"The relationship between corporate social responsibility and earnings management: accounting for endogeneity"

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THE RELATIONSHIP BETWEEN CORPORATE SOCIAL RESPONSIBILITY AND EARNINGS MANAGEMENT: ACCOUNTING FOR ENDOGENEITY

Abstract

This study examines the relationship between corporate social responsibility (CSR) and earnings management after controlling for endogeneity of CSR. Using a sample of non-financial firms listed on Korean Securities Market between 2002 and 2010, this study finds that ignoring endogeneity biases the estimated relation between CSR and earnings management. Specifically, the results show that the negative and significant relation between CSR commitment and discretionary accruals reported in the previous studies becomes insignificant. However, the negative and significant relation between CSR commitment and real activities manipulation remains significant even when the endogeneity of CSR commitment is taken into account. Therefore, this study provides evidence that proactive CSR engagement significantly affects firm's practice of real activities manipulation, while it does not affect its practice of discretionary accruals. These results indicate that CSR commitment leads managers to be more responsible in management of operational activities than in accruals management.

Keywords	corporate social responsibility, earnings management, discretionary accruals, real activities manipulation, endogeneity
JEL Classification	M40, M41, M14

INTRODUCTION

Corporate social responsibility (hereafter, CSR) has attracted a great deal of attention in the academia and business world (e.g., Kim, Park, & Wier, 2012; Porter & Kramer, 2006). The International Federation of Accountants has issued a sustainability framework (IFAC, 2011) and different consultation documents (IFAC, 2006a, 2006b) to highlight the important roles that professional accountants play in facilitating the sustainable development of their organizations. In this regard, IFAC refers to CSR as sustainability, which originates from accounting transparency. Similarly, the American Institute of Certified Public Accountants (AICPA, 2010) also defines CSR as sustainability and recommends publicly announcing economic viability, social responsibility, and environmental responsibility, as well as corporate financial performance, for a great transparency about all aspects of business.

A number of previous works have examined the association between CSR and accounting transparency. Some researchers argue that CSR reflects a firm's value and culture, which, in turn, affect managers' decisions and reporting behaviors (Aguilera et al., 2007; Kim et al., 2012). The argument relies on the idea that managers of good corporate citizens have less incentive to manipulate accounting numbers through

earnings management, since these managers are more likely to pursue ethical expectations by stake-holders rather than achieve their self-interest. However, other researchers argue that managers may use CSR for their self-interest to advance their careers and reputation or to cover up unethical practices such as earnings management. The assumption here is that these managers may want to perform CSR activities in order to avoid the scrutiny from third parties (Prior et al., 2008).

The aim of this paper is to examine whether the results found in previous CSR earnings management relation studies suffer from endogeneity issues of CSR. This study asserts that management's decision to engage in CSR activities is correlated with unobserved firm specific variables such as firm's value and culture and management's self-motivation. Ignoring this self-selection is the likely source of endogeneity bias. Accordingly, this paper revisits the association between CSR and earnings management and shows that endogeneity bias produces inconsistent estimates of the relation between firm's CSR commitment and its accounting transparency.

Using a sample of Korean listed companies between 2002 and 2010 and the Korean Economic Justice Institute (hereafter, KEJI) index as a proxy for conducting CSR activities, this study finds that CSR companies engage in less earnings management through both accruals and real activities manipulations in comparison with non-CSR companies when this study uses ordinary least squares (hereafter, OLS) estimation[1]. Before correcting for endogeneity, the results apparently suggest that the CSR engagement is negatively related to both discretionary accruals and real activities manipulation, consistent with the findings in previous studies. The majority of prior studies (Choi & Moon, 2013; Prior et al., 2008) show that companies with strong commitment to CSR are less likely to manipulate earnings through discretionary accruals. In a recent study, Kim et al. (2012) provide further evidence that CSR engagement tends to reduce real activities manipulation, as well as accruals manipulation.

However, once this study corrects for endogeneity of CSR commitment using the Heckman (1979) procedure and differencing specifications, some of empirical results differ from those in previous studies. The relation between CSR commitment and discretionary accruals reported in prior studies becomes insignificant, while the negative relation between CSR commitment and real activities manipulation remains significant even after controlling for the endogeneity. These results imply that proactive CSR engagement leads managers to behave in a more strategic manner and restrict real activities manipulation rather than constrain accruals manipulation. Considering that real activities manipulation decreases future firm performance due to its direct impact on cash flows, managers of CSR companies may end up restricting real activities manipulation, as it provides more benefits for the companies than accruals management, which does not affect direct cash disbursements.

Prior studies on the CSR-earnings management association use CSR proxies as exogenous variables when CSR engagement may be determined endogenously (e.g., Chih et al., 2008; Kim et al., 2012; Prior et al., 2008). Although Choi and Pae (2011) have recently considered the endogeneity issues in their earnings management study, this paper makes the following contributions to the literature. First, while Choi and Pae (2011) use a proxy for ethical commitment based on a survey, this study uses a proxy for CSR commitment made by an independent third party named KEJI index, similar to KLD (Kinder, Lydenberg and Domini Research & Analytics, Inc.). Second, while Choi and Pae (2011) focus on accruals management and conservatism, this study examines real activities manipulations, as well as accruals management. Third, while Choi and Pae (2011) explore a sample of Korean listed companies for the year 2004 only, this study considers an exhaustive sample over the 2002 to 2010 period.

The remainder of this paper is organized as follows. Section 1 presents the CSR in Korea, discusses previ-

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1   According to recent research, Korea is one of the few Asian countries where large corporate citizens show strong commitment to social and environmental activities (Chang et al., 2017; Cheung et al., 2010; Oh et al., 2011). Therefore, the Korean setting is particularly interesting to investigate management motivation to engage in CSR activities.

ous research on the CSR-earnings management association and addresses endogeneity issues. Section 2 describes the methodology used in empirical analysis. Section 3 introduces the data and descriptive statistics. Section 4 reports the empirical results and discusses sensitivity analyses. Final section concludes with implications of findings.

1. LITERATURE REVIEW AND ENDOGENEITY PROBLEM

1.1. CSR and earnings management association

CSR originated in the U.S. and only recently has spread and entered the business debate and practice to the rest of the world (Matten & Moon, 2008). Contemporary institutional theory sheds light on the global spread of CSR and its social contextualization beyond its U.S. origins. The extensive literature addressing the theory and practice of CSR is still very much grounded in the European and U.S. contexts (Matten & Moon, 2008). However, the globalization of business drives the need to acquire insight into the nature of CSR in different countries (Tempel & Walgenbach, 2007). The notion of CSR remains contextualized by national institutional frameworks and differs among countries (Chih et al., 2008; Lim & Tsutsui, 2012).

The business climate in Korea has traditionally made companies put the focus on economic value against other softer values such as environmental protection, community relations or other social activities. The Korean society started to appreciate the importance of CSR through its financial crisis. This stream economic situation has generated societal demands and pressures on CSR by stimulating local actors such as the state, corporate unions and consumers. The attention of the media to cover CSR issues has also started to grow with the financial crisis. In Korea, the existent protectionist trade policies are abolished during the crisis, which allows consumers to claim their rights against Korean companies and makes them more demanding as for the role and responsibilities of corporations in society.

Thus, Korean companies become more interested in CSR activities to satisfy not only consumers, but also other stakeholders. Panel A of Figure 1 shows that CSR budget of Korean companies is increas-
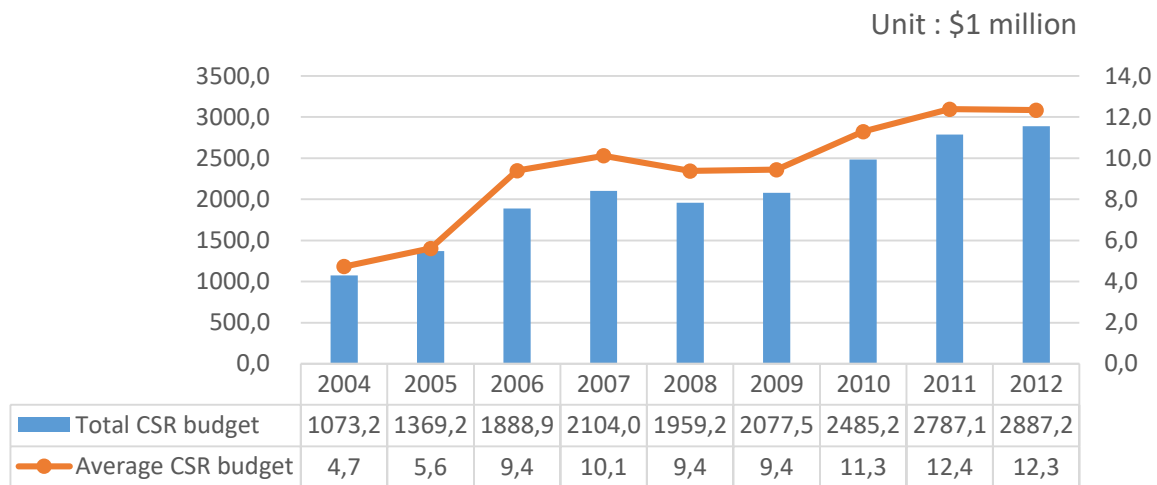
ing continuously. Panel B shows that growth rate of the CSR budget exceeds that of Korea's GDP, except 2010. In addition, Korean companies' CSR budgets are maintained at 0.2% to 0.3% of sales continuously.

Recent studies (Chang et al., 2017; Cheung et al., 2010; Oh et al., 2011) suggest that Korea is one of the few Asian emerging countries where listed firms have a strong commitment to social activities. In this sense and given the historical differences on institutional characteristics in relation to Western countries, the Korean setting is particularly interesting to investigate management motivation to engage in CSR.

With regard to previous studies, there are two contradicting views on the relation between CSR and earnings management. On the one hand, it is possible to expect a negative impact of CSR on earnings management. Within agency theoretic framework, earnings management is likely to increase agency cost, because managers behave opportunistically by reporting financial numbers, which do not reflect the real economic situation of the firm, thus, leading investors to non-optimal investment decisions (Kothari et al., 2016; Prior et al., 2008; Scholtens & Kang, 2013). Several researchers argue that CSR mitigates agency problems by reducing incentives to engage in earnings management, and enhances transparency in financial reporting (Huang et al., 2008; Wang et al., 2016). Ethical, political, and integrative theories of CSR suggest that managers in CSR firms are subject to a moral imperative and CSR firms have an incentive to be honest, trustworthy, and ethical in their business process. Such firms, therefore, are more likely to constrain earnings management and maintain transparency in financial reporting (Chen et al., 2018; Kim et al., 2012).

On the contrary, it is also possible to argue a positive CSR-earnings management association. It could be argued that the motivation of managers for engaging in CSR is always driven by some kind

Panel A. Total CSR budget and average CSR budget

Unit : $1 million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total CSR budget	1073,2	1369,2	1888,9	2104,0	1959,2	2077,5	2485,2	2787,1	2887,2
Average CSR budget	4,7	5,6	9,4	10,1	9,4	9,4	11,3	12,4	12,3

Panel B. Growth rate of CSR budget

Unit: %

Growth rate of CSR budget — Korea GDP growth rate (nominal) — CSR budget for sales
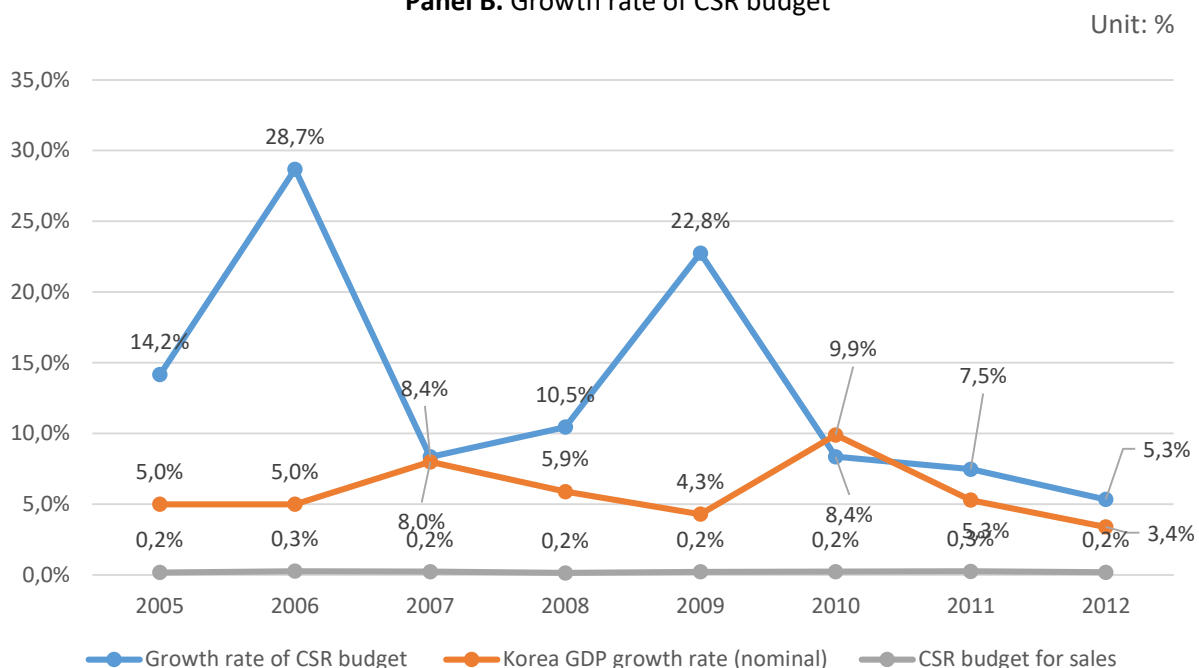
Figure 1. CSR budget trend of Korean companies

of self-interest (Hemingway, 2013), such as hiding earnings management or advancing their careers or other personal agendas (Martínez-Ferrero et al., 2016; Prior et al., 2008). Under this situation, CSR becomes a form of a window-dressing mechanism. If managers engage in CSR to conceal the effects of their private benefits or corporate miscon- duct, they may have incentives to mislead share- holders with opportunistic financial reporting (Hemingway & Maclagan, 2004; Kim et al., 2012)[2].

While prior studies have yielded mixed results in the association between CSR and earnings man- agement, majority of studies document that CSR

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2   For example, CSR efforts of companies related to controversial activities can be seen as a way of management self-serving behavior in an attempt to cover up bad reporting practices and achieve legitimacy (Blanco et al., 2013; Cai et al., 2012; Hemingway & Maclagan, 2004; Martínez-Ferrero et al., 2016).
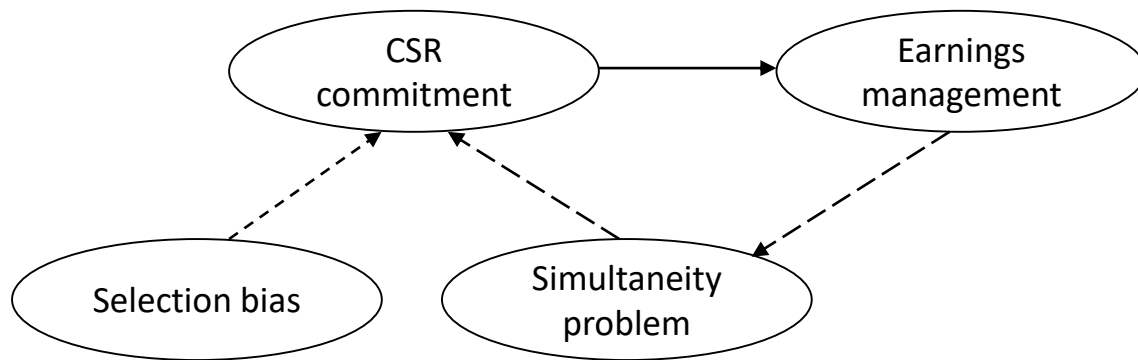
Two sources of endogeneity in CSR engagement

Figure 2. Endogeneity concerns in CSR engagement

firms are less likely to engage in earnings management, as compared to non-CSR companies, and behave in a more responsible manner to report financial information (Choi et al., 2013; Choi & Moon, 2013; Choi & Pae, 2011; García-Sánchez & García-Meca, 2017; Huang et al., 2008; Kim et al., 2012)[3]. Among these studies, Kim et al. (2012) conduct a comprehensive study of the relation between CSR and earnings management, using not only discretionary accruals, but also real activities manipulation and whether the firm has been subject to SEC investigation, as different proxies for earnings management. They provide evidence that CSR plays an important role in constraining earnings management.

1.2. Endogeneity concerns

This paper argues that previous results on the CSR-earnings management association might be subject to endogeneity issues. Indeed, prior literature has mainly used CSR proxies as exogenous variables (e.g., Chen et al., 2018; Chih et al., 2008; Kim et al., 2012; Prior et al., 2008).

This study identifies and addresses two sources of endogeneity. The first source of endogeneity relates to the consideration that managers make CSR engagement decisions not randomly and, thus, CSR engagement might be determined by managers' overall policies or other internal factors. When the

endogenous indicator variable, CSR commitment, is included as an independent variable, the error term in the regression model can be correlated with CSR commitment. A statistical analysis that does not take into account this selection bias may suffer from biased coefficient estimates (Garcia-Castro et al., 2010; Jo & Harjoto, 2012; Lennox et al., 2012).

The second source of endogeneity is rooted in a simultaneity problem. While CSR engagement may lead to higher accounting transparency, companies with opportunistic financial reporting are more likely to engage in CSR activities. CSR engagement and earnings management may be co-determined, with each affecting the other. Indeed, determinants of CSR, such as firm size, market to book ratio, return on asset, and leverage, are also associated with accounting transparency (Dechow et al., 1995; DeFond & Jiambalvo, 1994; DeFond & Subramanyam, 1998; Kim et al., 2012; Scholtens & Kang, 2013). In this case, estimating either CSR or earnings management regressions may result in endogeneity. Figure 2 illustrates two endogeneity concerns related to CSR engagement.

In order to address the above two endogeneity issues, this study applies the Heckman 2-stage specification to correct the selection bias caused by CSR engagement decision. Further, this study uses a differencing equation to eliminate the simultaneity problem.

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3   In sharp contrast, Prior et al. (2008) and Chih et al. (2008) provide evidence that CSR firms are more aggressive in earnings management. Prior et al. (2008) report a positive association between CSR and earnings management, using a sample of 593 regulated and unregulated companies from 26 countries. However, the positive association disappears after dropping regulated firms from the sample (i.e., about 20% of total observations). Chih et al. (2008) find that CSR companies tend to smooth earnings less when compared with non-CSR companies. These authors also report that CSR companies display less interest in avoiding earnings losses, but they are still more aggressive in accruals management. However, the results in Chih et al. (2008) should be interpreted with caution since they could be explained by country differences (e.g., different accounting standards, earnings management practices, etc.) rather than differences in CSR activities (Kim et al., 2012).

2. RESEARCH METHODOLOGY

In order to test the hypothesis that earnings management is an increasing or decreasing function of CSR engagement, the next subsection describes an OLS specification in detail. Then, the following subsection presents a selection model and a differencing model to address potential endogeneity concerns. Consequently, this study compares the results after accounting for endogeneity with those based on the OLS regression.

2.1. OLS model specification

Based on the extant literature on earnings management (e.g., Badertscher, 2011; Cohen et al., 2008; DeFond & Subramanyam, 1998; Kim et al., 2012; Kothari et al., 2005; Roychowdhury, 2006; Wang et al., 2016; Zhang, 2012), this study uses the following OLS regression models to test the relationship between CSR commitment and earnings management:

$$
\begin{aligned}
ABS\_DA_t = {} & \beta_0 + \beta_1 DCSR_t + \\
& + \beta_2 COM\_RAM_t + \beta_3 SIZE_{t-1} + \\
& + \beta_4 MB_{t-1} + \beta_5 ROA_{t-1} + \beta_6 LEV_{t-1} + \\
& + \beta_7 BIG4_t + \beta_8 RD\_INT_t + \\
& + \beta_9 AD\_INT_t + \beta_{10} AGE_t + \beta_{11} EO_{t+1} + \\
& + Industry/Year\ Fixed\ Effect + \varepsilon_t.
\end{aligned} \tag{1}
$$

$$
\begin{aligned}
COM\_RAM_t = {} & \beta_0 + \beta_1 DCSR_t + \\
& + \beta_2 ABS\_DA_t + \beta_3 SIZE_{t-1} + \beta_4 MB_{t-1} + \\
& + \beta_5 ROA_{t-1} + \beta_6 LEV_{t-1} + \beta_7 BIG4_t + \\
& + \beta_8 RD\_INT_t + \beta_9 AD\_INT_t + \\
& + \beta_{10} AGE_t + \beta_{11} EO_{t+1} + \\
& + Industry/Year\ Fixed\ Effect + \varepsilon_t.
\end{aligned} \tag{2}
$$

This study uses two main proxies for earnings management: discretionary accruals and real activities manipulations[4]. Discretionary accruals are the practice of using tricks to misrepresent or reduce transparency of the financial reports without involving the changes of cash flows in the future.

These discretionary accruals can be reversed in the future. On the other hand, real activities manipulations are the management actions that deviate from normal business practice, undertaken with the primary objective of meeting certain earnings thresholds (Roychowdhury, 2006). To avoid earnings disappointments, companies can utilize three real activities manipulation methods: boosting sales volumes temporarily through increased price discounts or more lenient credit terms, which lead to decreasing cash flows, decreasing other operating expenses through reductions in discretionary expenditures, which include advertising expense, research and development, and SG&A expenses, and reducing the reported cost of goods sold through overproduction (Roychowdhury, 2006).

CSR commitment (*DCSR*) is a main variable of interest. We predict that β_1 in equations (1) and (2) is negative, indicating that the companies with CSR commitment are less likely to manage earnings than the companies without CSR commitment.

Following previous studies, this study includes the following independent variables that could affect financial reporting behavior. To control for the substitutive nature of two earnings management mechanisms, we include *COM_RAM* or *ABS_DA* (Kim et al., 2012). Cohen et al. (2008) and Zhang (2012) suggest that companies can choose between the two mechanisms using the technique, which is less costly to them. Firm size and growth opportunity are significantly associated with earnings management (Roychowdhury, 2006; Wang et al., 2016). Prior studies find a significant relation between earnings management and financial performance (Kim et al., 2012). We include a proxy for financial performance: *ROA*. Debt also influences the incentives to manage earnings (DeFond & Jiambalvo, 1994; Wang et al., 2016). Auditor quality influences reporting transparency (Becker et al., 1998; Francis et al., 1999; Wang et al., 2016). McWilliams and Siegel (2000) suggest that R&D intensity and advertising intensity are associated with earnings. Firms with equity offering tend to have incentives for earnings management (Marquardt & Wiedman, 2004). Finally, we include industry and year fixed effects.

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4   Most of prior studies (e.g., Chen et al., 2018; Chih et al., 2008; Choi & Moon, 2013; Prior et al., 2008) examine whether companies with a higher degree of CSR commitment are more or less likely to manipulate earnings through discretionary accruals than other companies. Kim et al. (2012) provide further evidence that CSR commitment is associated with lower real activities manipulation in addition to lower accruals manipulation.

2.2. Selection model estimation

One problem with standard OLS estimations in equations (1) and (2) is that they assume that error term (ε) is uncorrelated with the explanatory variable of interest (DCSR). A potential concern is that companies that choose to engage in CSR are not a random sample of population. Selection bias arises when an independent variable included in the model is potentially a choice variable, correlated with unobservable relegated to the error term. When the correlation between ε and DCSR is non-zero, OLS estimates are inconsistent (Garcia-Castro et al., 2010; Jo & Harjoto, 2012; Lennox et al., 2012).

To control for selection bias, Heckman (1979) proposes a two-stage estimation procedure, commonly known as a treatment effect model when the dependent variable is observed for all observations in the data. In the first stage, a regression for observing a positive outcome of the dependent variable is modeled with a probit model. The estimated parameters are used to calculate the inverse Mill's ratio, which is then included as an additional explanatory variable in the second stage (Lennox et al., 2012). However, to implement Heckman's two-stage estimation, we need to find the variables, which are included in the first stage, but are excluded in the second stage. If such variables are available, the estimation using the treatment effect model would yield an unbiased estimator of the coefficient on DCSR.

The choice of CSR commitment in the first stage is estimated as follows:

$$DCSR_t = \alpha_0 + \alpha_1 DCSR_{t-1} + \alpha_2 CASH_t +$$
$$+\alpha_3 CFO_t + \alpha_4 CHAEBOL_t + \alpha_5 MSH_t +$$
$$+\alpha_6 FSH_t + \alpha_7 ABS\_DA_t +$$
$$+\alpha_8 COM\_RAM_t + \alpha_9 SIZE_{t-1} + \alpha_{10} MB_{t-1} +$$
$$+\alpha_{11} ROA_{t-1} + \alpha_{12} LEV_{t-1} + \alpha_{13} BIG4_t +$$
$$+\alpha_{14} RD\_INT_t + \alpha_{15} AD\_INT_t + \alpha_{16} AGE_t +$$
$$+\alpha_{17} EO_{t+1} + Industry/Year\ Fixed\ Effect + \theta_t.$$

(3)

CSR engagement is affected by various factors such as firm performance, financial constraint, growth opportunity, and industry (Choi & Moon, 2013; Oh et al., 2011). Most of these factors are already included in the second stage earnings management equation as control variables. As explanatory variables for CSR engagement are only in the first stage regression, we include the lagged value of CSR commitment $(DCSR_{t-1})$ to control for time series of CSR activities (Ittner & Larker, 1998; Yook & Choi, 2011). We also include the level of cash and cash flows from operations to proxy for firm performance, which enables or gives rise to the external demand for CSR investment (Campbell, 2007).

Further, corporate governance is associated with the scope and effectiveness of CSR investment (Kim et al., 2012). Especially in Korea, it is important to take into account the influence of business groups: chaebols[5]. Previous research suggests that chaebols have viewed CSR activities as a way to restore credibility after reputational damage due to accounting fraud and the creation of illegal slush funds (Choi & Aguilera, 2009; Choi et al., 2013), especially after the Asian financial crisis. Further, we acknowledge that different shareholders may have different motivations to engage in CSR. According to Oh et al. (2011), while equity shareholding by managers is negatively associated with CSR commitment, there is a positive association between CSR commitment and percentage ownership by foreign investors.

After running the probity model in the first stage and estimating inverse Mill's ratio from equation (3), this study controls for selection bias by adding inverse Mill's ratio to equations (1) and (2).

2.3. Differencing model specification

To rule out the existence of the simultaneity problem, this study implements a fixed effect specification (Garcia-Castro et al., 2010). Firm fixed effects are incorporated into the model by either including a set of firm indicator variables or differencing equations (1) and (2). Accordingly, this study uses

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5   A Chaebol is defined as a group of firms of which more than 30% of shares are owned by the group's controlling shareholders and its affiliated companies (Bae et al., 2002; Bae and Jeong, 2007; Choi et al., 2013). The Korea Fair Trade Commission (KFTC) announces a list of Chaebols whose asset size is worth over two trillion Korean won in every year. From the list of Chaebol group, the top 30 non-government groups are selected for analysis based on the size of total assets of the group in each year (Choi et al., 2013).

the following differencing equations to mitigate the simultaneity problem by focusing on the companies that are ranked in the KEJI index for the first time:

$$\Delta ABS\_DA_t = \beta_0 + \beta_1 RATING +$$
$$+ \beta_2 \Delta COM\_RAM_t + \beta_3 \Delta SIZE_{t-1} +$$
$$+ \beta_4 \Delta MB_{t-1} + \beta_5 \Delta ROA_{t-1} + \beta_6 \Delta LEV_{t-1} + \qquad (4)$$
$$+ \beta_7 \Delta BIG4_t + \beta_8 \Delta RD\_INT_t +$$
$$+ \beta_9 \Delta AD\_INT_t + \beta_{10} \Delta EO_{t+1} +$$
$$+ Industry/Year\ Fixed\ Effect + \varepsilon_t.$$

$$\Delta COM\_RAM_t = \beta_0 + \beta_1 RATING_t +$$
$$+ \beta_2 \Delta ABS\_DA_t + \beta_3 \Delta SIZE_{t-1} +$$
$$+ \beta_4 \Delta MB_{t-1} + \beta_5 \Delta ROA_{t-1} + \beta_6 \Delta LEV_{t-1} + \qquad (5)$$
$$\beta_7 \Delta BIG4_t + \beta_8 \Delta RD\_INT_t +$$
$$+ \beta_9 \Delta AD\_INT_t + \beta_{10} \Delta EO_{t+1} +$$
$$+ Industry/Year\ Fixed\ Effect + \varepsilon_t.$$

where *RATING* is one if the firm is included in the KEJI index in year *t* for the first time and zero otherwise and Δ indicates that variables are measured as the difference between $t-1$ and t.

In equations (4) and (5), this study assumes that being first included in the list of companies with the best CSR activities is exogenous. This research design allows us to investigate the change in earnings management following being listed as CSR companies.

3. DATA

3.1. Sample selection

This study first collects the information on CSR. We identify CSR companies included in the list of top-200 best corporate citizens from 2002 to 2010, assessed by a leading Korean CSR institution, KEJI. This institute provides a CSR rating, officially labeled as the KEJI index. In Korea, most of studies have used the KEJI index as a proxy for proactive CSR engagement (Choi & Moon, 2013; Oh et al., 2011; Yook & Choi, 2011), similar to KLD[6]. The KEJI index divides the various CSR-related items into seven major categories including environment, community, corporate governance, corporate integrity, customer satisfaction with product quality and safety, employee relations, and long-term vision. The KEJI index consists of quantitative and qualitative measures. While the quantitative data are collected in a disciplined process from a wide variety of organizations (Korean government, non-government organizations, media sources, annual reports, and firm disclosures), the qualitative data are collected from a survey.

Our sample consists of a set of non-financial and unregulated Korean listed companies for the period from 2002 to 2010. To control for the effect of the adoption of International Financial Reporting Standard (IFRS) in Korea beginning in 2011, we limit the duration of our sample to 2010. This study supplements the KEJI data with financial data from KIS-Value, a Korean electronic database similar to Compustat in the U.S. To reduce the impact of influential observations, continuous variables are winsorized at the top and bottom 1% of their distribution. This sample selection procedure results in 4,870 firm-year observations over the period from 2002 to 2010.

Table 1 reports the sample distribution. Panel A of Table 1 presents the sample distribution by year of CSR and non-CSR companies. The full sample consists of 4,870 firm-year observations, 1,609 observations for the CSR sample and 3,261 observations for the non-CSR sample. CSR and non-CSR samples tend not to be clustered by time periods over the years 2002 through 2010. Panel B of Table 1 shows the sample distribution by the KSIC industry code[7]. The relatively heavily represented industries in the CSR sample are chemical and allied products (25.67%), followed by electronic and machinery (10.13%) and food and beverage (7.83%). On the other hand, chemical and allied products (13.25%), primary metal product (8.80%) and wholesale and retail (7.94%) are highly represented in the non-CSR sample.

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6   Most of previous research on U.S. companies uses CSR attributes ratings from KLD, an independent agency with a long history of tracking and rating firms based on a number of CSR dimensions.

7   KSIC (Korean Standard Industrial Classification) industry code is announced by Korean Statistical Information Service. Most of Korean research has used this code for industry variable, similar to SIC industry code in the U.S.

Table 1. Sample distribution

Panel A. CSR and non-CSR samples

Year	Sample size	
	CSR firms	Non-CSR firms
2002	167	322
2003	168	337
2004	178	335
2005	177	346
2006	177	360
2007	180	374
2008	186	381
2009	190	394
2010	186	412
Sub-total	1,609	3,261
Total	4,870	

Panel B. Sample distribution by industry

Industry	CSR			Non-CSR			Total
	# of obs	% of CSR sample	% of total sample	# of obs	% of non-CSR sample	% of total sample	
Food, beverage	126	7.83	2.59	175	5.37	3.59	301
Apparel and other textiles products	48	2.98	0.99	184	5.64	3.78	232
Paper and allied products	36	2.24	0.74	156	4.78	3.20	192
Chemical and allied products	413	25.67	8.48	432	13.25	8.87	845
Rubber and plastic products	39	2.42	0.80	75	2.30	1.54	114
Fabricated metal product	56	3.48	1.15	121	3.71	2.48	177
Primary metal product	112	6.96	2.30	287	8.80	5.89	399
Electronic and machinery	163	10.13	3.35	176	5.40	3.61	339
Electric equipment	111	6.90	2.28	231	7.08	4.74	342
Transportation equipment	107	6.65	2.20	231	7.08	4.74	338
Construction	104	6.46	2.14	122	3.74	2.51	226
Transportation	29	1.80	0.60	123	3.77	2.53	152
Wholesale and retail	42	2.61	0.86	259	7.94	5.32	301
Other	223	13.86	4.58	689	21.13	14.15	912
Total	1,609	100.00	33.04	3,261	100.00	66.96	4,870

3.2. Descriptive statistics

Table 2 shows descriptive statistics for the full sample. The mean (median) absolute value of discretionary accruals (ABS_DA) is 0.055 (0.040) and the mean (median) value of comprehensive measure of real activities manipulations (COM_RAM) is −0.210 (−0.066). About thirty-three percent of observations are ranked in the KEJI index by engaging in CSR activities; the mean $DCSR$ is 0.330. The mean (median) values of total assets ($SIZE$), market-to-book ratio (MB), return-on-asset (ROA), and debt ratio (LEV) are 1,320 (213) billion Korean won, 1.008 (0.678), 0.029 (0.037), and 0.454 (0.457), respectively. Of our sample companies, 65.7% are audited by Big4 accounting firms ($BIG4$). R&D expense (RD_INT) and advertising expense (AD_INT) are on average approximately 0.6% and 0.9% of sales, respectively. The mean (median) values of firm age (AGE) is about 35.5 (36) years, and 12.9% of our sample issues equity in the following fiscal year (EO).

Table 2. Descriptive statistics

Variable	Mean	Q_1	Median	Q_3	Std. dev.
ABS_DA	0.055	0.018	0.040	0.074	0.051
COM_RAM	−0.210	−1.154	−0.066	0.974	2.168
$DCSR$	0.330	0.000	0.000	1.000	0.470
Assets (KRW billions)	1,320	101	213	601	4,981
MB	1.008	0.397	0.678	1.196	1.023
ROA	0.029	0.008	0.037	0.072	0.090
LEV	0.454	0.304	0.457	0.595	0.198
$BIG4$	0.657	0.000	1.000	1.000	0.475
RD_INT	0.006	0.000	0.000	0.006	0.013
AD_INT	0.009	0.000	0.001	0.007	0.019
AGE	35.542	27.000	36.000	45.000	15.470
EO	0.129	0.000	0.000	0.000	0.335

Notes: Variables are defined as in Appendix A.

Table 3 presents Pearson correlation matrix of the variables in the earnings management equation. $DCSR$ is negatively correlated with ABS_DA and COM_RAM, indicating that CSR companies

Table 3. Correlation matrix

Variables	ABS_DA	COM_RAM	DCSR	SIZE	MB	ROA	LEV	BIG4	RD_INT	AD_INT	AGE	EO
ABS_DA	1.000	–	–	–	–	–	–	–	–	–	–	–
COM_RAM	–0.049***	1.000	–	–	–	–	–	–	–	–	–	–
DCSR	–0.067***	–0.185***	1.000	–	–	–	–	–	–	–	–	–
SIZE	–0.090***	–0.103***	0.193***	1.000	–	–	–	–	–	–	–	–
MB	0.169***	–0.209***	0.021	0.101***	1.000	–	–	–	–	–	–	–
ROA	–0.042***	–0.201***	0.211***	0.160***	0.069***	1.000	–	–	–	–	–	–
LEV	0.074***	0.162***	–0.191***	0.154***	0.143***	–0.341***	1.000	–	–	–	–	–
BIG4	–0.012	–0.090***	0.096***	0.331***	0.117***	0.111***	0.039***	1.000	–	–	–	–
RD_INT	0.020	–0.238***	0.126***	0.040***	0.174***	–0.021	–0.055***	0.047***	1.000	–	–	–
AD_INT	–0.013	–0.460***	0.162***	0.029**	0.145***	0.097***	–0.094***	–0.002	0.172***	1.000	–	–
AGE	–0.073***	0.128***	0.077***	0.035**	–0.160***	–0.070***	0.006	–0.051***	–0.010	–0.022	1.000	–
EO	0.093***	–0.011	–0.072***	0.004	0.192***	–0.133***	0.151***	0.026*	0.071***	0.001	–0.023*	1.000

Notes: Variables are defined as in Appendix A. *, **, *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, based on two-tailed tests.

are less likely to engage in earnings management relative to non-CSR companies. CSR engagement is positively correlated with *SIZE*, *ROA*, *BIG4*, *RD_INT*, *AD_INT*, and *AGE*, which are consistent with prior research (Choi & Moon, 2013; Kim et al., 2012; McWilliams & Siegel, 2000; Prior et al., 2008). Finally, the highest correlation coefficient is –0.460 between *COM_RAM* and *AD_INT*, indicating that multicollinearity does not seem to be severe.

4. RESULTS

4.1. OLS estimation

Previous research has mainly used the OLS estimation for the CSR-earnings management association. Thus, this study first reproduces previous results using pooled cross-sectional OLS to identify in our sample the relation between CSR commitment and earnings management. Table 4 presents the regression results for equations (1) and (2). This study first reports the results using the absolute value of discretionary accruals (*ABS_DA*) as the dependent variable in the first column. The coefficient on *DCSR* is negative (–0.004) and significant ($t = –2.35$), indicating that discretionary accruals are significantly lower for CSR firms than non-CSR firms.

As a control variable, we include the combined proxy for real activities manipulation (*COM_RAM*). The estimated coefficient on *COM_RAM* is negative and significant; it is –0.001 ($t = –3.59$). These results are consistent with Kim et al. (2012), suggesting that firms choosing earnings management through real activities manipulation are less likely to engage in accruals manipulation. Discretionary accruals are also negatively associated with *SIZE*, *AD_INT* and *AGE*, suggesting that larger and older clients spending more advertising expenses are less likely to engage in accrual-based earnings management. Further, discretionary accruals are positively associated with *MB*, *LEV*, and *EO*, indicating that firms with higher growth opportunity, more leverage, and subsequent equity offering are more likely to engage in accrual-based earnings management.

The second column presents the regression results for equation (2), using *COM_RAM* as the dependent variable. The coefficient on *DCSR* is also negative (–0.334) and significant ($t = –5.64$), indicating that combined real earnings management is significantly lower for CSR companies than non-CSR companies[8]. These results support the notion that CSR companies manage their earnings less using real activities manipulation than non-CSR companies and are more transparent in their financial reporting.

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8   In an unablated result, this study observes similar results for the regression of ACFO, ADISEXP, and APROD as the dependent variable. The coefficient on DCSR is 0.015 (t = 5.49), 0.007 (t = 3.42), and –0.022 (t = –5.75), respectively. Given that higher levels of abnormal operating cash flows and discretionary expenses and lower levels of abnormal production costs indicate more conservative operating decisions, these results suggest that CSR companies engage in earnings management less by real activities manipulations than other companies.

Taken together, these results from OLS estimation in Table 4 indicate that CSR companies engage in earnings management less by manipulating accruals and real operating activities. In other words, CSR commitment is more likely to constrain earnings management and lead companies to make responsible operating decisions, thereby maintaining transparency in financial reporting.

Table 4. OLS regression of earnings management on corporate social responsibility

Dependent variable	ABS_DA Coefficient (*t*-stat)	COM_RAM Coefficient (*t*-stat)
Intercept	0.171 (11.67)***	1.540 (2.89) ***
DCSR	−0.004 (−2.35)**	−0.334 (−5.64)***
COM_RAM	−0.001 (−3.59)***	–
ABS_DA	–	−1.850 (−3.59)***
SIZE	−0.004 (−7.37)***	−0.079 (−3.91)***
MB	0.008 (9.78)***	−0.271 (−9.43)***
ROA	−0.007 (−0.73)	−0.246 (−7.70)***
LEV	0.013 (3.12)***	1.511 (9.85)***
BIG4	−0.002 (−1.19)	−0.155 (−2.70)***
RD_INT	−0.001 (−0.02)	−2.631 (−12.81)***
AD_INT	−0.106 (−2.36)**	−4.988 (−34.68)***
AGE	−0.002 (−1.98)**	0.327 (8.24)***
EO	0.006 (2.81)***	−0.043 (−0.56)
Industry dummy	Included	Included
Year dummy	Included	Included
Adj. R²	0.090	0.349
F-value	14.95***	81.12***
N	4,870	4,870

Notes: Variables are defined as in Appendix A. *, **, *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, based on two-tailed tests.

4.2. Heckman estimation

As discussed in the methodology section, potential endogeneity of CSR engagement may lead to a bias in *DCSR* coefficient estimates. To control for selection bias, this study uses a Heckman 2-stage estimation procedure to obtain consistent and efficient estimates for *DCSR*. Specifically, we model *DCSR* using probit in the first stage and then estimate *IMR*. In the second stage, we add *IMR* to Equations (1) and (2) to control for selection bias.

Table 5 shows the second stage result of testing the CSR engagement-earnings management association after including *IMR*. The *IMR* coefficients in the first and second columns are positive and significant, suggesting the presence of selection bias.

More importantly, this study finds that some results differ from those in Table 4. For the regressions using *ABS_DA* and *COM_RAM* as the dependent variables, the estimated coefficients on *DCSR* are 0.001 (*t* = 0.06) and −0.124 (*t*= −2.14), respectively. After controlling for the selection bias of CSR engagement, the coefficient on *DCSR* for the *ABS_DA* regression becomes insignificant, while the coefficient on *DCSR* for the *COM_RAM* regression remains significant. Thus, these results suggest that a firm's CSR commitment significantly affects earnings management through real operating activities manipulation, but not through accruals manipulation.

After correcting for endogeneity of CSR activities, the results provide the evidence that CSR commitment leads managers to be more responsible in operational decisions. Discretionary accruals just make the manipulation of book income by managers' decision without considering the changes in cash flows and can be reversed in the future. In contrast, the real activities manipulations are the management actions that deviate from normal business practice and cannot be reversed in the future (Roychowdhury, 2006). Even though these activities enable managers to meet short-run earnings targets, they are likely to decrease firm value in the long run. Consequently, real activities manipulations often sacrifice long-term firm performance and are costlier to the firm than discretionary accruals. Thus, managers of CSR companies tend to restrict real activities manipulation rather than constrain accruals management to provide more benefits for their companies and foster future relationship with stakeholders.

Table 5. Heckman second stage regression of earnings management on corporate social responsibility

Dependent variable	ABS_DA Coefficient (*t*-stat)	COM_RAM Coefficient (*t*-stat)
Intercept	0.026 (1.48)	−4.680 (−7.57)***
DCSR	0.001 (0.06)	−0.124 (−2.14)**
COM_RAM	−0.003 (−6.94)***	–
ABS_DA	–	−0.350 (−6.94)***
SIZE	−0.001 (−1.15)	−0.086 (−4.02)***
MB	0.007 (8.89)***	−0.278 (−10.04)***
ROA	−0.029 (−3.19)***	−0.561 (−1.73) *
LEV	−0.005 (−1.12)	0.535 (3.42) ***

Table 5 (cont.). Heckman second stage regression of earnings management on corporate social responsibility

Dependent variable	ABS_DA	COM_RAM
	Coefficient (*t*-stat)	Coefficient (*t*-stat)
BIG4	−0.001 (−0.01)	−0.056 (−1.01)
RD_INT	0.087 (1.51)	−2.021 (−10.07)***
AD_INT	−0.075 (−1.71) *	−4.513 (−32.01)***
AGE	0.002 (1.77) *	0.504 (12.81)***
EO	−0.002 (−0.80)	−0.413 (−5.29)***
IMR	0.028 (13.57)***	1.380 (19.01)***
Industry dummy	Included	Included
Year dummy	Included	Included
Adj. R²	0.123	0.395
F-value	20.62***	95.46***
N	4,870	4,870

Notes: IMR is inverse Mills' ratio estimated from the first stage model of CSR engagement. Other variables are defined as in Appendix A. *, **, *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, based on two-tailed tests.

4.3. Differencing estimation

In Table 6, this study uses the differencing specification to control for the simultaneity problem of CSR. This differencing specification can also address the concern of reverse causality in the sense that unethical practices such as earnings management affect a firm's decision regarding whether to engage in CSR activities. If changes in a firm's earnings management between the current and prior years are related to its inclusion in the KEJI index made by an independent CSR institution, it is hard to argue that earnings management causes CSR engagement. This study examines changes in earnings management from year *t – 1* to year *t* when a firm is ranked for the first time in the KEJI index in year *t*. Thus, we define an indicator variable *RATING* for a company first included in the KEJI index during the period from 2002 to 2010.

Table 6 presents results for the two differencing models outlined in equations (4) and (5). The results are very similar to those in Table 5. This study finds

that the coefficient on *RATING* is −0.003 (*t* = −0.94) and −0.205 (*t*= −2.00), respectively, using *ΔABS_DA* and *ΔCOM_RAM* as the dependent variable. The results suggest that firms newly ranked in the KEJI index are more likely to decrease real activities manipulations, but not discretionary accruals.

Thus, the findings in Tables 5 and 6 suggest that the proactive involvement in CSR activities leads managers to report accounting information more transparently by restricting real activities manipulations, and not by constraining accruals. The findings indicate that some of the results found in the previous research change when concerns about the potential endogeneity of CSR engagement are addressed in the analysis.

Table 6. Differencing regression of earnings management on corporate social responsibility

Dependent variable	ΔABS_DA	ΔCOM_RAM
	Coefficient (*t*-stat)	Coefficient (*t*-stat)
Intercept	0.157 (10.13) ***	2.325 (4.21) ***
RATING	−0.003 (−0.94)	−0.205 (−2.00)**
ΔCOM_RAM	−0.001 (−1.28)	–
ΔABS_DA	–	−0.684 (−1.28)
ΔSIZE	−0.004 (−6.14)***	−0.112 (−5.45)***
ΔMB	0.007 (7.78)***	−0.230 (−7.56)***
ΔROA	−0.011 (−1.17)	−2.541 (−7.66)***
ΔLEV	0.016 (3.55)***	1.554 (10.00)***
ΔBIG4	−0.002 (−0.99)	−0.192 (−3.27)***
ΔRD_INT	0.079 (1.30)	−2.935(−13.88)***
ΔAD_INT	−0.115 (−2.46)**	−4.955 (−33.86)***
ΔEO	0.005 (2.10)**	0.039 (0.48)
Industry dummy	Included	Included
Year dummy	Included	Included
Adj. R²	0.079	0.348
F–value	11.62***	72.57***
N	4,379	4,379

Notes: RATING is an indicator variable that takes a value of one if the firm is included in the KEJI index in year *t* for the first time and zero otherwise and Δ indicates that variables are measured as the difference between *t – 1* and *t*. Other variables are defined as in Appendix A. *, **, *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, based on two-tailed tests.

CONCLUSION

This study examines the relationship between CSR engagement and accounting transparency through discretionary accruals and real activities manipulations. Specifically, we examine the role played by endogeneity of CSR commitment in this association for a sample of Korean listed companies. In this paper, we argue that endogeneity problems might plague previous research studying the CSR-earnings

management association. While endogeneity problems are not unique to the CSR research, few studies have properly considered endogeneity in CSR-earnings management association. This study contributes to the literature by controlling for the endogeneity problem using the Heckman procedure and differencing specifications.

This study empirically shows that ignoring the endogeneity of CSR activities biases the estimated association between CSR engagement and earnings management. More specifically, this study finds that the negative relation between CSR and discretionary accruals reported in most of the previous studies becomes insignificant when endogeneity of CSR is properly taken into account. However, the prior findings on a negative and significant relation between CSR and real activities manipulation hold even when the endogeneity is corrected. These results provide evidence that CSR commitment is more likely to lead companies to make responsible operating decisions rather than accruals management decisions.

Finally, this study acknowledges the limitation of making generalization for other countries based on the results from Korean listed companies and the KEJI index. Differences in legal, institutional, accounting system, and CSR measurement could lead to differences in the relationship between CSR and earnings management. Due to such differences, it would be interesting to examine the relationship between CSR and earnings management using KLD, a representative measure of CSR, or across countries. In addition, due to changes in accounting standards, the period after 2011 is not analyzed in this study. Since changing accounting standards will have a significant impact on corporate accounting, it will be the subject of further research to study the relationship between CSR and earnings management before and after changes in accounting standards. This study leaves these important questions for future researches.

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APPENDIX A

Table A1. Definitions of variables[9]

Variable	Definition
Dependent variables	
ABS_DA	Absolute value of performance-adjusted discretionary accruals, which are computed using modified Jones model including lagged return on assets as follows: $$\frac{TA_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{\Delta S_t - \Delta AR_t}{A_{t-1}} + \alpha_3 \frac{PPE_t}{A_{t-1}} + \alpha_4 ROA_{t-1} + \varepsilon_t,$$ where TA is the total accruals which is defined as the difference between income before extraordinary items and operating cash flow, A is the total asset, ΔS is changes in sales, ΔAR is changes in accounts receivable, and PPE is the level of plant, property, and equipment. We then control for firm performance using prior year return on assets, ROA
COM_RAM	Sum of real activities manipulation proxies, measured as APROD/std(APROD) − ACFO/std(ACFO) − ADISEXP/std(ADISEXP), where std stands for standard deviation of each respective variable
ACFO	Level of abnormal cash flows from operations which is the regression residuals from following equation: $$\frac{CFO_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_t}{A_{t-1}} + \varepsilon_t,$$ where CFO is cash flows from operations, A is total asset, S is sales, and ΔS is changes in sales
ADISEXP	Level of abnormal discretionary expenses which is the regression residuals from following equation: $$\frac{DISEXP_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t,$$ where $DISEXP$ is the sum of advertising expenses, R&D expenses, and selling and administrative expenses, A is total asset, and S is sales
APROD	Level of abnormal production cost which is the regression residuals from following equation: $$\frac{PROD_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_t}{A_{t-1}} + \alpha_4 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t,$$ where $PROD$ is the sum of cost of goods sold and change in inventory. A is total asset, S is sales, and ΔS is changes in sales
Experimental variable	
DCSR	An indicator variable that takes a value of one if the firm is ranked in the KEJI index and zero otherwise
Control variables	
SIZE	Natural logarithm of total asset at the beginning of the year
MB	Market-to-book equity ratio at the beginning of the year
ROA	Net income scaled by total asset
LEV	Total debt scaled by total asset
BIG4	An indicator variable that takes a value of one if the firm is audited by a Big 4 audit firm and zero otherwise
RD_INT	R&D expense scaled by sales
AD_INT	Advertising expense scales by sales
AGE	Natural logarithm of (1 + the number of years since the firm was founded)
EO	An indicator variable that takes a value of one if the firm has equity offerings in the following year and zero otherwise

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9   The Appendix A includes the models to compute ABS_DA, COM_RAM, ACFO, ADISEXP, and APROD.