Moratis and van Egmond *International Journal of Corporate Social Responsibility* (2018) 3:8
https://doi.org/10.1186/s40991-018-0030-7

International Journal of Corporate Social Responsibility

ORIGINAL ARTICLE Open Access

Concealing social responsibility? Investigating the relationship between CSR, earnings management and the effect of industry through quantitative analysis

Lars Moratis[1,2*] and Max van Egmond[3]

Abstract

The relationship between corporate social responsibility (CSR) and earnings management (EM) has only emerged recently as a topic of academic research. Literature suggests that firms may strategically use CSR to compensate for EM or to deflect stakeholder attention from EM. Studies on the EM-CSR relationships have so far yielded contradictory results. Additionally, research has largely neglected the influence of industry on this relationship. As scholars of both CSR and EM have suggested that industry effects may play a role, this study examines the relationship between the level of CSR performance of companies, the extent of EM firms are practising and the effect of industry (high vs. low environmental impact as a proxy for experienced stakeholder pressure). Using the Modified Jones model, discretionary accruals are estimated and used as a proxy for EM (accrual-based EM). Firm CSR performance is captured by using the Kinder, Lydenberg, Domino (KLD) database. Using a sample consisting of 5494 observations of US listed companies for the fiscal years 2003 until 2009, this study (1) finds no relationship between EM and CSR and (2) finds that the firms in the category high environmental impact do not seem to practice EM but do display higher levels of CSR performance. Finally, the article reflects critically on the concepts used in studying the EM-CSR relationship and its contribution to the literature.

Keywords: Corporate social responsibility, Earnings management, Sustainability, Quantitative analysis, Modified Jones model, Discretionary accruals

Introduction[1]

Corporate social responsibility (CSR) refers to a wide range of actions taken by firms to reduce their negative and increase their positive impacts on society (both in an ecological and a social sense) (cf. Carroll 1999). Stakeholder concerns and ethical issues (e.g., wellbeing of employees, the communities firms operate in, labour conditions in the supply chain, experienced product quality by customers, and transparency) as well as economic aspects (e.g., the costs incurred by and revenues generated through addressing societal impacts) represent an integral part of the CSR concept (Dahlsrud 2008). Hence, the disclosure of reliable and timely financial information is arguably an important aspect of CSR. It provides a basis of trust and confidence regarding the firm's claims, operations and future viability in its relationships with financial and non-financial stakeholders (Yip et al. 2011; Kim et al. 2012). However, firms have been reported to engage in earnings management (EM) to obfuscate rather than reveal their true financial characteristics (Gaver et al., 1995; Burgstahler and Dichev 1997; Vinten et al. 2005). EM occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports, either to mislead stakeholders about the underlying economic performance of the firm or to influence contractual outcomes that depend on reported accounting numbers (Healy and Wahlen 1999). EM essentially has a negative influence on the quality of financial information as it portrays a

* Correspondence: larsmoratis@hotmail.com
[1]NHTV Breda University of Applied Sciences, Breda, Netherlands
[2]Antwerp Management School, Antwerpen, Belgium
Full list of author information is available at the end of the article

false image towards different stakeholders of the firm's earnings (Prior et al. 2008).

The EM-CSR relationship has only emerged as a topic of academic research rather recently and similar studies have yielded different conclusions on this relationship. On the one hand, findings shows that CSR-oriented firms provide more transparent financial information as a result of managers willing to behave more ethically and meeting expectations of society and stakeholders. On the other hand, studies confirm that firms that invest in CSR practices show high levels of EM because managers try to disguise the low quality of firms' financial statements through signalling higher levels of CSR. This deflects stakeholder attention from the poor quality of the earnings of the company towards the CSR performance of the company, helping managers to legitimize the firm and themselves.

Despite the fact that industry effects have been recognized by scholars as a topic of investigation in both the separate contexts of EM and CSR, the emerging literature on the EM-CSR relationship has largely neglected such effects. This particularly applies to the aspect of negative environmental impacts of industries. However, following the suggestions of Prior et al. (2008) and Hrasky (2011), the extent to which firms within different industries experience stakeholder pressure to address their social and environmental responsibilities may well influence the EM-CSR relationship.

Using the Modified Jones model (Dechow et al. 1995) to estimate discretionary accruals as a proxy for EM and the Kinder, Lydenberg, Domino (KLD) database to measure CSR performance, this article investigates the EM-CSR relationship and the effect of industry type by distinguishing between high and low environmental impact on this relationship. It reports on findings from analyzing financial data from the COMPUSTAT database for one or more of the fiscal years 2003 until 2009 of US listed companies, comprising a total of 5494 observations. As such, this study aims to make a contribution to the existing and empirically inconclusive academic literature on the relationship between earnings management and CSR.

The article starts with briefly defining EM, addressing motivations for and implications of EM. Second, it turns to the relationship between EM and CSR, highlighting the scarce literature on this intersection that is currently available. It then expounds on the research methodology and presents the results. Finally, it discusses the findings in the light of the existing literature and formulates several avenues for future research.

Earnings management: definitions, motivation and implications

The main function of financial statements is to provide relevant and timely information about the financial position of a firm that is useful to a wide range of stakeholders in making economic decisions. It provides stakeholders with a basis of trust and confidence regarding a firm's claims, current operations and future viability. However, as various corporate scandals in recent history have shown, financial information communicated by firms is not necessarily reliable. Firms' earnings quality, understood as the congruence between the information financial reports provide about their performance and their actual performance, arguably varies (Dechow et al. 2010).

EM is seen as the opposite of earnings quality and can be defined as the extent to which managers exercise their discretion over accounting numbers, thereby deliberately aiming to alter financial reports to mislead stakeholders about the firm's underlying financial performance or to influence contractual outcomes (Watts and Zimmerman 1978; Healy and Wahlen 1999). Schipper (1989: 92) defines earnings management as the "purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to, say, merely facilitating the neutral operation of the process)." A well-known manifestation of EM is income smoothing, through which firms aim to "dampen fluctuations of the firms publicly reported net income" (Trueman and Titman, 1988: 127). Empirical research has shown that managing away decreases and losses in earnings are far from uncommon in business (e.g., Gaver et al., 1995; Burgstahler and Dichev 1997; Beatty et al., 2002; Vinten et al. 2005).

As a general motivation, Burgstahler and Dichev (1997) contend that managers engage in EM to limit the costs imposed on the firm in its transactions with stakeholders. Healy and Wahlen (1999) distinguish between capital market, contracting and regulatory motivations for managers to engage in such practices. More specific reasons for EM include attracting external financing at a lower cost (Richardson et al. 2002), supporting negotiations with trade unions (Liberty and Zimmerman 1986), and achieve management targets to seize bonuses (Bergstresser and Philippon, 2006).[2]

Generally, managers can adopt two main methods to manipulate earnings, both opportunistic in nature: accrual-based EM and real EM (Cohen et al. 2008). Accrual-based EM means that managers change the accrual part of earnings while not inducing real economic consequences (Dechow et al. 2010). In contrast, real EM means that companies actually modify their business actions, thus inducing real economic consequences (Roychowdhury 2006).

EM thus is a strategy for obfuscating a firm's true financial quality (Courtis, 1998; Rutherford 2003) and, as such, morally questionable from a CSR perspective. From a theoretical perspective, EM can be primarily seen as an agency dilemma, since managers (agents) are

able to make decisions on behalf of shareholders and other stakeholders (principals) that may be based on managers' self-interest rather than that of the company. EM hence creates and exacerbates agency costs, because stakeholders can be diluted by the reported financial information possibly resulting in sub-optimal decision-making and compromising their own interests. Various studies on the agency costs of EM have found that EM has long-term negative consequences for the firm and its shareholders and for its stakeholders (e.g., Roychowdhury 2006; Sloan 1996; D'Souza et al. 2000; Davidson III et al., 2004).

Earnings management and CSR

Although Watts and Zimmerman (1978) already argued several decades ago that firms may reduce 'political costs' by selecting accounting procedures that minimize reported earnings, research into the EM-CSR relationship has only begun to emerge. Although not covering all the papers on the EM-CSR relationship cited in this article, a recent overview study of Huang & Watson (2015) on CSR research in 13 top accounting journals serves as an illustration: it only mentions two papers that directly and two papers that indirectly investigate the EM-CSR relationship. We find this observation rather surprising, since the essence of EM (i.e., strategically obfuscating a firm's quality to manipulate stakeholder judgment) strongly resonates with the contemporary research theme of greenwashing and the credibility of corporate CSR claims (e.g., Delmas and Cuerel Burbano 2011; Elving, 2012; Illia et al., 2013; De Vries et al. 2015). In addition, and as recognized in academic literature, CSR may be an ideal way to compensate or deflect the attention of stakeholders for EM (Prior et al. 2008). Kaplan (2001) in this regards states that an important part of being socially responsible is business ethics and that EM is generally seen as an unethical practice. Studying the EM-CSR relationship may further be seen as a fruitful line of research within the ongoing convergence between the disciplines of accounting and CSR/sustainability, which is, for instance, illustrated by the interest in firms' integrated reporting practices and social and environmental accounting, true cost or true price accounting approaches and discussions on the links between corporate and societal value creation (cf. Tilt, 2009; KPMG 2014; Bebbington et al. 2014). There also seems to be theoretical overlap in frameworks that can explain earnings management and CSR practices as well as their relationships, including agency theory, signalling theory, and stakeholder-legitimacy theory (Sun et al. 2010).

Research on the EM-CSR relationship

To the extent that scholars have investigated the EM-CSR relationship, their studies have yielded different conclusions on this relationship, even when using the same datasets. Research has focused on the extent and nature of the EM-CSR relationship, using varying sample sizes, sample sources, timeframes, geographies and proxies used for EM and CSR (see Table 1).

Prior et al. (2008) investigated the proposition that managers compromise stakeholder interests through EM in order to obtain private benefits and compensate stakeholders through CSR activities, hence assuming a positive correlation between EM and CSR. Researching 593 firms from 26 countries, the authors indeed find EM to have a positive impact on CSR, with the latter providing avenues for managerial entrenchment. Through initiating CSR activities, the authors contend, managers can deal with stakeholders responding with activism and vigilance to EM and secure their position in the firm. This relationship holds for different forms of EM

Table 1 Overview of current literature on the EM-CSR relationship

Authors	Year	Nature of EM-CSR relationship	Sample size (no. of firms / firm-year observations)	Sample Source	Sample period	Sample geographical focus
Prior et al.	2008	+	593 / 1105	SiRi Pro™ database; COMPUSTAT Global Vantage database	2002–2004	International (26 countries)
Chih et al.	2008	+ and – (dependent on type of EM)	1653 / undisclosed	FTSE All-World Developed Index (Global); FTSE4Good Global Index; COMPUSTAT Global Vantage database	1993–2002	International (46 countries)
Gargouri et al.	2010	+	109 / 180	Michael Jantzi Research Associates Canadian Social Investment Database	2004–2005	National (Canada)
Barton et al.	2010	+	1317 / 7902	Kinder, Lydenburg, and Domini; COMPUSTAT Global Vantage database	2003–2008	National (United States)
Kim et al.	2012	+/–	Undisclosed / 18,160	Kinder, Lydenburg, and Domini, COMPUSTAT Global Vantage database	1991–2009	National (United States)
Salewski and Zülch	2014	+	90 / 258	Kirchhoff Consult AG Good Company Ranking	2005–2009	International (Europe; mainly Germany, France, United Kingdom)
Gao and Zang	2015	–	2022 / 10,755	Kinder, Lydenburg, and Domini, COMPUSTAT Global Vantage database	1993–2010	National (United States)

(including income smoothing), certain types of stakeholders (employees and customers), and for regulated sectors.

While research by Gargouri et al. (2010) among 109 Canadian firms also point at a positive association between CSR – especially in the realms of environment and employees – and EM practices, Chih et al. (2008) largely arrive at a different conclusion on the EM-CSR relationship. They investigated whether CSR mitigates or increases the extent of EM by looking at income smoothing, earnings aggressiveness (i.e., the tendency to delay loss recognition and accelerate gains recognition; cf. Bhattacharya et al., 2003), and the avoidance of earnings losses and decreases. Using data from 1653 firms in 46 countries, the authors conclude that "a firm with CSR in mind tends not to smooth earnings, and displays less interest in avoiding earnings losses and decreases. It is, however, prone to engage in more earnings aggressiveness" (Chih et al. 2008: 195–196). This opportunistic tendency, the authors argue, may be lessened in countries with strong legal enforcement.

Such opportunistic tendencies by firms can also be found in the research by Salewski and Zülch (2014). Acknowledging the mixed results of prior research, these authors have empirically explored the relationship between CSR and the degree of EM, the degree of accounting conservatism and accruals quality among European blue chip firms. Contrasting Chih et al. (2008) their findings show high-CSR firms to be more likely to engage in EM, to have lower quality accruals and to report bad financial news less timely. Based on the geography of their sample, the authors hence contend that geographical characteristics moderate the EM-CSR relationship.

In line with Chih et al. (2008), Kim et al. (2012) conclude that socially responsible firms are less likely to engage in earnings management and to manipulate real operating activities than other firms. Using the KLD database, they suggest that ethical concerns are likely to encourage managers to produce high-quality financial disclosures and restrain them from practising EM.

Based on a sample of 2022 firms and 10,755 firm-year observations for the period 1993–2010, Gao and Zang (2015) recently found a negative correlation between CSR and earnings smoothness, suggesting that socially responsible firms reduce or avoid EM through discretionary smoothing. Income-smoothing CSR-oriented firms also appear to experience higher earnings-return relationships and stronger current return-future earnings relationships. Their results indicate that CSR adds a 'quality dimension' to EM.

The results from research by Barton et al. (2010) into the earnings management choices of ethical firms indicates a more nuanced view on the EM-CSR relationship. Using several proxies of CSR and EM, including abnormal levels of accruals, cash flows, inventory production, and discretionary expenses, they find that ethical firms, alike regular firms, manage earnings. However, ethical firms do so primarily through real actions rather than accounting choices, and with the objectives of meeting analysts' earnings forecasts and reducing financing and tax costs, rather than opportunistically increasing management's compensation or equity stakes. Barton et al.'s findings suggest that whether firms view EM as ethical depends on the manner and reasons for managing earnings. CSR-oriented firms legitimize EM through using real actions rather than accounting choices, but apparently only to increase shareholders' rather than managers' wealth.

Related research

Research on the EM-CSR relationship has not only been conducted from the perspective of ethical firms, but also on related categories. Focusing on firms with poor environmental ratings, a study by Sarumpaet (2012) based on 577 observations from listed Indonesian firms showed such firms to engage in EM. These firms were presumed to decrease their earnings to anticipate and avoid political costs in the context of a pollution control, evaluation and rating program by the authorities.

Scholars have been studying EM and sustainability reporting practices as well. Focusing on environmental disclosures of 245 UK firms, Sun et al. (2010) find no statistically significant association, suggesting that British managers do not use environmental disclosure to reduce the chance that public policy actions is taken against their firms (Sun et al. 2010; cf. Patten and Trompeter, 2003). Their research however found audit committee diligence to affect the relationship between EM and corporate environmental disclosure.

Yip et al. (2011) examined whether CSR disclosure is related to EM and if the relationship is mitigated by political cost considerations or by the firm's ethical predisposition. Using data from the US oil and gas industry and the food industry (which score relatively high and low in the level of political attention respectively), they observe a significant relationship between CSR reporting and EM and, more specifically, evidence of a negative (complementary) relationship in the former industry while a positive (substitutive) relationship in the latter. Their findings hence suggest that the relationship between CSR reporting and EM is context-specific, affected by the political environment instead of ethical considerations.

The relationship between CSR and EM has also been investigated from other, more indirect, angles. Various authors (e.g., Beltratti 2005; Jo and Harjoto 2011) have studied the relationship between corporate governance and CSR, concluding that firms with good corporate

governance systems in place may be more likely to protect the interests of external constituents, including in instances where a firm's action are legal, but inappropriate. This corroborates the work of Dechow et al. (1996) who found that a positive relation exists between corporate governance and earnings quality, indicating lower EM probability.

Yet other views on the EM-CSR relationship have been emerging. Lys et al. (2015) have recently demonstrated empirically that firms' CSR expenditures should be seen as a signalling strategy: firms undertake CSR expenditures in the current period when they anticipate stronger future financial performance, thus signalling their financial performance through CSR. They conclude that CSR disclosures are another channel by which firms convey private information to outsiders. While Lys et al. (2015) do not focus on the EM-CSR relationship, their study suggests that CSR is a strategic investment for firms to signal future earnings towards investors. Chakravarthy et al. (2014), as a final illustration, suggest that CSR can help repair reputational damage that is the result of earnings restatements by firms.

Industry effects

While EM has appeared to be dependent on firm characteristics such as the type and ownership of firms and firm size (Siregar and Utama 2008), there has not been much attention for industry effects on EM. Dechow et al. (1995) have found extents of EM to correlate between firms in the same industries and various researchers have explored industry effects comparing core and peripheral sectors (Belkaoui and Picur 1984; Albrecht and Richardson 1990; Kinnunen et al. 1995).

Many researchers have investigated CSR from the perspective of particular sectors or industries (e.g., Wagner et al. 2002; Cuganesan et al. 2010) and studying industry effects is a widely adopted practice in CSR research (e.g., Young and Marais 2012; Melo and Garrido-Morgado 2011). Specifically, varying industry levels of stakeholder activism and stakeholder interest in CSR appear to influence the relationship between firms' CSR and financial performance (Chand and Fraser 2006). Firms have also been found to change their sustainability disclosures due to increased stakeholder awareness and pressure. Hrasky (2011) found that less carbon-intensive sectors move towards symbolic disclosure strategies, while more carbon-intensive sectors shift towards behavioral disclosure strategies.

Looking at the EM-CSR relationship, Yip et al. (2011) have studied industry effects by comparing the oil & gas and the food industry as illustrations of sectors that are experiencing different levels of political attention. However, these authors legitimize their choice by claiming that the food industry has attracted much less political attention than the oil & gas industry, which – at least in some national contexts (e.g., China, the Netherlands) – is not necessarily the case. Also, one could question to what extent political attention (attention with the prospect of, for instance, higher taxes or increased regulation) is a sufficiently appropriate proxy for CSR. A sector operationalization such as made by Hrasky (2011), based on assumed negative environmental impacts, hence seems more suitable when researching industry effects in the EM-CSR relationship and is used in this study.

In the next section, we will elaborate on the research methodology, which contains descriptions of the control variables used in the models.

Research methodology

The following paragraphs expound on the methodology used to determine the degree of EM, CSR performance, and industry effects as well as on the model developed, including the control variables, to explore the EM-CSR relationship.

Measuring the degree of EM

This study uses accrual-based EM to investigate the EM-CSR relationship. Discretionary accruals reveal the degree of bias infused into financial statements by firms (Hoitash et al. 2007).[3] The degree of EM will be determined by the Modified Jones model (Dechow et al. 1995), assuming that all changes in credit sales during a sample period are the result of EM. This assumption is based on the notion that EM is easier to exercise over recognition of revenue from credit sales than from cash sales. As the Modified Jones model has proven powerful in detecting EM it has been regularly used in studies that aim to discover earnings quality (e.g., Gul et al. 2003; Hoitash et al. 2007; Velury 2003).

Total accruals is calculated as follows:

$$\boldsymbol{TAt = EXBIt - CFOt}$$

Where:

TAt = Total Accruals (*in year t*)
EXBIt = Income Before Extraordinary Items (*in year t*)
CFOt = Cash Flows from Operations (*in year t*)

The following equation was used in order to estimate the parameters to find the amount of non-discretionary accruals:

$$\boldsymbol{TAt = \beta 1, t[1/At-1] + \beta 2, t[\Delta REVt/At-1] + \beta 3, t[\Delta PPEt/At-1] + \varepsilon}$$

Where:

At − 1 = Assets (*in year t − 1*)

$\Delta REVt$ = *Change in Revenue* (*year t* − 1 *to year t*)
$\Delta PPEt$ = *Change gross property, plant and equipment* (*year t* − 1 *to year t*)
βt = *Parameters*
ε = *Error of Estimate*

Non-discretionary accruals were found by using the equation:

$$NAt = \beta 1, t[1/At{-}1] + \beta 2, t[\Delta REVt{-}\Delta RECt/At{-}1] + \beta 3, t[\Delta PPEt/At{-}1] + \varepsilon$$

Where:

$\Delta RECt$ = *Change in Receivables* (*year t* − 1 *to year t*)

Discretionary accruals are calculated by subtracting non-discretionary accruals from total accruals:

$$DAt = TAt{-}NAt$$

Where:

DAt = *Discretionary Accruals* (*in year t*)
NAt = *Non discretionary Accruals* (*in year t*)

Measuring CSR performance

The KLD database was used to measure firms' CSR performance. This database, containing information on various dimensions of CSR about US companies, has been used in various research papers to measure CSR (e.g., Kim et al. 2012; Turban and Greening 1997). It is considered to be factual, reliable, broad-ranging, and maintained with consistency and transparency (Waddock 2003; Mattingly and Berman 2006) and has proven to reflect firms' actual CSR performance (Chatterji et al. 2009; Rahman and Post 2012).

This study differentiates between the firm-level performance labels CSR positive, neutral and negative through measuring the score on various CSR strengths and concerns of firms on seven different categories (community, corporate governance, diversity, employee relations, environment, human rights, product) that evaluate firms' stakeholder responsiveness. Strengths and concerns cover approximately 80 indicators in these categories (Table 2). The KLD database captures firms' responsiveness towards various different stakeholder groups (consumers, employees, the community, diversity-related stakeholders, environmental action groups) and hence spans a wide range of CSR topics. In line with Kim et al. (2012) CSR performance was measured by taking the total of strengths in the seven categories and subtracting the total of concerns from them, leading to firms that are labelled CSR positive, CSR neutral or CSR negative.

Measuring industry effects

In order to measure industry effects, a distinction was made between industries based on 2-digit Standard Industrial Classification (SIC) codes from the COMPUSTAT database (cf. Kim et al. 2012). As stakeholders are becoming more aware of CSR topics and are increasingly pressuring industries to be socially responsible (Hrasky 2011), firms that are active in industries that are perceived to have a negative effect on the environment were assumed to face higher pressure for CSR and to minimalize their environmental impacts. Research by Oekom

Table 2 Strengths and concerns in KLD categories (based on Bird et al. (2007))

Category	Strengths…	Concerns…
Community	… measure various contributions that the company makes to the community such as charitable contributions and support for the disadvantaged.	,,, measure activities that are judged to have had a negative economic impact on the community and/or possibly mobilized community opposition.
Corporate governance	… are present when activities such as limited compensation for the management and the company has multiple ownership strengths.	… are present when managers receive high compensation and there is low reporting quality.
Diversity	… measure the activities of the company in such areas as providing employment opportunities for minorities and providing working conditions that meet the special needs of minorities.	… measure things like the non-representation of minorities in senior positions within the company and major controversies on affirmative action issues.
Employee relations	… are practice such as strong worker involvement within the company, generous profit sharing across the majority of employees, good retirement benefits and/or a good safety record.	… arise when ac company might have bad union's relations, a poor safety record and/or a poorly funded pension plan.
Environment	… are a result when a company performs environmentally sound practices such as pollution prevention, and recycling.	… will arise when practices such as producing hazardous waste and/or environmentally unfriendly products are present.
Human rights	… are present when the company has a set of high quality of labor rights or follows human right policies imposed by society.	… are measured by activities such as support for controversial regimes and low quality labor rights.
Products	… measure activities such as high product quality, high innovation and the development of products to meet the special needs of the disadvantaged.	… are present when the company has low product safety, controversies over how it advertises its products and other product-related community concerns.

research (2009) suggests that such industries generally achieve good ratings in terms of their reports on environmental and social impacts. For purposes of regression analysis a dummy variable was included to differentiate between high environmental impact and low environmental impact industries. To distinguish between two industries classifications, dummy variables 'one' and 'zero' were created with 'one' linked to industries that have a large impact on the environment and 'zero' to industries that have a smaller impact on the environment (Table 3).

Model

As there are potentially multiple factors influencing the EM-CSR relationship management and the effects of industry type (INDUS), several control variables were included. The first control variable is firm size (SIZE), which is measured by taking the natural log of total assets. There are different views on the effect of firm size on EM. Capital market pressures are greater for larger firms, because their performance is the focus of the analyst community. This incentivizes firms to adopt more aggressive accounting policies, including EM (Richardson et al. 2002). The opposite view is that firm size can be used as a proxy for information asymmetry. Larger firms generally are more closely scrutinized by outsiders and required to disclose information, hence having a lower EM probability. Small firms, however are able to conceal private information more easily (Lee and Choi 2002). It can thus be suggested that firm size may explain significant variations in EM (Roychowdhury 2006). Next to the effect of firm size on EM, studies also show that firm size is correlated with CSR performance (McWilliams and Siegel 2000; Prior et al. 2008; Waddock 2003).

Table 3 Classification of industries

Sectors	SIC codes
High environmental impact	
Agriculture, Forestry, Fishing	01–09
Mining	10–14
Construction	15–17
Manufacturing	20–39
Transportation & Public utilities	40–49
Low environmental impact	
Telecommunication	48
Wholesale trade	50–51
Retail trade	52–59
Financials, Insurance, Real Estate	60–67
Services	70–89
Public administration	91–99

Return on assets (ROA) will be used to control for firm profitability and performance (cf. Kim et al. 2012; Prior et al. 2008). While Cochran and Wood (1984) observed a correlation between CSR and firms' financial performance, Dechow et al. (1995) and Orlitzky et al. (2003) contend that measures such as ROA are sensitive to manipulation by the management of the firm. Managers can make use of real and accrual-based EM to positively affect ROA.

Market-to-book (MTB) ratio is used to measure the market perception of firms' future growth. Literature suggests that growth stocks are particularly sensitive to stock price and that the market reacts negatively to firms that break their string of consecutive earnings increases (Barth et al. 1999; Skinner and Sloan 2002). Therefore, MTB explains whether a firm is under great pressure to adopt aggressive accounting policies to increase earnings.

Sales growth (GROWTH) is measured as firms' increase in sales divided by its sales in the previous year. Firms that experience strong growth are subject to more media attention. When firms are under such scrutiny, there is a higher EM probability (Lee and Choi 2002).

Leverage (LEV) captures the impact of debt contracting on EM. The relationship between EM and leverage is subject to two posing empirical findings. Sweeney (1994) and Press and Weintrop (1990) suggested that high leverage firms tend engage in aggressive EM. They find that firms respond to debt contracting by reporting discretionary accruals (Becker et al. 1998; Richardson et al. 2002). In contrast, Dechow and Skinner (2000) report that firms with high leverage are less likely to report small earnings increases. Chung and Kallapur (2003) do not find a relation between abnormal accruals and leverage at all, suggesting that the relation between leverage and EM is uncertain.

A similar study by Kim et al. (2012) used R&D intensity (R&D) as a control variable, measuring R&D expense by net sales. McWilliams and Siegel (2000) argued that R&D investment and CSR are correlated, because both are associated with product and process innovation. Any equation including CSR performance should therefore control for upwardly biased estimates of CSR performance by including a variable for R&D investments.

Auditor size (BIG4) will be used as control variable through a dummy variable. Large auditing offices can draw on expertise of their international network that will result in higher audit quality (Carson 2009; Francis and Wang 2008). Research indicates that Big-4 auditors possess more reputational incentives than smaller auditors and thus are less inclined to impair their independence for one client (Francis 2004). Becker et al. (1998) studied differences between firms being audited by the biggest audit offices and smaller audit offices in the context of EM, finding that smaller offices report discretionary

accruals that as a percentage of total assets are on average 1.5 to 2.1% higher than the discretionary accruals reported by clients of large auditing firms.

The following models (Model I and Model II) were used to test the EM-CSR relationship:

$$EM = \alpha + \beta 1\ CSR + \beta 2\ INDUS + \beta 3\ SIC + \beta 3\ SIZE + \beta 4\ ROA + \beta 5\ LEV + \beta 6\ GROWTH + \beta 7\ MTB + \beta 8\ RD + \beta 9\ BIG4 + \varepsilon$$

and

$$CSR = \alpha + \beta 1\ EM + \beta 2\ INDUS + \beta 3\ SIC + \beta 3\ SIZE + \beta 4\ ROA + \beta 5\ LEV + \beta 6\ GROWTH + \beta 7\ MTB + \beta 8\ RD + \beta 9\ BIG4 + \varepsilon$$

Where:

EM = Earnings management
CSR = CSR performance
SIC = *Standard Industrial Classification code*
INDUS = Dummy variable 'one' for CSR extensive industries, otherwise 'zero'
SIZE = Natural logarithm of total assets
ROA = Return on assets (net income divided by total assets)
LEV = Total debt divided by total assets
GROWTH = Sales growth, divided by sales previous year
MTB = Market-to-book equity ratio (market value of equity divided by the book value of equity)
R&D = R&D expense divided by the net sales
BIG4 = Dummy variable 'one' if audited by Big 4 audit firm, otherwise 'zero'

Sample

The sample included US-based firms only to ensure that firms operated the same economic and political environment and includes observations from the fiscal years 2003–2009, thus after the creation of the Sarbanes-Oxley Act (SOx) of 2002, since SOx has had a significant effect on accrual-based EM (Cohen et al. 2008). Furthermore, most data collected through the KLD database go only as far as 2009.

The merged dataset contained over 11,000 firm-year observations. We corrected this dataset for missing values by excluding cases listwise, resulting in a reduction of the sample to 6567 observations. The frequencies of all variables were checked through a frequency test, leading to no exceptional frequencies except for the variable R&D. As a result of this cumulating of data an additional 968 observations were deleted. Finally, 105 outliers were deleted, resulting in a final sample of 5494 observations.

Results

The following paragraphs provide the results of our study, addressing descriptive statistics, regression analyses and robustness respectively.

Descriptive statistics

Nearly 80% (78.94%) of the researched sample were observations from five industries: chemicals and allied products; industrial and commercial machinery and computer equipment; electronic and other electrical equipment and components, except computer equipment; measuring, analysing, and controlling instrument; and business services.

Table 4 provides an overview of all independent variables used in the two research models.[4] Discretionary accruals (DISCR) have a mean of 0.0786636 million, resulting from converting all negative discretionary accruals into positive. CSR performance shows a negative mean (− 0.3896979), indicating that firms included in the sample overall possess more CSR concerns than CSR strengths. The industry variable (0.9056061) indicates that most observations fall in industries belonging to high environmental impact industries. This can be explained by four out of the five dominant industries in the sample falling into this group, which is caused by the fact that most firms in the KLD database are listed in the S&P 500. This also causes the high number (6.863589) of the log of total assets. GROWTH shows a negative mean (− 0.0631989) and ROA shows a number below 1 % (0.0042784), which is probably explained by the effect of the economic downturn in the latter years of the sample period. The average leverage ratio has a value of around 0.5, indicating that, on average, firms have two times the amount of assets compared to debt. The mean of market-to-book ratio (3.427874) indicates that most firms are undervalued, while the R&D intensity (0.2625014) indicates that firms spend around a quarter of their sales on R&D. The mean

Table 4 Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
EM	.0786636	.1380935	4.95e-06	4.001645
CSR	−.3896979	2.289873	−9	13
SIC	40.52876	16.04184	10	87
INDUS	.8056061	.3957694	0	1
SIZE	6.863589	1.681489	1.600599	13.08138
ROA	.0042784	.2197204	−7.582123	1.617011
LEV	.4469656	.2730597	.0211989	3.564619
GROWTH	−.0631989	.3497316	−1	10.58722
MTB	3.427874	4.415615	−44.39538	50.38522
RD	.2625014	.8740478	.0001433	10.60547
BIG4	.9339279	.2484307	0	1

of the BIG4 dummy (0.9339279) shows that the sample is primarily audited by one of the large audit firms.

Table 5 shows the Pearson correlation matrix for all variables. The results indicate a negligible (and insignificant) correlation between CSR and EM. The same goes for the correlation between EM and INDUS. The other variables are weakly correlated at best (e.g., SIZE), but mostly show negligible correlation factors..

To account for issues of multicollinearity (Gujarati, 1988) a variable inflation factor (VIF) test was performed for CSR and EM since this correlation in particular diminishes the power of an eventual relation. No VIF values of 10 or above were found, indicating that a linear combination is not probable.[5] In addition, a skewness and kurtosis test were conducted to test the symmetry of the data distribution, indicating that data were normally distributed.

Regression analyses

The results of the regression analyses of Model I and Model II are presented in Tables 6 and 7.

The low coefficient values in Model I indicate that it lacks explanatory power. While the model shows a positive relation between CSR and EM, it is not statistically significant. Since the SIC variables do have a significant relation with EM, the model indicates that industry influences EM. The variable INDUS however shows a negative relation with EM. This indicates that firms in industries that have a high environmental impact practice EM to a lesser extent than those in industries that have a lower environmental impact.

The regression analysis for Model II shows that the explanatory power of this model is also low, suggesting that there is no significant relationship between EM and CSR. The significance of the SIC variable suggests that the industry a firm is in has an effect on the level of CSR performance. The variable INDUS shows that firms that belong to industries that have a high environmental impact have higher levels of CSR performance.

Robustness check

A robustness check was performed to check the robustness of the results of the ordinary least square regression (see Table 8). The results for Model I show that almost all variables that were significant remained significant and that the effect of CSR on EM remained insignificant. Almost all variables showed a minor change in their coefficients and showed a smaller effect on EM than in the regression analysis, either positively or negatively. Only the variable R&D changed from having a positive effect on earnings management to a negative effect.

The robustness check performed for Model II (see Table 9) also shows virtually no change in coefficients and *p*-values. Here, too, the effect of all variables except for R&D on EM decreases. Furthermore, this robustness check shows an even higher *p*-value for the effect of EM on CSR performance, indicating that a relationship is even more improbable.

Conclusion and discussion

This article investigated the relationship between CSR and earnings management and the effect of high versus low environmental impact industry on this relationship. As the limited prior research on the EM-CSR relationship has shown mixed results and has largely neglected the effect of industry type (especially as operationalized in this article through distinguishing between industries with high and low environmental impacts (cf. Hrasky 2011)), we aimed to contribute to insights in this field with our study. Using the Modified Jones model (Dechow et al. 1995) to analyze data from the KLD database for US firms in the period 2002–2009, we found a positive though statistically insignificant relationship between EM and CSR. The results from our study suggest

Table 5 Pearson correlation matrix

Variable	EM	CSR	SIC	INDUS	ROA	SIZE	GROWTH	LEV	MTB	RD	BIG4
EM	1.0000										
CSR	− 0.0057	1.0000									
INDUS	0.0258*	0.1148***	1.0000								
SIC	− 0.0387***	− 0.0912***	− 0.9367***	1.0000							
SIZE	− 0.1917***	0.0923***	− 0.1885***	0.1292***	1.0000						
ROA	− 0.2125***	0.0501***	0.0410***	− 0.0308**	0.2459***	1.0000					
LEV	0.0274**	− 0.0694***	− 0.1587***	0.0781***	0.3360***	−0.1944***	1.0000				
GROWTH	− 0.0615***	− 0.0293**	− 0.0512***	0.0536***	0.0046	− 0.1049***	0.0289**	1.0000			
MTB	0.0708***	0.0790***	0.0249*	− 0.0483***	− 0.0625***	0.0588***	− 0.0142	− 0.0678***	1.0000		
RD	0.1398***	0.0061	− 0.0924***	0.0590***	− 0.2222***	− 0.4346***	0.0464***	0.0884***	0.0667***	1.0000	
BIG4	− 0.0623***	0.0293**	0.0445***	0.0378***	0.2319***	0.0010	0.1148***	− 0.0208	− 0.0097	0.0117	1.0000

* Significant at $p < 0.10$; ** Significant at $p < 0.05$; *** Significant at $p < 0.01$

Table 6 Regression results for Model I (EM)

EM = α + β1CSR + β2INDUS + β3SIZE + β4ROA + β5LEV + β6GROWTH + β7MTB + β8R & D + β9BIG4 + ε
Adjusted R-squared = 0.0812

Variable	Coefficient	T	*P*-value
CSR	.0009125	1.14	0.254
SIC	−.0009392	−2.79	0.005
INDUS	−.0425261	−3.19	0.001
SIZE	−.0126608	−9.90	0.000
ROA	−.1023971	−10.64	0.000
LEV	.0233651	3.14	0.002
GROWTH	−.0305597	−5.92	0.000
MTB	.0018528	4.50	0.000
RD	.0051949	2.22	0.026
BIG4	−.0187861	−2.53	0.011

that while firms in industries that have a high environmental impact tend to have higher levels of CSR performance, these firms practice EM to a lesser extent than firms in industries that have a lower environmental impact (cf. Chih et al. 2008; Kim et al. 2012). It may not come as a surprise that firms in industries that have higher environmental impacts have higher levels of CSR performance, since these firms are probably aiming to counter or compensate for their negative externalities, either in an environmental or in a social way. As such, these CSR-oriented firms may not display opportunistic behaviour from an EM perspective (Chih et al. 2008; Salewski and Zülch, 2014), but may be more opportunistic from a CSR perspective. However, it may be a somewhat surprising result of this study that firms in high impact industries seem to have a lower tendency towards EM in the sense that they may not be using CSR initiatives to deflect stakeholders' attention from

Table 7 Regression results for Model II (CSR)

CSR = α + β1EM + β2INDUS + β3SIZE + β4ROA + β5LEV + β6GROWTH + β7MTB + β8R & D + β9BIG4 + ε
Adjusted R-squared = 0.0496

Variable	Coefficient	T	*P*-value
EM	.2600322	1.14	0.254
SIC	.0435496	7.70	0.000
INDUS	1.046145	4.65	0.000
SIZE	.2435294	11.31	0.000
ROA	.0462446	0.28	0.778
LEV	−.8107081	−6.47	0.000
GROWTH	−.1303827	−1.49	0.136
MTB	.0430423	6.20	0.000
RD	.1670621	4.24	0.000
BIG4	.0579144	0.46	0.644

Table 8 Robustness check for Model I (EM)

EM = α + β1CSR + β2INDUS + β3SIZE + β4ROA + β5LEV + β6GROWTH + β7MTB + β8R & D + β9BIG4 + ε

Variable	Coefficient	T	*P*-value
CSR	.0002908	1.05	0.292
SIC	−.0004179	−3.60	0.000
INDUS	−.0218191	−4.74	0.000
SIZE	−.0043168	−9.74	0.000
ROA	−.0706568	−18.78	0.000
LEV	.0044265	1.72	0.085
GROWTH	−.0058265	−3.26	0.001
MTB	.0008143	5.73	0.000
RD	−.0033122	−4.08	0.000
BIG4	−.0091071	−3.54	0.000

practices aimed at creating an overly positive image of their financial situation. This study may thus prompt the idea that the so-called 'obfuscation hypothesis' (i.e., CSR being an ideal way for deflecting stakeholders' attention for EM (Prior et al. 2008)) may not or only to a minor extent hold for companies with high environmental impacts. As such, these findings seem to contradict literature in the field of CSR (e.g., Delmas and Cuerel Burbano 2011; Elving, 2012; Illia et al., 2013). Also, from a more speculative perspective, one may argue based on our findings that firms could be considering CSR as a superior strategy compared to EM in order to obfuscate their true financial quality (cf. Courtis, 1998; Rutherford, 2003).

Limitations and research suggestions

Our study is obviously subject to several limitations. First, by measuring EM through accrual EM instead of real EM, this study is not able to capture the total picture of EM. This may have influenced the relationship

Table 9 Robustness check for Model II (CSR)

CSR = α + β1EM + β2INDUS + β3SIZE + β4ROA + β5LEV + β6GROWTH + β7MTB + β8R & D + β9BIG4 + ε

Variable	Coefficient	T	*P*-value
EM	.1256402	0.68	0.495
SIC	.0232756	5.10	0.000
INDUS	.5019461	2.76	0.006
SIZE	.0985869	5.67	0.000
ROA	.022396	0.17	0.866
LEV	−.6804796	−6.73	0.000
GROWTH	−.1251157	−1.77	0.076
MTB	.0349716	6.24	0.000
RD	.1065307	3.35	0.001
BIG4	.1186333	1.17	0.241

found between EM and CSR. Using other methods to address EM may increase the power of the used statistical models and lead to different results. Indicators such as income smoothing and earnings aggressiveness and concepts such as forecast management (Bernhardt and Campello 2007) and disclosure frequency (Jo and Kim 2007) have been used by other researchers to explore EM. Scholars may also apply other indicators to estimate discretionary accruals, such as the DeAngelo model (DeAngelo, 1988), or may create other models that overcome the limitations of existing models (Young 1999). Related to this limitation, Jackson (2017) recently wrote an extensive critique on discretionary accruals measures, labelling them "noisy proxies" for EM and noting that EM may be heavily influenced by the behaviour of peer firms rather than other independent variables addressed in EM studies. Taking these issues into account, future studies on the EM-CSR relationship may choose to deploy other, more precise, indicators for EM and may shed a different light on this relationship. As an extension of this point, it should be noted that levels of CSR performance can also (perhaps by definition) be considered as noisy proxies. For instance, it should be noted that CSR initiatives taken by firms, which is the primary operationalization of CSR performance in most databases, in itself does not mean that firms are actually reducing their actual negative impacts on society. Also, in the context of the database used in this study, the use of non-weighted CSR items, despite the fact that they represent a wide range of relevant CSR issues (cf. the definition of CSR adopted in this article), may distort research findings. Weighted CSR items may lead to a more diverse and balanced view of CSR performance, especially when the EM-CSR relationship is researched in other geographical contexts.

A second obvious limitation of our study is that it only includes observations of US listed companies, diminishing the potential to generalize the results of this study since differences of the national environments were not tested. Investigating the EM-CSR relationship for firms in other countries could well result in other findings. It has been argued that the 'CSR national systems' in European countries differ from that in the US from the perspective of the political, legal, cultural, financial, and coordination and control systems (Matten and Moon 2008). These differences can both have an effect on EM and CSR and hence lead to other insights in the EM-CSR relationship (cf. Salewski and Zülch, 2014). Extending this limitation to a research suggestion, it may be possible to enrich the models used in this article with one or more variables regarding national legal frameworks (enabling a between-country comparison) in order to, for instance, investigate the role of investors' rights and interests. Also, framing this issue as a principal-agent problem, the role of activist shareholders in the EM-CSR relationship may be considered to be a relevant area of inquiry to be taken up by researchers.

A third limitation applies to the industry categorization. Other separation methods to measure the effect of the industry can be used to research the EM-CSR relationship. Disclosure patterns differ from one industry type to another (Akhtaruddin, 2005). Further, the models do not consider all possibilities of all variables that can influence the relation between CSR and EM (cf. Jackson 2017). Therefore, future research may add other elements that can moderate the causal links between the variables. Other contingencies may be included in future studies as well. For instance, research has shown that firms with a higher proportion of non-executive directors appear to have lower earnings management (Klein, 2002). Also, the quality and extent of financial disclosure (Chen and Jaggi, 2000), disclosure frequency (Jo and Kim 2007), and other governance attributes, including board diversity and gender composition (Bear et al. 2010) may be addressed in research on the EM-CSR relationship.

Endnotes

[1]The authors would like to express their gratitude for the valuable responses of two anonymous reviewers. These responses have added greatly to the quality of this paper.

[2]Since it is beyond the scope of this paper to provide a full account of causes and consequences of EM, we refer to the authorative work of Dechow et al. (1995).

[3]It should be noted that this study does not differentiate between positive or negative discretionary accruals. All negative discretionary accruals were made positive so that only the amount rather than the direction of the accruals are taken into account.

[4]The sample size of the different variables is the same, because observation with one or more missing variables were deleted from the sample.

[5]High VIF values of the SIC and INDUS variables (9.13 / 9.05 and 8.75 / 8.74 for the EM / CSR model) were obviously caused by the fact that INDUS originates from SIC.

Funding
The authors have received no funding for the research.

Availability of data and materials
The data for this article was retrieved from publicly available sources.

Authors' contributions
The authors declare that they have had equal contribution to this article. The empirical research was done as a part of the master thesis project of MvE. Both authors read and approved the final manuscript.

Competing interests
The authors declare that they have no competing interests.

Publisher's Note

Author details
[1]NHTV Breda University of Applied Sciences, Breda, Netherlands. [2]Antwerp Management School, Antwerpen, Belgium. [3]Rotterdam School of Management, Rotterdam, Netherlands.

Received: 25 October 2017 Accepted: 4 April 2018
Published online: 02 May 2018

References

Akhtaruddin, M. (2005). Corporate mandatory disclosure practices in Bangladesh. *The International Journal of Accounting, 40*(4), 399–422.
Albrecht, W. D., & Richardson, F. M. (1990). Income smoothing by economy sector. *Journal of Business Finance & Accounting, 17*(5), 713–730.
Barth, M. E., Elliott, J. A., & Finn, M. W. (1999). Market rewards associated with patterns of increasing earnings. *Journal of Accounting Research, 37*(2), 387–413.
Barton, J., Hansen, B., & Pownall, G. (2010). Which performance measures do investors around the world value the most—and why? *The Accounting Review, 85*(3), 753–789.
Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics, 97*(2), 207–221.
Beatty, A., Ke, B., & Petroni, K. (2002). Earnings management to avoid earnings declines across publicly and privately held banks. *The Accounting Review, 77*(3), 547–570.
Bebbington, J., Unerman, J., & O'Dwyer, B. (Eds.). (2014). *Sustainability accounting and accountability* (2nd ed.). London: Routledge.
Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. (1998). The effect of audit quality on earnings management*. *Contemporary Accounting Research, 15*(1), 1–24.
Belkaoui, A., & Picur, R. D. (1984). The smoothing of income numbers: Some empirical evidence on systematic differences between core and periphery industrial sectors. *Journal of Business Finance & Accounting, 11*(4), 527–545.
Beltratti, A. (2005). The complementarity between corporate governance and corporate social responsibility. *The Geneva Papers on Risk and Insurance-Issues and Practice, 30*(3), 373–386.
Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics, 80*(3), 511–529.
Bernhardt, D., & Campello, M. (2007). The dynamics of earnings forecast management. *Review of Finance, 11*(2), 287–324.
Bhattacharya, U., Daouk, H., & Welker, M. (2003). The world price of earnings opacity. *The Accounting Review, 78*(3), 641–678.
Bird, R., Hall, A. D., Momentè, F., & Reggiani, F. (2007). What corporate social responsibility activities are valued by the market? *Journal of Business Ethics, 76*(2), 189–206.
Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics, 24*(1), 99–126.
Carroll, A. B. (1999). Corporate social responsibility evolution of a definitional construct. *Business & Society, 38*(3), 268–295.
Carson, E. (2009). Industry specialization by global audit firm networks. *The Accounting Review, 84*(2), 355–382.
Chakravarthy, J., DeHaan, E., & Rajgopal, S. (2014). Reputation repair after a serious restatement. *The Accounting Review, 89*(4), 1329–1363.
Chand, M., & Fraser, S. (2006). The relationship between corporate social performance and corporate financial. *The Business Review, 5*(1), 240–245.
Chatterji, A. K., Levine, D. I., & Toffel, M. W. (2009). How well do social ratings actually measure corporate social responsibility? *Journal of Economics and Management Strategy, 18*(1), 125–169.
Chen, C., & Jaggi, B. (2000). Association between independent non-executive directors, family control and financial disclosures in Hong Kong. *Journal of Accounting and Public Policy, 19*(4-5), 285–310.
Chih, H., Shen, C., & Kang, F. (2008). Corporate social responsibility, investor protection, and earnings management: Some international evidence. *Journal of Business Ethics, 79*(1-2), 179–198.
Chung, H., & Kallapur, S. (2003). Client importance, non-audit fees, and abnormal accruals. *The Accounting Review, 78*(4), 931–955.
Cochran, P. L., & Wood, R. A. (1984). Corporate social responsibility and financial performance. *The Academy of Management Journal, 27*(1), 42–56.
Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre-and post-sarbanes-oxley periods. *The Accounting Review, 83*(3), 757–787.
Courtis, J. (1998). Annual report readability variability: tests of the obfuscation hypothesis. *Accounting, Auditing & Accountability Journal, 11*(4), 459–472.
Cuganesan, S., Guthrie, J., & Ward, L. (2010). Examining CSR disclosure strategies within the Australian food and beverage industry. *Accounting Forum, 34*(3-4), 169–183.
D'Souza, J., Jacob, J., & Ramesh, K. (2000). The use of accounting flexibility to reduce labor renegotiation costs and manage earnings. *Journal of Accounting and Economics, 30*(2), 187–208.
Dahlsrud, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management, 15*(1), 1–13.
Davidson III, W., Jiraporn, P., Kim, Y., & Nemec, C. (2004). Earnings management following duality-creating successions: Ethnostatistics, impression management, and agency theory. *Academy of Management Journal, 47*(2), 267–275.
De Vries, G., Terwel, B. W., Ellemers, N., & Daamen, D. (2015). Sustainability or profitability? How communicated motives for environmental policy affect public perceptions of corporate greenwashing. *Corporate Social Responsibility and Environmental Management, 22*(3), 142–154.
DeAngelo, L. (1988). Discussion of: Evidence of earnings management from the provision for bad debts. Journal of Accounting Research, 26(Suppl.): 32-40.
Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics, 50*(2), 344–401.
Dechow, P., Sloan, R., & Sweeney, A. (1995). Detecting earnings management. *Accounting Review, 70*(2), 193–225.
Dechow, P. M., & Skinner, D. J. (2000). Earnings management: Reconciling the views of accounting academics, practitioners, and regulators. *Accounting Horizons, 14*(2), 235–250.
Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the sec*. *Contemporary Accounting Research, 13*(1), 1–36.
Delmas, M. A., & Cuerel Burbano, V. (2011). The drivers of greenwashing. *California Management Review, 54*(1), 64–87.
Elving, W. (2012). Scepticism and corporate social responsibility communications: The influence of fit and reputation. *Journal of Marketing Communications*. https://doi.org/10.1080/13527266.2011.631569.
Francis, J. R. (2004). What do we know about audit quality? *The British Accounting Review, 36*(4), 345–368.
Francis, J. R., & Wang, D. (2008). The joint effect of investor protection and big 4 audits on earnings quality around the world*. *Contemporary Accounting Research, 25*(1), 157–191.
Gao, L., & Zhang, G. (2015). Firms' earnings smoothing, corporate social responsibility, and valuation. *Journal of Corporate Finance, 32*, 108–127.
Gargouri, R., Shabou, R., & Francoeur, C. (2010). The relationship between corporate social performance and earnings management. *Canadian Journal of Administrative Sciences, 27*(3), 320–334.
Gaver, J., Gaver, K., & Austin, J. (1995). Additional evidence on bonus plans and income management. *Journal of Accounting and Economics, 19*(1), 3–28.
Gujarati, D. (1988). *Basic econometrics*. London: McGraw-Hill Education.
Gul, F. A., Chen, C. J., & Tsui, J. S. (2003). Discretionary accounting accruals, managers' incentives, and audit fees*. *Contemporary Accounting Research, 20*(3), 441–464.
Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons, 13*(4), 365–383.
Hoitash, R., Markelevich, A., & Barragato, C. A. (2007). Auditor fees and audit quality. *Managerial Auditing Journal, 22*(8), 761–786.
Hrasky, S. (2011). Carbon footprints and legitimation strategies: Symbolism or action? *Accounting, Auditing & Accountability Journal, 25*(1), 174–198.
Huang, X., & Watson, L. (2015). Corporate social responsibility research in accounting. *Journal of Accounting Literature, 34*, 1–16.
Illia, L., Zyglidopoulos, S., Romenti, S., Rodríguez-Cánovas, B., & González del Valle Brena, A. (2013). Communicating corporate social responsibility to a cynical public. *Sloan Management Review, 54*(3), 2.
Jackson, A. B. (2017). Discretionary accruals: Earnings management… or not? *Abacus*. https://doi.org/10.1111/abac.12117.
Jo, H., & Harjoto, M. A. (2011). Corporate governance and firm value: The impact of corporate social responsibility. *Journal of Business Ethics, 103*(3), 351–383.

Jo, H., & Kim, Y. (2007). Disclosure frequency and earnings management. *Journal of Financial Economics, 84*(2), 561–590.
Kaplan, S. E. (2001). Ethically related judgments by observers of earnings management. *Journal of Business Ethics, 32*(4), 285–298.
Kim, Y., Park, M. S., & Wier, B. (2012). Is earnings quality associated with corporate social responsibility? *The Accounting Review, 87*(3), 761–796.
Kinnunen, J., Kasanen, E., & Niskanen, J. (1995). Earnings management and the economy sector hypothesis: Empirical evidence on a converse relationship in the finnish case. *Journal of Business Finance & Accounting, 22*(4), 497–520.
Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics, 33*(3), 375–400.
KPMG. (2014). *A new vision of value: Connecting corporate and societal value creation*. Amstelveen: KPMG.
Lee, B. B., & Choi, B. (2002). Company size, auditor type, and earnings management. *Journal of Forensic Accounting, 3*, 27–50.
Liberty, S. E., & Zimmerman, J. L. (1986). Labor union contract negotiations and accounting choices. *The Accounting Review, 61*, 692–712.
Lys, T., Naughton, J. P., & Wang, C. (2015). Signaling through corporate accountability reporting. *Journal of Accounting and Economics, 60*(1), 56–72.
Matten, D., & Moon, J. (2008). 'Implicit' and 'explicit' CSR: A conceptual framework for a comparative understanding of corporate social responsibility. *The Academy of Management Review, 33*(2), 404–424.
Mattingly, J. E., & Berman, S. L. (2006). Measurement of corporate social action discovering taxonomy in the Kinder Lydenburg Domini ratings data. *Business & Society, 45*(1), 20–46.
McWilliams, A., & Siegel, D. (2000). Research notes and communications. Corporate social responsibility and financial performance: Correlation or misspecification? *Strategic Management Journal, 21*(5), 603–609.
Melo, T., & Garrido-Morgado, A. (2011). Corporate reputation: A combination of social responsibility and industry. *Corporate Social Responsibility and Environmental Management, 19*(1), 11–31.
Oekom research. (2009). *Taking stock of the position of sustainability in corporate management and capital investment*. München: Oekom.
Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies, 24*(3), 403–441.
Patten, D., & Trompeter, G. (2003). Corporate responses to political costs: an examination of the relation between environmental disclosure and earnings management. *Journal of Accounting and Public Policy, 22*(1), 83–94.
Press, E. G., & Weintrop, J. B. (1990). Accounting-based constraints in public and private debt agreements: Their association with leverage and impact on accounting choice. *Journal of Accounting and Economics, 12*(1), 65–95.
Prior, D., Surroca, J., & Tribó, J. A. (2008). Are socially responsible managers really ethical? Exploring the relationship between earnings management and corporate social responsibility. *Corporate Governance: An International Review, 16*(3), 160–177.
Rahman, N., & Post, C. (2012). Measurement issues in environmental corporate social responsibility (ECSR): Toward a transparent, reliable, and construct valid instrument. *Journal of Business Ethics, 105*(3), 307–319.
Richardson, S. A., Tuna, A., & Wu, M. (2002). Predicting earnings management: The case of earnings restatements. In *Min, predicting earnings management: the case of earnings restatements (October 2002)*.
Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics, 42*(3), 335–370.
Rutherford, B. (2003). Obfuscation, textual complexity and the role of regulated narrative accounting disclosure in corporate governance. *Journal of Management and Governance, 7*(2), 187–210.
Salewski, M., & Zülch, H. (2014). *The association between corporate social responsibility and earnings quality – Evidence from European blue chips*. Leipzig: HHL Working Paper Series No. 112, HHL.
Sarumpaet, S. (2012). Earnings management by firms with poor environmental performance ratings: An empirical investigation in Indonesia. Available at: https://pdfs.semanticscholar.org/dcb4/cb34d5364f093b38f25d82cdb92d5a8a49ca.pdf.
Schipper, K. (1989). Earnings management. *Accounting Horizons, 3*(4), 91–102.
Siregar, S. V., & Utama, S. (2008). Type of earnings management and the effect of ownership structure, firm size, and corporate-governance practices: Evidence from Indonesia. *The International Journal of Accounting, 43*(1), 1–27.
Skinner, D. J., & Sloan, R. G. (2002). Earnings surprises, growth expectations, and stock returns or do not let an earnings torpedo sink your portfolio. *Review of Accounting Studies, 7*(2-3), 289–312.
Sloan, R. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? (digest summary). *The Accounting Review, 71*(3), 289–315.
Sun, N., Salama, A., Hussainey, K., & Habbash, M. (2010). Corporate environmental disclosure, corporate governance and earnings management. *Managerial Auditing Journal, 25*(7), 679–700.
Sweeney, A. P. (1994). Debt-covenant violations and managers' accounting responses. *Journal of Accounting and Economics, 17*(3), 281–308.
Tilt, C. (2009). Corporate responsibility, accounting and accountants. In S. Idowu & F. W. Leal (Eds.), *Professionals' Perspectives of Corporate Social Responsibility* (pp. 11–32). Berlin: Springer.
Trueman, B., & Titman, S. (1988). An explanation for accounting income smoothing. *Journal of Accounting Research, 26*, 127–139.
Turban, D. B., & Greening, D. W. (1997). Corporate social performance and organizational attractiveness to prospective employees. *The Academy of Management Journal, 40*(3), 658–672.
Velury, U. (2003). The association between auditor industry specialization and earnings management. *Research in Accounting Regulation, 16*, 171–184.
Vinten, G., Sevin, S., & Schroeder, R. (2005). Earnings management: Evidence from SFAS no. 142 reporting. *Managerial Auditing Journal, 20*(1), 47–54.
Waddock, S. (2003). Stakeholder performance implications of corporate responsibility. *International Journal of Business Performance Management, 5*(2), 114–124.
Wagner, M., Nguyen, V. P., Azomahou, T., & Wehrmeyer, W. (2002). The relationship between the environmental and economic performance of firms: An empirical analysis of the European paper industry. *Corporate Social Responsibility and Environmental Management, 9*(3), 133–146.
Watts, R. L., & Zimmerman, J. L. (1978). Towards a positive theory of the determination of accounting standards. *The Accounting Review, 53*(1), 112–134.
Yip, E., Van Staden, C., & Cahan, S. (2011). Corporate social responsibility reporting and earnings management: The role of political costs. *Australasian Accounting, Business and Finance Journal, 5*(3), 17–34.
Young, S. (1999). Systematic measurement error in the estimation of discretionary accruals: An evaluation of alternative modelling procedures. *Journal of Business Finance & Accounting, 26*(7-8), 833–862.
Young, S., & Marais, M. (2012). A multi-level perspective of CSR reporting: The implications of national institutions and industry risk characteristics. *Corporate Governance: An International Review, 20*(5), 432–450.