Centre for Responsible Banking & Finance
RBF

University of St Andrews
School of Management

WORKING PAPERS IN RESPONSIBLE BANKING & FINANCE

Corporate Social Responsibility and Stock Price Informativeness: Evidence from the Canadian Market

By *Ahmed Marhfor, Kais Bouslah and Bouchra M'Zali*

Abstract: In this article, we examine the association between corporate social responsibility (CSR) and stock price informativeness for Canadian firms. In particular, we empirically explore whether CSR affects the amount of firm's future earnings information that is reflected in current stock prices. We consider that an efficient price discovery process can "bring the future forward" so that current stock prices track and reflect more information about future earnings. Our results suggest that strong CSR engagement in the social dimension (e.g., communities and employees) translates into more informative stock prices. We further find that such association is more pronounced in small companies. On the other hand, greater CSR commitment in environment and governance dimensions has no impact on stock price informativeness.

WP N° 17-011

3rd Quarter 2017

University of St Andrews
Scotland's first university
600 YEARS
1413 – 2013

Corporate Social Responsibility and Stock Price Informativeness: Evidence from the Canadian Market

Ahmed Marhfor[1], Kais Bouslah[2] and Bouchra M'Zali[3]

Abstract: In this article, we examine the association between corporate social responsibility (CSR) and stock price informativeness for Canadian firms. In particular, we empirically explore whether CSR affects the amount of firm's future earnings information that is reflected in current stock prices. We consider that an efficient price discovery process can "bring the future forward" so that current stock prices track and reflect more information about future earnings. Our results suggest that strong CSR engagement in the social dimension (e.g., communities and employees) translates into more informative stock prices. We further find that such association is more pronounced in small companies. On the other hand, greater CSR commitment in environment and governance dimensions has no impact on stock price informativeness.

Keywords: Corporate social responsibility, stock price informativeness, stakeholders' theory, agency theory, legitimacy theory.

[1] ***Corresponding author***:Ahmed Marhfor, Department of administrative studies, Université du Québec en Abitibi-Témiscamingue (UQAT), 445 boul. de l'Université, Rouyn-Noranda, J9X 5E4, Quebec, Canada. Email: Ahmed.Marhfor@uqat.ca

[2] Centre for Responsible Banking & Finance, School of Management, University of St Andrews. Email: kbhb@st-andrews.ac.uk

[3] Department of Strategy and Social Responsibility, School of Management, Université du Québec à Montréal (ESG UQAM). Email: mzali.bouchra@uqam.ca

Introduction

In recent years, Corporate Social Responsibility (CSR) has emerged as a dominant theme in management and financial literature. All over the world, more firms undertake a range of CSR activities and communicate these activities through their websites as well as through annual reports or specific CSR reports. In general, the foundation of CSR is the acknowledgement that firms have responsibilities that go above and beyond what is legally and financially required of a business (Freeman and Hasnaoui, 2011; Jo and Harjoto, 2012). Hence, the definition of CSR refers to serving not only shareholders but also communities, the environment and the society.

While most of CSR studies focus on the relation between CSR engagement and firm's financial performance and risk, the consequences of CSR on the price discovery process have received less attention (Chui et al. 2012). We try to address this deficiency in the literature by providing a valuable setting that directly examines such consequences. In particular, we try to answer the following question: does higher firm's social performance mean more or less informed stock pricing? We argue that a complete picture of firms' commitment to have a positive influence on society requires looking not only to the value created by those firms but also to the mechanisms that help share profits in a fair way (creation of shared value). As suggested by Stiglitz (2015), economists and corporations should not only figure out how to maximize the size of the pie. They should also propose solutions to how divide the pie in ways that will be socially productive. High asymmetric information (low stock price informativeness) can allow some stakeholders (e.g. firm's executives) to take a disproportionate share of corporate profits. It can also destroy long-term value. In fact, the presence of asymmetric information will make any creation of value not sustainable in the long run. Indeed, many

financial scandals (e.g., Volkswagen, Enron, WorldCom, Parmalat) and the recent financial crisis have showed that less informed stock pricing can lead to market failures after years of strong value creation. The final result is a loss of economic and social welfare. In this paper, we argue that if CSR allows stock prices to reflect more information about firm's fundamentals (future earnings), then we can say that CSR engagement plays an important role in improving markets equilibrium and the wellbeing of small investors and communities.

Our proxy of stock price informativeness is derived from the accounting literature (Collins et al., 1994; Gelb & Zarowin, 2002; Lundholm & Myers, 2002; Durnev et al., 2003). It is based on the intuition that firm's current stock return is determined by the unexpected current earnings and the change in expectations about future earnings. In our tests, we consider that an efficient price discovery process can "bring the future forward" so that current returns track and reflect more information about firm's future earnings (Lundholm & Myers, 2002). Further, we argue that if greater CSR commitment leads to high stock price informativeness, firm's CSR engagement should contribute to impound more future earnings information into current returns. Put differently, high CSR firms should be priced more correctly relative to low CSR firms.

Our study contributes to the literature in three different ways. First, to the best of our knowledge, our intuitive approach that was initially developed in the accounting literature is applied for the first time in the CSR literature. Our findings should then contribute to a better understanding of the link between CSR and price informativeness. As suggested earlier, we focus on price discovery because the recent financial crisis showed that the dissemination of transparent information is inadequate. In fact, we argue that more informative disclosures are crucial if firms are to be held accountable for their actions. Second, most papers in the literature involve indirect approaches focusing on indirect measures of stock price informativeness (e.g.,

analyst coverage, recommendations, and forecasts accuracy). In our paper, we use a direct measure that relies on fundamental data and test its relation with firm's CSR choice. Finally, our empirical analysis does not require stocks markets to be efficient (semi-strong form) because we test the presence of information about future earnings only and not necessarily all public information. This is desirable because we can find weak relationships between CSR and price informativeness mainly due to inefficient financial markets.

Some of our results provide evidence suggesting that firm's CSR engagement that addresses social issues such as community, employees, customers, and contractors is positively linked to stock price informativeness. Such findings support the stakeholder theory. We further find that such relationship is limited to small Canadian companies. On the other hand, most of the results indicate a neutral association between CSR and stock price informativeness. As stressed by Cormier & Magnan (2014), firm's disclosure practices, price discovery mechanisms and the acquisition of firm-level information are complex phenomenon that cannot be explained by a single theory. In fact, the expected positive relation between CSR and stock price informativeness has to be nuanced. For instance, a firm's commitment to improve its disclosure policies can alter the incentives for other market participants (e.g., financial analysts) to collect and trade on private information. Therefore, it is possible that any additional disclosure linked to CSR engagement could drive out private information acquisition, resulting in an ambiguous impact on total information in the market. Another potential explanation of the absence of any relationship between CSR and price informativeness is that Canadian firms already benefit from a richer information environment and that CSR choice is more linked to other advantages (e.g., high reputation, prestige, stock liquidity etc...). Overall, it appears that Canadian firms' managers do not invest in CSR to promote their personal interests at the expense of shareholders

and other stakeholders. In fact, our findings do not indicate the presence of a negative association between CSR activities and price informativeness.

The remainder of the paper is organized as follows. Section 2 reviews prior literature and develops our main hypotheses. In sections 3, we explain the measurement of stock price informativeness and our research design. Section 4 describes the data and sample selection. Section 5 presents our core evidence on the relation between CSR engagement and stock price informativeness. Section 6 concludes.

Literature Review and Hypotheses Development

The Theory of Information Asymmetry Reduction

Corporate reporting is aimed at reducing information asymmetry and providing a clear view to stakeholders about firm's long-term prospects. As Cui et al. (2012), we argue that the empirical relation between CSR and stock price informativeness is pivotal because asymmetric information problems can adversely affect the market equilibrium (Akerlof, 1970; Jensen & Meckling, 1976). The latter is a driving factor for the well-being of communities and people. A growing line of research suggests that asymmetric information is one of the most important market imperfections that adversely impact the wellbeing of investors and communities. Indeed, the recent financial crisis and many corporate scandals represent good examples of the severe consequences of unethical financial disclosures combined with asymmetric information. We argue that capital markets should perform a vital economic role when they generate stock prices that serve as signals for efficient allocation of resources and investment decisions (Tobin, 1982; Durnev et al. 2003). As suggested by Durnev et al. (2003): "A necessary condition for functional stock market efficiency is that share prices track firm fundamentals closely" (p.798).

Therefore, if CSR enhances the precision of information conveyed by stock prices, greater CSR commitment should direct capital to its highest value uses and mitigate the well known phenomena called adverse selection.

The Theory of CSR Engagement

In the literature, the impact of CSR on stock price informativeness has received less attention in comparison to the work that investigates the relationship between CSR and firm's financial performance. In 2007, Jo & Kim show that high firm's transparency (e.g., frequent and persistent disclosures) discourages unethical earnings manipulation. Cui et al. (2012) document a negative association between CSR and information asymmetry. Dhaliwal et al. (2011) and Cormier et al. (2014) studies suggest that CSR may improve firm's information environment through high analyst coverage and low analyst forecasts errors and dispersion. On the other hand, Petrovits, (2006) and Prior el al. (2008) work indicates that CSR choice is positively correlated to earnings management and that companies engage in CSR to cover up corporate misbehaviour.

Theoretically, there is no universally agreed-upon rationale behind the relation between firm's information environment and CSR engagement (Harjoto & Jo, 2012). The agency theory perceives CSR investments as a managerial rent-seeking behavior which takes place at the expense of both shareholders and other stakeholders. Here managers undertake CSR investments in order to advance their careers, develop entrenchments strategies, or promote their personal interests at the expense of all stakeholders, including shareholders (Deng et al., 2013). For instance, Barnea & Rubin (2010) argue that firm's insiders tend to invest in CSR because doing so provides private benefits, e.g., it allows managers to build reputation as good social

citizens (empire building approach). To the extent that a "good reputation" improves managers bargaining power, firms' executives should be able to negotiate high levels of compensation and get a larger share of the pie rather than increase the size of the pie. Under the agency theory, it is worth mentioning that CSR investments are inefficient because they profit only to managers. Such investments do not create value for shareholders and other stakeholders. In the same line of reasoning, Cespa & Cestone (2007) argue that poorly performing CEOs have an interest in engaging in CSR activities because such engagement may generate support from some shareholders and stakeholders activists, and ultimately reduce the probability of CEO turnover (entrenchment strategy). In this case, the purpose of managers is to protect their jobs by building coalitions with other stakeholders. Knowing that transparency and accountability can be mutually reinforcing, poorly performing managers will choose not to be transparent when dealing with firm's stakeholders. As a consequence, we expect CSR to be negatively associated with stock price informativeness if CSR engagement is driven primarily by managerial utility considerations. The above arguments lead to the following hypothesis:

Hypothesis 1: *Based on the agency theory, there is a negative relation between CSR and stock price informativeness* .

On the other hand, the stakeholder theory considers CSR engagement as a process that helps mitigate conflicts of interest between insiders, shareholders and non-investing stakeholders (Jensen 2002; Harjoto & Jo, 2011; Jo & Harjoto, 2012). This conflict-resolution hypothesis suggests that managers use CSR to resolve conflicts among stakeholders and act in the best interests of their shareholders. In fact, managers believe that by serving the interests of firm's stakeholders, they will gain their support and cooperation and ultimately increase firm's financial performance. Considered that way, high transparency should help managers build good

relationships with firm's stakeholders. Furthermore, when managers work hard to make their companies more transparent, stakeholders will be more likely to regard firm's CSR commitment as genuine and predictable which may strengthen even more the good firm-stakeholders relationships. Indeed, managers seeking stakeholders support and cooperation have incentives to use transparent communications strategies. In fact, low transparency is likely to lead to doubts about firm's commitments and may result in less motivated and more cynical shareholders. Hence, under the stakeholder theory, we expect CSR to be positively related to stock price informativeness.

In the same line of reasoning, the legitimacy theory posits that firms use CSR engagement as a legitimizing tool. Based on this theory, corporations are considered to be part of the wider social system and would be expected to perform socially desired actions in order to guarantee their continued existence (Deegan, 2002; Cho & Patten, 2007; Reverte, 2009; Archel et al. 2009). Any breach of the "social contract" challenges their existence and legitimacy (Reverte, 2009). Thus, firms will engage in CSR to serve constructively the needs of society and ensure their survival (Deegan, 2002; Cho & Patten, 2007; Reverte, 2009). The legitimacy theory predicts a positive association between CSR and stock price informativeness because firms' will use CSR to manage the informational needs of the society in which they operate. As suggested by Cho & Patten (2007): "firms seeking to gain or maintain legitimacy have an incentive to use communication strategies, including financing report disclosures, to potentially influence social perceptions" (p.641). While there are some similarities between the stakeholder theory and legitimacy theory, the latter looks at society as a whole whereas the stakeholder theory suggests that firms are accountable to particular groups (e.g., customers, employees, community) within society (Reverte, 2009). The above arguments lead to the following hypothesis:

Hypothesis 2: *Based on the stakeholder theory and the legitimacy theory, there is a positive relation between CSR and stock price informativeness.*

The legitimacy theory also suggests that firm's CSR commitment is a function of exposure to public pressure (Cho & Patten, 2007; Reverte, 2009). For instance, large firms are more visible to the public, face greater exposure and have more impact on the community. As a consequence, they should engage more heavily in legitimizing strategies (Cho & Patten, 2007; Reverte, 2009). On the other hand, small firms have significantly less market power and are associated with fewer public issues. Hence, small firms are expected to use less self-regulating mechanisms to address the threats to their legitimacy (Revert, 2009). Empirical studies (e.g. Gray et al. 1995; Reverte, 2009) have shown that CSR engagement varies across firms and industries. Following Reverte (2009), we argue that large firms are more likely to be subject to public scrutiny and therefore they are expected to engage more heavily in legitimizing activities. Thus we hypothesize that:

Hypothesis 3: *The positive relation between CSR and stock price informativeness is more pronounced for large firms.*

It is also possible that firms with more dispersed ownership are more likely to disclose more information in comparison to firms with concentrated ownership. The purpose is to reduce stakeholders' pressure for transparent disclosures. This pressure exists because conflicts of interest between managers and stakeholders are more acute in firms with more dispersed ownership. As suggested by Reverte (2009): "firms whose shares are widely held are more likely to improve their financial reporting policy by using their CSR disclosure in order to reduce information asymmetries" (p.356). Thus, we hypothesize that:

Hypothesis 4: *The positive relation between CSR and stock price informativeness is more pronounced for firms with dispersed ownership.*

Finally, we also argue that firms with high cost of capital are expected to disclose more voluntary information in order to reduce their agency costs. In this respect, CSR serves to limit the monitoring pressure and agency costs. Thus, we hypothesize that:

Hypothesis 5: *The positive relation between CSR and stock price informativeness is more pronounced for firms with high cost of capital (risky firms).*

Empirical Methodology

Our proxy of stock price informativeness is based on Collins et al. (1994), Gelb & Zarowin (2002), Lundholm & Myers (2002), and Durnev et al. (2003). These authors argue that firm annual return at time (t) is determined by the unexpected earnings at time (t) and the change in expectations about future earnings (t+i) between (t-1) and (t) (see equation 1 for more details). As suggested by Lundholm & Myers (2002), transparent firms can "bring the future forward" so that their current returns track and reflect more information about future earnings. In this paper, we investigate how CSR engagement affects the amount of future earnings information that is reflected in current stock return. If CSR activities improve price informativeness, we should expect a significant positive relation between firm's CSR scores and the amount of future earnings news reflected in current returns. To better understand the intuition behind our methodology, we can consider a firm over four periods and a discount rate of zero. We denote period (t) earnings by e_t, dividends by d_t and book value by BV_t. Following Lundholm & Myers (2002), we can define prices at time 0 and time 1 as:

$P_0 = BV_0 + E_0(e_1) + E_0(e_2) + E_0(e_3) + E_0(e_4)$

$P_1 = BV_1 + E_1(e_2) + E_1(e_3) + E_1(e_4)$

In addition, if we assume a clean surplus accounting system, we can substitute BV_1 by $BV_0 + e_1 - d_1$ and get the following formula for prices at time 1:

$P_1 = BV_0 + e_1 - d_1 + E_1(e_2) + E_1(e_3) + E_1(e_4)$

$P_1 = P_0 - E_0(e_1) - E_0(e_2) - E_0(e_3) - E_0(e_4) + e_1 - d_1 + E_1(e_2) + E_1(e_3) + E_1(e_4)$

$P_1 - P_0 + d_1 = e_1 - E_0(e_1) + E_1(e_2) - E_0(e_2) + E_1(e_3) - E_0(e_3) + E_1(e_4) - E_0(e_4)$

$P_1 - P_0 + d_1 = Ue_1 + \Delta E_1(e_2) + \Delta E_1(e_3) + \Delta E_1(e_4)$ (1)

Scaling equation (1) by P_0, the left-hand side equates with the annual return for year 1. The right-hand side becomes the scaled unexpected earnings for year 1 (Ue_1) and the change in expectations during year 1 about future earnings in year 2, 3 and 4. The unexpected current earnings and change in expectations about future earnings being unobservable, we follow the standard practice in the literature and use the level of earnings at periods (t) and (t-1) as a proxy for Ue_t. As stressed by Lundholm & Myers (2002):"by including the past year's earnings, we allow the regression to find the best representation of the prior expectation of current earnings: if the coefficient on e_{t-1} is of similar magnitude but opposite sign as the coefficient on e_t then earnings is being treated by the market as if it follows a random walk; if the coefficients on e_{t-1} is approximately zero then earnings is being treated as a white noise process" (p.813). To proxy for changes in expectations about future earnings, we use realized future earnings and future returns. Some papers (Beaver et al. 1980; Warfield & Wild, 1992) only use realized future earnings as a proxy for expected future earnings. However, using only realized future earnings introduces an error in variables because future earnings have expected and unexpected components. To correct for the error and control for the unexpected component, we need an instrument that is correlated with the measurement error but uncorrelated with the dependent

variable (current return). Following Collins et al. (1994), we use future returns since an unexpected shock to future earnings should have an impact on future returns.

We then characterize firm *i* current annual stock return ($R_{i,t}$) as the sum of the following components:

$$R_{i,t} = \beta_0 + \beta_1 e_{i,t-1} + \beta_2 e_{i,t} + \beta_3 e_{i,3t} + \beta_4 R_{i,3t} + \varepsilon_{i,t} \quad (2)$$

Where e_{t-1} and e_t represent earnings at periods (t-1) and (t); e_{3t} denotes firm's future earnings for three years following the current year; and R_{3t} is the buy-and-hold return for the three year period following the current year. We use only three years of future earnings and returns because prior research has shown that amounts further out in time add little explanatory power (e.g., Collins et al. 1994, and Lundholm & Myers, 2002). In addition, as stressed by Lundholm & Myers (2002) : "the regressions coefficients in the more general model in (2) allow for many complications not present in the simple example shown in (1), such as time value, risk, and the precision of the proxies used to measure unexpected current earnings and changes in excepted future earnings" (p.813). The coefficient β_3 in model (2) represents the relation between firm's current return ($R_{i,t}$) and firm's realized future earnings ($e_{i,3t}$). We argue that the more $R_{i,t}$ contains information about firm's real future earnings, the higher the coefficient β_3. In other words, future earnings coefficient (β_3) is our proxy for stock price informativeness. If managers are transparent to shareholders and non-investing stakeholders, then their disclosure policies should leave less information about future earnings that can be privately discovered. Consequently, stocks should exhibit price convergence to firm's fundamentals (high β_3). It is worth mentioning that our proxy of stock price informativeness does not require that capital markets are efficient (semi-strong form) because we test relative informativeness (information about future earnings and not necessarily all public information). This is desirable because we

could find weak associations between CSR and price informativeness that can be explained by less efficient capital markets.

To test whether CSR engagement affects the association between current stock returns and future earnings (our proxy of price informativeness), we propose the following model:

$$R_{i,t} = \beta_0 + \beta_1 e_{i,t-1} + \beta_2 e_{i,t} + \beta_3 e_{i,3t} + \beta_4 R_{i,3t} + \theta_1 CSR_{i,t} + \theta_2 CSR_{i,t} * e_{i,3t} + \theta_3 CSR_{i,t} * R_{i,3t} + \theta_4 \text{ controls} + \varepsilon_{i,t} \quad (3)$$

Where CSR is firm's CSR scores which represent our proxy for CSR engagement. Our main interest in equation (3) centers on θ_2, the coefficient of the interaction term ($CSR_{i,t} * e_{i,3t}$) that proxies for the impact of firm's CSR scores on the amount of realized future earnings news that are reflected in current return. A positive θ_2 means that high CSR scores increase at time (t) the amount of information about real future earnings (t+3) that is reflected in current prices. In other words, firm's CSR engagement increases the precision of information conveyed by stock prices and therefore improves stock price informativeness. Hypothesis 2 predicts that θ_2 will be positive. On the other hand, hypothesis 1 suggests that θ_2 will be negative. The null hypothesis predicts that θ_2 will be approximately equal to zero.

Because CSR engagement can be endogenously determined, we also conduct an endogeneity correction procedure. As suggested by Harjoto & Jo (2011), without considering endogenous treatment effects in which better quality firms (e.g. firms with high disclosure standards) tend to have high CSR scores, the association between CSR and stock price informativeness will be overstated or falsely attributed. Furthermore, it may also be possible that firms, engaging in CSR activities, deliver higher returns to investors. In this case, an OLS estimation of equation (3) will produce biased parameters because CSR is correlated with the error term. We address the endogeneity concern by using two econometric approaches. The first approach relies on the Heckman (1976) two-stage procedure. In the first stage, we rely on a

probit analysis of the firm's probability to engage in CSR activities. In fact, we follow prior studies and consider that firm's governance structure and characteristics may lead to CSR engagement. For instance, Harjoto & Jo (2011) find that independent boards and analyst coverage are positively related to the choice of CSR. As suggested by many studies (e.g. Knyazeva 2007; Yu 2008), financial analysts can monitor managers by scrutinizing financial statements and rising questions when they interact with them. This monitoring role may increase the likelihood of managers opting for CSR engagement. In the same line of reasoning, board independence can also be considered as an important monitoring mechanism that influences the behavior of firm's managers. Independent boards may help align managers' interests with stakeholders' interests and ultimately increase CSR involvement. Furthermore, according to Harjoto & Jo (2011): "CSR involvement is, on average, more common among larger firms, more leveraged firms, and more profitable firms" (p.51). Hence, we model the CSR choice as follow (first-stage):

$$U_i = W_i \gamma + \upsilon_i \quad \text{(CSR engagement equation)} \qquad (4)$$

$$\text{Engagement}_i = 1 \text{ if } U_i > 0 \text{ ; 0 otherwise}$$

Where U_i is an unobserved latent variable (utility of firm i to engage in CSR activities) and W_i is a set of variables that affect the CSR choice (firm's governance structure and characteristics). We don't observe U_i. All we observe is a dichotomous variable $Engagement_i$ with the value of one if the firm has high CSR scores (scores above the sample median CSR score) and 0 otherwise. The estimated parameters of equation 4 are used to calculate the inverse Mills' ratio, which is then included as an additional explanatory variable in the OLS estimation of equation 3 (second-stage estimation).

The second approach is the instrumental variables (IV) methodology. Following prior studies (e.g., Harjoto & Jo, 2001, 2012), we use firm age (FIRMAGE) as an instrumental

variable. We also use geographic location, which is measured as the average CSR score of the surrounding firms in the same province (e.g., Ontario), as an additional instrument in the first-stage regression. In our case, FIRMAGE and geographic location are highly correlated with CSR, but uncorrelated with $R_{i,t.}$ The more highly correlated the instruments with CSR, the more precise our estimates will be. The instrumental variables (IV) regression is estimated using the two-step efficient generalized method of moments (GMM) which generates efficient estimates of the coefficients and consistent estimates of the standard errors that are robust to the presence of arbitrary heteroskedasticity and clustering by firm.

Data and Sample Selection

Our initial sample consists of the 125 Canadian firms covered by Sustainalytics database during the years 2004-2009. After merging Sustainalytics database with Datastream, our final sample includes 111 firms. All financial variables (e.g. stock return, earnings, size, leverage etc...) are obtained from Datastream. Sustainalytics ratings of Canadian firms (CSR scores) are based on data gathered from a range of sources, both internal and external to the firm. These ratings assess sustainability policies, management systems and performance outcomes related to environment (E), social (S), and governance (G) issues using industry-specific indicators.

For each E, S, and G dimension, several indicators are used to assess each company. Examples of indicators within the E dimension include environmental policy, percentage of ISO 14001 certified sites and suppliers, targets and programs to reduce air emissions, and environmental fines and penalties. Examples of indicators within the S dimension include the percentage of ISO 9000 certified sites, product recalls, philanthropic activities, diversity in the workforce, lay-offs and job cuts, monitoring systems to ensure compliance, and controversies

over freedom of association and child/forced labour. Examples of indicators within the G dimension include a separate position for chairman of board and CEO, number (%) of independent directors in the Board, directors' and/or CEO's remuneration/compensation, variable remuneration linked to sustainability performance, and formal policy on corruption and money laundering. Sustainalytics database provides company performance scores on E, S, and G dimensions (three sub-scores) as well as CSR total score (ESG overall score). The CSR total score is created for each company by multiplying the weights of each sub-score with the sub-scores and adding them up. All CSR ratings range from 0 to 100. A higher score indicates a strong and detailed CSR engagement. In our empirical analysis, we use these four CSR scores as a proxy for firm's social performance.

To control for industry, we include industry dummies in our regressions. We classify industries based on the 10 industry groups of the FTSE Industry Classification Benchmark (ICB): Oil & Gas (20.91% of the sample), Basic Materials (23.64%), Industrials (8.18%), Telecommunications (3.64%), Health Care (1.82%), Consumer Services (12.73%), Consumer Goods (3.64%), Utilities (2.73%), Financials (17.27%), and Technology (5.45%). We also include year dummy variables in our regressions in order to control for general market conditions.

Empirical Results

Table 1 reports summary statistics for our sample. We present the mean, median, minimum value, maximum value, standard deviation, and the number of observations. Returns for firm i at time t (R_t) are the buy-and-hold returns for the 12 months period starting at the beginning of the fiscal year. Future returns (R_{3t}) are the buy-and-hold returns for the three years

period following year (t). We define firm's earnings as net income before extraordinary items divided by the market value of equity. For robustness, we also use income before interest, taxes, depreciation and amortization (EBITDA) instead of net income. Our main findings remain unchanged. Future earnings (e_{3t}) are the sum of earnings for the three years following year (t). Since Sustainalytics definition and measurement of CSR includes three dimensions (E, S, and G), we use in our analysis CSR total scores (overall scores or TS) and individual scores (sub-scores: ES, SS and GS) of each dimension. The average (median) CSR total score is 54.492 (53.5). The S and E sub-scores are much lower suggesting that firm's total scores are pulled downward by these two subcategories. Finally, the mean (median) G score is 82.109 (83.72).

[Insert Table 1 about here]

Table 2 shows the correlations between our main variables. As expected, the CSR total score is highly and significantly correlated with all three sub-scores (e.g. Pearson coefficient is 0.8567 between TS and SS). On the other hand, correlations between S, E, and G sub-scores are much lower (e.g., Pearson coefficient is 0.1543 between ES and GS). As suggested earlier, our empirical goal is to investigate whether strong CSR engagement (high CSR scores) allows current stock prices to reflect more information about future earnings. If this hypothesis is correct, CSR scores should correlate positively with firm's future earnings. The positive and non-significant correlations between our CSR scores and (e_{3t}) do not confirm this hypothesis. However, we argue that our tests are best performed using a multivariate regression analysis because the univariate findings do not account for a variety of factors known to affect the return-future earnings relation. Our correlation analysis also indicates that future returns (R_{3t}) are not significantly correlated with current returns (R_t) but are significantly correlated with (e_{3t}), consistent with Collins et al. (1994) and Lundholm & Myers (2002). As suggested by Lundholm

& Myers (2002): “future returns should not influence the regression results except through their role as a proxy for the measurement error in future earnings” (p.822). Finally, the correlations between R_{3t}, e_t, e_{t-1} and e_{3t} are not excessive, suggesting that multicollinearity should not be an issue in our multivariate analysis.

[Insert Table 2 about here]

Table 3 reports the primary empirical tests of equation (3). We present our findings without control variables (model 1-4) and with a variety of controls variables (model 5-8). We propose to use the percentage growth in firm’s assets and firm size as control variables in equation (3). The purpose is to control for observed variations in future earnings–current return relation that are likely due to causes other than firm disclosure policies. After controlling for these factors, our empirical measure should reflect stock price informativeness. In fact, we argue that firms with high expected growth should exhibit a strong relation between current returns and future earnings in comparison to mature firms, all else equal. The intuition behind this idea is that future earnings will be considered as a better measure of value creation for firms’ with high growth opportunities, but a less relevant measure for mature firms. We define growth as the percentage growth in firm’s assets from year t-2 to year t. Size might also be an important omitted variable because Freeman (1987) and Collins & Kothari (1989) find that returns of larger firms impound earnings on a more timely basis than returns of smaller firms. To measure firm’s size, we use the natural logarithm of market capitalization. We also include market-to-book (M/B) ratio, leverage and stock liquidity into equation (3) to control for differences in returns (our dependant variable) arising from these factors. Note that the results of estimations with control variables are similar to those without control variables, suggesting that the inclusion of such variables does not alter our main conclusions.

[Insert Table 3 about here]

For all models, we run OLS estimations with year and industry fixed effects. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. We focus on the coefficients (θ_2) of the interaction variable ($CSR_{i,t}$ * future earnings) because we intend to examine whether high CSR scores impact the return-future earnings association. If CSR engagement is associated with stock returns reflecting more information about future earnings, we should have a positive and significant θ_2. Model 1 and 5 of Table 3 present coefficients and test statistics from estimations using CSR total scores. The remaining models examine the association between CSR and stock price informativeness using scores of each of the three dimensions covered by Sustainalytics (SS, ES, and GS). Our estimations reveal two important findings. First, strong CSR engagement exerts an insignificant effect on current return-future earnings association. In fact, θ_2 is not significant in seven of the eight estimations presented in Table3. Second, only model 4 findings indicate a positive association between firm's social scores and price informativeness (our coefficient of interest is positive (0.0244) and significant at 5% level). Model 4 social scores are based on indicators linked to firm's employees (e.g., freedom of association and diversity in the workplace), contractors & supply chain, customers (e.g., product safety), society & community (e.g., controversies over local communities), and philanthropy. It appears that an increase of involvement in the social category (higher SS) is followed by an increase in stock price informativeness. On the other hand, greater CSR commitment in other categories (E and G) has no impact on stock price informativeness.

To analyze whether a number of firm characteristics are potential determinants of CSR engagement, we partition our sample based on firm's size, ownership structure and risk. The legitimacy theory implies that the potential positive relationship between CSR and stock price

informativeness should be higher for firms with large market capitalization, high cost of capital and more dispersed ownership. Table 4 presents OLS estimations separately for large and small firms.

[Insert Table 4 about here]

Panel B in Table 4 displays regression coefficients for small firms. The key feature in Panel B is the positive association between TS dimension and stock price informativeness. As Model 1 and 5 show, our coefficients of interests (θ_2) are positive and significant at 5% and 1% level, respectively. However, the relationship between CSR and stock price informativeness continues to be positive only for small firms with high social scores (Model 4 and 8). Such findings provide additional evidence that strong CSR commitment in the social dimension is associated with more informative stock prices only for small firms. Panel A reports coefficients for large firms. In most specifications, the relationship between CSR and stock price informativeness is not significant. On the other hand, Model 5 (TS) and model 6 (ES) of Panel A indicate the presence of a negative and significant association between CSR and stock price informativeness. Panel A and B results do not support the legitimacy hypothesis. Panel B findings (TS and SS) are consistent with the stakeholder theory. Panel A results (TS (model 5) and ES (model 6)) are consistent with the agency theory. We also estimate the relation between CSR and stock price informativeness separately for dispersed ownership firms and concentrated ownership firms. The results (not tabulated) indicate the presence of a neutral impact of CSR on price informativeness for both subsamples. In addition, we still find an insignificant effect of CSR on stock price informativeness (results available upon request) when we split our sample based on firm's cost of capital (high versus low cost of capital). These additional results do not

support the hypothesis that greater CSR commitment is associated with more or less informative stock prices.

We check the robustness of our primary results in several ways. First, we re-estimate equation (3) using the two-stage Heckman procedure instead of the OLS procedure. The purpose is to mitigate self-selection concerns. The findings (see Table 5 for more details) suggest that firms with high CSR total scores have more informative stock prices in comparison to firms with low scores (θ_2 is positive (0.1330) and significant at 1% level). In addition, high scores in the S dimension improve stock price informativeness (θ_2 is positive (0.0737) and significant at 1% level) while an increase of involvement in G and E dimensions has no effect on stock price informativeness. So far, there is evidence indicating that one CSR dimension (S dimension) plays an important role in improving price informativeness. This implies that CSR engagement linked to firm's employees, customers, communities, contractors and philanthropy can be considered as an extension of firm's efforts that promote high transparency. On the other hand, CSR engagement in E and G dimensions does not necessarily result in more informed stock pricing.

[Insert Table 5 about here]

Table 6 summarizes the results of estimates of the two-stage Heckman procedure for large and small firms. These additional findings suggest that the positive association between CSR and stock price informativenes is limited to firms with high CSR engagement in the social dimension and large market capitalization (see Panel A results for more details). When we split our sample based on firm's ownership and risk and use the Heckman estimation, we find that greater CSR commitment in all dimensions has no impact on stock price informativeness (results are available upon request).

[Insert Table 6 about here]

Finally, we use the IV method to address other sources of endogeneity. We report the findings of such analysis in Table 7. The impact of CSR activities on the return-future earnings association remains insignificant, suggesting a neutral relation between CSR and stock price informativeness in all dimensions.

[Insert Table 7 about here]

On the other hand, when we rely on IV estimations based on firm's size (see Table 8 for more details), we find that small firms with strong CSR commitment exhibit higher current return-future earnings association (θ_2 is positive (0.0373) and significant at 1% level) . Finally, IV estimations based on firm's ownership and risk (results not tabulated) show neutral associations between CSR and stock price informativeness for all dimensions.

[Insert Table 8 about here]

Conclusion

In this paper, we propose to apply a new empirical methodology for the first time in the CSR literature, which we hope will contribute to a better understanding of the association between CSR engagement and stock price informativeness. We analyse a sample of Canadian firms covered by Sustainalytics database during the 2004-2009 period along three CSR issues: environment (E), social (S), and governance (G). We show that CSR involvement can improve stock price informativeness in certain circumstances, while it has no impact on firm's information environment in most cases. In fact, there is some evidence suggesting that the social (S) dimension plays a significant role in improving the price discovery process. In addition, our results suggest that firm's CSR engagement, in particular for E and G issues, has no impact on

price informativenss. The neutral association between CSR and stock price informativenss is not an indicator that Canadian firms' disclosure policies are inadequate or unethical. For instance, a firm's commitment to increase disclosure can alter the incentives for other market participants (e.g., financial analysts) to collect and trade on private information. Therefore, it is possible that any additional disclosure linked to CSR engagement could drive out private information acquisition, resulting in an ambiguous impact on total information in the market. On the other hand, another strand of research (e.g., Dhaliwal et al. 2011; Cormier et al. 2014) suggests that strong CSR engagement expands the set of market participants (e.g., institutional investors and financial analysts) who collect private information about firm's future prospects. If the presence of analysts and institutional investors may attract more noise trading to the stock instead of private information trading, this will reduce the content of relevant information in stock prices even when firms increase their disclosure, which may also result in an ambiguous impact on total information in the market. Furthermore, it is also possible that Canadian firms already benefit from a richer information environment and that CSR engagement is more oriented to benefit from advantages linked to higher reputation, stock liquidity, and prestige. Overall, the neutral relationship and the absence of a consistent negative association between CSR and stock price informativeness indicate that Canadian firms' managers do not use CSR opportunistically to extract private benefits.

This research has several limitations. First, our tests do not cover the period following the 2008 financial crisis. Second, we rely on an accounting measure of price informativeness. Other avenues of measuring stock price informativeness (market based measures) should be examined. This will offer further validation of the findings of this paper. Finally, the present analysis should be extended internationally because it is possible to find cross-country variations

in the relationship between CSR and stock price informativeness based on differences in institutional and cultural factors.

Our work suggests several avenues for future research. First, it seems important to explore the different channels available for dissemination of CSR activities. We argue that it is relevant to examine the impact of each dimension separately. Results based on combined scores could be different from those based on individual scores. Second, some of our results show that firms having high S scores are considered more credible and transparent, while those having high E and G scores do not enjoy such benefits. It might be fruitful to explore the mechanisms underlying such differences. Third, future research should investigate whether the behaviour of "informed market participants" can change when there are changes in CSR engagement. The purpose is to examine on the one hand whether these markets participants "new" behaviour can attract more noise trading instead of private information trading activities. On the other hand, it will be interesting to also investigate whether strong CSR engagement deters some market participants from collecting firm-specific information and reduces the active trading of "informed" traders. Answers to such questions can provide some insight into the study puzzling findings.

References

Akerlof, G (1970). «The market for 'lemons': qualitative uncertainty and the market mechanism», Quarterly Journal of Economics, Vol. 85, p. 488-500

Archel, P.; Husillos, J.; Larrinaga, C.; Spence, C (2009). «Social disclosure, legitimacy theory and the role of the state», Accounting, Auditing & Accountability Journal, Vol. 22, p. 1284-1307.

Barnea, A.; Rubin, A (2010). «Corporate social responsibility as a conflict between shareholders», Journal of Business Ethics, Vol. 97, p. 71-86.

Baron, D. P (2001). «Private politics, corporate social responsibility, and integrated strategy», Journal of Economics & Management Strategy, Vol. 10, p.7-45.

Beaver, W.; Lambert, R.; Mosse, D (1980). «The information content of security prices», Journal of Accounting and Economics, Vol. 2, p.3-28.

Bhattacharya, S (1979). «Imperfect information, dividend policy and 'bird in the hand' fallacy», Bell Journal of Economics, Vol. 10, p.259-270.

Carroll, A.B (1998). «The four faces of corporate citizenship», Business and Society Review, Vol. 100, p.1-7.

Cespa, G.; Cestone, G (2007). «Corporate social responsibility and managerial entrenchment», Journal of Economics and Management Strategy, Vol. 16, p.741-771.

Cho, C.H.; Patten, D.M (2007). «The role of environmental disclosures as tools of legitimacy: a research note», Accounting, Organization and Society, Vol. 32, p.639-647.

Collins, D.W.; Khotari, S.P (1989). «An analysis of intertemporal and cross-sectional determinants of earnings response coefficients», Journal of Accounting and Economics, Vol. 11, p. 143-181.

Collins, D. W.; Khotari, S.P.; Shanken, J.; Sloan, R.G (1994). «The lack of timeliness and noise as explanations for the low contemporaneous returns-earnings association», Journal of Accounting and Economics, Vol.18, p. 289-324.

Cormier, D.; Magnan, M (2014). «The impact of social responsibility disclosure and governance on financial analysts' information environment», Corporate Governance: The International Journal of Effective Board Performance, Vol. 14, p.467-484.

Cui, J.; Jo, H.; Na, H (2012). «Does corporate social responsibility reduce information asymmetry?» Working paper. Korea University.

Deegan, C (2002). «The legitimising effect of social and environmental disclosures - A Theoretical foundation», Accounting, Auditing & Accountability Journal, Vol. 15, p. 282-311.

Deng, X.; Kang, J.; Low, B. S (2013). «Corporate social responsibility and stakeholder value maximization: Evidence from mergers», Journal of Financial Economics, Vol. 110, p. 87-109.

Dhaliwal, D.; Li, O.; Zhang, A.; Yang, Y (2011). «Voluntary nonfinancial disclosure and the cost of equity capital: the initiations of corporate social responsibility reporting», The Accounting Review, Vol. 86, p. 59-10.

Durnev, A.; Morck, R.; Yeung, B.; Zarowin, P. (2003). «Does greater firm-specific return variation mean more or less informed stock pricing?», Journal of Accounting Research, Vol. 41, p. 797–836.

Eccles, R.; Ioannou, I.; Serafeim, G (2011). «The impact of a culture of sustainability on corporate behavior and performance», Harvard Business School and NBER Working Paper Series.

Fisman, R.; Heal, G.; Nair, V.B (2006). «A model of corporate philanthropy», Working paper, Columbia University, New York.

Freeman, R (1984). Strategic management: a stakeholder approach. Massachusetts: Pitman Publishing Inc, 292 p.

Freeman, R (1987). «The association between accounting earnings and security returns for large and small firms», Journal of Accounting and Economics, Vol. 9, p.195-228.

Freeman, T.; Hasnaoui, A (2011). «The meaning of corporate social responsibility: the vision of four nations», Journal of Business Ethics, Vol. 100, p. 419-443.

Friedman, M (1970). «The social responsibility of business is to increase its profits». New York Times, p. 122-126.

Gelb, D; Strawser, J.A (2001). «Corporate social responsibility and financial disclosures: an alternative explanation for increased disclosure», Journal of Business Ethics, Vol. 33, p.1-13.

Gelb, D.; Zarowin, P (2002). «Corporate disclosure policy and the informativeness of stock prices», Review of Accounting Studies, Vol. 7, p. 33-52.

Harjoto, M.; Jo, H (2011). «Corporate governance and CSR nexus», Journal of Business Ethics, Vol. 100, p. 45-67.

Healy, P.M.; Palepu, K.G (2001). «Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature», Journal of Accounting and Economics, Vol. 31, p. 405-440.

Hemingway, C.; Maclagan, P (2004). «Managers' personal values as drivers of corporate social responsibility», Journal of Business Ethics, Vol. 50, p.33-44.

Jensen, M.; Meckling, W (1976). «Theory of the firm, managerial behavior, agency costs and ownership structure», Journal of Financial Economics, Vol. 3, p.305-360.

Jo, H.; Harjoto, M (2012). «The causal effect of corporate governance on corporate social responsibility», Journal of Business Ethics, Vol. 106, p.53-72.

Jo, H.; Kim, Y (2007). «Ethics and disclosure: a study of the financial performance of firms in the seasoned equity offerings market», Journal of Business Ethics, Vol. 80, p. 855-878.

Hart, S. L (1995). «A natural resource based view of the firm», Academy of Management Review, Vol. 20, p. 986-1014.

Hess, D (2008). «The three pillars of corporate social reporting as new governance regulation: disclosure, dialogue, and development», Business Ethics Quarterly, Vol. 18, p.447-482.

Hong, H.; Kacperzyk, M (2009). «The price of sin: the effects of social norms on markets», Journal of Financial Economics, Vol. 93, p.15-36.

Ioannou, I.; Serafeim, G (2012). «What drives corporate social performance? The role of nation-level institutions», Journal of International Business Studies, p.1-31.

Jensen, M (2002). «Value maximization, stakeholder theory, and the corporate objective function», Business Ethics Quarterly, Vol. 12, p.235–256.

Knyazeva, D (2007). «Corporate governance, analyst following, and firm behavior», Working paper, New York University.

Lundholm, R.; Myers, L.A (2002). «Bringing the future forward: The effect of disclosure on the returns-earnings relation», Journal of Accounting Research, Vol. 40, p.809-839.

McWilliams, A.; Siegel, D (2001). «Corporate Social Responsibility: A Theory of the Firm Perspective», Academy of Management Review, Vol. 26, p.117-127.

Petrovits, C (2006). «Corporate-sponsored foundations and earnings management», Journal of Accounting and Economics, Vol. 41, p. 335-361.

Prior, D.; Surroca, J.; Tribo, J (2008). «Are socially responsible managers really ethical? Exploring the relationship between earnings management and corporate social responsibility», Corporate Governance, Vol. 16, p.160-177.

Reverte, C (2009). « Determinants of corporate social responsibility disclosure ratings by Spanish listed firms», Journal of Business Ethics, Vol. 88, p.351-366.

Russo, M. V.; Fouts, P. A (1997). «A resource-based perspective on corporate environmental performance and profitability», Academy of Management Journal, Vol. 40, p.534-559.

Servaes, H.; Tamayo, A (2013). «The impact of corporate social responsibility on firm value: the role of customer awareness», Management Science, Vol. 59, p.1045-1061.

Stiglitz, J.E (2015). The great divide: unequal societies and what we can do about them. New York: W.W. Norton, 464 p.

Ullmann, A (1985). «Data in search of a theory: A critical examination of the relationships among social performance, social disclosure, and economic performance», Academy of Management Review, Vol. 10, p.540-577.

Van Marrewijk, M (2003). «Concepts and definitions of CSR and corporate sustainability: Between agency and communion», Journal of Business Ethics, Vol. 44, p.95-105.

Verrecchia, R (2001). «Essays on disclosure», Journal of Accounting and Economics, Vol. 32, p.97-180.

Warfield, T.D.; Wild, J.J (1992). «Accounting recognition and the relevance of earnings as an explanatory variable for returns», The Accounting Review, Vol. 67, p.821-842.

Whitehouse, L (2006). « Corporate social responsibility: Views from the frontline», Journal of Business Ethics, Vol. 63, p.279-296.

Wood, D. J (1991). «Corporate social performance revisited», Academy of Management Review, Vol. 16, p. 691–718.

Yu, F (2008). «Analyst coverage and earnings management», Journal of Financial Economics, Vol. 88, p.245-271.

Table 1: Descriptive Statistics

This table presents descriptive statistics for the sample between years 2004 and 2009. **Current return** for year (t) (R_t) is the fiscal-year-end adjusted share price, plus the adjusted dividends, all divided by the adjusted price at the end of the previous fiscal year (t-1). **Future return** (R_{3t}) is the buy-and-hold return for the three-year period following the current year (for years t+1, t+2 and t+3). **Lagged earnings** (e_{t-1}) is net income before extraordinary items for year (t-1) divided by the market value of equity at the beginning of the firm's fiscal year. **Current earnings** (e_t) is net income before extraordinary items for year (t) divided by the market value of equity at the beginning of the firm's fiscal year. **Future earnings** (e_{3t}) is the sum of earnings for the three years following the current year (for years t+1, t+2 and t+3). Market value of equity is the share price times the previous year number of shares outstanding. **Total Score** represents firm's total CSR performance. In addition, we also use sub-scores that are based on assessments of corporate activities in three different areas: social, governance, and environmental practices**. Size** is the logarithm of the market capitalization. **Leverage** is long term debt plus short term debt, all divided by total assets. **Market-to-Book (M/B)** is the market to book ratio. **Asset growth** is total assets at the end of year (t+2) minus total assets at the end of year (t), all divided by total assets at the end of year (t).**Liquidity** is defined as trading volume divided by the number of shares outstanding.
All financial variables are winsorized at the 1% and 99% levels.

Variables	Mean	median	Min	Max	Std dev	N
Current return (R_t)	1.2322	1.1806	0.2139	3.8550	0.5206	1061
Future return (R_{3t})	1.8135	1.5198	0.1650	8.3243	1.3441	876
Lagged Earnings (e_{t-1})	0.0639	0.0672	-0.4346	0.5258	0.1175	978
Current earnings (e_t)	0.0625	0.0672	-0.4117	0.4957	0.1144	1065
Future earnings (e_{3t})	0.3034	0.2497	-1.7037	2.9682	0.5175	737
Total Score (TS)	54.492	53.5	34.8	77.10	7.4325	365
Environmental Score (ES)	39.487	38.3	13.63	84.1	11.456	365
Social Score (SS)	48.240	47.54	30.62	70.7166	8.4699	365
Governance Score (GS)	82.109	83.72	32.165	98.47	9.4472	365
Size	15.446	15.504	11.410	17.963	1.3251	1176
Leverage	0.2161	0.2051	0	0.6278	0.1541	1194
Market-to-Book (M/B) ratio	2.6046	2.2163	0.2483	10.843	1.7089	1174
Asset Growth	0.6028	0.2823	-0.6059	11.996	1.4974	974
Liquidity	18.946	13.343	0.5315	112.86	19.342	1173

Table 2: Pearson Correlations

This table presents the correlations between variables. The sample period is from 2004 to 2009.

	R_t	R_{3t}	e_{t-1}	e_t	e_{3t}	TS	ES	SS	GS
R_t	1.0000	-0.0213	0.1925*	0.2946*	0.2135*	0.0618	0.0415	0.0826	-0.0099
R_{3t}	-0.0213	1.0000	-0.0043	0.1482*	0.5311*	-0.0055	0.0577	-0.0147	-0.0404
e_{t-1}	0.1925*	-0.0043	1.0000	0.3400*	0.1311	0.0632	-0.0214	0.0809	0.0641
e_t	0.2946*	0.1482*	0.3400*	1.0000	0.3995*	0.0737	-0.0456	0.1128	0.0748
e_{3t}	0.2135*	0.5311*	0.1311	0.3995*	1.0000	0.0934	0.0842	0.0728	0.0013
TS	0.0618	-0.0055	0.0632	0.0737	0.0934	1.0000	0.7731*	0.8567*	0.5794*
ES	0.0415	0.0577	-0.0214	-0.0456	0.0842	0.7731*	1.0000	0.5097*	0.1543
SS	0.0826	-0.0147	0.0809	0.1128	0.0728	0.8567*	0.5097*	1.0000	0.4332*
GS	-0.0099	-0.0404	0.0641	0.0748	0.0013	0.5794*	0.1543	0.4332*	1.0000

* Significant at 1 % level

Table 3
Corporate Social Responsibility and Stock Price Informativeness: Primary Results

This table presents coefficients and test statistics from estimations of the following regression:

$$R_{i,t} = \beta_0 + \beta_1 e_{i,t-1} + \beta_2 e_{i,t} + \beta_3 e_{i,3t} + \beta_4 R_{i,3t} + \theta_1 CSR_{i,t} + \theta_2 CSR_{i,t} * e_{i,3t} + \theta_3 CSR_{i,t} * R_{i,3t} + \theta_4 \text{ controls} + \varepsilon_{i,t}$$

We estimate all models using Ordinary Least Square (OLS) regressions with year and industry fixed effects. Year and industry dummies coefficients are not reported for parsimony. We test the association between CSR and stock price informativeness using CSR total score (TS) and scores for each of the three areas covered by Sustainalytics (social (SS), environmental (ES), and governance (GS) area). Model 1,2,3 and 4 present coefficients from regressions without control variables. Model 5,6, 7 and 8 include additional control variables (firm's size, leverage, market-to-book ratio, asset growth and stock liquidity) . Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. One, two or three asterisks denote significance at the 10%, 5% and 1% levels, respectively.

Independent Variables	OLS without control variables				OLS with control variables			
	Model1 (TS)	Model2 (ES)	Model3 (GS)	Model4 (SS)	Model5 (TS)	Model6 (ES)	Model7 (GS)	Model8 (SS)
Intercept	1.5036***	1.5388***	1.3575***	1.5614***	0.6364*	0.7511***	0.5995	0.7742**
Lagged earnings	0.3128*	0.2929	0.3239*	0.2916	0.1390	0.1408	0.1662	0.1506
Current earnings	0.8345***	0.7822***	0.8737***	0.9165***	0.5289***	0.5316**	0.6119**	0.6052***
Future earnings	-0.0348	0.5882*	-0.4684	-0.6813	0.7698	0.6843**	0.2803	-0.2076
Future return	0.0470	-0.0927	-0.0072	0.0257	-0.0116	-0.1084**	-0.0356	-0.0101
CSR	-0.0024	-0.0024	-0.0004	-0.0046	0.0008	-0.0009	0.0022	-0.0030
CSR *Future earnings	**0.0089**	**-0.0034**	**0.0111**	**0.0244****	**-0.0077**	**-0.0076**	**0.0009**	**0.0124**
CSR*Future return	-0.0032	-0.0006	-0.0013	-0.0034	-0.0019	0.0000	-0.0010	-0.0024
Size					0.0407	0.0400	0.0301	0.0417
Leverage					-0.2898*	-0.2827	-0.2991*	-0.2889*
Market-to-Book					0.0509**	0.0514**	0.0566***	0.0470**
Asset Growth					0.0268*	0.0276*	0.0269*	0.0192
Liquidity					0.0028***	0.0028***	0.0028***	0.0029***
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.683	0.682	0.677	0.688	0.738	0.739	0.735	0.740
N	306	306	306	306	306	306	306	306

Table 4
Corporate Social Responsibility and Stock Price Informativeness: Separate Estimations based on Firm's Size.

Panel A : **OLS estimations for large firms**	OLS without control variables				OLS with control variables			
	Model1 (TS)	Model2 (ES)	Model3 (GS)	Model4 (SS)	Model5 (TS)	Model6 (ES)	Model7 (GS)	Model8 (SS)
Intercept	1.9208***	2.0611***	1.9785***	1.9753***	0.9405	1.2521*	0.9339	1.0696
Lagged earnings	0.0558	0.0203	0.1668	0.1083	-0.0794	-0.0339	0.1294	-0.0140
Current earnings	1.2275*	1.2158*	1.3836**	1.3754***	1.1820*	1.2984**	1.4830**	1.3346**
Future earnings	1.1168	0.8643*	-0.2197	-0.2615	2.3699***	1.1861***	0.2950	0.4865
Future return	-0.0161	-0.0743	-0.0775	-0.0157	-0.1049	-0.1421**	-0.0558	-0.1127
CSR	0.0024	-0.0001	-0.0012	-0.0020	0.0052	0.0015	0.0019	-0.0028
CSR *Future earnings	**-0.0138**	**-0.0099**	**0.0069**	**0.0135**	**-0.0388****	**-0.0185****	**-0.0001**	**-0.0038**
CSR*Future return	-0.0022	-0.0012	-0.0006	-0.0027	-0.0006	0.0000	-0.0012	-0.0008
Size					0.0482	0.0400	0.0396	0.0553
Leverage					-0.0069	-0.2827	0.0461	0.0098
Market-to-Book					0.0790***	0.0514**	0.0698***	0.0711***
Asset Growth					0.0421**	0.0276*	0.0388*	0.0341*
Liquidity					0.0021*	0.0028***	0.0014	0.0020*
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.692	0.698	0.685	0.689	0.758	0.758	0.739	0.744
N	186	186	186	186	186	306	186	186

Panel B: **OLS estimations for small firms**	OLS without control variables				OLS with control variables			
	Model1 (TS)	Model2 (ES)	Model3 (GS)	Model4 (SS)	Model5 (TS)	Model6 (ES)	Model7 (GS)	Model8 (SS)
Intercept	0.6081	1.0106***	0.2670	0.6625	1.0187	0.5526	-0.3718	0.9892*
Lagged earnings	0.3731	0.3486	0.3093	0.2603	0.3793	0.3633	0.3409	0.2636
Current earnings	0.5380**	0.5148*	0.6973***	0.6115***	0.3398	0.2729	0.4248*	0.4216***
Future earnings	-1.5995**	-0.0773	-2.2174	-1.4504*	-1.6232**	-0.2929	-2.4898	-1.4854***
Future return	0.4148	0.0056	0.5701	0.2113	0.1708	0.0094	0.5044	0.0157
CSR	0.0064	-0.0015	0.0019	0.0037	-0.0036	-0.0015	0.0019	-0.0074
CSR *Future earnings	**0.0425****	**0.0127**	**0.0323**	**0.0414****	**0.0393*****	**0.0143**	**0.0340**	**0.0381*****
CSR*Future return	-0.0102*	-0.0020	-0.0076*	-0.0062	-0.0048	-0.0017	-0.0066*	-0.0017
Size					0.0219	0.0214	0.0393	0.0271
Leverage					-0.0877	-0.0635	0.0592	-0.0800
Market-to-Book					0.0578***	0.0586***	0.0561***	0.0657***
Asset Growth					-0.0597	-0.0472	-0.0567	-0.0543
Liquidity					0.0056***	0.0053***	0.0048***	0.0054***
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.673	0.675	0.668	0.674	0.749	0.734	0.742	0.754
N	120	120	120	120	120	120	120	120

Table 5
Corporate Social Responsibility and Stock Price Informativeness: Self-selection Bias Estimation

This table reports the results of the Heckman (1979) two-stage procedure. In the first stage, we present the coefficient estimates from a probit model explaining the determinants of CSR engagement. We consider that firm's governance structure (e.g. Independent boards (INBOARDS) and analyst coverage) may lead to CSR engagement. NA, in the first stage equation, is the number of analysts following the firm. We also consider firm's characteristics (size, leverage, market-to-book, and ROA). The dependent variable is a dichotomous variable that takes the value of 1 if firm's social ratings are above the sample median and 0 otherwise. Model 1 reports results from regressions using CSR total score (TS). Model 2, 3 and 4 present results from estimations using social scores (SS), environmental scores (ES) and governance scores (GS), respectively. In the second stage, we estimate our main equation with control variables (firm's size, leverage, market-to-book ratio, asset growth and stock liquidity). Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. One, two or three asterisks denote significance at the 10%, 5% and 1% levels, respectively.

First stage Dependent variable (CSR dummy)	***Model 1*** Probit (TS)	***Model 2*** Probit (SS)	***Model 3*** Probit (ES)	***Model 4*** Probit (GS)	**Second Stage** Dependent variable (Return)	***Model 1*** (TS)	***Model 2*** (SS)	***Model 3*** (ES)	***Model 4*** (GS)
Intercept	0.2625	-12.79***	1.2777	-4.175*	Intercept	0.8872	1.0579	-0.1068	-2.7026
Log(1+NA)	0.0388	-0.7020	0.9625**	0.5961	Lagged earnings	0.1653	0.2659	0.0865	0.0040
INBOARDS	1.9125*	3.2670***	0.3186	0.7404	Current earnings	1.3236***	1.6669***	1.4026***	1.5715***
Size	0.3353***	0.8075***	0.1915	0.1822	Future earnings	-7.4218***	-3.6505**	0.2200	4.1248
Leverage	1.1931	0.7811	3.1500**	0.5018	Future return	0.1588	0.3426	-0.0169	0.7980
Market-to-Book	-0.248***	-0.1396**	-0.429***	-0.2703**	CSR	-0.0233**	-0.0044	0.0022	0.0158
ROA	0.7851	-1.5619	2.0304	2.1222	**CSR*future earnings**	**0.1330*** **	**0.0737*** **	**0.0026**	**-0.0405**
					CSR*Future return	-0.0051	-0.0086	-0.0032	-0.0103
					Size	0.0801**	-0.0008	0.0556	0.1126*
					Leverage	0.0133	-0.3189	-0.6553*	-0.0086
					Market-to-Book	0.0216	0.0799***	0.0595*	0.0289
					Asset Growth	0.0147	0.0261	0.0240	0.0139
					Liquidity	0.0028***	0.0025**	0.00035***	0.0026
					Mills	-0.0126	-0.1277	-0.0818	0.3919
					Industry dummies	Yes	Yes	Yes	Yes
					Year dummies	Yes	Yes	Yes	Yes
					Wald chi2	489.6	556.8	489.6	178.6
					p-value Wald chi2	0	0	0	0
					N	247	246	247	247

Table 6
Corporate Social Responsibility and Stock Price Informativeness: Self-selection bias Estimations for Large and Small firms.

Panel A : Large firms

First stage	***Model 1***	***Model 2***	***Model 3***	***Model 4***	**Second Stage**				
Dependent variable	Probit	Probit	Probit	Probit	Dependent variable	***Model 1***	***Model 2***	***Model 3***	***Model 4***
(CSR dummy)	(TS)	(SS)	(ES)	(GS)	(Return)	(TS)	(SS)	(ES)	(GS)
Intercept	-10.574**	-12.305***	-7.0962	-18.921***	Intercept	-2.6418	-2.5691*	-0.5538	-3.4671
Log(1+NA)	0.3370	-0.1880	1.0617*	0.3402	Lagged earnings	-0.2728	0.1238	-0.7376	-0.4521
INBOARDS	1.3090	3.3493***	-0.9166	0.7404	Current earnings	2.2099***	2.3561***	2.4575***	2.2528***
Size	0.5213**	0.6157**	0.2603	1.0629***	Future earnings	-7.3854***	-12.0738**	0.7209	4.0270
Leverage	-0.2425	-0.0911	1.9347*	0.6754	Future return	0.6145	1.5225*	0.0968	0.6770
Market-to-Book	-0.0042	0.0721	-0.2124*	-0.0628	CSR	0.0006	-0.0028	0.0193**	0.0140
ROA	1.2032	1.8886	0.6604	1.5036	**CSR*future earnings**	**0.1336****	**0.2218*****	**-0.0082**	**-0.0405**
					CSR*Future return	-0.0134	-0.0303**	-0.0058	-0.0094
					Size	0.1692**	0.1860***	0.0099	0.1638*
					Leverage	0.5270*	0.5672**	0.1206	0.2133
					Market-to-Book	0.0311	0.0028	0.0929**	0.0390*
					Asset Growth	0.0397**	0.0631***	0.0421**	0.1794***
					Liquidity	0.0017	0.0015	0.0045***	0.0028*
					Mills	0.2467	0.1525	-0.0194	-0.0281
					Industry dummies	Yes	Yes	Yes	Yes
					Year dummies	Yes	Yes	Yes	Yes
					Wald chi2	221.7	312.6	308.8	360.3
					p-value Wald chi2	0	0	0	0
					N	135	135	135	136

Panel B: Small firms

First stage	***Model 1***	***Model 2***	***Model 3***	***Model 4***	**Second Stage**	***Model 1***	***Model 2***	***Model 3***	***Model 4***
Dependent variable	Probit	Probit	Probit	Probit	Dependent variable	(TS)	(SS)	(ES)	(GS)
(CSR dummy)	(TS)	(SS)	(ES)	(GS)	(Return)				
Intercept	-9.4181*	-4.6902	-7.7963	17.495***	Intercept	5.7309***	3.8712***	-0.4284	-5.6716
Log(1+NA)	0.6451	-0.1296	2.8248**	2.2617**	Lagged earnings	-0.0470	0.1893	-0.1606	0.1045
INBOARDS	6.7173***	5.4631***	4.9464**	7.1986***	Current earnings	0.4544	0.4888	0.2449	0.9924**
Size	0.0824	-0.0310	-0.2949	-1.9885***	Future earnings	-9.0915***	-2.7242	5.9771	20.534
Leverage	-2.1254	-0.1060	-0.2382	-5.1567***	Future return	0.0801	-0.1117	-1.3313	0.4472
Market-to-Book	0.2644	0.2763	-0.3784*	0.5755**	CSR	-0.0525***	-0.0303*	-0.0259	0.0720
ROA	0.0144	1.0364	4.7556*	7.5425**	**CSR*future earnings**	**0.1806*****	**0.0637**	**-0.1281**	**-0.2217**
					CSR*Future return	-0.0036	0.0009	0.0249	-0.0062
					Size	-0.1659**	-0.1211	0.1601*	-0.0212
					Leverage	-0.3423	-1.2221**	-0.9461	-0.9741*
					Market-to-Book	0.0845***	0.1255***	0.0155	0.0300
					Asset Growth	-0.0935	0.0689	0.0290	-0.0970*
					Liquidity	0.0123***	0.0079**	0.0045	0.0100***
					Mills	0.0204	-0.0922	-0.1784	0.3919
					Industry dummies	Yes	Yes	Yes	Yes
					Year dummies	Yes	Yes	Yes	Yes
					Wald chi2	292.4	246.7	167.5	352.9
					p-value Wald chi2	0	0	0	0
					N	91	91	92	90

Table 7

Corporate Social Responsibility and Stock Price Informativeness: Instrumental Variable Approach

This Table presents the results of the Instrumental variable methodology that addresses endogeneity concerns on the impact of CSR engagement on price informativeness. One, two or three asterisks denote significance at the 10%, 5% and 1% levels, respectively.

Independent Variables	Instrumental variable approach estimation			
	Model1 (TS)	Model2 (ES)	Model3 (GS)	Model4 (SS)
Intercept	-2.226	0.4607	-2.263	21.78
Lagged earnings	0.347	0.2061	0.246	-2.722
Current earnings	0.495	0.640**	0.640**	2.752
Future earnings	3.146	0.540	2.890	-19.87
Future return	0.982	-0.267	0.631	-9.366
CSR	0.055	-0.011	0.031	-0.542
CSR *Future earnings	**-0.047**	**-0.003**	**-0.030**	**0.409**
CSR*Future return	-0.021	0.004	-0.009	0.195
Size	-0.015	0.027	0.006	0.322
Leverage	-0.128	0.004	-0.065	-0.435
Market-to-Book	0.070**	0.052***	0.074*	0.078
Asset Growth	0.041	0.027*	0.038	-0.220
Liquidity	0.000	0.001	0.000	0.016
Year dummies	Yes	Yes	Yes	Yes
N	296	296	296	296
P value of Hansen statistic	0.544	0.458	0.347	0.993

Table 8
Corporate Social Responsibility and Stock Price Informativeness: Instrumental Variable Estimations based on Firm's Size

Panel A : Large firms				
Independent Variables	Instrumental variable approach estimation			
	Model1 (TS)	Model2 (ES)	Model3 (GS)	Model4 (SS)
Lagged earnings	0.4960	0.0083	0.2697	-0.6702
Current earnings	1.4322**	1.3397**	1.2376**	1.2741*
Future earnings	7.0794	1.3217**	0.1218	-2.3934
Future return	0.7103	-0.0747	-0.1118	-0.8427
CSR	0.0762	0.0085	0.0007	-0.0591
CSR *Future earnings	**-0.1246**	**-0.0191***	**0.0037**	**0.0580**
CSR*Future return	-0.0167	-0.0018	-0.0003	0.0137
Size	-0.0936	-0.0087	0.0095	0.0702
Leverage	-0.3223	-0.1393	-0.0734	-0.0963
Market-to-Book	0.1210***	0.0930***	0.0889***	0.0899***
Asset Growth	0.0610*	0.0459*	0.0383	0.0186
Liquidity	-0.0017	0.0009	-0.0003	0.0036
Year dummies	Yes	Yes	Yes	Yes
N	181	181	181	181
P value of Hansen statistic	0.208	0.412	0.0205	0.283

Panel B : Small firms				
Independent Variables	Instrumental variable approach estimation			
	Model1 (TS)	Model2 (ES)	Model3 (GS)	Model4 (SS)
Lagged earnings	0.3885	0.2469	0.3158	0.2586
Current earnings	0.2113	0.1391	0.4311*	0.4089*
Future earnings	-1.7535**	-0.4579	-3.077	-1.4335***
Future return	0.7603	0.2679	0.4576	0.1226
CSR	0.0171	0.0136	-0.0008	-0.0030
CSR *Future earnings	**0.0431***	**0.0205**	**0.0415**	**0.0373*****
CSR*Future return	-0.0171	-0.0090	-0.0061	-0.0040
Size	0.0211	0.0159	0.0350	0.0224
Leverage	-0.0604	-0.0921	0.0553	-0.0692
Market-to-Book	0.0487*	0.0548**	0.0533**	0.0620**
Asset Growth	-0.0395	-0.0265	-0.0701	-0.0475
Liquidity	0.0052***	0.0054***	0.0052**	0.0052***
Year dummies	Yes	Yes	Yes	Yes
N	113	113	113	113
P value of Hansen statistic	0.953	0.779	0.837	0.804

The Centre for Responsible Banking and Finance
CRBF Working Paper Series
School of Management, University of St Andrews
The Gateway, North Haugh,
St Andrews, Fife,
KY16 9RJ.
Scotland, United Kingdom
http://www.st-andrews.ac.uk/business/rbf/

Recent CRBF Working papers published in this Series

Third Quarter | 2017

17-010 **Ross Brown and Colin Mason:** Looking Inside the Spiky Bits: A Critical Review and Conceptualisation of Entrepreneurial Ecosystems.

17-009 **Pejman Abedifar, Paolo Giudici and Shatha Hashem:** Heterogeneous Market Structure and Systemic Risk: Evidence from Dual Banking Systems.

Second Quarter | 2017

17-008 **Alberto Montagnoli, Mirko Moro, Georgios A. Panos and Robert E. Wright:** Financial Literacy and Attitudes to Redistribution.

17-007 **Dimitris Chronopoulos, Anna Lucia Sobiech and John O. S. Wilson:** Future Issues in Bank Taxation.

17-006 **Ross Brown and Neil Lee:** The Future of Funding for Small and Medium-Sized Enterprises in the UK.

17-005 **Jose Liñares-Zegarra and John O.S. Wilson:** Future Issues in Unsecured Consumer Debt.

First Quarter | 2017

17-004 **Ross Brown, Jose Liñares-Zegarra and John O.S. Wilson:** Sticking It on Plastic: The Spatial Dynamics of Credit Card Finance in UK Small and Medium Sized Enterprises.

17-003 **Marika Carboni and Franco Fiordelisi:** Endogenous Political Connections.

17-002 **Moritz Wiesel, Kristian Ove R. Myrseth and Bert Scholtens:** Social Preferences and Socially Responsible Investing: A Survey of U.S. Investors.