

CSR Reporting and Firm Value: International Evidence on Management Discussion and Analysis*

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Abstract

This study examines whether and how the practice of providing CSR information in the management discussion and analysis (MD&A) section of annual reports affects the relation between CSR performance and firm value in an international context. Based on a large sample from 42 countries, our results indicate that while providing CSR information in the MD&A section *does not* increase the price investors are willing to pay for the stock of a firm with high CSR performance, it *does* decrease the price they will pay for the stock of firms with high CSR concerns. Further analyses show that this finding is more likely to be observed when the perceived CSR reporting quality is greater, the level of investors' CSR awareness is higher, and the development of a country's institutional environment is better. Finally, consistent with the conjecture that the CSR disclosure channel matters to investors, our evidence shows that firms with high CSR concerns are less likely to provide environmental and social information in their annual reports.

Keywords: Corporate Social Responsibility, Firm Value, Institutions, Voluntary Disclosure, MD&A

JEL classification: G15, M14, M4

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I. Introduction

Awareness of the importance of corporate social responsibility (CSR) performance to firm value has grown over the last two decades (e.g. Lev *et al.*, 2010; Krüger, 2015; Ferrell *et al.*, 2016; Lins *et al.*, 2017). In response, in recent years, a growing number of companies have voluntarily released environmental and social information to demonstrate their commitment to CSR activities and initiatives (Dhaliwal *et al.*, 2011, 2012). Proponents of CSR disclosure assert that CSR reporting facilitates more effective communication with investors about firms' non-financial performance and leads to better internal decision-making, which in turn increases firm value (e.g. Eccles and Krzus, 2010; Eccles and Saltzman, 2011; Christensen, 2016). Opponents of such reporting practice, however, argue that the disclosure of CSR information may have an adverse effect on firm value (e.g. Arya *et al.*, 2010; Cheng *et al.*, 2014; Christensen *et al.*, 2017; Maniora, 2017; Chen *et al.*, 2018).

While voluntary CSR reporting has gained considerable momentum in recent years, stand-alone CSR reporting remains a major source of CSR information provided by firms from around the world (Ballou *et al.*, 2012; Velte and Stawinoga, 2016). However, few studies have examined the potential implication of CSR information disclosed in the management discussion and analysis (MD&A) section of firms' annual reports.⁵ Given our limited understanding of this relatively new reporting channel, a more thorough examination is required concerning (1) how pervasive the practice of providing CSR disclosures in the MD&A section of firms' annual reports is globally, (2) whether and how such a reporting practice matters to investors, and (3) the institutional factors contributing to the heterogeneity in the effect of this reporting practice across firms/countries. We attempt to examine all of these issues in this study.

Our study is also motivated by the ongoing debate on the effect of CSR performance on firm value (e.g. Orlitzky *et al.*, 2003; Margolis *et al.*, 2007; Huang *et al.*, 2020; Tsang *et al.*, 2021).⁶ Specifically, in this study, we examine the potential effect of providing CSR disclosures in the MD&A section of firms' annual reports on the relation between firms' CSR performance and firm value.⁷ We argue and conjecture that by exposing a firm to heightened

⁵ According to the results of a survey conducted by KPMG (2017), about 60% of the N100 companies (a worldwide sample of 4,900 companies comprising the top 100 companies by revenue in each of the 49 countries researched by KPMG) provided CSR information in their annual reports, including in the MD&A section.

⁶ Studies report positive, negative, and even neutral effects of CSR performance on financial performance/firm value (McWilliams and Siegel, 2000). Others suggest that contextual factors matter in the relation between CSR performance and firm value. For example, studies show that the effect of CSR performance on financial performance is affected by country-level contextual factors, such as the development of capital markets, the level of regulatory systems, and the presence of contract enforcement mechanisms (e.g. El Ghoul *et al.*, 2016).

⁷ Given the heterogeneity in the practices of providing non-financial disclosures in firms' financial disclosures in an international context (Velte and Stawinoga, 2016), the focus on whether a firm discloses its non-financial information in the MD&A section of its annual reports (rather than in other parts of the annual report), in our view, presumably facilitates the comparability of such a reporting practice across firms in different countries.

public awareness of environmental and social issues, reputational concerns, and political costs, providing more CSR information in firms' annual reports can have an adverse effect on stock price. In contrast, it is also possible that in light of the voluntary nature of CSR reporting in many countries around the world, the agency problem can manifest through self-laudatory CSR disclosures in firms' annual reports for image management. This in turn may have a positive effect on stock price for firms providing more CSR information in their annual reports.

On the basis of a large sample comprising more than 20,000 observations from 42 countries, we first demonstrate the significantly positive relation between CSR performance and firm value, which is consistent with findings that support the stakeholder view of CSR (e.g. Waddock and Graves, 1997; Wang *et al.*, 2008; Servaes and Tamayo, 2013; El Ghouli *et al.*, 2016; Cuypers *et al.*, 2016; Tsang *et al.*, 2021). This view holds that CSR can be consistent with shareholder value maximisation while at the same time creating a positive externality by achieving broader societal goals. More importantly, we find that while providing CSR information in firms' annual reports appears to strengthen the positive association between CSR performance and future firm value, this finding is driven mainly by a significantly lower firm value for firms with high CSR concerns rather than by a higher firm value for firms with good CSR performance. We obtain this result after controlling for both the presence and the characteristics of a firm's stand-alone CSR disclosures.⁸

Additional analyses show that the role of CSR information in firms' annual reports in reducing the firm value of firms with high CSR concerns varies with the perceived quality of CSR reporting, investors' level of CSR awareness, and the development of a country's institutional environment. Finally, we find evidence that firms with high CSR performance (concerns) are more (less) likely to provide CSR information in their annual reports. Further investigation shows that firms generally tend to have material CSR costs or concerns in the year when such reporting practices are adopted. Taken together, our findings support the conjecture that while investors do not appear to value CSR information reported in firms' annual reports more when firms' CSR performance is good, they do tend to pay greater attention to CSR information reported in firms' annual reports when firms' CSR concerns are high.

We also conduct various additional analyses as robustness checks. These include using the Heckman two-stage procedure (Heckman, 1979) to correct for the possible endogeneity issue relating to self-selection, obtaining CSR reporting data (measuring CSR information released in firms' annual reports) from an alternative database, employing alternative measures of CSR performance, adding firm fixed effects to control for potentially unobserved

⁸ Specifically, in examining the role of CSR information disclosed in firms' annual reports in the link between CSR performance and firm value, we further control for the presence of several other major CSR reporting practices, including whether a firm issues stand-alone CSR disclosures, whether stand-alone CSR disclosures are issued with assurance by an external third party, and whether the firm follows the Global Reporting Initiative's (GRI) CSR reporting guidelines.

firm-specific characteristics that are invariant over time (Himmelberg *et al.*, 1999), using samples matched by CSR performance or by overall propensity score to better control for differences across firms with and without such reporting practices, and excluding samples of Chinese, US, and South African firms. In all of these specifications, our results and inferences are unchanged.

This study contributes to the literature examining the relation between CSR disclosure and firm value. In response to the increasing number of organisations worldwide that are unitising voluntary CSR reports, recent studies have started to examine whether providing CSR information in firms' annual reports is associated with capital market benefits. These studies have directly examined, for example, the effect of providing CSR information in firms' annual reports on reducing analyst forecast errors and costs of equity capital (Bernardi and Stark, 2018; Zhou *et al.*, 2017), improving the value relevance of financial information (Baboukardos and Rimmel, 2016), increasing firm value (Lee and Yeo, 2016; Barth *et al.*, 2017), and attracting greater interest from long-term institutional investors (Serafeim, 2015). However, all of these studies focused on a single country (e.g. South Africa, where integrated reporting (IR) is mandatory, or the United States), and thus the results may or may not be generalisable to other countries given the difference in country-level institutions. Using an international setting, our study extends the research on the capital market consequences of CSR reporting disclosed in a particular channel by highlighting the incremental role played by reporting CSR information in annual reports, especially in the MD&A section, in the relation between CSR performance and firm value. Thus, this study will be useful to standard-setters, academics, and practitioners in terms of enhancing their understanding of the role of such CSR reporting practice in global financial markets.

Despite extensive studies on CSR disclosure (e.g. Huang and Watson [2015] and Radhakrishnan *et al.* [2018] review the CSR reporting literature), whether providing CSR information in annual reports, particularly in the MD&A section, has an effect on shareholder value that is incremental to the effect of stand-alone CSR reporting is unclear. Moreover, an emergent strand of the literature attempts to identify the channels through which information about CSR performance affects firm value. For example, existing studies attribute the inconclusive findings in the literature to poor understanding of the factors moderating the link between CSR disclosure and firm value. These factors include the level of stakeholders' awareness (Servaes and Tamayo, 2013; Cuypers *et al.*, 2016), the presence of sophisticated investors (Buchanan *et al.*, 2018; Nguyen *et al.*, 2020), the voluntary assurance of CSR disclosure (Clarkson *et al.*, 2019), and the heterogeneity in country-level institutional characteristics (Soleimani *et al.*, 2014; El Ghouli *et al.*, 2016). Thus, our study adds to the literature and suggests that by broadcasting information about firms' CSR activities to a wide range of interested parties by providing CSR information in annual reports, investors' awareness of the potential impact of CSR is increased, which in turn increases the sensitivity

of stock price to firms' CSR concerns.

Finally, while prior studies have extensively examined the capital market consequences associated with the characteristics of information disclosed in the MD&A section of corporate annual reports (e.g. Bryan, 1997; Barron *et al.*, 1999; Li, 2010; Feldman *et al.*, 2010; Mayew *et al.*, 2014), few studies have examined the incorporation of environmental and social information in the MD&A section and its implications for shareholders. One of these exceptions is Serafeim (2015), who examines the incorporation of CSR information in the MD&A section in the US setting. Thus, our study contributes to the MD&A literature by demonstrating the effect of incorporating CSR information in the MD&A section and how country-level institutional factors moderate the role of this reporting practice.

The remainder of our paper proceeds as follows. We review the related literature and develop the hypotheses of our study in section II. In section III, we discuss the variable definitions, outline the research design, and describe our sample construction. The empirical results and the results of additional tests are reported in sections IV and V, respectively. Section VI concludes the paper.

II. Literature Review and Hypothesis Development

2.1 CSR Performance and Firm Financial Performance

For several decades, the question of whether and how CSR performance is related to corporate financial performance (CFP) has attracted much research interest across various business disciplines and has been the subject of extensive empirical inquiry.⁹ Two opposing views predominate in the literature: the stakeholder and agency views. The stakeholder view suggests that CSR can facilitate value maximisation for shareholders. For instance, studies show that better CSR performance is on average associated with a lower cost of capital (El Ghoul *et al.*, 2011; Goss and Roberts, 2011), more positive sell-side analyst recommendations (Ioannou and Serafeim, 2015), higher credit ratings (Jiraporn *et al.*, 2014), reduced stock price crash risk (Kim *et al.*, 2014), stronger long-term post-acquisition returns (Deng *et al.*, 2013), and higher levels of social capital (Christensen, 2016; Lins *et al.*, 2017).

Agency theory, however, suggests that agency problems can occur through non-value-maximising investment choices (Jensen and Meckling, 1976; Shleifer and Vishny, 1997; La Porta *et al.*, 2000). Extending this view, some argue that CSR can be one manifestation of the agency problem by benefiting managers (e.g. improving the reputations of managers among key stakeholders, including labour unions, communities, non-governmental organisations, and local politicians) at the expense of shareholders (Bénabou and Tirole, 2010; Cheng *et al.*, 2013; Krüger, 2015; Ferrell *et al.*, 2016). Cheng *et al.* (2013) directly support this view by

⁹ Friede *et al.* (2015) analyse around 2,200 studies and conclude that about 90% of prior studies find that CSR has non-negative effects on financial performance.

providing empirical evidence that the agency problem is an important determinant of CSR. Similarly, Krüger (2015) finds that investors respond negatively to news of CSR initiatives, which is likely to be due to agency problems. Buchanan *et al.* (2018) and Nguyen *et al.* (2020) show that the positive relation between CSR and firm value is more pronounced for firms with long-term investors, supporting the view that the presence of informed investors reduces opportunistic CSR activities.

2.2 CSR Reporting

Due to the increasing importance of CSR activities to firms' financial performance, many firms have started to publish CSR reports to signal their commitment to socially responsible behaviours (Lanis and Richardson, 2012), gain business and political legitimacy (Patten, 1991; Marquis and Qian, 2014), protect/increase firm value and reputation (Fombrun, 1996; Godfrey *et al.*, 2009; Christensen, 2016; Clarkson *et al.*, 2020), reduce information asymmetry between firms and investors/debt-holders (Dhaliwal *et al.*, 2011, 2012; Tan *et al.*, 2020), and signal future financial performance (Lys *et al.*, 2015). Professionals and regulators worldwide have recognised the value of CSR reports for both firms and stakeholders and have attempted to establish standards to increase the usefulness of CSR disclosures.

Barnett (2007) proposes that stakeholders' lack of awareness of CSR constitutes a friction that limits CSR's role in value creation. Consistent with Barnett (2007), Servaes and Tamayo (2013) show that there is a significantly positive relation between CSR performance and firm value only in firms with a high level of customer awareness, as proxied by advertising expenditure. Similarly, Dhaliwal *et al.* (2011) show that the initiation of stand-alone CSR reporting is a necessary condition for CSR to influence stakeholders in general and shareholders in particular and thus to affect the cost of equity capital of the disclosing firms. In an international context, Dhaliwal *et al.* (2012) further find that the importance of CSR disclosure to investors, as proxied by financial analysts' forecasts, varies with financial analysts' awareness of the importance of CSR performance to firms' financial performance in a country. A more recent study by Tsang *et al.* (2019) shows that the presence of financial analysts strengthens the positive relation between CSR reporting and firm value.

Although there is growing evidence that investors consider CSR information in their decisions (Dhaliwal *et al.*, 2011, 2012; Clarkson *et al.*, 2013; Griffin and Sun, 2013; Elliott *et al.*, 2014), suggesting that the transparency of CSR information matters to shareholders' value, other studies argue that managers can use CSR reporting for purely symbolic purposes or "green-washing" (Weaver *et al.*, 1999; Hemingway and Maclagan, 2004; Kim *et al.*, 2012; Ramanna, 2013). This argument is further supported by the fact that unlike most types of financial disclosure, CSR reporting tends to be generally forward-looking and subject to few reporting guidelines: that is, firms can disclose CSR information that deviates from actual CSR performance. Supporting this view, Petrenko *et al.* (2016) find evidence that firms implement CSR activities for image management without a real focus on improving financial

performance. Similarly, other studies find a negative relation between environmental performance and disclosure (Patten, 2002). As a result, major concerns regarding CSR reporting include a lack of credibility and the potential for opportunism (Simnett *et al.*, 2009; Pflugrath *et al.*, 2011; Marquis and Qian, 2014; Chen *et al.*, 2016; Muslu *et al.*, 2019).

Indeed, in recent years, stand-alone CSR reporting has been criticised for having a number of shortcomings. Of the numerous CSR reporting initiatives (e.g. the Global Reporting Initiative [GRI], the Sustainability Accounting Standards Board, and the Carbon Disclosure Project), few offer legally binding standards that require publicly listed companies to truthfully report the extent to which they impose positive or negative externalities on their stakeholders (Krüger, 2015). Finally, the majority of CSR disclosures are not assured independently (Simnett *et al.*, 2009), suggesting that the information in stand-alone CSR disclosures can be difficult for stakeholders to verify or monitor. Given the significant variation in the quality of stand-alone CSR disclosures, several studies argue that the opportunistic incentives of managers can dampen the credibility of CSR reports and, subsequently, the capital market impact associated with such reporting (Ramanna, 2013; Sethi *et al.*, 2015; Muslu *et al.*, 2019).

2.3 CSR Reporting in Annual Reports

A Thomson Reuters' survey finds that 80% of surveyed investors find non-financial information "useful" or "very useful" in their investment decision-making (Accounting for Sustainability and GRI 2012). Given the growing awareness of the importance of CSR disclosure, the practice of providing CSR information in firms' annual reports has emerged and gradually gained acceptance in the last decade.¹⁰ Although it is still considered as an emerging practice, this reporting practice has gained increasing support from the investment community. Supporting the importance of providing CSR information in annual reports, surveys of CSR reporting indicate that an increasing number of companies are choosing to provide CSR information via annual reports (KPMG, 2017). In addition to investors, regulators around the world have begun to adopt and promote better CSR reporting practices. For example, the joint creation of the International Integrated Reporting Committee [IIRC] by the GRI and the Prince of Wales' Accounting for Sustainability Project in 2010 marked a significant move toward an integrated CSR disclosure regime. During 2010, the Johannesburg Stock Exchange (JSE) imposed a mandatory requirement that all its listed companies should adopt IR practices. Similarly, since 2008, many firms listed on two stock exchanges in China have been requested to provide an annual CSR report.

Although existing studies provide evidence that CSR disclosure can be value relevant, whether and how providing CSR disclosures in annual reports, especially in the MD&A section, has a value to shareholders over and above that of stand-alone CSR reporting is a

¹⁰ The importance of embedding CSR information in annual reports is also stressed in the literature on integrated reporting (e.g. Lee and Yeo, 2016; Barth *et al.*, 2017; Bernardi and Stark, 2018).

question that remains unanswered. This study attempts to answer this question by examining the role of providing CSR disclosure in the MD&A section of annual reports in the relation between CSR performance and firm value using an international setting after taking both the issuance and reporting characteristics of stand-alone CSR disclosures into consideration.

2.4 CSR Reporting, CSR Performance, and Firm Value

Given the concerns associated with stand-alone CSR reporting, we argue that for investors, providing CSR disclosures in the MD&A section of annual reports increases the perceived credibility of CSR information because this practice can expose managers to a high level of scrutiny from various stakeholders.¹¹ In other words, committing to the practice of providing CSR disclosures in annual reports can act as a bonding mechanism by which firms signal the informativeness/truthfulness of their CSR disclosures. Consistent with this argument, the accounting literature has long recognised that high-quality disclosure reduces information asymmetry and therefore limits managers' opportunistic behaviours (Bushman and Smith, 2001).

Studies have also shown that a lack of awareness by stakeholders of firms' CSR activities could limit their support for firms (e.g. Servaes and Tamayo, 2013; Serafeim, 2015; Cuypers *et al.*, 2016). Through examining investors' access to corporate filings in the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) online system, which hosts all mandatory filings by public companies in the United States, Drake *et al.* (2015) present evidence that investors are primarily interested in annual reports. Thus, providing CSR disclosures in annual reports should presumably increase stakeholders' awareness of firms' CSR information because of investors' greater level of interest in annual reports. Collectively, to the extent that providing CSR disclosures in annual reports improves the perceived credibility of CSR disclosures and increases shareholders' awareness of firms' CSR activities, we predict that this CSR reporting practice can play a positive role in the CSR-CFP relation (i.e. we expect a more positive relation between CSR performance and firm value).

Nonetheless, opponents of this reporting practice can argue that such reporting focuses too much on investors' information needs, neglecting the actual function of CSR in profit generation (e.g. Cheng *et al.*, 2014; Maniora, 2017). In addition, proprietary information theory (Verrecchia, 1983, 1990; Arya *et al.*, 2010) suggests that disclosing value-enhancing CSR activities may actually hamper firms' ability to create value. Finally, using an experimental setting, a more recent study by Bucaro *et al.* (2020) finds that relative to a CSR disclosure presented in a financial disclosure which contains relatively limited information, CSR information presented in stand-alone CSR reporting can have a greater influence on

¹¹ An obvious analogy is the effect of voluntary political spending disclosure in enhancing the positive relationship between corporate lobbying spending and firms' future financial performance, as documented by Goh *et al.* (2020). In their study, they argue that enhanced disclosure and improved political spending transparency reduces incentives for privately or personally driven political contributions, which may have little firm-level benefit, thereby reducing overspending arising from agency considerations.

investors' judgement. Taking these arguments together, we acknowledge the possibility that providing CSR disclosures in annual reports may also have no effect or even a negative effect on firms' CSR-CFP relation, especially given the presence of stand-alone CSR reporting. These competing arguments thus suggest an ambiguous relation in the role of providing CSR disclosures in annual reports in firms' CSR-CFP relation. We therefore formally state our main hypothesis (in a null form) as follows:

H1: Providing CSR disclosures in annual reports plays no role in the relation between CSR performance and firm value.

Hard/objective disclosures are often viewed by capital market participants as more credible than soft/subjective disclosures (Hutton *et al.*, 2003; Cormier *et al.*, 2011; Clarkson *et al.*, 2013) because they are typically more verifiable and accompanied by more precise data. Following the same view, in examining the relation between disclosure quality and firm value, Plumlee *et al.* (2015) construct novel data (by classifying voluntary disclosure into objective versus subjective) to measure firms' environmental reporting quality. They find evidence consistent with the assertion that different types of disclosure (hard versus soft) differ in terms of informativeness and impact. Given the variation in the perceived quality of CSR reporting, we predict that the role of CSR disclosures provided in annual reports in the relation between CSR and firm value might vary across hard and soft CSR disclosures. This prediction leads to our next hypothesis.

H2: The role of CSR reporting provided in annual reports in the CSR-CFP link varies with the perceived credibility of a firm's CSR disclosure.

Dhaliwal *et al.* (2012) show that the importance of stand-alone CSR disclosures varies with country-level stakeholder orientation and CSR awareness. Similarly, Dyck *et al.* (2019) suggest that investors from different countries can have different social norms regarding CSR issues. A stronger CSR norm incentivises economic agents (e.g. managers) to act in accordance with the country's CSR expectations. In contrast, stakeholders from countries with stronger (weaker) CSR norms are more likely to reward (punish) firms with good (poor) CSR performance, given their greater awareness of the potential impact of CSR activities. Following these arguments, we predict that the role of CSR disclosures provided in annual reports in the relation between CSR performance and firm value could vary with the level of stakeholders' CSR awareness (e.g. countries with different CSR norms and industries with different CSR performance). On the basis of this argument, we state our third hypothesis as follows:

H3: The role of CSR reporting provided in annual reports in the CSR-CFP link varies with the level of stakeholders' CSR awareness.

Finally, studies suggest that the country-level institutional environment has vital effects

on the quality and credibility of corporate disclosures, which influences the capital market consequences of voluntary disclosure (e.g. Ball *et al.*, 2003; Bushman *et al.*, 2004; Daske *et al.*, 2008; Haw *et al.*, 2012). We therefore predict that when firms provide CSR information in annual reports in countries with stricter legal regimes (e.g. those with a more stringent legal environment, a better developed capital market, and greater disclosure requirements), because of the potentially higher liability or litigation costs associated with information disclosure in annual reports, CSR disclosures provided in annual reports may matter more to investors. Thus, to the extent that CSR information in annual reports can hold managers more accountable for their information disclosure in countries with a stricter legal environment, we state our last hypothesis as follows:

H4: The role of CSR reporting provided in annual reports in the CSR-CFP link varies with the country-level institutional environment.

III. Research Design and Sample

3.1 Key Variables

Following Serafeim (2015), we extract data on CSR disclosures in annual reports from the ASSET4 database.¹² More specifically, ASSET4 provides a variable indicating whether the company provides non-financial environmental, social, and governance information in the MD&A section of its annual report (ASSET4 Code: CGVSDP018). We code *CSRDISC_IR* as 1 if a “Yes” answer is given to this particular indicator variable and 0 otherwise.¹³

We follow previous studies (e.g. Ioannou and Serafeim, 2012; El Ghouli *et al.*, 2016) and measure a firm’s CSR performance using the average scores of all performance indicators in the *environment* and *social* performance pillars only (*CSRPERF*). Our proxy for firm value is Tobin’s *q* (*TOBINQ*) as this variable captures the value of CSR achieved through various channels, including increased future cash flows due to customer and supplier loyalty, and lower cost of equity capital, which reflects the lower risk perceived by investors. Following previous studies (e.g. Waddock and Graves, 1997; Servaes and Tamayo, 2013; El Ghouli *et al.*, 2016), we measure Tobin’s *q* as the ratio of a firm’s market value to its book value of assets.¹⁴

¹² ASSET4 specialises in providing “objective, comparable and auditable” extra-financial information to professional investors who integrate sustainability data into their traditional investment analysis. Specially-trained research analysts collect a wide variety of economic and ESG data for more than 3,400 global firms that are covered by several prominent indices and give ratings for over 250 key performance indicators (KPIs), which are grouped into 18 categories within four pillars (economic, environmental, social, and corporate governance performance pillars). These indices include FTSE 250, S&P 500, NASDAQ 100, DJ STOXX, Russell 1000, S&P ASX 200, and MSCI World indices.

¹³ One key concern with using the disclosure indicator from ASSET4 is that such a coarse variable might not capture empirically the degree of variation in the disclosure practice of discussing CSR issues in the MD&A section. However, such a concern should work against finding a significant result in our case. Nevertheless, in a robustness test, we employ an alternative measure capturing a firm’s practice of providing CSR reporting in its annual reports and our inference is unchanged.

¹⁴ Firms’ market value is calculated as the difference between the book value of total assets and the book

When examining the role of CSR disclosure provided in the MD&A section in the relation between CSR performance and firm value, it is important to control for the presence or issuance of stand-alone CSR reporting and the characteristics of this reporting,¹⁵ given the potential duplication of information in CSR disclosures provided in both annual reports and stand-alone CSR reporting.

3.2 Model Specifications

To investigate the role of CSR disclosure in annual reports, we test the following ordinary-least squares (OLS) regression model:

$$TOBINQ_{t+1} = f(CSRDISC_IR_t, CSRPERF_t, CSRPERF_{t-1}, CSRDISC_IR_t, CONTROLS_t) \quad (1)$$

Our dependent variable (*TOBINQ*) and the key independent variables (*CSRDISC_IR* and *CSRPERF*) have been defined previously. As discussed above, we also include several CSR reporting variables, including *CSRDISC*, *CSRDISC_GRI*, and *CSRDISC_ASSURANCE*, in our model to better capture the incremental effect of CSR disclosure in firms' MD&A section over firms' stand-alone CSR reporting on investors' valuations of CSR performance.

We include several firm-level controls in our model that may affect firm value, as shown in previous studies. To control for potential time-series correlation between past firm value and future firm value, a lagged Tobin's *q* is included as a control variable.¹⁶ We add firm size (*SIZE*), measured as the natural logarithm of total assets, because large firms are associated with greater firm diversification and thus lower market value. A high level of debt results in significant agency costs of debt (Jensen and Meckling, 1976; Myers, 1977), which affects firm value. We therefore control firm leverage (*LEVERAGE*), measured as the ratio of total liabilities to total assets. We include firm age (*AGE*), which is measured as the natural logarithm of the number of years since the firm was founded plus 1. We include R&D intensity (*RND*), measured as R&D expense scaled by net sales, because of the future value implication associated with R&D investment.

We also add control variables that are related to governing parties, including institutional investors, financial analysts, and auditors, because firms with these external governing parties are likely to have fewer agency costs and therefore higher firm value. Thus, we include the percentage of institutional ownership (*INSTOWN*), the total number of analysts following the firm (*ANALYST*), and an indicator variable for Big 4 auditors (*BIG4*) in our model. As growth firms typically have a higher value, we add sales growth (*SALESGROW*), measured as the

value of total equity plus the market value of equity.

¹⁵ Data on whether (1) a company issues a stand-alone CSR report in a particular year, *CSRDISC* (ASSET4 Code: CGVSDP026); (2) a firm's CSR report is in accordance with the GRI guidelines, *CSRDISC_GRI* (ASSET4 Code: CGVSDP028); and (3) a firm's CSR report is assured by an independent third party for accuracy, completeness, and reliability, *CSRDISC_ASSURANCE* (ASSET4 Code: CGVSDP030) are all obtained from the ASSET4 database.

¹⁶ Excluding the lagged *q* as a control variable from our tests does not change our inference.

change of sales compared with the previous year. Many firms opt to cross-list in foreign stock markets to improve their corporate governance, and therefore we expect a positive relation between cross-listing (*CROSSLIST*) and firm value. Firm earnings opacity (*OPACITY*) affects shareholders' ability to monitor and assess firm value, so we measure earnings opacity following Bhattacharya *et al.* (2003) and include it in our model. As Fernández-Kranz and Santaló (2010) and Flammer (2015) find that increased product market competition can lead to increased CSR engagement, implying that CSR performance can be correlated with the level of product market competition, we also include a variable measuring the level of competition in each industry (*COMPETITION*). Finally, we include year, industry, and country fixed effects in all regressions. All the variables are defined in Appendix I. We also lag all the independent variables by one year (i.e. t-1) to mitigate potential concerns related to simultaneity bias.

3.3 Cross-sectional Variables

In our study, we predict that the role of CSR disclosure provided in the MD&A section in the relation between CSR performance and firm value varies with the perceived credibility of firm's CSR reporting (*H2*), investors' level of CSR awareness (*H3*), and the development of the institutional environment in a country (*H4*). Two empirical strategies are commonly used to test such predictions. One is to use an augmented empirical model; in this case, we could add the cross-sectional/moderating variables and their interaction terms with $CSRPERF \times CSRDIS_IR$ in equation (1). However, the application of this method in our setting would create three-way interaction terms, which would complicate interpretation of the results. Thus, we use another common method and estimate the coefficient separately for subsamples, which are classified on the basis of the median value of each moderating variable. We then examine whether the estimated coefficients are significantly different across subsamples.¹⁷

3.3.1 Perceived credibility of CSR reporting

H2 predicts that the role of CSR disclosure provided in annual reports varies with the perceived quality of a firm's CSR disclosure. Following previous studies (e.g. Hutton *et al.*, 2003; Cormier *et al.*, 2011; Clarkson *et al.*, 2013; Plumlee *et al.*, 2015), we first examine each of the key performance indicators across the social and environmental pillars of the ASSET4 data to classify each indicator as either hard/objective or soft/subjective.¹⁸ We then average

¹⁷ However, an issue associated with this method is the unbalanced sample size across the two subsamples. Thus, we conduct additional robustness tests using the three-way interaction model. The inference from these three-way interaction model tests remains similar.

¹⁸ There are roughly 120 data items or key performance indicators under the social and environmental pillars of the ASSET4 data set. For brevity, we do not tabulate the detailed classification of hard and soft disclosures in our study. Following the spirit of previous studies (e.g. Clarkson *et al.*, 2013; Plumlee *et al.*, 2015), we classify information that is more objective (subjective) and more likely (less likely) to be verifiable into the hard (soft) category. For example, we classify answers to the questions "Has the company

the score for each category and subsequently define firms whose hard CSR disclosure score is greater than their soft CSR disclosure score as those with higher perceived CSR reporting quality. Because the variable measuring the perceived quality of a firm's CSR disclosure is obtained on the same data items used to measure a firm's overall CSR performance, the results from this cross-sectional test need to be interpreted with caution.

3.3.2 Level of stakeholders' CSR awareness

H3 predicts that a CSR disclosure provided in the MD&A section plays a more important role when the level of stakeholders' CSR awareness is high. We use two variables to measure the level of stakeholders' CSR awareness. The first measure (*ESINDEX*) is obtained from Dyck *et al.* (2019), who construct a country-level measure of social norms regarding environmental and social issues (the World Value E&S Index) using data from multiple sources, including the World Value Survey and the European Value Study. A higher *ESINDEX* indicates stronger environmental and social values and beliefs in a country. The second measure (*INDCSR*) is a self-constructed industry-level stakeholders' CSR awareness measure which is defined as the median value of the CSR performance of all firms in each two-digit SIC industry of each country.

3.3.3 Country-level institutional environment

To test *H4*, we use three sets of country-level variables commonly used in the literature to measure the stringency of a country's legal/regulatory environment. The first set of measures includes (1) the strength of legal rights (*LEGRIGHT*) obtained from the Doing Business Project of the World Bank - this index is designed to measure the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate a stronger legal environment; (2) regulatory quality (*REGQUAL*) obtained from the Worldwide Governance Indicators - this index captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development; and (3) rule of law (*RULELAW*) obtained from the World Bank - this measure captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts and the likelihood of crime and violence.

Similarly, we use three variables to measure the extent of stock market development in a given country-year. The first measure (*DEVMKT*) is a binary variable from Leuz (2010) that equals 1 if a country is classified as a developed market by Morgan Stanley Capital

won an award or any prize related to general employment quality or 'best company to work for'?" and "Total number of announced layoffs by the company divided by the total number of employees" as hard CSR disclosures. In contrast, answers to the questions "Does the company claim to provide regular staff and business management training for its managers?" and "Does the company claim to provide vacations, career breaks and sabbaticals that go beyond the legal minimum? Or does the company promote part-time or flex-time hours, paid overtime, or work hours/week more than the legal requirements?" are classified as soft CSR disclosures.

International (MSCI) and 0 if it is classified as an emerging market. The second measure is the ratio of market capitalisation of listed companies to GDP in a country (*MKTCAP*). The third measure is the ratio of the value of trade stocks to GDP in a country (*STKTRADE*). Finally, we measure country-level disclosure requirements (*DISREQ*) using the disclosure requirements index (*DISREQ*) of La Porta *et al.* (2006) and the disclosure requirements of stock exchanges (*STKEXREQ*) obtained from Frost *et al.* (2006). See Appendix III for the distribution of all country-level variables among our sample countries.

3.4 Sample

We construct our sample by merging various databases. First, we obtain CSR performance and CSR reporting variables from the ASSET4 database. Financial data and auditor identity are obtained from Capital IQ, and institutional ownership data are obtained from the Factset Ownership database. Because it is unclear how long the effect of CSR disclosure in the MD&A section would last, we lead the dependent variable by 3 years. This procedure generates an initial sample of 25,605 observations with non-missing values from 42 countries from 2002 to 2013.¹⁹ The number of observations in each test is smaller than the sample size of the full sample because of the requirement to measure Tobin's *q* in future years. We report the by-country and by-industry distributions of our sample in panels A and B of Table 1, respectively.

Table 1 Sample Distribution

Panel A: By Country/Jurisdiction

Country/ Jurisdiction	N (Firms)	N (Obs.)	CSR Performance <i>CSRPERF</i>	Integrated Reporting <i>CSRDISC IR</i>	Tobin's <i>q</i> <i>TOBINQ</i>
1 Australia	286	1,424	0.403	0.110	1.805
2 Austria	10	95	0.605	0.147	1.160
3 Belgium	22	208	0.553	0.014	1.321
4 Brazil	76	271	0.617	0.052	1.782
5 Canada	265	1,564	0.396	0.196	1.533
6 Chile	18	69	0.463	0.043	1.406
7 China	75	299	0.300	0.167	1.595
8 Colombia	10	28	0.368	0.143	1.138
9 Denmark	22	217	0.551	0.171	2.090
10 Egypt	10	31	0.211	0.000	1.156
11 Finland	23	229	0.741	0.131	1.524
12 France	84	728	0.782	0.091	1.331
13 Germany	79	663	0.674	0.199	1.395
14 Greece	16	154	0.578	0.032	1.407
15 Hong Kong	107	641	0.365	0.136	1.474
16 India	81	323	0.549	0.508	2.364
17 Indonesia	26	90	0.519	0.256	2.572
18 Ireland	17	124	0.423	0.000	1.767
19 Israel	13	54	0.384	0.000	1.748

¹⁹ Our dependent variables end in 2016, with CSR reporting variables ending in 2013.

20	Italy	45	397	0.582	0.078	1.184
21	Japan	407	3,502	0.542	0.050	1.260
22	Luxembourg	3	19	0.452	0.000	1.334
23	Malaysia	38	138	0.456	0.225	1.836
24	Mexico	28	105	0.484	0.000	2.023
25	Netherlands	37	285	0.711	0.158	1.514
26	New Zealand	9	75	0.478	0.040	1.779
27	Norway	16	164	0.683	0.171	1.469
28	Philippines	18	56	0.383	0.089	1.538
29	Poland	25	87	0.398	0.046	1.214
30	Portugal	10	93	0.743	0.043	1.366
31	Russia	26	126	0.489	0.032	1.087
32	Singapore	50	344	0.373	0.047	1.500
33	South Africa	104	277	0.659	0.256	1.723
34	South Korea	99	370	0.592	0.059	1.297
35	Spain	47	391	0.715	0.082	1.664
36	Sweden	44	434	0.699	0.129	1.545
37	Switzerland	74	621	0.576	0.053	1.821
38	Taiwan	130	425	0.409	0.045	1.463
39	Thailand	18	63	0.523	0.000	1.525
40	Turkey	24	95	0.514	0.053	1.458
41	United Kingdom	316	2,588	0.613	0.205	1.624
42	United States	1,026	7,738	0.434	0.048	1.838
	Overall	3,834	25,605	0.510	0.101	1.620

Panel B: By Industry

Industry	N (Firms)	N (Obs.)	CSR	Integrated	Tobin's q	
			Performance	Reporting	TOBINQ	
			CSRPERF	CSRDISC IR		
1	Mining/Construction	299	1,606	0.500	0.164	1.620
2	Food	162	1,040	0.575	0.115	1.872
3	Textiles/Print/Publish	132	988	0.566	0.081	1.484
4	Chemicals	142	1,017	0.707	0.179	1.790
5	Pharmaceuticals	102	692	0.542	0.058	2.523
6	Extractive	207	1,305	0.470	0.175	1.541
7	Manf: Rubber/glass/etc	89	569	0.633	0.155	1.575
8	Manf: Metal	125	842	0.578	0.125	1.360
9	Manf: Machinery	113	856	0.589	0.077	1.742
10	Manf: Electrical Eqpt	80	603	0.618	0.096	1.530
11	Manf: Transport Eqpt	118	837	0.672	0.129	1.434
12	Manf: Instruments	90	750	0.535	0.028	2.374
13	Manf: Misc	16	111	0.524	0.009	1.627
14	Computers	318	2,003	0.499	0.040	2.196
15	Transportation	314	2,049	0.508	0.109	1.532
16	Utilities	200	1,359	0.604	0.190	1.234
17	Retail: Wholesale	91	588	0.446	0.070	1.445
18	Retail: Misc	198	1,429	0.459	0.085	1.943
19	Retail: Restaurant	22	195	0.565	0.062	1.875
20	Financial	463	3,156	0.440	0.049	1.238
21	Insurance/Real Estate	296	1,937	0.364	0.090	1.126
22	Services	203	1,332	0.394	0.083	1.925
23	Others	54	341	0.406	0.132	1.234
	Overall	3,834	25,605	0.510	0.101	1.620

Note: Panels A and B of Table 1 present the sample distributions by country and industry, respectively.

As shown in Panel A, the United States, the United Kingdom, and Japan are the top three countries in terms of the number of observations in our sample. In many countries, a considerable proportion of firms provide their CSR disclosure in the MD&A section of their annual reports. For example, in India, over 50% of firms adopt such a reporting practice. In South Africa, the percentage is about 25% of covered firms. Consistent with previous findings (Ioannou and Serafeim, 2012; El Ghoul *et al.*, 2016), the table also reveals substantial variation in firms' CSR performance across countries. Panel B presents the sample distribution by industry. The results indicate that firms in the utilities, chemical, and extractive industries (i.e. industries where stakeholders are generally more concerned about firms' CSR performance) are more likely to provide CSR disclosures in the MD&A section.

We report the descriptive statistics of the key variables in Table 2. The mean of *TOBINQ* is 1.62, suggesting that firms are reasonably priced. On average, about 10% of our sample provides CSR disclosures in the MD&A section, which is much smaller than the sample that provides stand-alone CSR reports (41.2%). The percentage of firms providing stand-alone CSR disclosures that follow GRI guidelines is about 25.5%, and the percentage of firms that assure their stand-alone CSR reports is about 19%, which is less than half of the firms issuing stand-alone CSR disclosures. Other variables indicate that our sample firms appear to be relatively large. For example, on average, more than 84% of our sample firms hire Big 4 auditors, and many are followed by financial analysts (about 14 analysts) and have a high level of institutional ownership (roughly 47%).

Table 2 Summary Statistics

This table presents the summary statistics for all variables (N = 25,605).

<i>Variable</i>	Mean	Median	Std. Dev.	25%	75%
<i>TOBINQ</i>	1.620	1.272	1.029	1.030	1.795
<i>CSRPERF</i>	0.510	0.494	0.297	0.219	0.810
<i>CSRPERF_Top25%</i>	0.250	0.000	0.433	0.000	1.000
<i>CSRPERF_Bottom25%</i>	0.250	0.000	0.433	0.000	1.000
<i>CSRDISC</i>	0.412	0.000	0.492	0.000	1.000
<i>CSRDISC_IR</i>	0.101	0.000	0.301	0.000	0.000
<i>CSRDISC_GRI</i>	0.255	0.000	0.436	0.000	1.000
<i>CSRDISC_ASSURANCE</i>	0.190	0.000	0.392	0.000	0.000
<i>SIZE</i>	8.898	8.744	1.637	7.797	9.872
<i>RND</i>	0.016	0.000	0.057	0.000	0.000
<i>AGE</i>	3.928	4.060	0.841	3.332	4.615
<i>OPACITY</i>	0.789	0.019	4.730	-0.021	0.125
<i>COMPETITION</i>	-0.250	-0.166	0.234	-0.348	-0.077
<i>INSTOWN(%)</i>	47.037	40.630	31.947	19.960	76.970
<i>LEVERAGE</i>	0.239	0.224	0.174	0.099	0.349
<i>ANALYST</i>	14.378	13.000	10.960	6.000	21.000
<i>BIG4</i>	0.843	1.000	0.364	1.000	1.000
<i>CROSSLIST</i>	1.532	1.000	1.334	1.000	2.000
<i>SALESGROW</i>	0.314	0.000	1.852	-0.378	0.295

Note: This table reports the descriptive statistics of the key variables. All of the variables are defined in Appendix I.

IV. Empirical Results

4.1 The Relation between CSR Performance and Firm Value

Given the strong focus in the literature on the relation between CSR performance and firm value, we begin our empirical analyses by examining whether CSR performance is associated with future firm value, as measured by Tobin's q in year $t+1$, $t+2$, and $t+3$, respectively. Consistent with the results of previous studies (e.g. El Ghouli *et al.*, 2016), the results in Table 3 (columns 1-3) indicate a significantly positive relation between CSR performance and future firm value. The R-squareds of our tests are relatively high across all of the models, suggesting that variations in firm value can be well explained by variations in the specific independent variables included in the model. In columns 4 to 6, we replace the continuous variable $CSRPERF$ by two indicator variables, $CSRPERF_Top25\%$ and $CSRPERF_Bottom25\%$, which equal 1 if a firm's CSR performance is in the top 25% or bottom 25% of all firms, respectively, and 0 otherwise. While the results again support a positive relation between good CSR performance and firm value, they also indicate a negative relation between high CSR concerns and firm value.

Table 3 CSR Performance and Financial Performance

<i>Dependent Variable</i>	(1)	(2)	(3)	(4)	(5)	(6)
	$TOBINQ_{t+1}$	$TOBINQ_{t+2}$	$TOBINQ_{t+3}$	$TOBINQ_{t+1}$	$TOBINQ_{t+2}$	$TOBINQ_{t+3}$
<i>CSRPERF</i>	0.038*** (0.004)	0.091*** (0.000)	0.147*** (0.000)			
<i>CSRPERF_Top25%</i>				0.022*** (0.007)	0.047*** (0.000)	0.070*** (0.000)
<i>CSRPERF_Bottom25%</i>				-0.011 (0.156)	-0.018* (0.094)	-0.028** (0.022)
<i>TOBINQ</i>	0.837*** (0.000)	0.694*** (0.000)	0.587*** (0.000)	0.837*** (0.000)	0.694*** (0.000)	0.587*** (0.000)
<i>SIZE</i>	-0.028*** (0.000)	-0.051*** (0.000)	-0.060*** (0.000)	-0.028*** (0.000)	-0.049*** (0.000)	-0.057*** (0.000)
<i>RND</i>	0.019 (0.750)	0.039 (0.648)	0.039 (0.690)	0.018 (0.760)	0.038 (0.651)	0.037 (0.711)
<i>AGE</i>	-0.001 (0.949)	-0.001 (0.974)	0.001 (0.927)	0.001 (0.990)	0.001 (0.857)	0.003 (0.670)
<i>OPACITY</i>	-0.001 (0.742)	0.002 (0.243)	0.001 (0.773)	-0.001 (0.754)	0.002 (0.240)	0.001 (0.765)
<i>COMPETITION</i>	-0.030* (0.098)	-0.044* (0.077)	-0.039 (0.192)	-0.029 (0.107)	-0.044* (0.082)	-0.038 (0.198)
<i>INSTOWN</i>	0.001*** (0.007)	0.001*** (0.001)	0.001** (0.011)	0.001*** (0.007)	0.001*** (0.001)	0.001*** (0.010)
<i>LEVERAGE</i>	-0.104*** (0.000)	-0.139*** (0.000)	-0.123*** (0.000)	-0.104*** (0.000)	-0.140*** (0.000)	-0.124*** (0.000)
<i>ANALYST</i>	-0.001* (0.059)	-0.001** (0.038)	-0.002*** (0.009)	-0.001* (0.068)	-0.001* (0.058)	-0.001** (0.018)

<i>BIG4</i>	0.028*** (0.006)	0.036*** (0.009)	0.044*** (0.005)	0.027*** (0.006)	0.036*** (0.009)	0.045*** (0.005)
<i>CROSSLIST</i>	0.010*** (0.001)	0.019*** (0.000)	0.023*** (0.000)	0.009*** (0.002)	0.018*** (0.000)	0.022*** (0.000)
<i>SALESGROW</i>	-0.004** (0.025)	-0.004* (0.099)	-0.007** (0.013)	-0.004** (0.022)	-0.004* (0.080)	-0.007*** (0.008)
Constant	0.356*** (0.000)	0.843*** (0.000)	1.156*** (0.000)	0.371*** (0.000)	0.859*** (0.000)	1.172*** (0.000)
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,683	18,131	14,646	21,683	18,131	14,646
R-squared	0.826	0.694	0.618	0.826	0.694	0.618

Note: This table presents the regression results for the effect of CSR performance on firm value. The dependent variable is Tobin's q measured in years $t+1$, $t+2$, and $t+3$, respectively. *CSRPERF* is a firms' CSR performance in year t . *CSRPERF_Top25%* and *CSRPERF_Bottom25%* are indicator variables which equal 1 if a firms' CSR performance in year t is among the top 25% and bottom 25% of all firms, respectively, and 0 otherwise. The number of observations in each test is smaller than the sample size of the full sample because of the requirement to measure Tobin's q in future years. All of the variables are defined in Appendix I. Year, industry, and country fixed effects are included in all regressions. The p-values are reported in parentheses underneath the coefficients. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

4.2 The Effect of CSR Disclosure on the Relation between CSR Performance and Firm Value

We report our main results of estimating equation (1) in Table 4. Columns 1 to 3 (4 to 6) of Panel A report the baseline regression results before (after) controlling for the possible effect of other CSR reporting variables related to stand-alone CSR disclosure on investors' valuation of CSR performance. The results indicate a positive coefficient on $CSRPERF \times CSRDISC_IR$ in general, thereby supporting the positive role of CSR disclosure in the MD&A section in the relation between CSR performance and firm value.

While a positive effect of CSR disclosure in the relation between CSR and firm value supports the interpretation that providing CSR disclosures in the MD&A section strengthens the positive implication of CSR for firm value among firms with good CSR performance, an alternative interpretation is that providing CSR disclosures in the MD&A section increases public awareness of CSR costs and concerns for firms with high CSR concerns, which in turn leads to lower firm value. Thus, in Panel B, we separately examine the role of CSR disclosure in the MD&A section on the firm value of firms with good and poor CSR performance. We find that the effect of CSR disclosure on the relation between CSR and future firm value documented in Panel A is indeed driven mainly by a significantly lower firm value for firms with high CSR concerns rather than by a higher firm value for firms with good CSR performance.²⁰ This finding is surprising, but it supports the interpretation that investors are

²⁰ We acknowledge that one potential concern with using the contents of annual reports, and thus the MD&A section, in our study is the timely nature of such reporting. For instance, by the time an annual report is

likely to pay greater attention to firms' CSR concerns than to CSR strength disclosed in firms' annual reports.

Table 4 CSR Performance, CSR Reporting, and Financial Performance

Panel A CSR Performance (*CSRPERF*)

<i>Dependent Variable</i>	(1)	(2)	(3)	(4)	(5)	(6)
	<i>TOBINQ</i> _{<i>t</i>+1}	<i>TOBINQ</i> _{<i>t</i>+2}	<i>TOBINQ</i> _{<i>t</i>+3}	<i>TOBINQ</i> _{<i>t</i>+1}	<i>TOBINQ</i> _{<i>t</i>+2}	<i>TOBINQ</i> _{<i>t</i>+3}
<i>CSRPERF</i>	0.036*** (0.008)	0.090*** (0.000)	0.147*** (0.000)	0.003 (0.842)	0.051** (0.030)	0.121*** (0.000)
<i>CSRDISC_IR</i>	-0.077*** (0.007)	-0.109** (0.014)	-0.076 (0.204)	-0.067** (0.020)	-0.094** (0.036)	-0.060 (0.318)
<i>CSRPERF</i>×<i>CSRDISC_IR</i>	0.089** (0.022)	0.113* (0.062)	0.067 (0.401)	0.071* (0.073)	0.086 (0.163)	0.039 (0.631)
<i>CSRDISC</i>				-0.001 (0.985)	0.007 (0.838)	-0.046 (0.284)
<i>CSRPERF</i> × <i>CSRDISC</i>				0.020 (0.546)	0.018 (0.709)	0.060 (0.313)
<i>CSRDISC_GRI</i>				-0.006 (0.886)	-0.014 (0.828)	0.045 (0.583)
<i>CSRPERF</i> × <i>CSRDISC_GRI</i>				0.028 (0.608)	0.041 (0.616)	-0.020 (0.846)
<i>CSRDISC_ASSURANCE</i>				-0.056 (0.277)	-0.119 (0.114)	-0.164* (0.068)
<i>CSRPERF</i> × <i>CSRDISC_ASSURANCE</i>				0.070 (0.263)	0.148 (0.103)	0.197* (0.068)
<i>TOBINQ</i>	0.837*** (0.000)	0.694*** (0.000)	0.587*** (0.000)	0.836*** (0.000)	0.693*** (0.000)	0.586*** (0.000)
<i>SIZE</i>	-0.028*** (0.000)	-0.051*** (0.000)	-0.060*** (0.000)	-0.028*** (0.000)	-0.051*** (0.000)	-0.061*** (0.000)
<i>RND</i>	0.019 (0.747)	0.038 (0.651)	0.038 (0.698)	0.022 (0.720)	0.042 (0.621)	0.042 (0.667)
<i>AGE</i>	-0.001 (0.935)	-0.001 (0.971)	0.001 (0.926)	-0.001 (0.916)	-0.001 (0.960)	0.001 (0.913)
<i>OPACITY</i>	-0.001 (0.733)	0.002 (0.241)	0.001 (0.782)	-0.001 (0.778)	0.002 (0.234)	0.001 (0.791)
<i>COMPETITION</i>	-0.030 (0.101)	-0.045* (0.076)	-0.039 (0.189)	-0.028 (0.115)	-0.043* (0.087)	-0.037 (0.218)
<i>INSTOWN</i>	0.001*** (0.008)	0.001*** (0.001)	0.001** (0.011)	0.001*** (0.007)	0.001*** (0.001)	0.001*** (0.009)
<i>LEVERAGE</i>	-0.104*** (0.000)	-0.139*** (0.000)	-0.123*** (0.000)	-0.105*** (0.000)	-0.141*** (0.000)	-0.126*** (0.000)
<i>ANALYST</i>	-0.001* (0.064)	-0.001** (0.039)	-0.002*** (0.009)	-0.001* (0.064)	-0.001** (0.040)	-0.002** (0.011)
<i>BIG4</i>	0.028*** (0.005)	0.036*** (0.008)	0.045*** (0.005)	0.028*** (0.005)	0.036*** (0.009)	0.045*** (0.005)
<i>CROSSLIST</i>	0.009*** (0.002)	0.018*** (0.000)	0.023*** (0.000)	0.008** (0.011)	0.016*** (0.000)	0.020*** (0.000)

filed, it is likely that the contents and narrative might have already been disclosed elsewhere (for example, via press release or earnings calls). However, this concern works against finding a significant result.

<i>SALESGROW</i>	-0.003**	-0.004	-0.007**	-0.004**	-0.004*	-0.007**
	(0.026)	(0.101)	(0.013)	(0.023)	(0.093)	(0.012)
Constant	0.357***	0.842***	1.154***	0.379***	0.872***	1.180***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,683	18,131	14,646	21,683	18,131	14,646
R-squared	0.826	0.694	0.618	0.826	0.694	0.619

Panel B CSR Performance Indicators *CSRPERF_Top25%* & *CSRPERF_Bottom25%*

<i>Dependent Variable</i>	(1)	(2)	(3)	(4)	(5)	(6)
	<i>TOBINO_{t+1}</i>	<i>TOBINO_{t+2}</i>	<i>TOBINO_{t+3}</i>	<i>TOBINO_{t+1}</i>	<i>TOBINO_{t+2}</i>	<i>TOBINO_{t+3}</i>
<i>CSRPERF_Top25%</i>	0.022**	0.029***	0.036***	-0.008	0.026**	0.051***
	(0.010)	(0.000)	(0.000)	(0.568)	(0.024)	(0.000)
<i>CSRPERF_Bottom25%</i>	-0.009	-0.010	-0.022***	-0.009	-0.009	-0.024***
	(0.226)	(0.162)	(0.003)	(0.276)	(0.224)	(0.002)
<i>CSRDISC_IR</i>	-0.013	-0.028*	-0.011	-0.012	-0.029*	-0.012
	(0.398)	(0.068)	(0.578)	(0.440)	(0.056)	(0.550)
<i>CSRPERF_Top25%</i> × <i>CSRDISC_IR</i>	0.006	-0.009	-0.024	-0.001	-0.009	-0.018
	(0.787)	(0.659)	(0.352)	(0.953)	(0.682)	(0.481)
<i>CSRPERF_Bottom25%</i> × <i>CSRDISC_IR</i>	-0.067*	-0.095**	-0.131***	-0.065*	-0.093**	-0.132***
	(0.072)	(0.013)	(0.005)	(0.078)	(0.015)	(0.005)
<i>CSRDISC</i>				0.001	0.008	-0.005
				(0.899)	(0.377)	(0.600)
<i>CSRPERF_Top25%</i> × <i>CSRDISC</i>				0.026	-0.019	-0.029*
				(0.168)	(0.229)	(0.081)
<i>CSRPERF_Bottom25%</i> × <i>CSRDISC</i>				0.059*	0.003	0.019
				(0.087)	(0.934)	(0.656)
<i>CSRDISC_GRI</i>				0.016	0.004	0.004
				(0.255)	(0.771)	(0.791)
<i>CSRPERF_Top25%</i> × <i>CSRDISC_GRI</i>				0.005	0.011	-0.003
				(0.795)	(0.524)	(0.864)
<i>CSRPERF_Bottom25%</i> × <i>CSRDISC_GRI</i>				-0.174	-0.269**	0.143
				(0.166)	(0.042)	(0.456)
<i>CSRDISC_ASSURANCE</i>				-0.002	-0.009	0.002
				(0.908)	(0.541)	(0.924)
<i>CSRPERF_Top25%</i> × <i>CSRDISC_ASSURANCE</i>				0.006	0.019	0.014
				(0.744)	(0.274)	(0.471)
<i>CSRPERF_Bottom25%</i> × <i>CSRDISC_ASSURANCE</i>				-0.011	0.119	0.071
				(0.945)	(0.535)	(0.755)
<i>TOBINO</i>	0.837***	0.716***	0.603***	0.836***	0.716***	0.604***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
<i>SIZE</i>	-0.028***	-0.022***	-0.025***	-0.028***	-0.022***	-0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
<i>RND</i>	0.018	0.067	0.077	0.02	0.067	0.089
	(0.769)	(0.235)	(0.215)	(0.736)	(0.236)	(0.156)
<i>AGE</i>	0.001	0.007**	0.008**	-0.001	0.007*	0.008**
	(0.994)	(0.043)	(0.036)	(0.933)	(0.051)	(0.029)

<i>OPACITY</i>	-0.001 (0.738)	0.001 (0.251)	-0.003 (0.112)	-0.001 (0.801)	0.001 (0.253)	-0.003 (0.124)
<i>COMPETITION</i>	-0.029 (0.106)	-0.021 (0.198)	-0.02 (0.254)	-0.028 (0.117)	-0.021 (0.185)	-0.018 (0.294)
<i>INSTOWN</i>	0.001*** (0.007)	0.001*** (0.001)	0.001** (0.011)	0.001*** (0.006)	0.001*** (0.001)	0.001*** (0.009)
<i>LEVERAGE</i>	-0.105*** (0.000)	-0.047*** (0.004)	-0.027 (0.137)	-0.105*** (0.000)	-0.049*** (0.003)	-0.026 (0.149)
<i>ANALYST</i>	-0.001* (0.070)	-0.001** (0.013)	-0.002*** (0.000)	-0.001* (0.060)	-0.001** (0.010)	-0.002*** (0.000)
<i>BIG4</i>	0.028*** (0.005)	0.027*** (0.002)	0.022** (0.018)	0.028*** (0.006)	0.027*** (0.002)	0.022** (0.018)
<i>CROSSLIST</i>	0.009*** (0.002)	0.007** (0.012)	0.009*** (0.003)	0.008*** (0.006)	0.006** (0.024)	0.009*** (0.005)
<i>SALESGROW</i>	-0.004** (0.022)	-0.003* (0.062)	-0.007*** (0.000)	-0.004** (0.021)	-0.003* (0.065)	-0.007*** (0.000)
Constant	0.369*** (0.000)	0.523*** (0.000)	0.803*** (0.000)	0.384*** (0.000)	0.529*** (0.000)	0.802*** (0.000)
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,683	18,131	14,646	21,683	18,131	14,646
R-squared	0.826	0.694	0.618	0.827	0.694	0.618

Note: This table presents the regression results for the effect of providing CSR reporting in annual reports on the relation between CSR performance and firm value. The dependent variable is Tobin's q measured in years $t+1$, $t+2$, and $t+3$, respectively. *CSRPERF* is a firm's CSR performance in year t . *CSRPERF_Top25%* and *CSRPERF_Bottom25%* are indicator variables which equal 1 if a firm's CSR performance in year t is among the top 25% and bottom 25% of all firms, respectively, and 0 otherwise. The number of observations in each test is smaller than the sample size of the full sample because of the requirement to measure Tobin's q in future years. All of the variables are defined in Appendix I. Year, industry, and country fixed effects are included in all the regressions. The p-values are reported in parentheses underneath the coefficients. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

4.3 Cross-sectional Tests

$H2$ predicts that the role of CSR disclosure in the relation between CSR performance and firm value is affected by the perceived credibility of a firm's CSR reporting. Consistent with the prediction of $H2$, we find that for firms whose CSR reporting is perceived as more credible (i.e. when the level of a firm's hard CSR disclosure is greater than the level of its soft CSR disclosure), the coefficient on *CSRPERF_Bottom25%* × *CSRDISC_IR* is -0.104 with a less than 5% significance level (Table 5).²¹ However, no statistically significant result is found on the same interaction term in the subsample of firms with lower-quality CSR reporting. We also find that the coefficient difference in the two subsamples is statistically significant at the 5% level.

²¹ The findings are similar when Tobin's q is measured in years $t+2$ and $t+3$. For brevity, we only tabulate the result when Tobin's q is measured in year $t+1$.

Table 5 CSR Reporting and CSR Disclosure Credibility

Dependent Variable	(1)	(2)
	<i>TOBINQ_{t+1}</i>	
Cross-sectional Variable	<i>Soft CSR Disclosure ></i>	<i>Hard CSR Disclosure ></i>
	<i>Hard CSR Disclosure</i>	<i>Soft CSR Disclosure</i>
	<i>Low CSR Reporting</i>	<i>High CSR Reporting</i>
	<i>Quality</i>	<i>Quality</i>
<i>CSRPERF_Top25%</i>	0.026*** (0.002)	0.005 (0.896)
<i>CSRPERF_Bottom25%</i>	0.014 (0.277)	-0.020 (0.102)
<i>CSRDISC_IR</i>	-0.028* (0.093)	0.033 (0.341)
<i>CSRPERF_Top25%×CSRDISC_IR</i>	0.018 (0.410)	-0.076 (0.495)
<i>CSRPERF_Bottom25%×CSRDISC_IR</i>	0.043 (0.714)	-0.104** (0.047)
<i>TOBINQ</i>	0.857*** (0.000)	0.808*** (0.000)
<i>SIZE</i>	-0.028*** (0.000)	-0.032*** (0.000)
<i>RND</i>	0.124* (0.069)	-0.203* (0.085)
<i>AGE</i>	0.001 (0.770)	-0.006 (0.395)
<i>OPACITY</i>	0.001 (0.990)	-0.001 (0.794)
<i>COMPETITION</i>	-0.014 (0.498)	-0.042 (0.226)
<i>INSTOWN</i>	0.001 (0.928)	0.001*** (0.000)
<i>LEVERAGE</i>	-0.107*** (0.000)	-0.099*** (0.002)
<i>ANALYST</i>	-0.001 (0.119)	-0.001 (0.248)
<i>BIG4</i>	0.030** (0.011)	0.030* (0.091)
<i>CROSSLIST</i>	0.008** (0.016)	0.007 (0.326)
<i>SALESGROW</i>	-0.009*** (0.000)	0.002 (0.476)
Constant	0.321*** (0.000)	0.488*** (0.000)
Country Fixed Effect	Yes	Yes
Industry Fixed Effect	Yes	Yes
Year Fixed Effect	Yes	Yes
Observations	13,885	7,798
R-squared	0.840	0.810
p-value of <i>Diff (High vs. Low)</i>		0.027**

Note: This table presents the regression results for the effect of providing CSR reporting in annual reports on the relation between CSR performance and firm value on subsamples partitioned on the basis of the perceived credibility of CSR disclosures. All of the variables are defined in Appendix I. The p-values are reported in parentheses underneath the coefficients. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

H3 predicts that the role of CSR disclosure in the relation between CSR performance and firm value can be affected by investors' levels of CSR awareness. Consistent with *H3*, we find a statistically significant and negative coefficient on $CSRPERF_Bottom25\% \times CSRDISC_IR$ only for firms from countries and industries with higher levels of CSR awareness (columns 1 and 3). A difference test across two subsamples shows that the coefficient on $CSRPERF_Bottom25\% \times CSRDISC_IR$ for firms from countries and industries with higher levels of CSR awareness is statistically lower than that for firms from countries and industries with lower levels of CSR awareness.

Table 6 CSR Reporting and Investors' CSR Awareness

Dependent Variable Cross-sectional Variable	(1)	(2)	(3)	(4)
	<i>ESINDEX</i>		<i>INDCSR</i>	
	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>
<i>CSRPERF_Top25%</i>	0.018*	0.038**	0.019*	0.024*
	(0.063)	(0.032)	(0.079)	(0.071)
<i>CSRPERF_Bottom25%</i>	-0.010	-0.018	0.016	-0.025***
	(0.250)	(0.292)	(0.205)	(0.008)
<i>CSRDISC_IR</i>	-0.010	-0.023	-0.001	-0.019
	(0.573)	(0.433)	(0.947)	(0.394)
<i>CSRPERF_Top25% × CSRDISC_IR</i>	-0.001	0.061	0.018	-0.026
	(0.974)	(0.156)	(0.523)	(0.457)
<i>CSRPERF_Bottom25% × CSRDISC_IR</i>	-0.072*	-0.018	-0.112*	-0.043
	(0.099)	(0.791)	(0.054)	(0.379)
<i>TOBINQ</i>	0.833***	0.861***	0.851***	0.831***
	(0.000)	(0.000)	(0.000)	(0.000)
<i>SIZE</i>	-0.024***	-0.034***	-0.022***	-0.027***
	(0.000)	(0.000)	(0.000)	(0.000)
<i>RND</i>	0.029	-0.028	0.075	-0.218**
	(0.657)	(0.877)	(0.302)	(0.049)
<i>AGE</i>	-0.003	0.009	-0.007	0.003
	(0.483)	(0.252)	(0.211)	(0.507)
<i>OPACITY</i>	0.001	-0.011	0.001	-0.001
	(0.868)	(0.648)	(0.899)	(0.666)
<i>COMPETITION</i>	-0.010	-0.081***	-0.053**	-0.037**
	(0.569)	(0.006)	(0.019)	(0.045)
<i>INSTOWN</i>	0.001***	0.001	0.001***	0.001***
	(0.000)	(0.122)	(0.000)	(0.000)
<i>LEVERAGE</i>	-0.086***	-0.134***	-0.140***	-0.083***
	(0.000)	(0.001)	(0.000)	(0.000)
<i>ANALYST</i>	-0.001	-0.001	0.001	-0.001
	(0.682)	(0.553)	(0.929)	(0.183)
<i>BIG4</i>	0.052***	0.009	0.032**	0.021*
	(0.000)	(0.549)	(0.018)	(0.093)
<i>CROSSLIST</i>	0.007**	-0.005	-0.004	0.007*
	(0.045)	(0.321)	(0.308)	(0.090)
<i>SALESGROW</i>	-0.003	-0.003	-0.010***	0.001
	(0.124)	(0.233)	(0.000)	(0.479)

Constant	0.320*** (0.000)	0.374*** (0.000)	0.335*** (0.000)	0.372*** (0.000)
Country Fixed Effect	No	No	No	No
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Observations	17,314	3,837	10,397	11,286
R-squared	0.819	0.850	0.830	0.821
p-value of <i>Diff</i> (High vs. Low)	0.078*		0.023**	

Note: This table presents the regression results for the effect of providing CSR reporting in annual reports on the relation between CSR performance and firm value on subsamples partitioned on the basis of the median value of *ESINDEX* and *INDCSR* (our proxies of the level of investors' CSR awareness, with *ESINDEX* as a country-level and *INDCSR* as a country-industry level measure). All of the variables are defined in Appendix I. Year and industry fixed effects are included in all the regressions. The p-values are reported in parentheses underneath the coefficients. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Finally, *H4* predicts that CSR disclosure plays a more important role in countries with more stringent legal regimes. Consistent with *H4*, we find significantly negative coefficients on *CSRPERF_Bottom25%×CSRDISC_IR* only for firms in countries with stronger legal environments measured by country-level stringency of the regulatory environment (Panel A), capital market development (Panel B), and disclosure requirements (Panel C). We also test whether the coefficient differences in two subsamples divided by those legal environments measures are statistically significant and find significant results for most measures.

Table 7 CSR Reporting and Country-Level Institutional Environment

Panel A Country-Level Stringency of Regulatory Environment						
Dependent Variable Cross-sectional Variable	(1)	(2)	(3)	(4)	(5)	(6)
	<i>TOBINQ_{t+1}</i>		<i>TOBINQ_{t+1}</i>		<i>TOBINQ_{t+1}</i>	
	<i>LEGRIGHT</i>		<i>REGQUAL</i>		<i>RULELAW</i>	
	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>
<i>CSRPERF_Top25%</i>	0.033*** (0.004)	0.003 (0.783)	0.026** (0.014)	0.015 (0.239)	0.018** (0.041)	0.019 (0.374)
<i>CSRPERF_Bottom25%</i>	-0.015 (0.115)	-0.008 (0.507)	-0.008 (0.392)	-0.019 (0.137)	-0.010 (0.218)	-0.019 (0.385)
<i>CSRDISC_IR</i>	-0.015 (0.457)	0.010 (0.668)	-0.018 (0.336)	0.014 (0.596)	-0.016 (0.324)	0.026 (0.508)
<i>CSRPERF_Top25%×CSRDISC_IR</i>	0.009 (0.746)	-0.013 (0.692)	-0.001 (0.973)	0.027 (0.462)	0.008 (0.745)	0.027 (0.613)
<i>CSRPERF_Bottom25%×CSRDISC_IR</i>	-0.090* (0.077)	-0.070 (0.185)	-0.075* (0.080)	-0.045 (0.536)	-0.067* (0.096)	-0.026 (0.793)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13,912	7,476	15,995	5,688	18,743	2,940
R-squared	0.827	0.805	0.817	0.849	0.818	0.865
p-value of <i>Diff</i> (High vs. Low)	0.093*		0.082*		0.065*	

Panel B Country-Level Capital Market Development

Dependent Variable Cross-sectional Variable	(1)	(2)	(3)	(4)	(5)	(6)
	$TOBINQ_{t+1}$		$TOBINQ_{t+1}$		$TOBINQ_{t+1}$	
	$DEVMKT$		$MKTCAP$		$STKTRADE$	
	High	Low	High	Low	High	Low
<i>CSRPERF_Top25%</i>	0.016*	0.039	0.021**	0.024	0.018**	0.032
	(0.062)	(0.177)	(0.020)	(0.297)	(0.038)	(0.326)
<i>CSRPERF_Bottom25%</i>	-0.010	-0.010	-0.012	-0.005	-0.015*	0.019
	(0.193)	(0.734)	(0.139)	(0.841)	(0.058)	(0.558)
<i>CSRDISC_IR</i>	-0.017	0.009	-0.008	-0.025	-0.015	0.081
	(0.307)	(0.851)	(0.639)	(0.553)	(0.348)	(0.219)
<i>CSRPERF_Top25%×CSRDISC_IR</i>	0.009	0.045	-0.007	0.047	0.012	-0.043
	(0.688)	(0.492)	(0.764)	(0.375)	(0.587)	(0.663)
<i>CSRPERF_Bottom25%×CSRDISC_IR</i>	-0.067*	0.019	-0.081**	0.034	-0.068*	-0.083
	(0.095)	(0.897)	(0.036)	(0.817)	(0.072)	(0.713)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,453	1,830	18,522	2,866	19,637	1,751
R-squared	0.820	0.874	0.822	0.846	0.824	0.840
p-value of Diff (High vs. Low)	0.017**		0.006***		0.121	

Panel C Country-Level Disclosure Requirement

Dependent Variable Cross-sectional Variable	(1)	(2)	(3)	(4)
	$TOBINQ_{t+1}$		$TOBINQ_{t+1}$	
	$DISCREQ$		$STKEXREQ$	
	High	Low	High	Low
<i>CSRPERF_Top25%</i>	0.021**	0.014	0.006	0.025*
	(0.023)	(0.444)	(0.328)	(0.059)
<i>CSRPERF_Bottom25%</i>	-0.010	-0.009	-0.007	-0.004
	(0.222)	(0.707)	(0.218)	(0.708)
<i>CSRDISC_IR</i>	-0.011	0.019	-0.005	-0.016
	(0.512)	(0.677)	(0.609)	(0.603)
<i>CSRPERF_Top25%×CSRDISC_IR</i>	0.004	-0.001	-0.002	0.025
	(0.864)	(0.983)	(0.908)	(0.555)
<i>CSRPERF_Bottom25%×CSRDISC_IR</i>	-0.072*	-0.178	-0.048**	-0.132
	(0.067)	(0.455)	(0.040)	(0.159)
Controls	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Observations	18,186	3,097	11,276	9,806
R-squared	0.822	0.850	0.796	0.837
p-value of Diff (High vs. Low)	0.036**		0.042**	

Note: Panel A of this table presents the regression results for the effect of providing CSR reporting in annual reports on the relation between CSR performance and firm value on subsamples partitioned on the basis of the median value of *LEGRIGHT*, *REGQUAL*, and *RULELAW* (our proxies of country-level regulatory/legal environment). Panel B presents the regression results for the effect of providing CSR reporting in annual reports on the relation between CSR performance and firm value on subsamples partitioned on the basis of the median value of *DEVMKT*, *MKTCAP*, and *STKTRADE* (our proxies of country-level capital market development). Panel C presents the regression results for the effect of providing CSR reporting in annual reports on the relation between CSR performance and firm value on subsamples partitioned on the basis of the median value of *DISCREQ* and *STKEXREQ* (our proxies of country-level disclosure requirements). All of the variables are defined in Appendix I. Year and industry fixed effects are included in all the regressions. The p-values are reported in parentheses underneath the coefficients. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

V. Additional Tests

5.1 CSR Performance and CSR Reporting

In our study, we find that firms with high CSR concerns tend to be associated with lower firm value when they provide CSR information in the MD&A section of their annual reports. However, we do not find evidence that firms with good CSR performance have a higher firm value after they initiate such a CSR reporting practice. In this section, we explore factors explaining the variations in CSR reporting practices across firms by examining the association between a firm's past CSR performance and its decision to provide CSR disclosures in the MD&A section of its annual reports.

The results reported in Table 8 (column 1) show that, indeed, an important determinant of firms' decision to provide CSR disclosures in the MD&A section of their annual reports is their past CSR performance; that is, providing CSR disclosures in the MD&A section is positively associated with firms' past CSR performance. However, the results reported in column 2 show that while firms with good CSR performance are more likely to adopt this reporting practice, firms with poor CSR performance are less likely to do so. We also find that firms with higher R&D intensity (*RND*), and industry competition (*COMPETITION*) are less likely to commit to the practice of providing CSR disclosures in the MD&A section. These findings are consistent with findings from previous studies on proprietary costs and their effect on voluntary disclosure. Moreover, while firms with a high level of financial reporting opacity (*OPACITY*) are less likely to provide CSR information in the MD&A section, cross-listing firms (*CROSSLIST*) and firms in countries with stronger legal regime (*LEGRIGHT*) are more likely to commit to such a reporting practice. This finding lends support to the conjecture that although firms with poor CSR performance or high CSR concerns tend to have a lower incentive to provide CSR disclosures in the MD&A section, other considerations, such as reducing firms' litigation costs when firms' CSR concerns are high, might explain why they do so. As such, the finding in this section supports our previous finding that providing CSR disclosures in the MD&A section negatively affects the value of firms with high CSR concerns.

Table 8 CSR Performance and CSR Reporting Decision

<i>Dependent Variable</i>	(1)	(2)
	<i>CSRDISC_IR_{t+1}</i>	
<i>CSRPERF</i>	1.133*** (0.000)	
<i>CSRPERF_Top25%</i>		0.337*** (0.000)
<i>CSRPERF_Bottom25%</i>		-0.477*** (0.000)
<i>SIZE</i>	-0.025** (0.043)	-0.006 (0.651)
<i>RND</i>	-1.416*** (0.000)	-1.422*** (0.000)

<i>AGE</i>	0.006 (0.744)	0.021 (0.219)
<i>OPACITY</i>	-0.015*** (0.000)	-0.015*** (0.000)
<i>COMPETITION</i>	-0.222*** (0.000)	-0.266*** (0.000)
<i>INSTOWN</i>	0.001 (0.304)	0.001 (0.217)
<i>LEVERAGE</i>	-0.087 (0.311)	-0.096 (0.258)
<i>ANALYST</i>	0.006*** (0.000)	0.005*** (0.000)
<i>BIG4</i>	0.023 (0.587)	0.021 (0.617)
<i>CROSSLIST</i>	0.019* (0.081)	0.029*** (0.008)
<i>SALESGROW</i>	0.009 (0.183)	0.006 (0.351)
<i>LITIGATION</i>	-0.054 (0.543)	-0.022 (0.806)
<i>LEGRIGHT</i>	0.067*** (0.000)	0.066*** (0.000)
Constant	-3.247*** (0.000)	-2.927*** (0.000)
Country Fixed Effect	No	No
Industry Fixed Effect	Yes	Yes
Year Fixed Effect	Yes	Yes
Observations	21,683	21,683
Pseudo R-squared	0.194	0.189

Note: This table presents the regression results for the effect of past CSR performance on a firm's decision to provide CSR reporting in annual reports. All of the variables are defined in Appendix I. Year and industry fixed effects are included in all the regressions. The p-values are reported in parentheses underneath the coefficients. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

5.2 Content Analysis of CSR Disclosures Provided in the MD&A Section

In this study, we proxy a firm's CSR reporting practice by identifying whether a firm provides its CSR information in the MD&A section of its annual reports. The practice of providing CSR disclosures in annual reports may also take other forms, such as a separately identifiable CSR component of an annual report (Cohen and Simnett, 2015). Thus, one can argue that CSR information released in the MD&A section may contain little information content or simply represent an opportunistic strategy to reduce investors' attention to, perhaps, poor financial information. To increase our confidence in the validity of our MD&A-based CSR disclosure proxy, for randomly selected firms with CSR information provided in the MD&A section, we conduct an additional manual collection and explore whether environmental and social information is also released in other parts of the annual report.

The results indicate that for all the randomly selected firms with CSR disclosures provided in the MD&A section, environmental and social information is also provided in other

parts of their annual reports. This finding enhances our confidence in the validity of using the presence of CSR information in the MD&A section as a proxy for the practice of providing CSR disclosures in annual reports. More importantly, through analysing the actual environmental and social content reported in annual reports, we find that in most cases (more than 90% of the sample firms investigated), the non-financial information released in annual reports is related to material environmental and social concerns (Appendix II provides a few examples). This finding is again in line with the finding of a negative effect of providing CSR disclosures in the MD&A section on the value of firms with high CSR concerns.

5.3 Control Possible Endogeneity Problem using the Heckman Model

To mitigate the concern related to causality and the possible endogeneity between non-observable firm-specific characteristics and CSR reporting decisions, we perform a two-stage Heckman Treatment analysis. Specifically, we first estimate a prediction model with the decision to provide CSR disclosure in the MD&A section as the dependent variable and include all of the firm-level controls and country-level institutional variables used in our study as independent variables in the first-stage analysis.²² We then obtain the inverse Mills ratio (*IMR*) from the first-stage prediction model and include it in equation (1) and treat it as a second-stage regression analysis (results are reported in columns 1-3 of Table 9). The coefficient on *CSRPERF_Bottom25%×CSRDISC_IR* remains significantly negative when firm value is measured by *TOBINQ_{t+1}* and *TOBINQ_{t+2}*. This procedure thus strengthens our findings.

Table 9 Additional Test

<i>Dependent Variable</i>	(1)	(2)	(3)	(4)	(5)	(6)
	<i>TOBINQ_{t+1}</i>	<i>TOBINQ_{t+2}</i>	<i>TOBINQ_{t+3}</i>	<i>TOBINQ_{t+1}</i>	<i>TOBINQ_{t+2}</i>	<i>TOBINQ_{t+3}</i>
	<i>With IMR</i>			<i>Without USA</i>		
<i>CSRPERF_Top25%</i>	0.022*** (0.009)	0.048*** (0.000)	0.071*** (0.000)	0.013*** (0.009)	0.025*** (0.005)	0.019** (0.029)
<i>CSRPERF_Bottom25%</i>	-0.012 (0.113)	-0.021* (0.052)	-0.030** (0.018)	-0.001 (0.855)	-0.013 (0.145)	-0.021** (0.022)
<i>CSRDISC_IR</i>	-0.019 (0.353)	-0.040 (0.172)	-0.008 (0.839)	-0.003 (0.718)	-0.020 (0.252)	-0.006 (0.750)
<i>CSRPERF_Top25%× CSRDISC_IR</i>	0.007 (0.731)	0.012 (0.705)	-0.016 (0.719)	-0.008 (0.532)	0.005 (0.839)	-0.007 (0.776)
<i>CSRPERF_Bottom25%× CSRDISC_IR</i>	-0.067* (0.074)	-0.106* (0.076)	-0.065 (0.408)	-0.045** (0.036)	-0.081* (0.059)	-0.073 (0.118)
<i>IMR</i>	0.003 (0.683)	0.008 (0.456)	-0.003 (0.804)			

²² Note that some of the independent variables, including *ESINDEX*, can be regarded as exogenous because there is little evidence that these variables affect Tobin's *q*.

<i>TOBINQ</i>	0.836*** (0.000)	0.696*** (0.000)	0.588*** (0.000)	0.875*** (0.000)	0.719*** (0.000)	0.616*** (0.000)
<i>SIZE</i>	-0.028*** (0.000)	-0.050*** (0.000)	-0.057*** (0.000)	-0.005** (0.019)	-0.018*** (0.000)	-0.016*** (0.000)
<i>RND</i>	0.023 (0.708)	0.036 (0.672)	0.030 (0.766)	-0.105** (0.033)	0.079 (0.354)	-0.005 (0.955)
<i>AGE</i>	0.001 (0.969)	0.002 (0.650)	0.004 (0.541)	-0.001 (0.940)	0.007* (0.079)	0.008** (0.040)
<i>OPACITY</i>	-0.001 (0.623)	0.002 (0.272)	0.001 (0.803)	-0.010*** (0.006)	0.006 (0.480)	0.007 (0.359)
<i>COMPETITION</i>	-0.026 (0.154)	-0.037 (0.138)	-0.031 (0.293)	-0.007 (0.484)	-0.014 (0.424)	-0.018 (0.314)
<i>INSTOWN</i>	0.001** (0.013)	0.001*** (0.002)	0.001** (0.010)	0.001*** (0.001)	0.001*** (0.000)	0.001*** (0.007)
<i>LEVERAGE</i>	-0.105*** (0.000)	-0.137*** (0.000)	-0.123*** (0.000)	-0.050*** (0.000)	-0.063*** (0.002)	-0.033* (0.093)
<i>ANALYST</i>	-0.001* (0.051)	-0.001** (0.045)	-0.001** (0.024)	-0.001*** (0.000)	-0.001*** (0.001)	-0.002*** (0.000)
<i>BIG4</i>	0.027*** (0.008)	0.035** (0.011)	0.041** (0.011)	0.017*** (0.002)	0.028*** (0.003)	0.020** (0.025)
<i>CROSSLIST</i>	0.009*** (0.003)	0.018*** (0.000)	0.021*** (0.000)	0.002 (0.194)	0.008** (0.012)	0.008*** (0.008)
<i>SALESGROW</i>	-0.003** (0.031)	-0.004 (0.106)	-0.008*** (0.006)	-0.002** (0.037)	-0.004** (0.016)	-0.006*** (0.002)
Constant	0.376*** (0.000)	0.863*** (0.000)	1.168*** (0.000)	0.104*** (0.000)	0.468*** (0.000)	0.681*** (0.000)
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,295	17,823	14,487	14,993	12,422	9,911
R-squared	0.826	0.697	0.619	0.822	0.686	0.612

Note: This table presents the regression results for the effect of providing CSR reporting in annual reports on the relation between CSR performance and firm value. The dependent variable is Tobin's q measured in years $t+1$, $t+2$, and $t+3$, respectively. $CSRPERF_Top25\%$ and $CSRPERF_Bottom25\%$ are indicator variables which equal 1 if a firm's CSR performance in year t is among the top 25% and bottom 25% of all firms, respectively, and 0 otherwise. In columns 1 to 3, IMR is the inverse Mills ratio estimated from a first-stage regression of estimating the determinants of providing CSR reporting on annual reports. In columns 4 to 6, we exclude all US firms from our sample. All of the variables are defined in Appendix I. Year, industry, and country fixed effects are included in all the regressions. The p-values are reported in parentheses underneath the coefficients. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

5.4 Excluding the United States, South Africa, and China

As shown in Table 1, over 7,700 observations (around 30%) are from the United States, leading to the concern that our results may be driven by these firms. Thus, we conduct a robustness test after excluding all US firms and find our inferences generally unaffected (Table 9, columns 4-6). In untabulated analyses, we also exclude all firms listed on the JSE of South Africa and all firms domiciled in China and find that our results remain intact.

5.5 Controlling for Voluntary Financial Disclosure

Lee (2017) examines the association between CSR and management forecast accuracy and finds that firms with better CSR performance provide better earnings forecasts. Chen *et al.* (2016) show that committing to a higher level of financial reporting quality enhances the perceived credibility of CSR disclosure. This raises the omitted correlated variable concern. To mitigate this concern, we explicitly control for several key properties of management earnings forecasts and their interactions with CSR performance in our regressions.²³ Our results (untabulated) indicate that our baseline inference is unaffected after controlling for firms' earnings forecasts.

5.6 Employing Alternative CSR Reporting and Performance Measures

For robustness, we use an alternative CSR reporting proxy obtained from the Sustainalytics database which measures the extent to which a firm's integrated CSR reporting practice conforms to international standards and best practices. This variable ranges from 0 to 100, with the highest score indicating a reporting practice conforming to best practice in an industry. To ensure comparability with our main model, we define *CSRDISC_IR_Alternative* as 1 when the indicator has a value of 100 and 0 otherwise. We then repeat all of our analyses using this alternative CSR reporting measure and find that our inferences remain generally unchanged. In addition, to reduce concern over the measurement error commonly associated with CSR performance measures, we perform a further robustness test using an alternative CSR performance measure based on firms' CSR policies/drivers (an input measure of CSR performance) rather than CSR outcomes (an output measure of CSR performance).²⁴ By using this measure, it reduces the concern that some of the variables, such as the variable measuring the CSR reporting quality variable used to test *H2*, may be highly correlated with the output-based CSR performance measure. Again, our findings remain unchanged when using the alternative CSR performance measure.

5.7 Controlling for Firm Fixed Effect

Although we control numerous variables that have the potential to affect firm value, other correlated but omitted variables may also influence the effect of CSR disclosure on the relation between CSR and firm value. Thus, we repeat our tests by controlling for firm fixed effect in our major regression models and find that our results are not affected.

²³ We obtain management earnings forecasts data, including management forecast likelihood, forecast frequency, and forecast precision, from S&P Capital IQ's key development data. Forecast likelihood is an indicator variable for whether a firm issues an earnings forecast in a given year. Forecast frequency is the number of times a firm issues earnings forecasts during a year. Forecast precision is represented by a score of 1, 2, 3, or 4, assigned respectively to qualitative, min or max, range, and point forecasts (with a higher score indicating a more precise forecast).

²⁴ The ASSET4 database also provides variables measuring the performance of CSR policies/drivers for each category of CSR. In general, these variables measure the performance of a firm in developing CSR-related policies and in implementing, monitoring, and improving those policies.

5.8 Using Matched Sample

In a last robustness test, we match each firm with CSR information provided in the MD&A section with a firm without such a reporting practice on the basis of firms' CSR performance. This allows us to make better comparison across firms with and without such a CSR reporting practice while keeping the level of their CSR performance constant. We then repeat our analyses by limiting the sample to the matched sample and find our inferences continue to hold. Moreover, we also match each CSR reporting firm with a non-CSR reporting firm by the overall propensity score to better control for differences across firms with and without such reporting practices. We find our inferences unchanged in this analysis as well.

5.9 Country-by-Country Tests

Different countries tend to impose different reporting standards for publicly listed companies. For instance, in the United States, the Securities and Exchange Commission (SEC) requires firms to include the MD&A section in 10-K reports, although its contents are not audited. To isolate the concern that the heterogeneity across country-level reporting standards may affect our main result, we further conduct a country-by-country analysis to better compare firms with CSR information provided in the MD&A section and firms without such information but domiciled in the same country. In an untabulated within-country test, we find that our main results hold in most countries/jurisdictions, the exceptions being Australia, Belgium, China, Denmark, Germany, Hong Kong, and Taiwan. This finding reduces the concern that our findings are driven by country-level difference in reporting practices.

5.10 Modification of the MD&A Section due to Economic Changes

Brown and Tucker (2011) show that a firm is more likely to change the MD&A section after significant economic changes at the firm. We control for several such factors to capture firms' economic changes. In addition, we further control for other factors that the literature has shown to affect MD&A disclosures; for example, we control for industry competition as Li *et al.* (2013) shows that firm-level disclosures in 10-K filings are related to existing industry-level measures of disclosure (e.g. Herfindahl index). We also exclude firm-years experiencing substantial operational changes, such as mergers and acquisitions, and find our conclusion unchanged.

VI. Conclusions

Studies have found that a firm's communication of CSR information to its stakeholders is important as it enhances the link between CSR performance and firm value. Motivated by increased demand for CSR disclosure from investors and regulators in countries around the world, we examine whether and how providing CSR disclosures in the annual report in general, and in the MD&A section more specifically, is associated with firm value. Using a

large sample from many countries around the world, we find consistent and robust evidence that providing CSR disclosures in the MD&A section is associated with lower firm value for firms with high CSR concerns. However, we do not find that the practice of providing CSR disclosures in the MD&A section increases the firm value of firms with good CSR performance. Additional evidence reveals that firms with high CSR concerns are less likely to provide CSR disclosures in their annual reports, but when they do, such disclosures usually contain material environmental and social concerns or risks. These findings suggest that more broadly disseminating environmental and social information to stakeholders increases public awareness of firms' CSR issues, thereby leading to a more negative stock price reaction to firms with high CSR concerns. Further analyses show that the effect of such reporting practices on the relation between CSR performance and firm value varies with the credibility of the firm's CSR reporting, stakeholders' CSR awareness, and country-level institutional characteristics.

By examining the effect of CSR disclosures in the MD&A section, our study helps investors and researchers to understand the usefulness of the MD&A section and its non-financial component. In addition, given that the International Accounting Standards Board (IASB) and the SEC have both encouraged companies to provide an MD&A section (IASB 2009), our study is also informative for corporate reporting standard-setters and accounting professionals worldwide.

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Appendix I Variable Definitions

Variable	Definition	Data Source
<u>Dependent Variable</u>		
<i>TOBINQ</i>	The ratio of a firm's market value to its book value of assets, where the firm's market value is calculated as the book value of assets minus the book value of equity plus the market value of equity.	Capital IQ
<u>CSR Performance Variable</u>		
<i>CSRPERF</i>	The average of the environment performance score and the social performance score.	ASSET4
<i>CSRPERF_Top25%</i>	An indicator variable equal to 1 if <i>CSRPERF</i> (defined above) is in the top 25% of all firms and 0 otherwise.	ASSET4
<i>CSRPERF_Bottom25%</i>	An indicator variable equal to 1 if <i>CSRPERF</i> (defined above) is in the bottom 25% of all firms and 0 otherwise.	ASSET4
<u>CSR Reporting Variables</u>		
<i>CSRDISC</i>	An indicator variable equal to 1 if a company issues non-financial CSR disclosures in specific reports and 0 otherwise.	ASSET4
<i>CSRDISC_IR</i>	An indicator variable equal to 1 if a company integrates financial and CSR disclosures in the MD&A section of the annual report and 0 otherwise.	ASSET4
<i>CSRDISC_GRI</i>	An indicator variable equal to 1 if a company publishes a yearly CSR disclosure in accordance with the GRI (Global Reporting Initiative) guidelines and 0 otherwise.	ASSET4
<i>CSRDISC_ASSURANCE</i>	An indicator variable equal to 1 if a company provides assurance (3rd party audit) about the accuracy, completeness, and reliability of its CSR disclosure and 0 otherwise.	ASSET4
<u>Control Variables</u>		
<i>SIZE</i>	The natural logarithm of total assets in millions of US dollars.	Capital IQ
<i>LEVERAGE</i>	The ratio of total liabilities to total assets.	Capital IQ
<i>RND</i>	R&D intensity, measured as R&D expense/net sales for the year.	Capital IQ
<i>AGE</i>	The natural logarithm of the number of years since the firm was founded+1.	Capital IQ
<i>OPACITY</i>	A measure of firm-level financial opacity measured by country-, industry- and year-adjusted total scaled accruals based on Bhattacharya <i>et al.</i> (2003). Scaled accruals are computed using balance sheet and income statement information: $ACCRUAL = (\Delta CA - \Delta CL - \Delta CASH + \Delta STD - DEP + \Delta TP) / \text{lag}(TA)$, where ΔCA is the change in total current assets; ΔCL is the change in total current liabilities; $\Delta CASH$ is the change in cash; ΔSTD is the change in the current	Capital IQ

	portion of long-term debt included in total current liabilities; <i>DEP</i> is depreciation and amortisation expense; ΔTP is the change in income taxes payable; and $\text{lag}(TA)$ is total assets at the end of the previous year.	
<i>COMPETITION</i>	A measure of competition defined as the Herfindahl index $\times (-1)$, where the Herfindahl index is calculated as the sum of the squares of fractional market shares of firms within each two-digit SIC industry for each country-year.	Capital IQ
<i>INSTOWN</i>	Percentage of shares (end-of-year) held by all types of institutional investors.	FACTSET
<i>ANALYSTS</i>	Total number of analysts following a firm.	I/B/E/S
<i>BIG4</i>	An indicator variable equal to 1 if a firm's auditor is a Big 4 auditor and 0 otherwise.	Capital IQ
<i>CROSSLIST</i>	Total number of stock exchanges (including stock exchanges in both home and foreign countries) where a firm is listed.	Capital IQ
<i>SALESGROW</i>	The difference between sales in year t and year $t-1$, divided by sales in year $t-1$.	Capital IQ
<u>All Other Variables</u>		
<i>LEGRIGHT</i>	Strength of legal rights index, measuring the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. The index ranges from 0 to 10, with higher scores indicating a stronger legal environment.	The World Bank, Doing Business Project
<i>REGQUAL</i>	Regulatory quality, a measure that captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	The World Bank
<i>RULELAW</i>	Rule of law, a measure that represents perceptions of the extent to which agents have confidence in and abide by the rules of society and in particular the quality of contract enforcement, property rights, the police, and the courts, and the likelihood of crime and violence.	The World Bank
<i>DEVMKT</i>	A binary classification for developed and emerging markets which equals 1 for developed markets and 0 for emerging markets.	Leuz (2010)
<i>MKTCAP</i>	Market capitalisation of listed companies as a percentage of a country's GDP.	The World Bank
<i>STKTRADE</i>	A country's total value of traded stocks scaled by its GDP.	The World Bank
<i>DISREQ</i>	Aggregated disclosure requirement measure for a country, equal to the average value of the indices of disclosure requirements for the following aspects of a firm: (1) prospectus; (2) directors and key officers' compensation; (3) equity ownership structure; (4) inside ownership; (5) irregular contracts; and (6)	La Porta <i>et al.</i> (2006)

	related party transactions. The value ranges from 0 to 1, with larger values indicating stricter disclosure requirements.	
<i>STKEXREQ</i>	The overall disclosure requirements for the stock exchange of a country. For countries with more than one stock exchange, we average the measure across all stock exchanges and obtain the mean value.	Frost, Gordon, and Hayes (2006)
<i>ESINDEX</i>	A country's environmental and social value index, based on 12 questions from the World Value Survey, that assess a society's values regarding environment activism, lifestyle, gender equality, personal autonomy, and the voice of the people. Higher index values indicate stronger environmental and social values and beliefs.	Dyck <i>et al.</i> (2019)
<i>INDCSR</i>	A self-constructed outcome-based CSR norm measure using the median value of CSR performance of all firms in each industry defined on the basis of the 2-digit SIC industry codes in a country during a year.	Self-constructed based on ASSET4

Appendix II

Examples of Detailed CSR Contents in the MD&A Section

GKVEY	Company Name	Fiscal Year	Filing Date	Form Type	Source	Example of CSR Contents (from 10 K)
1 3439	CMS Energy Corporation	2010	20110224	10-K	Item 1; Item 1A	<p>Consumers' operations are subject to various state and federal environmental laws and regulations. CMS Energy's and Consumers' businesses could be affected adversely by any delay in meeting environmental requirements.</p> <p>CMS Energy and Consumers could incur additional significant costs to comply with environmental requirements.</p>
2 6386	Kennametal Inc.	2011	20110811	10-K	Item 1A; Item 7	<p>Changes in the regulatory environment, including environmental, health and safety regulations, could subject us to increased compliance and manufacturing costs, which could have a material adverse effect on our business.</p> <p>The operation of our business has exposed us to certain liabilities and compliance costs related to environmental matters.</p> <p>We are involved in various environmental clean-up and remediation activities at certain of our locations.</p>
3 7017	Marathon Oil Corporation	2012	20130222	10-K	Item 1; Item 3; Item 7	<p>We may incur substantial capital expenditures and operating costs as a result of compliance with, and changes in environmental health, safety and security laws and regulations, and, as a result, our business, financial condition, results of operations and cash flows could be materially and adversely affected.</p>
4 9667	The Sherwin-Williams Company	2007	20080228	10-K	Item 1; Item 1A	<p>We are required to comply with increasingly stringent federal, state and local environmental laws and regulations, the cost of which is likely to increase and may adversely affect our earnings. We are involved with environmental investigation and remediation activities at some of our currently and formerly owned sites, as well as a number of third-party sites, for which our ultimate liability may exceed the current amount we have accrued.</p>
5 10581	The Timken Company	2008	20090226	10-K	Item 1; Item 1A	<p>Environmental regulations impose substantial costs and limitations on our operations and environmental compliance may be more costly than we expect.</p>

Appendix III Country-level Variables

Country/ Jurisdiction	LEGRIGHT	REGQUAL	RULELAW	STOCKTRADE	MKTCAP	DEVMT	DISREQ	ESINDEX
1 Australia	9.00	1.45	1.76	96.27	123.43	1	0.75	0.59
2 Austria	7.00	1.37	1.86	15.00	37.20	1	0.25	0.53
3 Belgium	7.00	1.16	1.34	31.16	70.74	1	0.42	0.48
4 Brazil	3.00	0.07	-0.24	25.50	63.01	0	0.25	0.44
5 Canada	6.00	1.39	1.78	84.64	121.42	1	0.92	0.60
6 Chile	4.00	1.27	1.28	16.57	115.68	0	0.58	0.44
7 China	4.83	-0.12	-0.42	87.44	82.91	NA	NA	0.37
8 Colombia	5.00	0.19	-0.41	3.64	38.12	0	0.42	NA
9 Denmark	8.67	1.61	1.94	51.59	67.22	1	0.58	0.64
10 Egypt	3.00	-0.17	-0.18	24.74	71.96	0	0.50	NA
11 Finland	7.00	1.44	1.94	132.74	96.26	1	0.50	0.57
12 France	5.83	1.09	1.46	84.19	83.50	1	0.75	0.49
13 Germany	7.67	1.32	1.67	66.56	46.02	1	0.42	0.57
14 Greece	3.00	0.71	0.70	25.20	53.49	0	0.33	NA
15 Hong Kong	10.00	1.65	1.55	289.71	589.31	1	0.92	0.43
16 India	7.17	-0.23	0.04	64.68	81.86	0	0.92	0.34
17 Indonesia	3.00	-0.23	-0.65	15.11	32.75	0	0.50	NA
18 Ireland	8.00	1.54	1.76	27.70	46.55	1	0.67	0.43
19 Israel	9.00	0.98	0.90	49.13	97.48	0	0.67	0.51
20 Italy	3.00	0.79	0.36	53.89	39.02	1	0.67	0.47
21 Japan	6.83	0.96	1.32	96.62	87.85	1	0.75	0.55
22 Luxembourg	7.00	1.45	1.78	1.02	184.63	NA	NA	0.51
23 Malaysia	10.00	0.43	0.50	44.64	137.59	0	0.92	0.39
24 Mexico	5.00	0.31	-0.56	7.24	30.93	0	0.58	NA
25 Netherlands	6.00	1.51	1.79	132.27	88.52	1	0.50	0.58
26 New Zealand	10.00	1.50	1.87	18.31	38.38	1	0.67	0.58
27 Norway	7.00	1.19	1.93	68.25	63.64	1	0.58	0.67
28 Philippines	3.00	-0.10	-0.52	8.68	45.55	0	0.83	0.37
29 Poland	8.17	0.73	0.55	10.64	33.31	NA	NA	0.40
30 Portugal	3.00	0.87	1.02	28.51	41.89	1	0.42	0.41
31 Russia	3.00	-0.29	-0.87	33.92	72.33	NA	NA	NA
32 Singapore	10.00	1.56	1.66	118.81	193.19	1	1.00	0.38
33 South Africa	9.00	0.45	0.10	102.63	238.29	0	0.83	0.41
34 South Korea	7.00	0.71	0.94	143.85	82.10	0	0.75	0.45
35 Spain	6.00	1.02	1.13	141.28	92.50	1	0.50	0.51
36 Sweden	4.83	1.40	1.92	127.34	108.03	1	0.58	0.71
37 Switzerland	8.00	1.37	1.79	269.94	245.39	1	0.67	0.60
38 Taiwan	NA	0.89	0.87	NA	NA	0	0.75	0.41
39 Thailand	4.00	0.20	-0.15	51.24	63.45	0	0.92	NA
40 Turkey	4.00	0.28	0.06	38.05	31.04	0	0.50	NA
41 United Kingdom	9.00	1.51	1.72	191.41	125.48	1	0.83	0.53
42 United States	8.00	1.29	1.59	232.02	125.13	1	1.00	0.53