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Corporate social responsibility disclosure and the cost of equity capital: The roles of stakeholder orientation and financial transparency

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A B S T R A C T

We examine the benefits associated with corporate social responsibility (CSR) disclosure in an international setting covering 31 countries. Using variables such as the legal status of labor protection, CSR disclosure requirements, and public awareness of and attitudes toward CSR issues, we divide countries into more and less stakeholder-oriented groups. We find a negative association between CSR disclosure and the cost of equity capital; this relationship is more pronounced in stakeholder-oriented countries. We also find evidence that financial and CSR disclosures act as substitutes for each other in reducing the cost of equity capital. This study furthers our understanding of CSR disclosure and its consequences.

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1. Introduction

Since the mid-1990s, an increasing number of firms around the world have started to disclose nonfinancial information related to social issues, such as environmental preservation, human rights protection, employees' welfare improvement, and contributions to their communities and societies. In particular, an increasing number of firms are publishing information on their social performance

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in the form of standalone corporate social responsibility (CSR) reports.¹ A few studies provide empirical evidence on the economic determinants and consequences of firms' decision to supply CSR disclosure. For example, Kim et al. (2012) suggest that firms with better CSR performance are likely to have a larger concern for ethical issues and hence will provide higher quality financial reports. Dhaliwal et al. (2011) and El Ghouli et al. (2011) show that CSR disclosure and CSR performance, respectively, are negatively associated with the cost of equity capital. We extend this research by showing how the effect of CSR disclosure varies by country-level stakeholder orientation and financial transparency.

Neu et al. (1998) and van der Laan Smith et al. (2005, 2010) argue that a critically important determinant of CSR disclosure is a country's stakeholder orientation. Complementary institutions, which differ in various countries, are important in the monitoring of firms' actions and the effective enforcement of CSR-related rules (Ramanna, 2013). Specifically, CSR disclosure depends on the extent to which a country's laws and public awareness legitimize the interest of non-shareholder stakeholders in firms' operating activities and disclosure policies. Understanding the moderating effect of a country's stakeholder orientation on CSR disclosure not only helps place the conclusions of the CSR literature in the right context, but also provides new insights into pertinent CSR issues. Given the fact that the U.S. ranks relatively low in stakeholder orientation, it is important to investigate whether conclusions obtained in the U.S. hold for other countries. Dhaliwal et al. (2011) provide evidence that CSR disclosure reduces firms' cost of equity capital. We expect CSR disclosure in more stakeholder-oriented countries to contain more information needed by stakeholders to monitor and evaluate firms, and hence reduce the cost of equity capital to a greater extent, than in less stakeholder-oriented countries.

In addition, CSR disclosure is an important form of nonfinancial disclosure. A typical CSR report contains a great deal of information, such as expenditures related to environmental protection and climate change, charity donations, and employee welfare – all of which are typically not reported in financial statements but bear significant implications for assessing firm value. As the literature has shown that financial transparency can affect the cost of equity capital (Francis et al., 2005), it is naturally interesting to examine how financial and nonfinancial disclosure interact to affect the cost of equity capital. Hence, our second research question is whether CSR and financial disclosures act as substitutes for, or complements to, each other in affecting the cost of equity capital.

Following previous studies on the cost of equity capital (Hail and Leuz, 2006; Dhaliwal et al., 2006; Ben-Nasr et al., 2012), we adopt three alternative *ex ante* measures of the cost of equity capital, which use analysts' earnings forecasts and stock prices as inputs. We control for potential self-selection by performing the Heckman's two-stage regression analysis. Our final sample consists of firms from 31 countries.

Consistent with the findings for U.S. firms, we find that CSR disclosure is negatively associated with the cost of equity. More importantly, the negative association between the cost of equity capital and CSR disclosure is more pronounced in countries that are more stakeholder-oriented. In addition, this negative association is significantly stronger when the firm- and country-level financial opacity is greater, suggesting a potentially substitutive relationship between CSR disclosure and financial disclosure. These results are robust to controls for a number of potentially confounding factors.

To the best of our knowledge, our study is the first to examine the effect of nonfinancial disclosure on the cost of equity capital in an international setting. We contribute to the literature on the economic consequences of nonfinancial disclosure in several ways. First, our study expands the scope of research on the capital market implications of CSR disclosure from a single country to a global setting. We show that the negative association between CSR disclosure and the cost of equity capital varies depending on a country's stakeholder orientation. This result is analogous to Ball, Kothari and Robin's (2000) proposition that the demand for high quality financial information varies across countries according to these countries' corporate governance models. More broadly, our findings support the notion that complementary institutions will affect the CSR disclosure's properties in general, and its informativeness in particular (Ramanna, 2013). Given the important role played by stakeholder

¹ The European Commission defines corporate social responsibility (CSR) as a concept whereby companies integrate social and environmental concerns into their business operations and into their interactions with their stakeholders on a voluntary basis (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0136:FIN:en:PDF>). In practice and in academic research, "CSR" is often used interchangeably with "sustainability" and "activities related to social causes." We follow this convention and use "CSR performance" interchangeably with "social performance."

orientation in a firm's decision to issue CSR disclosure, it is crucial to factor this effect into the analysis of CSR disclosure's consequences.

In addition, we explore the interactive relationship between financial and nonfinancial disclosure. Francis et al. (2005) find that the level of transparency, as reflected in a firm's financial statements, is negatively associated with the cost of equity capital. Our results complement theirs by focusing on nonfinancial disclosure. We show that the effects of these two forms of disclosure are probably substitutive in their ability to reduce the cost of equity capital. This assists us in understanding the interactive nature of these two forms of disclosures.

The rest of this paper proceeds as follows. In Section 2, we review the literature and develop hypotheses. In Section 3, we describe the data, sample selection, and research design. In Section 4, we present and describe our empirical results. We summarize our findings and present our conclusions in Section 5.

2. Prior research and hypotheses

Disclosure can help reduce non-diversifiable risk and hence the cost of capital through multiple mechanisms. First, transparent disclosure lessens information asymmetry among investors and between managers and investors. As a result, investors show a greater willingness to trade, leading to higher liquidity (Verrecchia, 2001; Amihud and Mendelson, 1986). Second, disclosure reduces estimation risk and parameter uncertainty in asset pricing models used by investors (Barry and Brown, 1985; Coles et al., 1995; Lambert et al., 2007). Third, a high level of transparency reduces the monitoring cost shared by investors and they therefore require a lower rate of return for holding stocks (Lombardo and Pagano, 2002). Finally, better disclosure improves investor recognition, leading to enhanced risk sharing (Merton, 1987; Lombardo and Pagano, 2002). Prior research has shown that both financial (Botosan, 1997, 2006; Hail and Leuz, 2006; Francis et al., 2005) and nonfinancial disclosures (Dhaliwal et al., 2011) reduce the cost of equity capital.

Previous studies have shown that CSR disclosure reveals information relevant to investors' investment decisions. Firms with superior CSR performance appeal to consumers who support the corresponding social causes, resulting in better financial performance. For instance, Lev et al. (2010) show that charitable contributions can help boost the future revenue growth of firms in industries that are highly sensitive to consumer perception. Brown and Dacin (1997) suggest that within markets in which consumers have high levels of social awareness, better social performance can enhance brand value and firm reputation, which can translate into more favorable product evaluations by consumers and thus higher sales growth. Socially responsible firms with an emphasis on improving employees' welfare can better attract and retain talent and motivate employees, leading to greater productivity and better financial performance (Roberts and Dowling, 2002; Edmans, 2011; Banker and Mashruwala, 2007). Clarkson et al. (2004) argue that environmental disclosure also contains information that has direct cash flow implications. They find that there are incremental economic benefits associated with environmental investment by low-pollution firms, and that investors use environmental performance information to assess firms' unbooked environmental liabilities.

Around the world, more and more firms are recognizing the potential benefits of CSR activities and making stakeholders' satisfaction an important component of their corporate strategies. In a survey of the largest 250 firms worldwide, conducted by KPMG in 2005, 74% of the managers cite direct economic considerations as the most important driver of CSR disclosure.

The financial benefits of CSR performance are also directly reflected in capital markets. Hong and Kacperczyk (2009) show that institutional investors such as pension fund managers conform to social norms and invest less in "sin stocks" such as firms with business dealings in alcohol, tobacco, or gambling. These stocks have higher expected returns than other comparable stocks. Starks (2009) suggests that CSR activities can influence firm value through its effect on a firm's risk profile including regulatory, supply chain, litigation, and product and technology risks. Consistent with this view, Luo and Bhattacharya (2009) find that corporate social performance is negatively associated with a firm's idiosyncratic risk.² To the extent that CSR performance has an effect on a firm's risk and value,

² When investors are under-diversified and cannot hold the market portfolio, idiosyncratic risk will be priced and thus is positively associated with expected returns (Malkiel and Xu, 2006).

CSR disclosure, which reveals information about a firm's CSR performance, can potentially reduce information asymmetry on these relevant dimensions. A higher level of social transparency will then lead to a lower cost of capital.

Supporting this prediction, [El Ghoul et al. \(2011\)](#) find that in the U.S., firms with better CSR performance rankings have a lower cost of equity. Further, after controlling for firms' CSR performance, [Dhaliwal et al. \(2011\)](#) show that CSR disclosure is incrementally negatively associated with the cost of equity capital for a sample of large U.S. firms. Nonetheless, it remains an open question whether CSR disclosure reduces the cost of equity in other countries.

More importantly, countries differ in their degree of stakeholder orientation, which is defined as the extent to which management's vision of its roles and responsibilities includes the interests and claims of non-stockholding groups such as customers, suppliers, employees, communities, and the general public ([Mitchell et al., 1997](#)). These differences in stakeholder orientation are reflected in the substantial variation in public awareness of and regulatory attention to social and environmental issues. According to a survey of 1500 corporate executives and managers by the MIT Sloan Management Review (2009), over 30% of North American managers cite "insufficient customer demand and needs" as the most significant roadblock to addressing sustainability issues. However, fewer than 20% of the managers from Australia/New Zealand hold this view.³ In another survey of European fund managers and financial analysts by Deloitte (2003), 50% of the respondents from the Netherlands say they would "grant a premium to companies which are, demonstrably, environmentally and socially responsible," whereas only 22% of the respondents from the U.K. agree with this statement.⁴ Significant variation in social awareness across countries is also observed in consumer markets. A survey of individual consumers from 12 European countries by CSR Europe (2000) shows that 64% of respondents from Denmark are willing to "pay more for products that are more environmentally and socially responsible," but only 16% of the respondents from Italy are willing to do so.⁵ Similarly, [Botero et al. \(2004\)](#) observe significant variation in the level of legal protections for labor rights and social security benefits. In our sample of 31 countries, the U.S. ranks the fifth lowest in labor and employment protection, whereas Portugal ranks the first.

According to [van der Laan Smith et al. \(2005\)](#), stakeholder groups in countries with stronger stakeholder orientations have more influence on firms' business operations. Their claims may also be viewed with greater urgency. Management in more stakeholder-oriented countries will be more responsive to the information demands of the stakeholder groups and will therefore produce higher quality (more numeric, proactive, forward-looking, and informational, as opposed to promotional) CSR disclosure ([van der Laan Smith et al., 2005](#)).⁶ CSR disclosure in these countries is also likely to be more credible due to the existence of more complete and mature complementary institutions to monitor firms' actions and the more effective enforcement of CSR-related rules ([Ramanna, 2013](#)). For example, following [Ramanna's \(2013\)](#) intuition, as employment laws in Germany favor workers better than those in Hong Kong (see Appendix A in [Dhaliwal et al. \(2012\)](#)), a similar level of intensity of CSR reporting and activities will be more effective in protecting workers' interest in Germany than in Hong Kong.⁷ As a result, we expect CSR disclosure in more stakeholder-oriented countries to contain more information needed by stakeholders to monitor and evaluate firms, and hence to be more informative to investors, than that in less stakeholder-oriented countries. [Dhaliwal et al. \(2011\)](#) argue and provide evidence that taking care of various stakeholders of the firm can translate into a reduction in the cost of equity capital. We expect stakeholder orientation to enhance this mechanism.

Supporting this view, [Dhaliwal et al. \(2012\)](#) find that the positive association between the accuracy of earnings forecasts by sell-side analysts and CSR disclosure is significantly stronger in countries that

³ <http://sloanreview.mit.edu/special-report/the-business-of-sustainability/>.

⁴ http://www.csreurope.org/pages/en/investing_in_responsible_business.html.

⁵ http://www.csreurope.org/pages/en/european_survey_of_consumers_attitudes.html. This survey is based on responses from about 1000 individual consumers from each of the 12 countries.

⁶ In untabulated analysis, we find that the frequency of CSR reporting is higher in more stakeholder-oriented countries than in less stakeholder-oriented countries. This is potentially due to the fact that, in countries with strong stakeholder orientation, stakeholders demand more information about firms' CSR activities and performance, as such information carries a significant weight in firm valuation. Accordingly, firms supply more CSR reports to cater to this demand.

⁷ Of course, the ranking may not be the same on other dimensions such as social security laws, collective relations laws, human rights, and others, between Germany and Hong Kong.

are more stakeholder-oriented. In a similar vein, we predict that in countries that are more stakeholder-oriented, CSR disclosure, due to its role in ameliorating the asymmetry of value-relevant information related to CSR activities among stakeholders, will have a stronger effect on the cost of capital. We formally state our prediction in the following hypothesis:

Hypothesis H1. CSR disclosure is more negatively associated with the cost of equity capital in countries that are more stakeholder-oriented

It is worth noting that if a country is absolutely stakeholder-friendly, in the sense that all CSR-related information is required by law to be disclosed in formal filings, CSR reports, which are currently voluntarily disclosed in most cases, are unlikely to provide much incremental information to the market. To the extent that our stakeholder orientation measures capture such a substitutive effect of mandatory CSR disclosure, our prediction will be weakened. However, only one of the eleven dimensions in our comprehensive set of stakeholder orientation measures (CSRLAW) is related to this substitutive effect (see Section 3 for details). We believe that this effect, if it occurs, would be immaterial. Moreover, in a highly stakeholder-friendly country, if CSR reports are only designed to meet the governmental requirements and do not contain incrementally informative information to investors, the validity of this hypothesis will also be undermined. Ultimately, the strength of the moderating effect of stakeholder orientation on the association between CSR disclosure and the cost of equity is an empirical question.

Given the saliency of CSR disclosure for representing nonfinancial disclosure, we further study the effect of the interaction between financial and CSR disclosure on the cost of equity capital. A number of studies find a significant negative association between financial transparency and the cost of equity in the U.S. (Botosan, 1997, 2006). Francis et al. (2005) and Hail and Leuz (2006) extend the finding to international settings. Dhaliwal et al. (2012) document that the association between analyst forecast error and CSR disclosure is significantly more negative in firms and countries with greater financial opacity. This finding suggests that CSR disclosure serves as a substitutive information source for financial disclosure in analysts' forecasting processes. To the extent financial information and the nonfinancial information contained in CSR disclosures are substitutes for each other on a more general term, this substitutive relationship will also be evident in their effects on the cost of equity capital. We therefore propose the following hypothesis:

Hypothesis H2. CSR disclosure is more negatively associated with the cost of equity capital in countries or firms that are more financially opaque

3. Data and model specification

3.1. Data and sample

We collect standalone CSR reports from various internet-based sources, including the Corporate Register (<http://www.corporateregister.com>), Corporate Responsibility Newswire (<http://www.csr-wire.com>), CSR News (<http://csr-news.net>), and firms' own websites. We exclude data from before 1995 due to the small number of CSR reports available for those years. After excluding observations that lack the information needed to calculate the country- and firm-level variables necessary for our analysis, we obtain 6296 standalone CSR reports.⁸ The two-stage regressions needed to control for the self-selection issue require the availability of the cost of equity capital for the previous year ($t - 1$) and the following year ($t + 1$). This data restriction causes a further loss of 1161 CSR reports. The final sample consists of 5135 standalone CSR reports published by 1093 unique firms from 1995 to 2007. These firms are located in 31 countries.

Table 1, Panel A presents the annual distribution of CSR reports. Consistent with our casual observation, there is a significant increasing trend in the popularity of CSR reporting throughout our sample period. In 1995, only 48 firms published standalone CSR reports. However, the number of firms publishing CSR reports increased to over 800 in 2007. Panel B illustrates the industry distribution of our

⁸ A lack of the information needed to calculate the cost of equity capital causes a loss of 812 CSR reports from the sample of 7108 CSR reports in Dhaliwal et al. (2012).

Table 1
Sample distribution.

Year	No. of firms	No. of CSR reports	% of CSR reports	
<i>Panel A: By year</i>				
1995	3971	48	1.21	
1996	5040	60	1.19	
1997	5808	104	1.79	
1998	6158	124	2.01	
1999	6181	174	2.82	
2000	5936	249	4.19	
2001	6029	376	6.24	
2002	5981	443	7.41	
2003	6254	542	8.67	
2004	6681	681	10.19	
2005	7052	723	10.25	
2006	7521	808	10.74	
2007	6600	803	12.17	
Total	79,212	5135		
Industry	No. of firm-year obs.	No. of CSR reporters	No. of CSR reports	% of CSR reports
<i>Panel B: By industry</i>				
1 Mining/Construction	3994	86	343	8.59
2 Food	3555	61	291	8.19
3 Textiles/Print/Publish	5391	72	316	5.86
4 Chemicals	3049	92	480	15.74
5 Pharmaceuticals	3617	44	264	7.30
6 Extractive	2523	47	230	9.12
7 Manf:Rubber/Glass/etc.	2613	39	170	6.51
8 Manf:Metal	3300	51	201	6.09
9 Manf:Machinery	3819	50	227	5.94
10 Manf:Electrical Eqpt	3608	46	264	7.32
11 Manf:Transport Eqpt	2429	52	322	13.26
12 Manf:Instruments	3737	35	175	4.68
13 Manf:Misc.	783	8	19	2.43
14 Computers	10,438	79	410	3.93
15 Transportation	6028	101	500	8.29
16 Utilities	2622	93	447	17.05
17 Retail:Wholesale	3462	20	83	2.40
18 Retail:Misc.	5055	48	154	3.05
19 Retail:Restaurant	967	6	17	1.76
22 Services	7197	44	112	1.56
23 Others	1025	19	110	10.73
Total	79,212	1093	5135	

The sample period is from 1995 to 2007 and covers a total of 31 countries. Our treatment group consists of CSR-reporting firm-years. The control group comprises firm-years without the issuance of a standalone CSR report, which include all firm-years of the non-reporting firms and the non-reporting years of the reporting firms. Reporting firms are those that released at least one standalone CSR report throughout the sample period. All other firms are classified as non-reporting firms.

sample. Notably, utilities, chemicals, and manufacturing of transportation equipment industries have the highest reporting frequencies (17.05%, 15.74%, and 13.26%, respectively), possibly due to their higher environmental impacts.

3.2. Model specification

We run pooled regressions for our main tests. Our treatment group consists of 5135 firm-years with standalone CSR reports. The control group comprises all firm-years (74,077) in which there are no standalone CSR reports.

3.2.1. Variable definitions

Implied cost of equity capital (COC). The choice of proxies for the cost of equity capital is a contentious topic. There is no consensus on the “best” proxy, or even on how to evaluate the merits of the

various measures proposed in the literature. For example, [Botosan and Plumlee \(2005\)](#) argue that the criteria for evaluating the proxies should be their relationships with known risk factors, but [Easton and Monahan \(2010\)](#) contend that realized returns are a more appropriate criterion. Further, after considering the *ex ante* measures of the cost of equity capital, [Botosan and Plumlee \(2005\)](#) and [Botosan et al. \(2011\)](#) recommend the use of the target price model proposed in [Botosan and Plumlee \(2002\)](#) and the PEG model proposed in [Easton \(2004\)](#).

It is not our intention to enter into this debate as our study is more applied with the purpose of linking CSR disclosure to the cost of equity capital. We follow prior research such as [Hail and Leuz \(2006\)](#) and [Ben-Nasr et al. \(2012\)](#) and use three cost of equity measures developed by [Gebhardt et al. \(2001\)](#), [Claus and Thomas \(2001\)](#), and [Easton \(2004\)](#), respectively (see Appendix A for a description of the implementation of these measures). We do not include the measure from the [Ohlson and Juettner-Nauroth \(2005\)](#) model because its use of analysts' estimates of long-term growth rate as its main input significantly reduces our sample size. Moreover, [Hail and Leuz \(2006\)](#) show that the [Ohlson and Juettner-Nauroth \(2005\)](#) measure is very highly correlated with the [Claus and Thomas \(2001\)](#) measure.⁹ As each of these measures can be a noisy proxy for the underlying true cost of equity capital, our main tests rely on the average of the aforementioned three measures. To the extent that the noise represents random errors, the averaging approach can potentially remove a portion of that noise. In additional tests, we separately use each individual measure of the cost of equity capital, and the results remain similar. In all of the regressions, we include analyst forecast bias to control for its effect on the estimation of the cost of equity capital. Finally, as the PEG model is strongly recommended by [Botosan and Plumlee \(2005\)](#) and [Botosan et al. \(2011\)](#), we also use it in a robustness test and obtain similar results (untabulated). Note that our use of these proxies of the cost of equity capital in no way implies our support for the argument that they are the "best" measures. However, we do want to emphasize that previous studies document a significant correlation between these cost of equity measures and various risk factors and country variables ([Hail and Leuz, 2006](#)). This evidence, and the supporting theoretical models, lends support to the validity of these measures for our study.

CSR reporting indicator (NONFIN). This is an indicator variable that takes the value of 1 if a firm issues a standalone CSR report during the year, and 0 otherwise. There are two advantages to using this indicator summary variable. For one, it is an objective measure, so we can avoid any researcher bias in data coding. In addition, its low coding cost allows a large-sample study, which is crucial in our broad-sample international study and enables us to draw conclusions with high generalizability. Nonetheless, its disadvantages are also apparent. It is crude in nature and fails to capture the variability in CSR disclosures. Although in later analysis we incorporate more characteristics of CSR reports such as their length, whether they are assured by third parties, and their persistence over time, we may still be missing important characteristics of CSR reports. An alternative approach, as the one adopted by [Plumlee et al. \(2010\)](#), that codes the detailed content and reporting features of CSR disclosures could complement ours.¹⁰

Stakeholder orientation (STAKE). We use the four proxies developed in [Dhaliwal et al. \(2012\)](#) for stakeholder orientation (see Appendix A [Dhaliwal et al. \(2012\)](#)). The underlying constructs of these measures correspond to factors adopted by the stakeholder theory in describing the supremacy of stakeholders ([Mitchell et al., 1997](#)).

STAKELAW. This proxy assesses a country's legal environment, specifically the protection of labor rights and benefits. We use the average of the rank scores for the following indices: (1) employment laws, which are a measure of the protection of labor and employment based on (a) alternative employment contracts, (b) the cost of increasing working hours, (c) the cost of firing workers, and (d) dismissal procedures; (2) social security laws, a measure of social security benefits based on (a) old age, disability, and death benefits, (b) sickness and health benefits, and (c) unemployment benefits; (3) collective relations laws, a measure of the protection of collective relations based on (a) labor union power and (b) collective disputes; and (4) human rights laws, an index for human rights

⁹ With a correlation coefficient of 0.945.

¹⁰ Another potential challenge of using *NONFIN* is that it can overlap with CSR performance. We include measures of CSR performance based on Dow Jones Global Sustainability Index and ASSET4 from Thomson Reuters. The effect of *NONFIN* is unchanged. To the extent that these measures capture CSR performance adequately, this challenge should not pose a serious threat to our inference.

protection. The first three of the above four indices come from [Botero et al. \(2004\)](#) and the fourth from [La Porta et al. \(2004\)](#). *STAKELAW* measures the importance of stakeholders in managers' decision-making processes.

CSRLAW. This proxy measures the extent of country-level mandatory disclosure requirements for CSR issues. It takes the value of 1 if the country has mandatory CSR requirements for either industrial firms or pension funds, but not both; 2 if the country has mandatory CSR disclosure requirements for both industrial firms and pension funds; and 0 otherwise. *CSRLAW* captures the power of stakeholders to influence legislation.

PUBWARE. This proxy measures country-level public awareness of CSR issues. We calculate it as the average rank score of the following ratios: (1) number of NGOs (non-government organizations) per million people, collected from EarthTrends.com; and (2) number of CSR reports issued by both commercial and noncommercial organizations per million people.

PUBAWARE1. This proxy measures the country-level attitude of corporate executives toward CSR activities. It is largely based on opinion surveys administered to global corporate executives. We use the average rank scores of the following indices: (1) sustainable development priority; (2) ethical practice implementation; (3) social responsibility of business leaders; and (4) corporate responsibility competitiveness index. The first three of the four indices come from the Institute for Management Development's (IMD) annual surveys. We use the average IMD annual survey scores in the ranking process. The fourth index comes from AccountAbility (National Corporate Responsibility Index 2003, <http://www.accountability.org/>). This index is primarily based on opinion surveys and contains seven categories of social issues. Public awareness of CSR issues (*PUBWARE*) and the attitude of corporate executives toward CSR activities (*PUBAWARE1*) reflect the perception that stakeholders can have a legitimate influence on firms' operating decisions, and the country's general attention to and concern with protecting non-shareholder stakeholders' interests.

In our main tests, we use the principal factor, *STAKE*, of the above four proxies as our measure of stakeholder orientation. In our robustness checks, we use the individual proxies separately.

In addition to information on the values of the above variables, we also provide information on CSR legislations in various countries in Appendix B. For example, Australia, Belgium, Germany, etc. have mandatory CSR reporting requirement while CSR reporting in countries such as Brazil, Chile and Finland is voluntary.

Financial opacity at the firm (*FFIN*) and country (*CFIN*) levels. At the firm level, we follow [Bhattacharya et al. \(2003\)](#), [DeFond and Hung \(2003\)](#), and [Leuz et al. \(2003\)](#) and measure financial opacity as the absolute value of scaled accruals, averaged over the previous three years. [DeFond and Hung \(2003\)](#) argue that it is the magnitude of total accruals, rather than a component of accruals such as the abnormal accruals developed in some specific models, that triggers investors' suspicions of earnings. Such suspicions encourage investors to rely on other sources of information, such as nonfinancial disclosure, to assess a firm's true financial performance.

Scaled accruals (*ACCRUAL*) are computed using balance sheet and income statement information as $(\Delta CA - \Delta CL - \Delta CASH + \Delta STD - DEP + \Delta TP) / \text{lag}(TA)$, 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 portion of long-term debt included in total current liabilities; *DEP* is the depreciation and amortization expense; ΔTP is the change in income taxes payable; and $\text{lag}(TA)$ is the total assets at the end of the previous year. To reduce measurement errors, we convert our measure of absolute accruals into an indicator variable, *FFIN*, based on the two-digit SIC industry median for a firm's country in each year. *FFIN* equals 0 (1) if a firm's absolute accrual is lower (higher) than the country-industry median during the year. Hence, *FFIN* is a positive indicator of financial opacity.

We measure country-level financial opaqueness, *CFIN*, as the country average of firm-level rank scores for disclosure ratings in 1991, 1993, and 1995, as provided by the Center for International Financial Analysis and Research (*CIFAR*), multiplied by (−1). The yearly ratings are obtained from [Bushman et al. \(2004\)](#) and [Francis et al. \(2005\)](#). For details on the values and sources for the country-level financial transparency variable *CFIN*, see Appendix A of [Dhaliwal et al. \(2012\)](#).

FFIN and *CFIN* are computed using different information and are therefore likely to capture different aspects of financial opacity. The findings based on the two measures will complement each other.

Firm-level control variables. *SIZE* is firm size measured as the natural logarithm of a firm's market value of equity. *LEVERAGE* is interest-bearing long-term debt (*DLTT*) divided by total assets (*AT*). *BM* is the book-to-market ratio calculated as the ratio of book value of equity to the market value of equity. *RETVAR* is stock return variability measured as the standard deviation of daily stock returns during the previous year. *VAREARN* is the natural logarithm of the time-series standard deviation of earnings per share (*EPS*). We use a rolling window of ten years before the current year and require at least three years of *EPS* to calculate the standard deviation. *FCBIAS* is the one-year-ahead analyst earnings forecast error (consensus minus actual *EPS*) divided by the absolute value of actual *EPS*. *STKEXCH* is a summary score describing all major stock exchanges on which a firm is listed during the sample period (Hope, 2003). A listing on any of the U.S. exchanges is given a weight of 1.5, and a listing on any other exchange is given a weight of 1. The weights are summed for each firm to arrive at the score. Stock listing data are obtained from Standard and Poor's Capital IQ database (www.capitaliq.com). *ADR* is an indicator variable that takes the value of 1 if a non-U.S. firm also trades in the U.S. markets through the ADR (American Depositary Receipts) program during the year, and 0 otherwise.

When studying the effect of CSR disclosure, it is important to control for actual CSR performance. This is clearly illustrated by the finding of Dhaliwal et al. (2011) that in the U.S., the reduction effect of CSR disclosure on the cost of equity is observed mainly in firms with superior CSR performance. Moreover, El Ghoul et al. (2011) directly show that firms with better CSR performance enjoy a lower cost of capital. Nonetheless, controlling for CSR performance is made difficult by the lack of a consensus on an appropriate empirical measure, especially in the international setting. We tackle this issue by including in our models an indicator, *DJS*, that takes the value of 1 if the firm is included in the Dow Jones Global Sustainability Index (*DJS*) in any year from 2002 to 2008 (the period for which the *DJS* is publicly available), and 0 otherwise. Each year, the Dow Jones selects firms that are industry leaders in sustainability performance for inclusion in the index.¹¹ The benefit of using an indicator performance measure is its simplicity and objectivity. However, a major drawback is that it cannot capture the many distinct dimensions of CSR performance and hence lacks variation. In our robustness tests, we leverage on an alternative database, ASSET4, provided by Thomson Reuters.¹² ASSET4 uses over 250 indicators to measure firms' sustainability performance along four dimensions: environmental, social, economic, and governance. Although this measure is more in-depth and has greater variation, it is only available for about 10% of our full sample. Nevertheless, when we include firms' average scores for social and environmental performance in our regressions, we still obtain significantly negative coefficients (untabulated) on the interactions *NONFIN* * *STAKE* (coef. = -0.154, *p* = 0.08) and *NONFIN* * *CFIN* (coef. = -0.527, *p* = 0.02). However, *NONFIN* * *FFIN* becomes insignificant (coef. = -0.074, *p* = 0.74).

Country-level control variables *INFLATION* is the one-year-ahead inflation rate for each country-year for the 1995–2007 period. It reflects changes in the cost of acquiring a fixed basket of goods and services by the average consumer. We obtain this information from the Institute for Management Development (IMD) database. *LAW* represents the overall quality of a country's legal system, measured using the rule of law index (divided by 10) from La Porta et al. (1997).

3.2.2. Determinants of CSR disclosure decisions

Our main analysis examines the association between CSR disclosure and the implied cost of equity capital. Voluntary CSR reporting can be a self-selecting process. For example, reporting firms may choose to disclose because of the perceived cost of equity benefits of CSR disclosure, whereas non-reporting firms avoid disclosing due to a perceived lack of benefits. To address this self-selection, we use the Heckman's two-stage regression approach. In the first stage, we model the determinants of CSR disclosure decisions using a probit regression. In the second stage, we run an OLS regression of the implied cost of equity capital on CSR disclosure while including the inverse Mills ratio derived from the first-stage regression and other control variables.

For the first stage regression, we follow Dhaliwal et al. (2011) and run the following probit regression to estimate the likelihood that a firm conducts a CSR disclosure in year *t*:

¹¹ See <http://www.sustainability-index.com/> for more detail.

¹² See the Environmental, Social and Governance (ESG) Data on <http://thomsonreuters.com> for more detail.

$$\begin{aligned} \text{Prob}(\text{NONFIN}_{i,t} = 1) = & \Phi(\beta_0 + \beta_1 \text{COC}_{i,t-1} + \beta_2 \text{ANANO}_{i,t-1} + \beta_3 \text{SIZE}_{i,t-1} + \beta_4 \text{VAREARN}_{i,t-1} \\ & + \beta_5 \text{FFIN}_{i,t-1} + \beta_6 \text{STAKE}_{i,t-1} + \beta_7 \text{DJS}_{i,t-1} + \beta_8 \text{LEVERAGE}_{i,t-1} + \beta_9 \text{ROA}_{i,t-1} \\ & + \beta_{10} \text{R\&D}_{i,t-1} + \beta_{11} \text{CAPEX}_{i,t-1} + \beta_{12} \text{AGE}_{i,t-1} + \beta_{13} \text{MKTSHR}_{i,t-1} + \beta_{14} \text{CFIN}_{i,t} \\ & + \text{IndustryIndicators}_{i,t} + \text{YearIndicators}_{i,t}) + \varepsilon_{i,t}, \end{aligned} \quad (1)$$

in which Φ is the cumulative distribution function of the standard normal distribution. The definition of all variables are summarized in Appendix C.

We include the following control variables that are likely to affect firms' disclosure decisions. If, as we argue, CSR disclosure lowers the cost of capital, then firms with higher cost of capital will have greater incentives to conduct CSR disclosure. We therefore include the cost of equity capital in the previous year (COC_{t-1}) in the model and expect it to have a positive effect on firms' decisions to disclose CSR matters. Extensive analyst coverage (ANANO) can exert a great pressure on firms to disclose information, including information related to social issues. We expect ANANO to have a positive effect on firms' decisions to disclose CSR matters. Large firms have more financial resources to allocate to social issues. They also face greater public pressure to be socially responsible. Therefore, firm size (SIZE) is likely to be positively associated with firms' propensity to disclose CSR activities. Firms with more volatile earnings (VAREARN) and a greater magnitude of accruals (FFIN) have greater financial opacity and are therefore more likely to provide CSR disclosure to reduce information asymmetry. Hence, we expect VAREARN and FFIN to have a positive effect. Firms from more stakeholder-oriented countries (STAKE) are more likely to conduct CSR disclosure to cater to the information needs of different stakeholders. As previously mentioned, we include the indicator DJS in the model to control for variations in firms' social performances. Better performing firms are more likely to make the disclosure to distinguish themselves from firms with poorer performance.

In addition, because CSR information deals with the sustainability of a firm's operations and its continuing viability, debt holders will be particularly interested in this type of information that reveals the downside risk. We therefore include the leverage ratio (LEVERAGE) in the model and expect it to have a positive effect. Further, firms that are more profitable, as measured by ROA , have more financial resources to perform social activities and conduct the corresponding disclosure. We expect ROA to have a positive effect on firms' decision to issue a CSR report. We use research and development expenditures (R\&D) and capital investment expenditures (CAPEX) to measure firms' need for external funds. If CSR disclosure has a cost of capital benefit, then firms that have a greater need for external funds will have a larger incentive to disclose, to lower the cost of raising funds. Therefore, CAPEX should have a positive effect. Firms that are older (higher AGE) are more likely to have succeeded in sustainable development and hence have a larger incentive to disclose CSR issues. Firms with a leading position in their industry (MKTSHR) may face higher pressure to conduct CSR activities and we expect MKTSHR to have a positive effect. Finally, at the country level, we include CFIN and expect it to be positive, following the same logic outlined for FFIN . We also control for industry and year fixed effects in the model.¹³

3.2.3. Cost of equity capital and CSR disclosure

In the second stage, we follow Francis et al. (2005) and Hail and Leuz (2009) in the development of our model and estimate the following OLS regression to determine the association between CSR disclosure in year t and the implied cost of equity capital in year $t + 1$:

$$\begin{aligned} \text{COC}_{i,t-1} = & \lambda_0 + \lambda_1 \text{SIZE}_{i,t} + \lambda_2 \text{LEVERAGE}_{i,t} + \lambda_3 \text{BM}_{i,t} + \lambda_4 \text{RETVAR}_{i,t} + \lambda_5 \text{VAREARN}_{i,t} + \lambda_6 \text{FCBIAS}_{i,t} \\ & + \lambda_7 \text{STKEXCH}_{i,t} + \lambda_8 \text{ADR}_{i,t} + \lambda_9 \text{DJS}_{i,t} + \lambda_{10} \text{INFLATION}_{i,t} + \lambda_{11} \text{MILLS}_{i,t} + \lambda_{12} \text{LAW}_{i,t} \\ & + \lambda_{13} \text{STAKE}_{i,t} + \lambda_{14} \text{CFIN}_{i,t} + \lambda_{15} \text{FFIN}_{i,t} + \lambda_{16} \text{NONFIN}_{i,t} + \lambda_{17} \text{NONFIN}_{i,t} * \text{STAKE}_{i,t} \\ & + \lambda_{18} \text{NONFIN}_{i,t} * \text{CFIN}_{i,t} + \lambda_{19} \text{NONFIN}_{i,t} * \text{FFIN}_{i,t} + \text{IndustryIndicators}_{i,t} \\ & + \text{YearIndicators}_{i,t} + \zeta_{i,t}, \end{aligned} \quad (2)$$

¹³ Certain industries could be characterized by greater financing needs than others, rendering them more likely to publish CSR reports. In untabulated analysis, we examine whether CSR reporting is related to firms' financing need as determined by the nature of the industries that they belong to following the approach in Rajan and Zingales (1998) and Klapper et al. (2006). We find that CSR reporting frequency is positively associated with firms' financing need as characterized by their industry membership.

where *MILLS* is the inverse Mills ratio from the first-stage regression. All other variables are defined in Appendix C.

We test Hypothesis 1 by considering the interaction between CSR disclosure and stakeholder orientation, *NONFIN * STAKE*. A negative coefficient will support our hypothesis that the cost of equity capital reduction effect of CSR disclosure is more pronounced in stakeholder-oriented countries. For Hypothesis 2, we consider the interaction of CSR disclosure, *NONFIN*, and financial opacity at the firm (*FFIN*) and country (*CFIN*) levels. As *FFIN* and *CFIN* are measured in such a way that larger values correspond to higher levels of financial opacity, we expect the main effect of *FFIN* or *CFIN* to be positive. Meanwhile, we expect the coefficient on *NONFIN * FFIN* and *NONFIN * CFIN* to be negative; these results would be consistent with the substitutive relationship between CSR disclosure and financial disclosure predicted in Hypothesis 2.

We also control for the conventional factors affecting cost of equity capital and include firm size (*SIZE*), book-to-market ratio (*BM*), and firm risk, as proxied by stock return variability (*RETVAR*) and earnings variance (*VAREARN*). We include firm leverage (*LEVERAGE*) to control for financial distress risk. As our implied cost of equity capital measures rely on analyst forecasts, international differences in forecasting behavior could systematically bias our results (Hail and Leuz, 2009). We therefore control for analyst forecast bias (*FCBIAS*).

Hail and Leuz (2009) demonstrate that institutional environment and investor protection are negatively associated with the implied cost of equity capital. Following this line of logic, we include several variables that are related to a country's legal environment and disclosure regulation. Firms cross-listed in more stock exchanges (*STKEXCH*) are subject to more rules on disclosure and corporate governance. These firms also probably enjoy a lower cost of equity capital. Similarly, cross-listing in the U.S. (*ADR*) may impose particularly stringent scrutiny on cross-listed firms, compared with firms listed on exchanges of other countries. We use the rule of law index (*LAW*) from La Porta et al. (1997) to capture countries' quality of legal institutions.

In addition, firms with better publicized social performance records are more likely to attract investors and have a larger investor base, and hence will have a lower cost of capital (El Ghoul et al., 2011). We consider a firm's inclusion in the Dow Jones Global Sustainability Index (*DJS*) as an indication of its superior social performance. Further, Hail and Leuz (2006) note that analyst forecasts used in the estimation of the implied cost of capital are expressed in nominal terms and local currencies, and hence reflect a country's expected inflation rates. To adjust for this potential bias, we follow Francis et al. (2005) and include the inflation rate (*INFLATION*) in the model. We also include the main effect of stakeholder orientation (*STAKE*) to capture various correlated institutional features. We directly control for country-level (*CFIN*) and firm-level (*FFIN*) disclosure quality. Finally, we include the inverse Mills ratio (*MILLS*) from the first-stage regression as a control for the potential self-selection bias in our sample. As in other tests, we consider in the model industry and year fixed effects.

4. Empirical results

4.1. Descriptive statistics

In Table 2, we present summary statistics at the country level for several key variables. The magnitude and variation of our cost of equity measure (*COC*) are comparable to those in previous studies, such as Hail and Leuz (2006). Our proxy for stakeholder orientation, *STAKE*, has values ranging from -2.73 to 2.95 . Notably, the U.S. ranks the seventh lowest in *STAKE* among the 31 countries in our sample, consistent with the conventional view that the U.S. is a strongly shareholder-oriented country. This fact also suggests that it is necessary to extend the findings of Dhaliwal et al. (2011), who examine the reduction benefit of CSR disclosure on the cost of equity in the U.S., to an international setting and to consider the effects of variation in stakeholder orientation.

Table 3, Panel A compares several main firm-level variables for reporting and non-reporting firm-year observations. The cost of equity capital is significantly lower (*COC*: 11.567% versus 15.587%, $p < 0.001$) if the observation of the previous year indicates the publication of a standalone CSR report (*NONFIN* = 1), than if there is not such a report (*NONFIN* = 0). This suggests that CSR disclosure reduces

Table 2
Descriptive statistics at the country level.

	Country	No. of firm-year obs.	No. of CSR reporters	No. of CSR reports	% of CSR reports	COC_AVG (%)	FFIN	CFIN	STAKELOW	CSRLAW	PUBAWARE	PUBAWARE1	STAKE
1	Australia	2829	50	203	7.18	10.609	0.411	-27.00	14.88	2	23.5	22.50	1.58
2	Austria	381	6	26	6.82	14.319	0.451	-4.00	15.88	1	22.5	25.75	1.25
3	Belgium	570	8	31	5.44	12.390	0.512	-11.25	16.13	2	22.5	17.50	1.29
4	Brazil	780	14	66	8.46	15.743	0.514	-1.75	12.13	0	4.5	7.63	-1.92
5	Canada	1172	15	69	5.89	12.704	0.428	-18.00	13.50	1	19.0	21.25	0.56
6	Chile	487	7	28	5.75	11.721	0.544	-14.25	13.38	0	13.0	13.50	-0.88
7	Denmark	612	11	86	14.05	11.671	0.480	-17.50	23.38	2	28.5	29.00	2.95
8	Finland	805	20	140	17.39	15.004	0.493	-28.75	22.50	0	29.5	29.13	1.89
9	France	2890	51	235	8.13	11.959	0.440	-23.25	25.63	2	13.0	14.00	1.12
10	Germany	2623	46	222	8.46	14.049	0.451	-9.00	22.75	1	14.5	19.25	0.81
11	Greece	561	9	26	4.63	10.976	0.517	-4.25	17.63	0	15.5	6.00	-0.33
12	Hong Kong	1727	9	38	2.20	12.772	0.423	-15.50	15.83	0	8.5	11.88	-1.11
13	India	440	9	19	4.32	7.653	0.470	-3.75	7.00	0	1.0	4.50	-2.73
14	Italy	982	25	108	11.00	12.035	0.464	-9.25	21.50	1	16.0	4.75	-0.09
15	Japan	13,506	252	1373	10.17	9.963	0.470	-13.25	13.00	0	11.5	14.50	-0.95
16	Korea	664	16	45	6.78	15.036	0.495	-8.25	13.25	0	8.0	8.00	-1.57
17	Malaysia	1496	5	8	0.53	12.920	0.430	-23.50	3.13	0	8.5	16.25	-1.76
18	Mexico	683	3	18	2.64	13.176	0.552	-12.75	15.00	0	4.5	2.88	-1.47
19	Netherlands	1104	17	124	11.23	11.917	0.465	-15.50	20.13	1	22.5	25.00	1.52
20	New Zealand	538	10	38	7.06	9.730	0.565	-26.50	12.63	0	26.5	24.00	0.64
21	Norway	712	13	51	7.16	15.744	0.497	-21.00	26.63	1	31.0	25.75	2.62
22	Philippines	273	2	3	1.10	16.804	0.538	-8.00	12.75	0	3.5	7.83	-1.93
23	Portugal	188	5	25	13.30	12.269	0.569	-1.25	24.25	0	17.5	5.25	-0.29
24	Singapore	1229	5	18	1.46	13.364	0.433	-21.50	5.75	0	18.0	21.63	-0.59
25	South Africa	917	32	131	14.29	11.120	0.494	-22.50	10.00	0	10.0	12.00	-1.42
26	Spain	793	27	121	15.26	10.213	0.487	-11.00	19.75	0	17.0	9.00	-0.42
27	Sweden	1076	22	130	12.08	12.688	0.447	-29.75	26.88	2	26.0	26.75	2.90
28	Switzerland	982	24	126	12.83	10.417	0.518	-24.50	19.75	0	28.0	25.25	1.34
29	Thailand	700	4	9	1.29	17.212	0.456	-7.50	7.63	0	6.0	10.50	-1.96
30	U.K.	7868	146	717	9.11	10.273	0.439	-30.00	10.50	2	19.5	14.25	0.47
31	U.S.A.	29,624	230	901	3.04	10.336	0.385	-20.00	9.13	0	6.5	14.75	-1.55
	Total	79,212	1093	5135									

All variables are defined in Appendix C.

the average cost of equity. In addition, disclosing firms tend to be significantly larger than non-disclosing firms, supporting both the conjecture that larger firms have more resources to conduct socially responsible activities and to disclose them, and that these firms are subject to greater public pressure to be socially responsible and transparent. Disclosing firms also have a higher leverage ratio than non-disclosing firms (*LEVERAGE*: 0.180 versus 0.150, $p < 0.001$), possibly because highly leveraged firms seek equity financing and more disclosure might help them to obtain such financing at a lower cost. The result also suggests that debt holders play a role in inducing firms to disclose social issues to manage the downside risk associated with sustainability and viability. Disclosing firms have a lower book-to-market ratio than non-disclosing firms (*BM*: 0.241 versus 0.679, $p < 0.001$), indicating their higher growth potentials. High growth firms need more capital than low growth firms, and hence they benefit more from the cost of equity capital reduction effect of disclosure. Consistent with the findings of Luo and Bhattacharya (2009) that CSR disclosure is negatively associated with firm risk, our two risk proxies, return variability (*RETVAR*) and earnings variance (*VAREARN*), have significantly lower values for disclosing firms than for non-disclosing firms. Dhaliwal et al. (2012) argue that nonfinancial disclosure helps analysts reduce forecast errors. Consistent with this conjecture, we find that analyst forecast bias (*FCBIAS*) is significantly lower when firms conduct standalone CSR disclosure during the year, than when they do not (*FCBIAS*: 0.165 versus 0.248, $p < 0.001$).

We also find that firms conducting CSR disclosure have higher financial opacity than those that do not (*FFIN*: 0.445 versus 0.431, $p = 0.005$). This suggests that the association between financial and CSR-related nonfinancial disclosures is likely to be substitutive. In addition, firms listed in more stock exchanges (*STKEXCH*), particularly non-U.S. firms cross-listed in the U.S. (*ADR* = 1), are more likely to provide CSR disclosure. Finally, firms with better social performance records are significantly more likely to conduct disclosure (*DJS*: 0.309 versus 0.020, $p < 0.001$), consistent with the classic disclosure theory that better performing firms have greater incentives to reveal their activities than poorer performers.

Table 3, Panel B displays the correlation matrix of the main variables. CSR disclosure in year t (*NONFIN_t*) is significantly negatively correlated with the cost of equity capital in year $t + 1$ (*COC_{t+1}*); this is consistent with the univariate comparison in Panel A. In addition, the significant correlation between *STAKE* and *NONFIN* suggests that firms in countries that are more stakeholder-oriented are significantly more likely to issue standalone CSR reports, probably because of the greater public pressure for CSR disclosure.

Overall, we find preliminary evidence in Table 3 suggesting that CSR disclosure is associated with a lower cost of equity capital. However, given the significant correlations of CSR disclosure (*NONFIN*) and the cost of equity capital (*COC*) with various other factors, we estimate multivariate regressions to draw more reliable inferences.

4.2. Main regression results

For brevity, we do not tabulate the results for the first-stage regression designed to estimate the likelihood of a firm publishing a standalone CSR report; instead, we briefly summarize them here. All of the variables have the expected signs and are statistically significant at conventional levels. The evidence suggests that a firm with higher analyst coverage (*ANANO*), larger capitalization (*SIZE*), higher risk (*VAREARN*), greater financial opacity (*FFIN* and *CFIN*), better CSR performance (*DJS*), higher leverage (*LEVERAGE*), a higher profit margin (*ROA*), larger R&D and capital expenditure (*R&D* and *CAPEX*), higher age (*AGE*), located in a country with greater stakeholder orientation (*STAKE*) and in leading industry positions (*MKTSHR*) is more likely to disclose CSR issues.

From the first-stage regression we derive the inverse Mills ratio and include it in the second-stage OLS regression to control for the potential self-selection bias. The regression results are reported in Table 4, Panel A. The coefficient on *NONFIN* is significantly negative (-4.101 , $p = 0.02$), suggesting that CSR disclosure reduces the cost of equity capital. The coefficient on *NONFIN * STAKE* is also significantly negative (-1.114 , $p < 0.001$), supporting Hypothesis 1, which states that the cost of equity capital reduction effect of CSR disclosure is more pronounced in more stakeholder-oriented countries. The variable *STAKE* ranges from -1.466 at the 25th percentile to 1.293 at the 75th percentile and the corresponding effect of *NONFIN* on *COC* amounts to 3.07%. Hence, stakeholder orientation has an economically significant effect on the association between CSR disclosure and the cost of equity cap-

Table 3
Descriptive statistics.

	Full sample				NONFIN = 1				NONFIN = 0				p Value (difference)												
<i>Panel A: Descriptive statistics</i>																									
COC _{t+1}	14.986				11.567				15.587				0.00												
SIZE _t	6.368				8.527				5.989				0.00												
LEVERAGE _t	0.155				0.180				0.150				0.00												
BM _t	0.534				0.241				0.679				0.00												
RETVAR _t	0.519				0.451				0.531				0.00												
VAREARN _t	1.319				1.065				1.364				0.00												
FCBIAS _t	0.236				0.165				0.248				0.00												
FFIN _t	0.433				0.445				0.431				0.01												
STKEXCH _t	1.467				2.379				1.306				0.00												
ADR _t	0.066				0.211				0.042				0.00												
DJS _t	0.063				0.309				0.020				0.00												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
<i>Panel B: Correlations (Pearson/Spearman)</i>																									
1	COC_AVG _{t+1}																								
2	COC_GLS _{t+1}	.97																							
3	COC_CT _{t+1}	.96	.94																						
4	COC_E _{t+1}	.84	.81	.84																					
5	SIZE _t	-.22	-.22	-.22	-.23																				
6	LEVERAGE _t	.05	.05	.05	.04	.29																			
7	BM _t	.05	.04	.05	.07	.17	.02																		
8	RETVAR _t	.11	.11	.11	.11	-.13	-.02	.00																	
9	VAREARN _t	.06	.06	.06	.05	-.02	.06	.02	.15																
10	FCBIAS _t	.33	.31	.31	.27	-.08	.03	.01	.02	.02															
11	STKEXCH	-.13	-.13	-.12	-.12	.29	.06	.06	.02	.02	-.07														
12	ADR	-.02	-.02	-.02	-.02	.29	.04	.48	.05	.05	-.01	.15													
13	DJS	-.10	-.10	-.10	-.10	.40	.04	.14	-.04	.00	-.04	.23	.31												
14	INFLATION _t	.03	.03	.03	.03	-.01	.08	.04	.14	.06	-.02	.03	.11	-.03											
15	LAW	-.05	-.04	-.04	-.06	-.09	.08	-.14	.00	.13	-.03	.08	-.18	.01	-.30										
16	CFIN	.03	.03	.03	.04	.21	-.03	.10	-.01	-.03	.05	.00	.00	-.01	-.01	-.30									
17	FFIN _t	.12	.12	.12	.11	-.06	-.04	.11	.04	.01	.05	-.04	.08	.00	-.02	-.06	.03								
18	STAKE	.06	.05	.06	.07	-.09	-.05	.05	-.11	-.12	.03	.00	.14	.09	-.16	.14	-.34	.04							
19	STAKELAW	.09	.08	.09	.11	.05	-.05	.12	-.09	-.11	.06	.06	.16	.09	-.14	.01	.15	.05	.76						
20	CSRLAW	.05	.04	.05	.06	-.12	-.04	.03	-.07	-.09	.01	.02	.15	.06	.03	-.03	-.49	.02	.79	.47					
21	PUBAWARE	.04	.03	.04	.05	-.09	-.05	.06	-.13	-.14	.03	-.04	.12	.08	-.19	.08	-.36	.05	.93	.57	.67				
22	PUBAWARE1	.02	.02	.02	.01	-.12	.00	-.08	-.04	-.02	.01	-.05	-.04	.05	-.25	.53	-.37	.00	.65	.32	.24	.65			
23	NONFIN _t	-.07	-.07	-.08	-.08	.37	.05	.09	-.09	-.01	-.04	.16	.21	.37	-.06	-.03	.00	.01	.09	.09	.05	.10	.04		

The Pearson (Spearman) correlations are below (above) the diagonal. A correlation coefficient in bold face indicates that the correlation is statistically significant at better than the 10% level. All variables are defined in Appendix C.

ital. The effect of *NONFIN* on the incremental explanatory power of the regression model also appears meaningful. The inclusion of *NONFIN* alone in the model increases the adjusted *R*-squared by a magnitude of 1.2%, and the inclusion of *NONFIN* and the three interaction terms increases the adjusted *R*-squared by a magnitude of 3.5%.

Consistent with previous studies examining the effect of financial disclosure on the cost of capital (Botosan, 1997; Francis et al., 2005), both *CFIN* (0.116, $p < 0.001$) and *FFIN* (2.443, $p < 0.001$) load significantly positively, suggesting that financial opacity increases the cost of equity capital. Further, the coefficients on *NONFIN * CFIN* and *NONFIN * FFIN* are both significantly negative (-0.066 with $p = 0.07$ and -1.690 with $p < 0.001$, respectively). Combined with the significantly negative coefficient on *NONFIN* (-4.101 , $p = 0.02$), these results suggest that the negative association between *NONFIN* and the cost of equity capital is more pronounced in countries or firms that are more financially opaque, suggesting a substitutive relationship between these two forms of disclosure, as predicted in Hypothesis 2.

The coefficient estimate of -0.066 on *NONFIN * CFIN* indicates that when *CFIN* varies from -23.25 at the 25th percentile to -8.25 at the 75th percentile, the association between *NONFIN* and the cost of equity capital changes by 0.99%. Similarly, because *FFIN* is an indicator variable with values of 0 (relatively transparent) or 1 (relatively opaque), the coefficient of -1.690 ($p < 0.001$) on *NONFIN * FFIN* indicates that CSR disclosure is associated with a subsequent cost of equity capital that is 1.90% lower among firms that are relatively financially opaque than among firms that are relatively financially transparent. These variations suggest that the substitutive relationship between these two forms of disclosure is economically significant.

In Models 2 to 4 of Table 4, Panel A, we separately use individual proxies for the implied cost of equity capital. Overall, our main results are similar to those obtained when we use the average measure. In particular, the main effects on *NONFIN* and on the three interaction terms are significantly negative.

Table 4, Panel B reports the second-stage regression results that use the four components of *STAKE* to gauge stakeholder orientation. The results are generally consistent with those in Panel A, except that when *CSRLAW* is used, the effect of *NONFIN * CFIN* is insignificant (-0.031 , $p = 0.40$) and when *PUBAWARE1* is used, the effect of *NONFIN * CFIN* is only marginally significant (-0.058 , $p = 0.11$).

The empirical analysis above supports Hypotheses 1 and 2. There is a significantly stronger negative association between CSR disclosure and the cost of equity capital in countries that are more stakeholder-oriented and in countries and firms that are more financially opaque.

4.3. Additional analyses

4.3.1. Characteristics of CSR reports

It is possible that firms in countries with strong stakeholder orientation produce CSR reports with distinct characteristics compared to firms in countries with weak stakeholder orientation. For example, the reporting could differ in length and frequency. It is not clear then whether *STAKE* captures the effectiveness of a country's institutions in protecting stakeholders' interests or whether it is merely a summary measure of firms' CSR reporting behavior. To examine this issue, we add to Model 2 additional controls for the characteristics of CSR reports. Specifically, we control for whether a report is assured by a third party (*ASSURANCE*), the length in pages of the report (*PAGES*), and whether a firm regularly produces CSR reports (*PERSISTENT*). *ASSURANCE* is an indicator variable that takes the value of 1 if the CSR report is assured by a third party, and 0 otherwise. *PAGES* is the number of pages in a CSR report. *PERSISTENT* is an indicator that equals 1 if a firm is classified as a persistent CSR reporter; that is, if it publishes standalone CSR reports every year since its first CSR report issuance. The results of the regression including these additional controls are shown in Table 5, Model 1. These CSR-report characteristics are not significant and our main variables of interest, specifically, the three interaction terms remain significantly negative. In Table 5, Model 2 we add a control for whether the report is issued after a country mandated CSR disclosure (*POSTLEG*), if it ever did. Again, our main results remain unchanged.

4.3.2. Additional control variables

Following the argument of Hail and Leuz (2006) that legal institutions have a direct effect on the cost of capital, we additionally control for several country-level variables that are used to measure the quality of legal environments and investor protections. We consider these variables only in our

Table 4
Cost of equity, CSR report and stakeholder orientation.

	Model 1		Model 2		Model 3		Model 4	
Dep. Var.=	COC_AVG _{t+1}		COC_GLS _{t+1}		COC_CT _{t+1}		COC_E _{t+1}	
Adj. R-square	0.2421		0.2289		0.2313		0.2319	
Industry Indicators	Included		Included		Included		Included	
Year Indicators	Included		Included		Included		Included	
Variable	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
<i>Panel A. Second-stage regression across different cost of capital measures</i>								
INTERCEPT	4.521*	0.07	3.778	0.13	3.333	0.18	7.858***	0.00
SIZE _t	-0.299**	0.02	-0.308**	0.02	-0.282**	0.03	-0.480***	0.00
LEVERAGE _t	0.098***	0.00	0.096***	0.00	0.096***	0.00	0.092***	0.00
BM _t	0.090***	0.01	0.079***	0.01	0.089***	0.01	0.127***	0.00
RETVAR _t	2.810***	0.00	2.817***	0.00	2.945***	0.00	2.813***	0.00
VAREARN _t	0.213***	0.00	0.205***	0.00	0.212***	0.00	0.226***	0.00
FCBIAS _t	5.231***	0.00	4.831***	0.00	4.753***	0.00	4.003***	0.00
STKEXCH	-0.374***	0.00	-0.364***	0.00	-0.353***	0.00	-0.303***	0.00
ADR	-1.632***	0.01	-1.427***	0.01	-1.559***	0.01	-2.136***	0.00
DJS	-2.507***	0.00	-2.360***	0.00	-2.393***	0.00	-2.433***	0.00
INFLATION _t	0.061	0.32	0.070	0.24	0.110	0.08	0.104	0.11
MILLS	3.987***	0.00	3.915***	0.00	3.859***	0.00	3.774***	0.00
LAW	-5.428***	0.00	-4.631***	0.00	-4.570***	0.00	-6.694***	0.00
STAKE	1.486***	0.00	1.362***	0.00	1.457***	0.00	1.655***	0.00
CFIN	0.116***	0.00	0.101***	0.00	0.108***	0.00	0.142***	0.00
FFIN _t	2.443***	0.00	2.325***	0.00	2.354***	0.00	2.079***	0.00
NONFIN _t	-4.101***	0.02	-4.246***	0.01	-4.247***	0.01	-5.443***	0.00
NONFIN _t * STAKE	-1.114	0.00	-1.127***	0.00	-1.168***	0.00	-1.285***	0.00
NONFIN _t * CFIN	-0.066	0.07	-0.069	0.06	-0.060	0.10	-0.062	0.09
NONFIN _t * FFIN _t	-1.690***	0.00	-1.494***	0.00	-1.452***	0.00	-1.624***	0.00
Dep. Var.=	Model 1 COC_AVG _{t+1}		Model 2 COC_AVG _{t+1}		Model 3 COC_AVG _{t+1}		Model 4 COC_AVG _{t+1}	
STAKE=	STAKELAW		CSRLAW		PUBAWARE1		PUBAWARE2	
Adj. R-square	0.2291		0.2232		0.2245		0.2222	
Industry Indicators	Included		Included		Included		Included	
Year Indicators	Included		Included		Included		Included	
Variable	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
<i>Panel B. Second-stage regression across different stakeholder orientation measures</i>								
INTERCEPT	-2.735	0.35	7.527***	0.00	1.329	0.64	7.601***	0.01
SIZE _t	-0.309**	0.03	-0.750***	0.00	-0.455***	0.00	-0.744***	0.00
LEVERAGE _t	0.096***	0.00	0.095***	0.00	0.096***	0.00	0.094***	0.00

<i>BM_t</i>	0.077 ^{***}	0.01	0.084 ^{***}	0.01	0.077 ^{***}	0.01	0.086 ^{***}	0.01
<i>RETVAR_t</i>	2.727 ^{***}	0.00	2.696 ^{***}	0.00	2.746 ^{***}	0.00	2.486 ^{***}	0.00
<i>VAREARN_t</i>	0.202 ^{***}	0.00	0.167 ^{***}	0.00	0.189 ^{***}	0.00	0.160 ^{***}	0.00
<i>FCBIAS_t</i>	4.817 ^{***}	0.00	4.899 ^{***}	0.00	4.862 ^{***}	0.00	4.901 ^{***}	0.00
<i>STKEXCH</i>	-0.345 ^{***}	0.00	-0.388 ^{***}	0.00	-0.339 ^{***}	0.00	-0.324 ^{***}	0.00
<i>ADR</i>	-1.273 ^{***}	0.02	-0.881 [*]	0.10	-1.019 ^{**}	0.06	-0.613 [*]	0.24
<i>DJS</i>	-2.447 ^{***}	0.00	-1.723 ^{***}	0.00	-2.178 ^{***}	0.00	-1.671 ^{***}	0.00
<i>INFLATION_t</i>	0.086	0.15	0.047	0.46	0.104	0.09	0.080	0.20
<i>MILLS</i>	4.015 ^{***}	0.00	2.664 ^{***}	0.00	3.555 ^{***}	0.00	2.752 ^{***}	0.00
<i>LAW</i>	-5.999 ^{***}	0.00	-2.009	0.13	-3.365 ^{***}	0.01	-7.083 ^{***}	0.00
<i>STAKE</i>	0.430 ^{***}	0.00	1.318 ^{***}	0.00	0.198 ^{***}	0.00	0.225 ^{***}	0.00
<i>CFIN</i>	0.032	0.24	0.128 ^{***}	0.00	0.101 ^{***}	0.00	0.077 ^{***}	0.01
<i>FFIN_t</i>	2.327 ^{**}	0.00	2.309 ^{***}	0.00	2.301 ^{***}	0.00	2.304 ^{***}	0.00
<i>NONFIN_t</i>	1.395	0.19	-2.175 [*]	0.06	-1.283	0.24	-0.369	0.74
<i>NONFIN_t * STAKE</i>	-0.362 ^{***}	0.00	-1.369 ^{***}	0.00	-0.185 ^{***}	0.00	-0.185 ^{***}	0.01
<i>NONFIN_t * CFIN</i>	-0.090 [*]	0.03	-0.031	0.40	-0.058	0.11	-0.108 [*]	0.04
<i>NONFIN_t * FFIN_t</i>	-1.484 ^{***}	0.00	-1.613 ^{***}	0.00	-1.493 ^{***}	0.00	-1.629 ^{***}	0.00

Panels A and B present the second-stage regression results of the two-stage least square regression. In the first stage, we run a probit model and regress *NONFIN_t* on *COC_AVG_{t-1}*, *ANANO_{t-1}*, *SIZE_{t-1}*, *VAREARN_{t-1}*, *FFIN_{t-1}*, *CFIN*, *STAKE_{t-1}*, *DJS_{t-1}*, *LEVERAGE_{t-1}*, *ROA_{t-1}*, *R&D_{t-1}*, *CAPEX_{t-1}*, *AGE_{t-1}*, *MKTSHR_{t-1}*, plus industry and year fixed effects. Refer to Appendix C for detailed definitions of each variable. For brevity, we do not report the results from the first stage regression. *MILLS* is the inverse Mills ratio generated from the first stage regression.

All firm-level continuous variables are winsorized at the 1st and the 99th percentiles.

* The estimated coefficients are statistically significant at the 10% level, in two-tailed *t*-tests based on White standard errors adjusted for country-year clustering.

** The estimated coefficients are statistically significant at the 5% level, in two-tailed *t*-tests based on White standard errors adjusted for country-year clustering.

*** The estimated coefficients are statistically significant at the 1% level, in two-tailed *t*-tests based on White standard errors adjusted for country-year clustering.

Table 5

Additional tests.

Dep. Var.= Adj. R-square Industry Indicators Year Indicators	Model 1 COC_AVG _{t+1}		Model 2 COC_AVG _{t+1}		Model 3 COC_AVG _{t+1}	
	Included		Included		Included	
Variable	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
INTERCEPT	5.458***	0.01	5.365***	0.01	-1.214	0.77
SIZE _t	-0.309***	0.00	-0.307***	0.01	-0.238	0.17
LEVERAGE _t	0.089***	0.00	0.089***	0.00	0.089***	0.00
BM _t	0.073***	0.00	0.073***	0.00	0.038**	0.05
RETVAR _t	2.663***	0.00	2.669***	0.00	2.168***	0.00
VAREARN _t	0.201***	0.00	0.201***	0.00	0.204***	0.00
FCBIAS _t	4.954***	0.00	4.952***	0.00	4.567***	0.00
STKEXCH	-0.345***	0.00	-0.343***	0.00	-0.265***	0.00
ADR	-1.296***	0.01	-1.313***	0.01	-0.347	0.41
DJS	-2.175***	0.00	-2.171***	0.00	-3.574***	0.00
INFLATION _t	0.043	0.42	0.051	0.34	-0.316*	0.03
MILLS	3.556***	0.00	3.560***	0.00	5.350***	0.00
LAW	-5.029***	0.00	-4.921***	0.00	-7.997***	0.00
CIVIL					1.890**	0.03
SECREG					1.246	0.57
AUDIT					1.173**	0.03
CAPFLOW					-0.569	0.25
ANTIDIR					0.436*	0.08
MGMFTFC _t					-1.465***	0.00
STAKE	1.287***	0.00	1.345***	0.00	1.653***	0.00
CFIN	0.098***	0.00	0.099***	0.00	0.006	0.89
FFIN _t	2.184***	0.00	2.183***	0.00	2.320***	0.00
NONFIN _t	-4.194***	0.01	-4.082***	0.02	-3.120*	0.07
NONFIN _t * STAKE	-1.057***	0.00	-0.968***	0.01	-1.072**	0.00
NONFIN _t * CFIN	-0.075**	0.03	-0.079**	0.02	-0.087***	0.01
NONFIN _t * FFIN _t	-1.475***	0.00	-1.477***	0.00	-1.318***	0.00
NONFIN _t * ASSURANCE	0.482	0.21	0.466	0.22	0.373	0.32
NONFIN _t * PAGES	0.002	0.66	0.002	0.56	-0.003	0.43
NONFIN _t * PERSISTENT	-0.316	0.20	-0.311	0.21	-0.424*	0.09
POSTLEG			-0.423	0.42	-0.709	0.26
NONFIN _t * POSTLEG			-0.348	0.62	0.639	0.43

All firm-level continuous variables are winsorized at the 1st and the 99th percentiles. All variables are defined in Appendix C.

* The estimated coefficients are statistically significant at the 10% level, in two-tailed *t*-tests based on White standard errors adjusted for country-year clustering.

** The estimated coefficients are statistically significant at the 5% level, in two-tailed *t*-tests based on White standard errors adjusted for country-year clustering.

*** The estimated coefficients are statistically significant at the 1% level, in two-tailed *t*-tests based on White standard errors adjusted for country-year clustering.

robustness analyses because country-level institutional variables tend to be highly correlated and, therefore, simultaneously including a multiple of them in regressions could induce multicollinearity. Specifically, we include a variable *CIVIL*, which denotes whether a country's legal system has a common law or code law origin. La Porta et al. (1998) document that common law countries generally have better legal enforcement and investor protection. *CIVIL* takes the value of 1 for countries with a civil law origin, and 0 otherwise. In addition, we include a variable *SECREG* to capture the strength of the securities regulations that mandate and enforce disclosures in a country. It is calculated as the mean of the disclosure index, the liability standard index, and the public enforcement index, from La Porta et al. (2006). A third additional control, *AUDIT*, is a categorical variable measuring the proportion of firms in a country that are audited by Big 5 (or Big 4 after 2002) accounting firms, as discussed in Bushman et al. (2004). *AUDIT* equals 1, 2, 3, or 4 if the percentage ranges between (0%, 25%), (25%, 50%), (50%, 75%), or (75%, 100%), respectively. A larger proportion of firms audited by the Big 5 auditors suggests a better information environment.

Bekaert and Harvey (1995) and Stulz (1999) suggest that country and firm specific factors become less important in asset pricing when markets are more integrated. The rationale is that when investors can invest freely across countries, they can shift their portfolios to include stocks from other countries, reducing the effect of country or firm specific factors such as stakeholder orientation or CSR disclosure. To control for this effect, we follow Hail and Leuz (2006) and include a variable *CAPFLOW* to measure capital integration. *CAPFLOW* takes the value of 1 for countries with above median portfolio inflows and outflows as a percentage of the gross domestic product, as reported by the International Monetary Fund in 2001, and 0 otherwise. Further, we include the anti-director index *ANTIDIR* from La Porta et al. (1998) as a direct measure of investor protection from the expropriation of controlling shareholders.

At the firm level, we construct an indicator variable, *MGMTFC*, that takes the value of 1 if a firm issues at least one management forecast in the year, and 0 otherwise. We use this variable to capture a firm's general policy of voluntary financial disclosure. The information on management forecasts is obtained from the Capital IQ database. The inclusion of this variable reduces our sample size by about half from 79,212 to 46,118 firm-years.

We report the results with the inclusion of these additional variables in Table 5, Model 3. The coefficient on *MGMTFC* is significantly negative (-1.465 , $p < 0.001$), consistent with our expectation. However, the significantly positive coefficients on *CIVIL*, *AUDIT*, and *ANTIDIR* are inconsistent with our predictions. This is probably caused by multicollinearity, given that the model includes many highly correlated country-level variables. Nonetheless, our main results remain similar to those reported above.

4.3.3. Sensitivity to the exclusion of industries with higher environmental impacts

From Table 1, we observe that utilities, chemicals, and the manufacturing of transportation equipment industries have the highest CSR reporting frequencies (17.05%, 15.74%, and 13.26%, respectively). It is possible that firms in these industries are more likely to use disclosure of CSR issues to preempt litigation related to their use of environmental pollutants. To rule out the possibility that our main results are solely driven by firms in these industries, we exclude these three industries and exclude firm-year observations with CSR reports that cover only environmental issues. Our main results (untabulated) are not affected.

5. Summary and conclusion

In this study, we examine the beneficial effects of transparency regarding CSR issues on the cost of equity capital in an international setting. We find that disclosure on social issues is negatively associated with the cost of equity capital and that this negative association is stronger in countries that are more stakeholder-oriented. In addition, we find that the negative association between CSR disclosure and the cost of equity capital is more pronounced in countries or firms with higher levels of financial opacity. Given that financial opacity increases the cost of equity capital, this result suggests a potential substitutive relationship between financial and nonfinancial disclosures. Our study contributes to the literature on the economic consequences of nonfinancial CSR disclosure.

Our findings are qualified by two caveats. First, the use of an indicator variable to reduce researcher bias in coding CSR disclosure potentially causes a significant loss of information with regard to CSR disclosure quality. For that reason, we may have only scratched the surface of understanding the importance of CSR reports. Second, although we include a battery of variables in the Heckman first-stage regression, it is possible that we are missing some important factors that simultaneously determine the issuance of CSR reports and the cost of equity capital. Therefore, our analysis may suffer from the problem of omitted correlated variables. To deepen our understanding, future research could explore the underlying mechanisms through which CSR disclosure affects the cost of capital. Dhaliwal et al. (2012) suggest that CSR disclosure affects information asymmetry, as reflected in analyst forecast accuracy, and Luo and Bhattacharya (2009) propose that CSR disclosure helps to lower firm risk, but other mechanism could also be at work. For example, it might be interesting to examine whether institutional investors are attracted to socially responsible firms around the world and whether institutional investors from countries with differing levels of stakeholder-orientation place different weights on social issues in their investment decisions. Similarly, it would be interesting to examine whether individual investors pay attention to CSR disclosure. Although there is some survey evidence suggesting that socially responsible consumers are

willing to pay more for socially responsible products, it is not clear if individual investors would follow the same preference in their investment choice decisions.

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Appendix A. Estimation of cost of equity capital

We follow [Hail and Leuz \(2006\)](#) to estimate the cost of equity proxies. The variables used in the models are defined as follows:

- p_0 : Current stock price, measured as of month +10 after the fiscal year-end.
- bv_0 : Current book value of equity per share, measured as of fiscal year-end.
- e_t : Expected future earnings per share for year t .
- d_t : Expected future dividends per share for year t .
- bv_t : Expected book value of equity per share for year t .
- g, g_{lt} : Expected perpetual and long-term growth rate.
- k : Average dividend payout ratio over the past three years.

Current stock price (p_0), book equity value per share (bv_0), and dividends payout ratio (k) are extracted from Compustat. p_0 and bv_0 are adjusted for stock splits. $e_1, e_2, e_3, e_4,$ and e_5 are mean analyst forecast earnings per share obtained from I/B/E/S and are adjusted for stock splits. We require non-missing values for e_1 or e_2 . If k is missing, it is replaced by the country-year median. All data items are converted to U.S. dollars.

A.1. The measure in [Claus and Thomas \(2001\)](#)

$$p_0 = bv_0 + \sum_{t=0}^4 \frac{e_{t+1} - r_{CT} \times bv_t}{(1 + r_{CT})^{t+1}} + \frac{(e_5 - r_{CT} \times bv_4) \times (1 + g)}{(r_{CT} - g)(1 + r_{CT})^5} \quad (\text{B.1})$$

$$bv_t = bv_{t-1} + e_t - e_t \times k.$$

If $e_3, e_4,$ and e_5 are missing, they are replaced with the formula $e_{t+1} = e_t \times (1 + g_{lt})$, where g_{lt} is the analyst forecast for long-term growth rate. The inflation rate of Year 5 is used as a proxy for g .

A.2. The measure in [Gebhardt et al. \(2001\)](#)

$$p_0 = bv_0 + \sum_{t=1}^3 \frac{e_t - r_{GLS} \times bv_{t-1}}{(1 + r_{GLS})^{t+1}} + \sum_{t=4}^{11} \frac{\overline{ROE}_t - r_{GLS}}{(1 + r_{GLS})^t} \times bv_{t-1} + \frac{\overline{ROE}_t - r_{GLS}}{r_{GLS} \times (1 + r_{GLS})^{12}} \times bv_{11} \quad (\text{B.2})$$

$$\overline{ROE}_t = \frac{1}{I} \sum_{i=1}^I \overline{ROE}_{t,i},$$

in which, I is the total number of firms in the industry that firm i belongs to.

$$\overline{ROE}_{t,i} = e_{t,i} / bv_{t,i}$$

$$bv_t = bv_{t-1} + e_t - e_t \times k$$

A.3. The modified PEG ratio model in [Easton \(2004\)](#)

$$p_0 = (e_2 + r_{PEG} \times d_1 - e_1) / r_{PEG}^2 \quad (\text{B.3})$$

Appendix B. CSR Reporting Legislation

Country	CSR Reporting Legislation	Effective year of mandatory CSR reporting	Regulation requiring disclosure on whether SRI (social responsibility investment) is considered in investment policy	CSR Reporting Legislation Score (CSRLAW)
Australia	Listed companies on the Australian Stock Exchange have been required to make an annual responsibility report since 2001 (Corporations Act 2001). Pension funds are required to inform their clients of the extent to which socially responsible factors are incorporated into a fund's investment strategy (Financial Services Reform Act, 2002 section 1013D & Corporations Act 2001 section 7.9.14C)	2001	Yes	2
Austria	Pension funds are required to disclose the social and environmental criteria of their investment decisions (Pensionskassen Regulations, section 25(a) 1(6))	–	Yes	1
Belgium	Companies operating in Belgium have been obliged to report the social performance of the company over a three-year period since 1996 (Coordination of the Federal Policy for Sustainable Development, 1997). In addition, pension fund managers and collective investment institutions have been required by law to disclose in their annual reports the extent to which they take into account ethical, social, and/or environmental criteria in their investment policies since 2001 (Occupational Pension Law, 2003)	1996	Yes	2
Brazil	Voluntary	–	No	0
Canada	Mandatory social reporting is required by law only for financial institutions. Under Section 459.3(1) of the Bank Act 2001, all federally regulated financial institutions (e.g., banks, insurance companies) with capital assets in excess of \$1 billion are required to issue an annual Public Accountability Statement	2001	No	1
Chile	Voluntary	–	No	0

(continued on next page)

Appendix B (continued)

Denmark	Mandatory reporting on environmental impact since 1995. Starting from 2009, the Danish parliament mandated reporting on social responsibility policies by companies and institutional investors including pension funds (Danish Financial Statements Act, Section 99a. (1))	1995	Yes	2
Finland	Voluntary	–	No	0
France	Laws regulating nonfinancial data in private bodies in France as early as 1977 under the Social Assessment Law. Several CSR-related laws have been passed during 2001 including, for example, Nouvelles Regulations Economiques (New Economic Regulations Act 2001), article 116, which makes reporting on social and environmental impacts mandatory for listed companies. Pension funds are also required to report the social criteria for their investment decisions under the Law on Public Pension Research Funds 2001 and the Fabius Act of 2001, article 21	2001	Yes	2
Germany	All private pension funds have been required to declare the social and environmental factors that influence their investments decisions since 2001 (Insurance Supervision Act, 2001)	–	Yes	1
Greece	Voluntary	–	No	0
Hong Kong	Voluntary	–	No	0
India	Voluntary	–	No	0
Italy	Pension funds have been requested to show in their yearly reports, as well as in their annual reports to all scheme members, whether and to what extent any social, ethical, or environmental investment aspects have been considered in their asset and resource management since 2004 (Legislative Decree No. 252, article 6)	–	Yes	1
Japan	Voluntary	–	No	0
Korea	Voluntary	–	No	0
Malaysia	Voluntary	–	No	0
Mexico	Voluntary	–	No	0
Netherlands	Mandatory reporting on environmental activities since 1999	1999	No	1
New Zealand	Voluntary	–	No	0

Appendix B (continued)

Norway	Environmental information has been required information in annual reports since 1999	1999	No	1
Philippines	Voluntary	–	No	0
Portugal	Voluntary	–	No	0
Singapore	Voluntary	–	No	0
South Africa	Voluntary	–	No	0
Spain	Voluntary	–	No	0
Sweden	Disclosure of environmental information has been mandatory since 1999. All state-owned companies have been required to present audited sustainability reports since 2008 (Regeringskansliet 2007). In addition, national pension funds are required to disclose environmental and ethical considerations in their investment activities under the Public Pension Funds Act 2000	1999	Yes	2
Switzerland	Voluntary	–	No	0
Thailand	Voluntary	–	No	0
U.K.	The Pensions Act 1995 (chapter 26) and The Occupational Pension Schemes Amendment Regulations, 1999, require all pension funds to disclose the social, environmental, or ethical factors they use for investment decisions. The Companies Act 2006 requires company directors to consider their business's impacts on people and the environment. It also requires some of the largest businesses to make public these impacts in annual reports	2006	Yes	2
U.S.A.	Voluntary	–	No	0

Data sources: government websites, KPMG International Survey of CSR Reporting, *The Handbook of International Corporate Governance* (2nd edition), published by the Institute of Directors, articles published by the Organization for Economic Co-operation and Development (OECD), CSR Europe, and the Shareholder Association for Research & Education (SARE).

Appendix C. Variable definitions

Variables	Description
<i>Dependent variable</i>	
COC_AVG	Firm's <i>ex ante</i> cost of equity capital measure (in percentage), which is the average of implied cost of equity derived from three different models including Gebhardt et al. (2001) [COC_GLS], Claus and Thomas (2001) [COC_CT], and the Modified PEG ratio model by Easton (2004) [COC_E]. The details of each of these models are provided in Appendix A

(continued on next page)

Appendix C (continued)

Variables	Description
<i>CSR information variables</i>	
<i>NONFIN</i>	An indicator variable that equals 1 if the concerned firm issues a standalone CSR report during the year, and 0 otherwise
<i>PAGES</i>	The number of pages for each standalone CSR report
<i>ASSURANCE</i>	An indicator variable that equals 1 if the firm's CSR report released during the year was assured by a third party, and 0 otherwise
<i>PERSISTENT</i>	An indicator variable that equals 1 if a CSR reporter is classified as a persistent CSR reporter (i.e., if a firm has published standalone CSR reports every year since its first CSR report issuance), and 0 otherwise
<i>POSTLEG</i>	An indicator variable that equals 1 for post-mandatory reporting years in countries with mandatory CSR disclosure requirements, and 0 otherwise
<i>Country-level stakeholder orientation</i>	
<i>STAKE</i>	The principal factor of <i>STAKELAW</i> , <i>CSRLAW</i> , <i>PUBAWARE</i> , and <i>PUBAWARE1</i> ^a
<i>STAKELAW</i>	A measure primarily assessing the legal environment of a country with regards to the protection of labor rights. It is the average rank score of the following four indices, with the first three from Botero et al. (2004) and the fourth from La Porta et al. (2004) : <ul style="list-style-type: none"> (i) Employment laws, a measure of the protection of labor and employment based on (a) alternative employment contracts, (b) cost of increasing hours worked, (c) cost of firing workers, and (d) dismissal procedures (ii) Social security laws, a measure of social security benefits based on (a) old age, disability, and death benefits, (b) sickness and health benefits, and (c) unemployment benefits (iii) Collective relations laws, a measure of the protection of collective relations based on (a) labor union power, and (b) collective disputes (iv) Human rights laws, an index for human rights protection, with higher scores indicating better human rights protection
<i>CSRLAW</i>	Equals 1 if the concerned country has mandatory disclosure requirements on CSR issues only for industrial companies or only for pension funds, 2 if the country has mandatory disclosure requirements for both industrial companies and pension funds, and 0 otherwise
<i>PUBAWARE</i>	A measure of public awareness of CSR issues at the country level, calculated as the mean rank score of the following two variables <ul style="list-style-type: none"> (1) Number of NGOs (non-government organizations) per million population, collected from EarthTrends.com, and (2) the total number of CSR reports issued by both commercial and noncommercial organizations divided by millions in population in each country
<i>PUBAWARE1</i>	An alternative measure of public awareness of CSR issues at the country level, primarily based on opinion surveys administered to global corporate executives. It is the mean rank score of the following four indices: <ul style="list-style-type: none"> (1) sustainable development priority, (2) ethical practice implementation, (3) social responsibility of business leaders, and (4) corporate responsibility competitiveness index (2003). The first three indices are from the Institute for Management Development's annual surveys (IMD). We use the average of the IMD yearly survey scores in the ranking procedure because these scores are relatively stable across years. Using yearly indices does not change the tenor of our results. The fourth index is from AccountAbility, an international professional institute devoted to promoting social accountability. This index is primarily based on various other surveys but also

Appendix C (continued)

Variables	Description
	incorporates some hard data. It consists of seven categories of social issues such as engagement with civil society and environmental management (National Corporate Responsibility Index 2003, http://www.accountability.org/)
<i>Other variables</i>	
<i>SIZE</i>	Firm size is measured as the natural log of a firm's market value of equity
<i>LEVERAGE</i>	Leverage ratio equals interest-bearing long-term debt (<i>DLTT</i>) divided by total assets (<i>AT</i>)
<i>BM</i>	Book to market ratio is calculated as the ratio of the book value of equity (<i>CEQ</i>) to the market value of equity
<i>RETVAR</i>	The variability of stock return measured as the standard deviation of daily stock returns over the past one year
<i>VAREARN</i>	The natural logarithm of the time-series standard deviation of earnings per share (EPS). We use a rolling window of ten years before the current year and require at least three years of EPS to calculate the standard deviation
<i>FCBIAS</i>	One-year-ahead analysts forecast error (Consensus minus Actual EPS) divided by the forecast period stock price
<i>STKEXCH</i>	As defined in Hope (2003), a summary score describing all of the major stock exchanges on which a firm was listed during the sample period. A listing on any of the U.S. exchanges is given a weight of 1.5, a listing on all other exchanges are given a weight of 1. The scores for each firm are summed. The stock listing data are obtained from Standard and Poor's Capital IQ database. Data source: Capital IQ (www.capitaliq.com)
<i>ADR</i>	An indicator variable that equals 1 if a non-U.S. company also trades in the U.S. markets through ADR (American Depository Receipts) programs during the year, and 0 otherwise. Data source: CRSP
<i>DJS</i>	CRSP equals 1 if the company is included in the Dow Jones Sustainability Index (DJSI) in any year from 2002 to 2008, which is the period for which the DJSI is publicly available, and 0 otherwise. Each year, Dow Jones selects companies that are industry leaders in sustainability performance for inclusion in the index (http://www.sustainability-index.com/)
<i>INFLATION</i>	One-year-ahead inflation rate for each country, each year for the 1995–2007 period, reflecting changes in the cost of acquiring a fixed basket of goods and services by the average consumers obtained from the Institute for Management Development (IMD) database
<i>LAW</i>	<i>LAW</i> represents the overall quality of the legal system and is measured as the rule of law index (divided by 10) from La Porta et al. (1997)
<i>CFIN</i>	Country-level financial opacity. It is the mean rank score of a country's average CIFAR ratings in three years (1991, 1993, and 1995) multiplied by (–1). CIFAR 91 and 93 are from Francis et al. (2005) and CIFAR 95 is from Bushman et al. (2004)
<i>FFIN</i>	Firm-level financial opacity measured by country-, industry- and year-adjusted average accruals based on Bhattacharya et al. (2003). The average accrual is calculated as the absolute value of a firm's accruals averaged over the past three years for each firm. The accruals (<i>ACCRUAL</i>) are computed using balance sheet and income statement information as $ACCRUAL = (\Delta CA - \Delta CL - \Delta CASH + \Delta STD - DEP + \Delta TP) / \text{lag}(TA)$, 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 portion of long-term debt included in total current liabilities; <i>DEP</i> is depreciation and amortization expense;

(continued on next page)

Appendix C (continued)

Variables	Description
	ΔTP is the change in income taxes payable; and $\text{lag}(TA)$ is total assets at the end of the previous year. $FFIN$ takes the value of 1 if the firm has a higher than country-industry-year mean of firms' average accruals, and 0 otherwise
MGMTFC	An indicator variable that equals 1 if a firm issued at least one management forecast in the year, and 0 otherwise. This variable is only available since 2001. Data source: Capital IQ (www.capitaliq.com)
ANANO	The natural logarithm of the number of analysts following the firm throughout the year
ROA	Return on assets measured as the ratio of income before extraordinary items over total assets at the beginning of the year
R&D	Research and development expense deflated by total assets. We assume that R&D is 0 if these data are missing
CAPEX	Capital expenditure divided by total assets
AGE	Firm age measured by the total number of years since the firm was included in the Global or NA COMPUSTAT database
MKTSHR	Market share measured by the sales of a firm in a year divided by the total sales of all companies in its industry in the same year. Industries are classified on the basis of the two-digits SIC codes
CIVIL	An indicator variable takes a value of 1 for countries with civil law legal origin, and 0 for those with common law legal origin (obtained from La Porta et al., 1998)
SECREG	SECREG captures the strength of securities regulation mandating and enforcing disclosures. It is measured as the mean of the disclosure index, the liability standard index, and the public enforcement index. All these securities regulation related variables are obtained from La Porta et al. (2006)
AUDIT	Variable indicating the percentage of firms in the country audited by the Big 5 accounting firms (or Big 4 after 2002). AUDIT equals 1, 2, 3, or 4 if the percentage ranges between (0%, 25%), (25%, 50%), (50%, 75%), and (75%, 100%), respectively. We obtain this variable from Bushman et al. (2004)
CAPFLOW	A measure for capital integration, obtained from Hail and Leuz (2006) . It equals 1 for countries with above median portfolio inflows and outflows as a percentage of the gross domestic product as reported by the International Monetary Fund for 2001
ANTIDIR	Anti-director index based on six specific elements of investor protection obtained from La Porta et al. (1998)

^a If not all variables are available for a country, for example, there is missing value for the Human Rights score for Hong Kong, and Corporate Responsibility Competitiveness Index for Philippines, and CIFAR 91 and 93 for Thailand, we use only the non-missing variables to compute the principal factor.

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