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Voluntary Nonfinancial Disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility Reporting

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ABSTRACT: We examine a potential benefit associated with the initiation of voluntary disclosure of corporate social responsibility (CSR) activities: a reduction in firms' cost of equity capital. We find that firms with a high cost of equity capital in the previous year tend to initiate disclosure of CSR activities in the current year and that initiating firms with superior social responsibility performance enjoy a subsequent reduction in the cost of equity capital. Further, initiating firms with superior social responsibility performance attract dedicated institutional investors and analyst coverage. Moreover, these analysts achieve lower absolute forecast errors and dispersion. Finally, we find that firms exploit the benefit of a lower cost of equity capital associated with the initiation of CSR disclosure. Initiating firms are more likely than non-initiating firms to raise equity capital following the initiations; among firms raising equity capital, initiating firms raise a significantly larger amount than do non-initiating firms.

Keywords: *corporate social responsibility; cost of capital; voluntary disclosure*.

Data Availability: *The data are publicly available from the sources identified in the paper.*

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I. INTRODUCTION

The last 15 years have witnessed a steadily increasing emphasis on socially responsible corporate activities around the world. While third parties, such as KLD Research and Analytics, Inc. (KLD), often track and rate the corporate social responsibility (CSR) performance of large firms, firms have also become increasingly willing to voluntarily issue standalone CSR reports in recent years.[1] According to CorporateRegister.com, a private company that specializes in tracking CSR reports, few standalone CSR reports were issued in the United States before the mid-1990s. However, since then, increasingly more U.S. firms have committed to making this type of disclosure. In 2007 alone, large firms issued about 300 CSR reports. Although CSR disclosing firms represent only a small fraction of the population of U.S. publicly listed firms, their aggregate market value constituted over 10 percent of the total U.S. market capitalization in 2007.[2] The rapid increase in CSR reporting naturally raises questions among researchers: What are the rationales behind this type of voluntary disclosure? What benefits do firms gain by spending resources on compiling and publishing these standalone reports, especially given that CSR performance ratings are often available to investors through third parties?

A number of factors potentially provide answers to these questions, such as the growing influence of global enterprises, the intensified scrutiny of corporate impact on the society and the economy as a result of a loss of trust after a series of corporate scandals around 2001, and the recent rapid growth in ethical/socially responsible investment in the United States and around the world.[3] Anecdotal evidence also indicates that firms' reputations and long-term sales can suffer because of poor CSR performance. For instance, Nike struggled for years and invested a great amount of financial resources and effort to regain its reputation after the 1997 child labor scandal.[4]

We examine one factor, namely, a reduction in firms' cost of equity capital, that potentially provides an explanation for the increasing trend in CSR disclosure. Among various potential factors influencing CSR disclosure decisions, we focus on the cost of equity capital because it plays a critical role in a firm's financing and general operations decisions. Also, corporate executives appear to believe that voluntarily communicating information can reduce their firms' cost of capital (Graham et al. 2005). Further, there is a longstanding interest among academics in the relation between disclosure and the cost of capital (Diamond and Verrecchia 1991; Botosan 1997; Leuz and Verrecchia 2000; Botosan and Plumlee 2002).

To determine whether and how CSR disclosure is related to firms' cost of equity capital, we employ a sample of firms that intersect two CSR data sources: (1) a comprehensive list of firms releasing electronic or hard-copy standalone CSR reports since 1993, collected from various sources on the Internet; and (2) the KLD STATS database that provides detailed CSR performance ratings for individual firms. Our analyses provide four important insights. First, firms with a high cost of equity capital in the previous year are significantly more likely than others to initiate standalone CSR disclosures. Second, the cost of equity capital decreases for CSR-initiating firms with superior CSR performance. Third, CSR-initiating firms with superior CSR performance attract dedicated institutional investors and analyst coverage. Moreover, these analysts have more

[1] Consistent with McWilliams and Siegel (2001), among others, we define CSR as instances where the company goes beyond compliance and voluntarily engages in actions that appear to advance social causes, including committing to environmental and human rights protection, providing community support, and so forth. In practice and academic research, CSR is often used interchangeably with "sustainability." We also follow this convention in the paper.

[2] This figure is based on the mean market cap of $14.47 billion for firms as represented in Table 2 and the total U.S. market cap of around $15.35 trillion on May 23, 2007.

[3] For example, according to the Social Investment Forum (2007), from 1995 to 2005, assets invested in socially responsible investment grew from $639 billion to $2.29 trillion, and accounted for approximately 11 percent of the total assets managed by professional managers.

[4] See http://www.bandt.com.au/news/25/0c00d225.asp.

accurate forecasts and lower forecast dispersion. Finally, corroborating the result on the relation between CSR disclosure and the cost of equity capital, CSR-initiating firms are significantly more likely than non-initiating firms to conduct seasoned equity offerings (SEOs) in the two years following these initiations and among firms conducting SEOs, CSR-initiating firms raise a significantly larger amount of capital than do non-initiating firms. Overall, our evidence is consistent with our predictions that a potential reduction in the cost of equity capital motivates firms to publish standalone CSR reports and that CSR disclosure by firms with superior CSR performance leads to a lower cost of equity capital.

This study is the first to investigate the impact of standalone voluntary disclosure of general CSR issues on the cost of equity capital. We contribute to the literature by extending the traditional research on voluntary disclosure beyond the narrow focus of financial disclosure. The extant finance and accounting literatures on voluntary disclosure focus primarily on management forecasts or conference calls that are short-term-oriented.[5] In contrast, CSR disclosure, which is broad in scope, is related to a firm's long-term development strategies and performance sustainability. Our results provide evidence on the rationales behind and the consequences of the recent trend in voluntary CSR disclosure.

Our study is related to, but differs from, the work of Plumlee et al. (2008) and Richardson and Welker (2001). Plumlee et al. (2008) examine the impact of voluntary environmental disclosure quality on firm value. We examine a broader concept of CSR, which includes environmental protection, community development, corporate governance practices, employee relations, diversity practices, human rights, and product quality. In addition, we use a measure of CSR that is different from Plumlee et al. (2008), who use a self-constructed index to measure firms' environmental disclosure quality. We use a proxy that indicates whether firms publish CSR reports. Also, the information examined by Plumlee et al. (2008) comes from corporate environmental reports as well as annual reports and 10-Ks, which reflect both voluntary and mandatory disclosures. The standalone CSR reports we examine are voluntary.

Our study also differs from Richardson and Welker (2001), who examine the relation between the cost of equity capital and social as well as financial disclosure. First, we study U.S. firms, whereas they examine Canadian firms. The United States and Canada differ considerably in institutions related to information disclosure, with the United States having more stringent regulations than Canada (Richardson and Welker 2001). If more stringent regulations and the associated higher level of litigation risk translate into a generally higher level of disclosure credibility, then we can observe different relations between disclosure and the cost of equity capital in these two countries. In addition, the CSR measure used by Richardson and Welker (2001) is based on annual reports, whereas we focus on standalone CSR disclosures. These two forms of disclosure differ in depth and breadth of CSR coverage.

Methodologically, we differ from Plumlee et al. (2008) and Richardson and Welker (2001) by employing a lead-lag approach enhanced with two-stage regressions in sensitivity analysis to deal with endogeneity and self-selection issues and by exploring the underlying channels, such as institutional ownership and analyst coverage, through which CSR disclosure affects the cost of equity capital. In sum, we contribute to the literature by complementing and extending Plumlee et al. (2008) and Richardson and Welker (2001).

Section II develops our hypotheses. Section III describes our sample and methodology. Section IV presents empirical evidence on the relation between CSR disclosure and the cost of equity capital. Section V summarizes and concludes.

[5] One of the few exceptions is Dietrich et al. (2001), who investigate the effect of the supplemental disclosure of forward-looking information on security prices.

II. RELATED RESEARCH AND HYPOTHESIS DEVELOPMENT

Most prior research on the relation between disclosure and the cost of capital focuses on financial disclosure (Core 2001; Healy and Palepu 2001; Leuz and Wysocki 2008). The consensus appears to be that a negative relation exists between the quality of financial disclosure and the cost of capital. Greater disclosure increases investors' awareness of a firm's existence and enlarges its investor base, which improves risk-sharing and reduces the cost of capital (Merton 1987). In addition, higher quality or more precise firm-specific disclosures decrease the covariance of a firm's cash flow with the cash flows of other firms (Hughes et al. 2007; Lambert et al. 2007), which essentially reduces the betas of individual firms and, hence, the cost of equity capital. Similarly, greater disclosure can lead to reduced information asymmetry among investors or between managers and investors. When the level of disclosure is inadequate and some investors are perceived to be better informed than others, informationally disadvantaged investors price-protect themselves and become less willing to trade. The resultant illiquidity increases the bid-ask spread and transaction costs (Verrecchia 2001), which leads to a higher required rate of return or cost of equity capital (Amihud and Mendelson 1986).

These mechanisms likely apply to both financial and nonfinancial disclosure, as long as the information concerned is value-relevant. Indeed, a fair amount of research suggests that CSR information is value-relevant (Margolis and Walsh 2001; Orlitzky et al. 2003; Al-Tuwaijri et al. 2004). Of course, CSR practices can affect firms' financial performance and value through channels other than those related to financial disclosure. For instance, voluntary socially responsible behavior can help firms avoid government regulation and, therefore, reduce compliance costs. In addition, socially responsible firms appeal to consumers who care about the corresponding social issues, which leads to superior sales and financial performance (Lev et al. 2010). Socially aware investors are willing to pay a premium for the securities of socially responsible firms (Anderson and Frankel 1980; Richardson and Welker 2001). Perhaps more important, some CSR projects have direct implications for positive cash flow even in the near future. For example, practices related to protecting the environment and improving employee welfare can reduce potential litigation and pollution cleaning costs, boost employee morale. And, thereby, production efficiency. These arguments highlight the importance of CSR disclosure in reducing information asymmetry and uncertainty related to factors affecting firm value (Rodriguez et al. 2006), which in turn reduces the cost of equity capital.

Nevertheless, a straightforward generalization of the cost of capital effect from financial disclosure to nonfinancial CSR disclosure is not always obvious. Standalone CSR reports are currently subject to very limited regulatory guidance. There is a common concern about the usefulness of this type of disclosure because of noncomparability and potential credibility issues and opportunistic behaviors of firms (Ingram and Frazier 1980; Hobson and Kachelmeier 2005).[6] In the end, whether *voluntary* CSR disclosure reduces a firm's cost of equity capital is an empirical question.

It is important to note that CSR performance ratings of large firms are often available to investors through third parties. These ratings could be directly associated with the cost of equity capital of these firms. However, ratings alone are unlikely to provide sufficient information for investors to assess firms' overall CSR performance. Detailed CSR disclosures potentially provide additional information necessary for investors to assimilate these summary ratings.[7] Further, voluntarily disclosing CSR activities demonstrates firms' confidence in their CSR performance, which

[6] Although some accounting and consulting firms provide voluntary assurance service (Simnett et al. 2009), there is not yet a government standard that regulates this service, and the assurance industry is still in its infancy.

[7] An obvious analogy is the usefulness of footnote disclosures and management discussions in supplementing financial statements.

sends a positive signal to investors, or, in the case of poor CSR performance, allows firms to offer explanations. Therefore, CSR disclosures contain information beyond that contained in CSR performance ratings.

Some firms also disclose information on CSR activities in their annual reports or filings with the SEC. However, a firm's voluntary compilation and publication of standalone CSR reports demonstrates its special effort and commitment to improving transparency regarding long-term performance and risk management. More importantly, compared with the CSR information provided in annual reports or 10-Ks, standalone CSR reports are more comprehensive and contain significantly more details.[8] Therefore, standalone CSR reports likely provide incrementally useful information for investors to evaluate firms' long-term sustainability. Focusing on standalone CSR reports can thus improve the power of our tests and shed light on this new form of voluntary nonfinancial disclosure.

Our first hypothesis predicts that a possible reduction in the cost of equity capital provides an incentive for firms to publish CSR reports. Frankel et al. (1995) find that firms increase their level of voluntary disclosure to raise capital in the future at a lower cost, which suggests that firms with a relatively higher cost of capital likely have a greater incentive to enhance disclosure. Lending support to the cost of capital incentive for disclosure, Sletten (2008) finds that stock price declines, which imply an increase in firms' cost of equity capital, induce managers to disclose more information.[9]

Of course, endogeneity and self-selection issues can arise if we examine a contemporaneous relation between CSR disclosure and the cost of equity capital. On the one hand, if CSR disclosure is motivated by a firm's desire to reduce its high cost of equity capital, then we should find a positive relation between CSR disclosure and the cost of the equity capital. On the other hand, if CSR disclosure leads to a lower cost of equity capital, then we should find a negative relation between CSR disclosure and the cost of equity capital. Therefore, the contemporaneous relation between CSR disclosure and the cost of equity capital could be ambiguous. To address the potential endogeneity and self-selection issues related to CSR disclosure and the cost of equity capital, we employ a lead-lag approach in our main analyses and state our first hypothesis below:

H1: The likelihood that a firm will disclose its corporate social responsibility activities is positively associated with its cost of equity capital in the previous year.

If CSR disclosure provides information that is incremental to information provided in third-party CSR performance ratings or other information dissemination channels such as annual reports or 10-Ks, then the preceding discussion suggests that CSR disclosure should lead to a lower cost of equity capital. This logic suggests the following hypothesis:

H2: Corporate social responsibility disclosure is associated with a subsequently lower cost of equity capital.

Support for H1 and H2 would provide justification for the rationales behind and the consequences of CSR disclosure. We also test a corollary of H1 and H2 by examining whether disclos-

[8] In untabulated analyses and relying on manual data collection, we compare CSR-related content in the first-time standalone CSR reports and annual reports (or 10-Ks in the absence of annual reports) of 50 firms out of our final sample of 213 firms. We find that, on average, standalone CSR reports are significantly longer (28.3 pages versus 1.5 pages) and cover significantly more CSR issues (6.4 issues versus 1.5 issues) compared to annual reports or 10-Ks. The inference of the above comparison is also supported by a comprehensive survey conducted by KPMG (2008), which finds that among the largest 100 U.S. firms, only about 1 percent of them adequately integrate CSR reports into their annual reports.

[9] However, the result documented by Sletten (2008) could be attributable to either the numerator (cash flow) effect or the denominator (cost of capital) effect, or both.

ing firms seek external financing after CSR disclosures. If CSR disclosure is motivated by firms' desire to reduce the cost of equity capital, then these firms will be more likely than non-disclosing firms to raise equity capital after their CSR disclosures to exploit the reduction in their cost of equity capital, and they will also strive to raise a larger amount. While we formulate our predictions based on CSR disclosure, in the empirical analysis we focus on CSR-disclosure-initiating firms since initial reports likely contain more information than mundane continuing reports.

III. SAMPLE AND METHODOLOGY

Sample Description

CSR disclosure policies can be sticky across years. Therefore, we focus on first-time standalone CSR reports. We collect standalone CSR reports issued by U.S. firms from various sources, including (1) Corporate Social Responsibility Newswire, (2) CorporateRegister.com, (3) Internet searches, and (4) company websites. The first two sources are the two leading organizations collecting and disseminating news and information related to CSR. We verify our CSR reporting sample by checking whether we can find their actual standalone CSR reports.[10]

In our main analyses, we control for the relative social responsibility performance of sample firms, as proxied for by the KLD social performance rating scores. Our final sample comprises firms that are in both the KLD STATS and Compustat databases. KLD evaluates CSR performance for all covered firms along a variety of dimensions, regardless of whether they release standalone reports.[11] Starting from 1991, KLD STATS rated approximately 650 companies every year, comprising mainly all firms in the S&P 500 and Domini 400 Social SM Index. During 2001 to 2002, KLD expanded its coverage to include the largest 1,000 U.S. companies by market capitalization. Since 2003, it has covered the largest 3,000 U.S. companies based on market capitalization.

Table 1, Panel A shows the industry distribution, based on Barth et al.'s (1998) industry classifications, of CSR reports and disclosing firms. During the 1993–2007 period, 294 firms issued a total of 1,190 standalone CSR reports.[12] The Utilities industry has the largest proportion (30.4 percent) of firms publishing CSR reports, while the Services and Insurance/Real Estate industries have the lowest proportion of disclosing firms (2.15 percent and 0.40 percent, respectively). Consistent with the broad scope of CSR disclosure, many non-pollution-prone industries including the Food and Retail industries also actively disclose their social performance. After eliminating 81 firms because of missing data, our final sample contains 213 disclosing firms. The Utilities industry constitutes the largest proportion of the final sample (13.4 percent). Table 1, Panel B presents the distribution by year of CSR reports and disclosing firms. Overall, there is a steadily increasing trend in the number of CSR reports over time from 8 in 1993 to 184 in 2007. The average report length nearly doubles from about 20 pages in the early 1990s to more than 40 pages in the most recent years. On average, a CSR report has 36 pages.[13]

[10] It is tempting to examine the information content of CSR disclosures. However, this test is hampered by the lack of information on the exact reporting dates of the reports. Nevertheless, we conduct an event study based on the reporting months of the reports. We find that (1) during the CSR reporting month, there is no difference in raw and market-adjusted returns between high and low CSR performance firms; (2) during the three-month period following the CSR reporting month, high CSR performance firms appear to do slightly better than low CSR performance firms, based on market-adjusted returns; and (3) there is no difference in returns between CSR reporting months and non-CSR reporting months.

[11] The Appendix to this paper lays out the main categories of CSR issues employed by KLD in its rating process and also the average rating scores across industries.

[12] Sometimes a firm publishes multiple CSR reports, often discussing different CSR-related issues such as environmental versus non-environmental matters, in a single year. When that is the case, we combine them into one firm-year observation.

[13] The statistics for page numbers are based on all CSR reports published in the year, not just on first-time reports.

TABLE 1
Sample Distribution

Panel A: Distribution by Industry

	Industries	No. of CSR Reports	%	No. of CSR Reporters	%	No. of Firms in KLD Database	% of KLD Firms Disclosing CSR Reports	Average No. of Pages per Report	No. of First-Time CSR Reports	%
		Initial Sample							Full Sample	
1	Mining/Construction	33	2.77	9	3.06	83	10.84	43	7	3.29
2	Food	73	6.13	17	5.78	86	19.77	43	14	6.57
3	Textiles/Print/Publish	75	6.30	20	6.80	168	11.90	32	16	7.51
4	Chemicals	102	8.57	18	6.12	94	19.15	25	12	5.63
5	Pharmaceuticals	80	6.72	14	4.76	297	4.71	38	12	5.63
6	Extractive	96	8.07	16	5.44	180	8.89	33	13	6.10
7	Manf: Rubber/glass/etc.	18	1.51	4	1.36	53	7.55	47	3	1.41
8	Manf: Metal	28	2.35	4	1.36	100	4.00	30	3	1.41
9	Manf: Machinery	30	2.52	9	3.06	120	7.50	34	8	3.76
10	Manf: Electrical Eqpt	22	1.85	6	2.04	133	4.51	21	4	1.88
11	Manf: Transport Eqpt	62	5.21	13	4.42	87	14.94	41	10	4.69
12	Manf: Instruments	32	2.69	9	3.06	232	3.88	35	8	3.76
13	Manf: Misc.	3	0.25	2	0.68	25	8.00	53	2	0.94
14	Computers	123	10.34	27	9.18	593	4.55	36	23	10.80
15	Transportation	30	2.52	12	4.08	275	4.36	41	8	3.76
16	Utilities	188	15.80	45	15.31	148	30.41	39	29	13.62
17	Retail: Wholesale	22	1.85	5	1.70	106	4.72	24	3	1.41
18	Retail: Misc.	29	2.44	12	4.08	222	5.41	38	10	4.69
19	Retail: Restaurant	17	1.43	4	1.36	48	8.33	52	3	1.41
20	Financial	92	7.73	34	11.56	778	4.37	33	18	8.45
21	Insurance/Real Estate	1	0.08	1	0.34	248	0.40	29	0	0.00
22	Services	14	1.18	8	2.72	372	2.15	22	5	2.35
23	Others	20	1.68	5	1.70	25	20.00	48	2	0.94
	Total	1,190	99.99	294	99.97				213	100.01

(continued on next page)

Panel B: Distribution by Year

Year	No. of CSR Reports	%	No. of First-Time CSR Reporters	%	No. of Firms in KLD Database	% of KLD Firms Disclosing CSR Reports	Average No. of Pages per Report	No. of First-Time CSR Reports	%
	Initial Sample							Final Sample	
1993	8	0.67	6	2.04	432	1.85	22	3	1.41
1994	16	1.34	11	3.74	423	3.78	24	7	3.29
1995	23	1.93	10	3.40	440	5.23	25	5	2.35
1996	31	2.61	12	4.08	456	6.80	23	9	4.23
1997	46	3.87	14	4.76	459	10.02	23	11	5.16
1998	41	3.45	8	2.72	494	8.30	23	4	1.88
1999	56	4.71	15	5.10	518	10.81	25	7	3.29
2000	57	4.79	18	6.12	537	10.61	23	11	5.16
2001	101	8.49	42	14.29	928	10.88	28	34	15.96
2002	99	8.32	28	9.52	981	10.09	31	18	8.45
2003	101	8.49	22	7.48	2,639	3.83	33	14	6.57
2004	121	10.17	20	6.80	2,750	4.40	40	16	7.51
2005	149	12.52	32	10.88	2,792	5.34	42	30	14.08
2006	157	13.19	31	10.54	2,790	5.63	41	23	10.80
2007	184	15.46	25	8.50	2,827	6.51	45	21	9.86
Total	1,190	100.01	294	99.97				213	100.00

This table provides the sample distribution by industry and year for both the initial CSR reports collected and CSR reports selected for the final sample. "No. of First-Time CSR Reports" is the number of CSR reports in the earliest reporting year of a firm (i.e., CSR report-initiating year) based on our collected CSR reports. "% of KLD Firms Disclosing CSR Reports" is the number of CSR disclosing firms in any industry (namely, "No. of CSR Reporters" in Panel A) or year (namely, "No. of CSR Reports" in Panel B) divided by the total number of KLD firms in that industry or year, respectively.

Empirical Models and Variable Definitions

Past Cost of Equity Capital and Current-Year CSR Disclosure

To test H1, we examine whether a high cost of equity capital in the previous year gives firms an incentive for CSR disclosure in the current year. In the empirical regression model, we control for other determinants of CSR disclosure to parse out potential confounding effects. However, the current literature provides limited information on what motivates a firm's CSR disclosure decision. As CSR disclosure is part of a firm's overall voluntary disclosure strategy, we identify potential factors from the voluntary disclosure literature that influence a firm's decision to commit to CSR disclosure. Our logistic regression model is specified as follows:

$$\begin{aligned}\log[\text{prob}(DISCI_{i,t})/(1-\text{prob}(DISCI_{i,t}))] = {} & \beta_0 + \beta_1 COC_{i,t-1} + \beta_2 PERFORM_{i,t-1} \\ & + \beta_3 HICONCERN_{i,t-1} + \beta_4 SIZE_{i,t-1} \\ & + \beta_5 LITIGATION_{i,t-1} + \beta_6 ROA_{i,t-1} \\ & + \beta_7 COMPETITION_{i,t-1} + \beta_8 FIN_{i,t-1} \\ & + \beta_9 TOBINQ_{i,t-1} + \beta_{10} LEV_{i,t-1} + \beta_{11} GLOBAL_{i,t-1} \\ & + \beta_{12} LIQUIDITY_{i,t-1} + \beta_{13} ABS\_EM_{i,t-1} \\ & + \beta_{14} CIG_{i,t-1} + \Sigma IND_{i,t} + \Sigma YEAR_{i,t} + \varepsilon_{i,t} \qquad (1)\end{aligned}$$

where $DISCI_{i,t}$ is an indicator variable that equals 1 if firm i discloses a standalone CSR report for the first time in year t (initiating firm-years or initiators), and 0 (non-initiating firm-years or non-initiators) otherwise. Therefore, the control group ($DISCI = 0$), namely, non-initiators, includes all years of firms that never issue CSR reports and the years before and after CSR-initiating firms' first-time reports.

Our main variable of interest, the cost of equity capital in the year prior to first-time CSR disclosure, *COC*, is the *ex ante* or implied cost of equity capital, calculated using three different models, namely, those of Gebhardt et al. (2001), Claus and Thomas (2001), and Easton (2004). The mean of the three measures (*COC_AVG*) serves as our proxy for the cost of equity capital. To implement the estimation, we obtain expected future earnings per share from I/B/E/S and market price and dividend per share from Compustat.

We include a number of control variables in the regression. *PERFORM* is the total KLD score of CSR strengths, which we use to proxy for firms' CSR performance. Firms with better social performance have a greater incentive to disclose (Dye 1985). The KLD database is widely used in CSR research (Graves and Waddock 1994; Berman et al. 1999; Baron et al. 2009). Waddock (2003, 369) regards it as "the *de facto* (CSR) research standard at the moment." [14] KLD ranks firms' CSR performance in seven main categories: (1) community, (2) corporate governance, (3) diversity, (4) employee relations, (5) environment, (6) human rights, and (7) product.[15] We adjust raw CSR strength scores each year by industry medians to get relative performance scores that are comparable across industries.

[14] Of course, there is also no lack of criticism of the KLD database. For example, KLD uses indicator variables to describe firms' CSR performance. This is a crude methodology and potentially suffers from loss of information. Chatterji et al. (2009) show that KLD environmental strengths do not accurately predict pollution levels or compliance violations, and that KLD ratings do not optimally use publicly available data.

[15] The rankings are based on information obtained from surveys, financial statements, government documents, peer-reviewed legal journals, and reports from mainstream media. KLD defines a set of potential strengths under each category and assigns a value of 1 if a strength exists, and a value of 0 otherwise. See the Appendix for more details on KLD's rating categories.

We control for firm size (*SIZE*) because size captures various factors motivating firms to issue CSR reports such as public pressure or financial resources (Lang and Lundholm 1993). We measure *SIZE* as the natural logarithm of the market value of common equity at the beginning of each year. Skinner (1997) argues that firms facing a higher level of litigation risk (*LITIGATION*) are more likely to make voluntary disclosure to preempt potential lawsuits. *LITIGATION* is an indicator variable that equals 1 if a firm operates in a high-litigation industry (SIC codes of 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370), and 0 otherwise (Francis et al. 1994; Matsumoto 2002). As firms with better financial performance likely have more resources to practice CSR activities and produce CSR reports, we include return on assets (*ROA*), computed as income before extraordinary items scaled by total assets at the beginning of each year.

Dye (1985) suggests that proprietary costs arising from product market competition can reduce disclosure incentives. Hence, we control for industry competition (*COMPETITION*), which is proxied by the Herfindahl-Hirschman Index multiplied by −1. This index is computed as the sum of the squared fractions of sales of the 50 largest firms in an industry (industries are defined based on the two-digit SIC codes). In cases where there are fewer than 50 firms in an industry, we use all firms in the industry to calculate market shares. In addition, firms raising capital in the public market have a greater propensity to make voluntary disclosures (Frankel et al. 1995). We control for a firm's financing activities (*FIN*) by assessing the amount of debt or equity capital raised by the firm during the year scaled by total assets at the beginning of the year. Following Richardson et al. (2004), *FIN* is measured as the sale of common and preferred shares minus the purchase of common and preferred shares plus the long-term debt issuance minus the long-term debt reduction.

We also control for growth opportunities (*TOBINQ*) because firms in an expansionary period are more financially constrained and have fewer resources for CSR activities and disclosure. However, growth firms also tend to have higher levels of information asymmetry, which could induce managers to make more disclosures to attract potential investors. The net effect is hence unknown *ex ante*. *TOBINQ* is Tobin's Q, defined as the market value of common equity plus the book value of preferred stock, book value of long-term debt and current liabilities, scaled by the book value of total assets. We include the debt ratio (*LEV*) in the model because debt servicing plays a monitoring role and debt holders demand greater disclosure (Leftwich et al. 1981). We define *LEV* as the ratio of total debt divided by total assets.

In addition, firms with a global focus, especially those operating in emerging markets, face greater pressure to commit to social performance and are accordingly more likely to provide CSR disclosure. *GLOBAL* is an indicator variable that equals 1 if a firm reports foreign income, and 0 otherwise. Further, managers have incentives to increase the liquidity of their firms' stock in order to issue equities or sell shares of their firm obtained from options or other incentive compensation plans. One way to increase liquidity is to improve transparency and supply more information to investors. Our liquidity measure, *LIQUIDITY*, is the ratio of the number of shares traded in the year to the total shares outstanding at the year-end.

Finally, CSR disclosure could be correlated with the general disclosure policies and financial transparency of firms. To control for this possibility, we include two variables to proxy for firm financial disclosure quality and voluntary disclosure policy: earnings quality (*ABS_EM*) and management earnings forecasts (*CIG*). We use the absolute value of abnormal accruals from the modified Jones (1991) model, based on Dechow et al. (1995), to proxy for earnings quality (Francis et al. 2008).[16] Following prior studies that use management forecasts as a direct measure

[16] Using the original Jones (1991) model or an alternative version developed by Dechow et al. (2003, 359, Equation (2b)) yields similar results.

of a firm's disclosure policy (Rogers and Van Buskirk 2009), we define *CIG* as an indicator variable that equals 1 if a firm issues at least one earnings forecast in the year, and 0 otherwise. In all specifications of the model, we include industry and year indicators to control for potential industry and year effects.

Effect of CSR Disclosure on the Future Cost of Equity Capital

Hypothesis 2 predicts that CSR disclosure leads to a lower cost of equity capital. We test H2 by estimating the following regression model:

$$\begin{aligned}\Delta\%COC_{i,t+1} = {} & \beta_0 + \beta_1 DISCI_{i,t} + \beta_2 \Delta SIZE_{i,t} + \beta_3 \Delta BETA_{i,t} + \beta_4 \Delta LEV_{i,t} + \beta_5 \Delta MB_{i,t} \\ & + \beta_6 \Delta LTG_{i,t} + \beta_7 \Delta LNDISP_{i,t} + \Sigma IND_{i,t} + \Sigma YEAR_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

where $\Delta\%COC_{i,t+1}$ is the percentage change in the cost of equity capital from year t to year t+1. The control variables also adopt the change form. A negative coefficient on *DISCI* would support H2.

The control variables are derived from prior research. Fama and French (1992) find that expected returns are negatively associated with firm size and positively associated with the book-to-market ratio. Hence, we include firm size (*SIZE*) and the market-to-book ratio (*MB*). The market model *BETA*, which is estimated using CRSP daily data for each year, is included to control for systematic risk. Gebhardt et al. (2001) and Gode and Mohanram (2003) find that the implied cost of equity capital is positively associated with long-term growth rate. We therefore include an empirical proxy of long-term growth rate based on I/B/E/S analyst EPS forecasts (*LTG*), which is measured as the difference between the two-year-ahead consensus EPS forecast and the one-year-ahead consensus EPS forecast scaled by the one-year-ahead consensus EPS forecast. Gebhardt et al. (2001) and Dhaliwal et al. (2005) find that analyst forecast dispersion is negatively associated with the implied cost of equity capital. Thus, we include analyst forecast dispersion (*LNDISP*), which is calculated as the logarithm of the standard deviation of analyst EPS forecasts divided by the consensus forecast. We include leverage (*LEV*) because Fama and French (1992) suggest that the cost of equity capital increases as the degree of leverage increases. All other variables are as defined earlier.

Although firms may be motivated by a possible reduction in the cost of equity capital when deciding whether to issue a CSR report, from the perspective of investors, CSR disclosure *per se* may not necessarily warrant a lower cost of equity capital. Corporate managers could attempt to manage public impressions through such disclosures; therefore, CSR information can be self-serving and noncredible (Cormier and Magnan 2003; Hobson and Kachelmeier 2005). Investors are likely to have a favorable perception if a firm actually performs well in its CSR practices relative to its peers. To incorporate this possibility, we augment Equation (2) with a measure of a firm's relative CSR performance from KLD (*HIPERFORM*):

$$\begin{aligned}\Delta\%COC_{i,t+1} = {} & \beta_0 + \beta_1 DISCI_{i,t} + \beta_2 HIPERFORM_{i,t} + \beta_3 DISCI_{i,t} * HIPERFORM_{i,t} \\ & + \beta_4 \Delta SIZE_{i,t} + \beta_5 \Delta BETA_{i,t} + \beta_6 \Delta LEV_{i,t} + \beta_7 \Delta MB_{i,t} + \beta_8 \Delta LTG_{i,t} \\ & + \beta_9 \Delta LNDISP_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

where *HIPERFORM* is an indicator variable that equals 1 if a firm's CSR performance score, *PERFORM*, is higher than its industry median (in other words, if the firm is a superior CSR performer in its industry), and 0 otherwise. All other variables are as defined earlier. We expect the effect of *DISCI* * *HIPERFORM* to be negative. In an additional test, instead of using the interaction term between *DISCI* and *HIPERFORM*, we estimate Equation (2) within the high and low partitions of CSR performance scores. Using partitioned subsamples sacrifices some power due to

reduced sample size, but has the benefit of flexibility that allows the effects of other variables to also vary based on high or low levels of CSR performance scores.

Endogeneity and self-selection could potentially affect our results. In our main analysis, we use a lead-lag approach to tackle these issues. To further enhance inferences based on our lead-lag approach, we adopt the Heckman and Hausman two-stage procedures and repeat our main analyses. The Heckman two-stage procedure introduces the inverse Mills ratio into the second-stage OLS regression to control for self-selection bias that is related to CSR disclosure. We obtain qualitatively similar results using the Heckman two-stage procedure.[17] The Hausman test deals with potential endogeneity in the data. We conduct the Hausman test and find that endogeneity does not qualitatively affect our main results.

IV. RESULTS

Descriptive Statistics

Table 2, Panel A provides descriptive statistics for the variables included in Equation (1) for the full sample and separately for initiators and non-initiators. The cost of equity capital before CSR disclosure is significantly higher ($p = 0.04$) among CSR initiators (12.86 percent) than among non-initiators (11.98 percent). This difference is also reflected in a significantly positive correlation coefficient between *DISCI* and *COC_AVG* in Table 2, Panel B, providing initial support for H1.

Consistent with the theory on voluntary disclosure, firms voluntarily publishing standalone CSR reports tend to have superior CSR performance (*PERFORM*) relative to their industry peers. The difference in CSR performance between the two groups (1.613 for initiators versus −0.166 for non-initiators) is significant ($p < 0.01$). The correlation between *DISCI* and *PERFORM* is also significantly positive though at a relatively moderate level of 0.09 based on the Spearman correlation and 0.13 based on the Pearson correlation (see Table 2, Panel B). This highlights the importance of including *PERFORM* in our regression equations.

Initiators are significantly larger (*SIZE*: 9.147 for initiators versus 5.783 for non-initiators, $p < 0.01$) and more profitable (*ROA*: 0.051 for initiators versus 0.015 for non-initiators, $p < 0.01$) than non-initiators, lending support to the financial resources argument for CSR disclosure. Contrary to the proprietary information argument, initiators tend to observe greater industry competition than non-initiators (*COMPETITION*: −0.060 for initiators versus −0.069 for non-initiators, $p = 0.02$).

Initiators have a significantly lower level of financing than non-initiators (*FIN*: −0.019 for initiators versus 0.043 for non-initiators, $p < 0.01$). The negative financing level for initiators implies that these firms, in net effect, either have repurchased stock or redeemed their debts. Firms normally conduct repurchases when they believe that their stock is undervalued, indicating a high cost of equity capital, which in turn provides an incentive for managers to increase disclosure and transparency levels. Similarly, the redemption of mature debts likely implies that firms need future financing to maintain a normal capital level. These firms would also be willing to increase their level of disclosure if doing so helped them to lower the cost of borrowing.

Initiators have a higher degree of leverage than non-initiators (*LEV*: 0.265 for initiators versus 0.221 for non-initiators, $p < 0.01$). Those with a higher level of global operations are also more likely to publish CSR reports (*GLOBAL*: 0.460 for initiators versus 0.219 for non-initiators, $p < 0.01$), consistent with the notion that these firms attract more attention in the international community. Contrary to the notion of disclosing information to improve liquidity, initiators actually

[17] The only exception is for the test of analyst forecast errors. Among better CSR performers, the coefficient on *DISCI* is positive and insignificant.

TABLE 2
Summary Statistics and Correlation

Panel A: Mean Comparison

Variable	Full Sample	$DISCI_t = 1$ (n = 213)	$DISCI_t = 0$ (n = 11,712)	t-value (difference)
$COC\_AVG_{t-1}(\%)$	11.988	12.855	11.985	2.08
$PERFORM_{t-1}$	−0.142	1.613	−0.166	11.66
$SIZE_{t-1}$	5.795	9.147	5.783	41.13
$LITIGATION_{t-1}$	0.204	0.199	0.204	−0.22
ROA_{t-1}	0.017	0.051	0.015	13.06
$COMPETITION_{t-1}$	−0.069	−0.060	−0.069	2.28
FIN_{t-1}	0.042	−0.019	0.043	−14.36
$TOBINQ_{t-1}$	2.046	1.994	2.047	−0.53
LEV_{t-1}	0.221	0.265	0.221	4.70
$GLOBAL_{t-1}$	0.192	0.460	0.219	5.44
$LIQUIDITY_{t-1}$	1.248	1.387	1.247	2.10
CIG_{t-1}	0.528	0.646	0.527	15.09
ABS_EM_{t-1}	0.068	0.032	0.066	−6.84

Panel B: Spearman\Pearson correlation (n ($DISCI = 0$) = 11,712, n ($DISCI = 1$) = 213)

	$DISCI_t$	COC_AVG_{t-1}	$PERFORM_{t-1}$	$SIZE_{t-1}$	$LITIGATION_{t-1}$	ROA_{t-1}	$COMPETITION_{t-1}$
$DISCI_t$		**0.01**	**0.13**	**0.11**	0.00	**0.02**	**0.01**
COC_AVG_{t-1}	**0.01**		0.00	**0.01**	**−0.07**	**−0.11**	**0.03**
$PERFORM_{t-1}$	**0.09**	0.01		**0.23**	0.00	**0.07**	**−0.03**
$SIZE_{t-1}$	**0.08**	**0.01**	**0.21**		**−0.02**	**0.25**	**0.09**
$LITIGATION_{t-1}$	0.00	**−0.09**	**−0.03**	**−0.03**		**−0.16**	**0.10**
ROA_{t-1}	**0.02**	**−0.06**	**0.04**	**0.24**	**−0.03**		**−0.09**
$COMPETITION_{t-1}$	**0.01**	**0.07**	**−0.03**	**0.12**	**0.07**	**−0.18**	
FIN_{t-1}	**−0.02**	**−0.11**	**−0.06**	**−0.14**	**0.08**	**−0.09**	**0.02**

(continued on next page)

Panel B: Spearman\Pearson correlation (n (*DISCI* = 0) = 11,712, n (*DISCI* = 1) = 213)

	$DISCI_t$	COC_AVG_{t-1}	$PERFORM_{t-1}$	$SIZE_{t-1}$	$LITIGATION_{t-1}$	ROA_{t-1}	$COMPETITION_{t-1}$
$TOBINQ_{t-1}$	0.00	**−0.32**	**0.02**	**0.23**	**0.18**	**0.29**	**0.10**
LEV_{t-1}	**0.02**	**0.15**	0.01	**0.08**	**−0.15**	**−0.15**	**−0.03**
$GLOBAL_{t-1}$	**0.05**	**−0.05**	**0.03**	**0.24**	**0.03**	**0.10**	**−0.07**
$LIQUIDITY_{t-1}$	**0.02**	**−0.06**	−0.01	**0.28**	**0.22**	**0.05**	**−0.04**
CIG_{t-1}	**0.08**	**0.02**	**0.08**	**0.23**	**0.04**	**0.10**	0.00
ABS_EM_{t-1}	**−0.03**	**−0.07**	**−0.02**	**−0.21**	**0.05**	**−0.04**	**−0.06**

	FIN_{t-1}	$TOBINQ_{t-1}$	LEV_{t-1}	$GLOBAL_{t-1}$	$LIQUIDITY_{t-1}$	CIG_{t-1}	ABS_EM_{t-1}
$DISCI_t$	**−0.02**	0.00	**0.01**	**0.03**	**0.01**	**0.08**	**−0.03**
COC_AVG_{t-1}	**−0.09**	**−0.22**	**0.14**	0.01	**−0.01**	**0.01**	**−0.04**
$PERFORM_{t-1}$	**−0.06**	**0.02**	0.01	**0.03**	**−0.02**	**0.09**	**−0.04**
$SIZE_{t-1}$	**−0.14**	**0.15**	**0.04**	**0.12**	**0.22**	**0.22**	**−0.20**
$LITIGATION_{t-1}$	**0.11**	**0.17**	**−0.13**	**0.01**	**0.21**	**0.04**	**0.05**
ROA_{t-1}	**−0.28**	**−0.15**	**−0.06**	**0.04**	**−0.05**	**0.08**	**−0.20**
$COMPETITION_{t-1}$	**0.03**	**0.08**	**−0.04**	**0.02**	**0.04**	**0.02**	**−0.02**
FIN_{t-1}		**0.30**	**−0.27**	**−0.04**	**0.08**	**−0.07**	**0.14**
$TOBINQ_{t-1}$	**0.18**		**−0.25**	**−0.03**	**0.29**	**0.03**	**0.21**
LEV_{t-1}	**−0.26**	**−0.37**		**−0.01**	**−0.06**	0.00	**−0.05**
$GLOBAL_{t-1}$	**−0.05**	**0.01**	**−0.01**		**0.04**	**0.07**	**−0.05**
$LIQUIDITY_{t-1}$	**0.08**	**0.32**	**−0.07**	**0.12**		**0.17**	**0.14**
CIG_{t-1}	**−0.06**	**0.08**	**0.01**	**0.14**	**0.22**		**−0.06**
ABS_EM_{t-1}	**0.10**	**0.14**	**−0.11**	**−0.07**	**0.11**	**−0.06**	

All continuous variables are winsorized at the 1st and 99th percentiles. In Panel B, the Spearman (Pearson) correlations are below (above) the diagonal. A correlation coefficient in bold indicates that the correlation is statistically significant at least at the 10 percent level.

Variable Definitions:

$DISCI_t$ = indicator variable that equals 1 if it is the earliest reporting year of a firm that issues CSR reports (CSR report initiating year), and 0 otherwise;

COC_AVG_{t-1} = implied cost of equity capital (in percentage) in year $t-1$ estimated as the mean of three different models: Gebhardt et al. (2001), Claus and Thomas (2001), and Easton (2004);

(continued on next page)

$PERFORM_{t-1}$ = measure of social performance defined as the industry-adjusted total CSR strength scores from the seven CSR rating categories obtained from the KLD Research & Analytics database;

$SIZE_{t-1}$ = natural logarithm of the market value of equity (CSHO * PRCC_F) at the beginning of each year;

$LITIGATION_{t-1}$ = indicator variable that equals 1 if the firm operates in a high-litigation industry (SIC codes of 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370), and 0 otherwise;

ROA_{t-1} = total return on assets measured as the ratio of income before extraordinary items (IB) over total assets (AT) at the beginning of each year;

$COMPETITION_{t-1}$ = Herfindahl-Hirschman Index multiplied by −1. The Herfindahl-Hirschman Index is calculated by summing the squares of the market shares of the 50 largest companies in an industry. We calculate a firm's market share by dividing the sales (SALE) of a firm in year *t* by the total sales of all of the 50 largest companies in an industry in that year. We define industries based on the two-digit SIC codes. In cases where there are fewer than 50 companies in an industry, we use all companies in that industry to calculate the market share of each firm;

FIN_{t-1} = amount of debt or equity capital raised by the firm scaled by total assets at the beginning of year $t-1$. It is measured as the issuance of common stock and preferred shares minus the purchase of common stock and preferred shares (SSTK – PRSTKC) plus the long-term debt issuance minus the long-term debt reduction (DLTIS – DLTR);

$TOBINQ_{t-1}$ = market value of common equity plus the book value of preferred stock (PSTKL), book value of long-term debt (DLTT) and current liability (LCT), scaled by the book value of total assets;

LEV_{t-1} = leverage ratio, which is defined as the ratio of total debt (DLTT + DLC) divided by total assets;

$GLOBAL_{t-1}$ = indicator variable that equals 1 if the firm reports non-zero foreign income (PIFO), and 0 otherwise;

$LIQUIDITY_{t-1}$ = ratio of the number of shares traded in year $t-1$ to the total shares outstanding at the end of year $t-1$;

CIG_{t-1} = indicator variable that equals 1 if the firm issues an earnings forecast in year $t-1$, and 0 otherwise. We obtain data for *CIG* from First Call database; and

ABC_EM_{t-1} = absolute value of abnormal accruals estimated based on the modified Jones model. The modified-Jones model discretionary accrual is an estimated cross-sectional each year using all firm-year observations in the same two-digit SIC code as follows: $TA_{i,t} = \beta_0 + \beta_1(1 / Assets_{i,t-1}) + \beta_2(\Delta Sales_{i,t} - \Delta REC_{i,t}) + \beta_3 PPE_{i,t} + \varepsilon_{i,t}$, where TA_{it} is defined as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization, scaled by lagged total assets; $\Delta Sales_{it}$ is the change in sales scaled by lagged total assets; $\Delta REC_{i,t}$ is the change in accounts receivable scaled by lagged total assets; and PPE_{it} is net property, plant, and equipment scaled by lagged total assets. Only industry-years with at least eight firms for estimation are considered. We use the residuals from the annual cross-sectional industry regression model above as discretionary accruals.

have higher liquidity levels than non-initiators (*LIQUIDITY*: 1.387 for initiators versus 1.247 for non-initiators, $p = 0.04$). Finally, initiators have better financial disclosure as manifested in their more frequent management forecasts (*CIG*: 0.646 for initiators versus 0.527 for non-initiators, $p < 0.01$) and better earnings quality (*ABS_EM*: 0.032 for initiators versus 0.066 for non-initiators, $p < 0.01$) than non-initiators.

Cost of Equity Capital and the Likelihood of CSR Disclosure

Hypothesis 1 predicts that a firm's likelihood of disclosing its corporate social responsibility activities is positively associated with its cost of equity capital in the previous year. We report the regression results for Equation (1) in Table 3. In Column I, we include all first-time reporting firm-year observations. In Column II, we exclude first-time reports that primarily discuss environmental issues, following Simnett et al. (2009). In Column III, we examine the robustness of our results to the exclusion of the Utilities industry.

Across all three specifications of the dependent variable, the cost of equity capital, *COC_AVG*, in year $t-1$, is significantly positively associated with a firm's likelihood of voluntarily issuing a standalone CSR report in year t (coeff. $= 0.049$, $p < 0.01$; coeff. $= 0.052$, $p < 0.01$; and coeff. $= 0.062$, $p < 0.01$ in Columns I, II and III, respectively), consistent with H1, which posits that a higher past cost of equity capital is associated with a greater likelihood of voluntary CSR disclosure in the current year. In Column I, for instance, holding other factors constant, when the prior year cost of equity capital increases by one percentage point, the odds of initiating standalone CSR disclosure increase by 5.02 percent.

The coefficient estimates of the control variables are generally consistent with the univariate comparisons in Table 2. One exception is *LIQUIDITY*, which reverses direction. The significantly negative coefficient suggests that firms with lower levels of liquidity are more likely to publish CSR reports, consistent with our original conjecture. The effects of financial disclosure quality, *ABS_EM*, and management forecast, *CIG*, are no longer significant.

CSR Disclosure and the Future Cost of Equity Capital

Hypothesis 2 predicts that voluntary CSR disclosure leads to a lower future cost of equity capital. Table 4, Panel A compares initiators and non-initiators and Table 4, Panel B presents the regression results. In Column I (Equation (2)), the coefficient on *DISCI* is insignificant (coeff. $= -0.037$, $p > 0.50$). It appears that CSR disclosure *per se* is not significantly associated with a change in a firm's future cost of equity capital. In Column II (Equation (3)), we consider whether a firm has superior CSR performance relative to its industry peers. The interaction term between *DISCI* and *HIPERFORM* is significantly negative (coeff. $= -4.618$, $p < 0.01$), consistent with H2, which posits that CSR disclosure reduces the cost of equity capital.[18] Combining the main effect of *DISCI* and the effect of the interaction term between *DISCI* and *HIPERFORM* in Column II, we infer that superior CSR performers enjoy a 1.833 percent reduction in the cost of equity capital when they produce standalone CSR reports for the first time. In Columns III and IV, we obtain similar results when we exclude environmental reports and the Utilities industry, respec-

[18] We perform a sensitivity test by restricting the analysis to firm-year observations of CSR reporters in a pre-post setting. Specifically, we focus only on disclosing firms and still use the change specification of the dependent variable Δ*COC_AVG*. *DISCI* is an indicator variable that equals 1 for the first reporting year and equals 0 before or after the first reporting year of a disclosing firm. The purpose of this examination is to show that a reduction in the cost of equity capital occurs immediately after the first reporting year and to alleviate the concern that the size of initiator sample is small relative to the universe of firm-year observations used in the main test. We obtain similar results and inferences, namely, firms with superior CSR performance enjoy a reduction in the cost of equity capital if they publish standalone CSR reports.

TABLE 3
Determinants of CSR Disclosure

Dependent Variable = $DISCI_t$		I		II		III	
		Full Sample		Removing Environmental Reports		Removing Utilities	
Variables	**Pred. Sign**	**Coeff.**	**Prob.**	**Coeff.**	**Prob.**	**Coeff.**	**Prob.**
COC_AVG_{t-1}	+	0.049***	0.00	0.052***	0.00	0.062***	0.00
$PERFORM_{t-1}$	+	0.101**	0.03	0.057	0.25	0.100**	0.04
$SIZE_{t-1}$	+	0.967***	0.00	1.017***	0.00	1.001***	0.00
$LITIGATION_{t-1}$	?	0.208	0.45	0.154	0.59	0.187	0.50
ROA_{t-1}	+	1.404	0.47	1.407	0.49	1.805	0.36
$COMPETITION_{t-1}$	−	1.685	0.37	1.105	0.55	1.569	0.40
FIN_{t-1}	+	0.768	0.50	0.955	0.41	1.406	0.20
$TOBINQ_{t-1}$	?	−0.398***	0.00	−0.355***	0.01	−0.371***	0.00
LEV_{t-1}	+	−0.846	0.28	−0.851	0.30	−1.038	0.20
$GLOBAL_{t-1}$	+	0.078*	0.08	0.091**	0.05	0.084*	0.07
$LIQUIDITY_{t-1}$	−	−0.292**	0.02	−0.255**	0.04	−0.292**	0.02
CIG_{t-1}	+	0.313	0.16	0.324	0.18	0.272	0.27
ABS_EM_{t-1}	−	−2.217	0.49	−1.545	0.64	−3.137	0.36
Year Indicators		Yes		Yes		Yes	
Industry Indicators		Yes		Yes		Yes	
Pseudo R^2		0.258		0.244		0.271	
Likelihood Ratio		303.40		27.00		273.30	
n (dep. var. = 1)		213		164		182	
n		11,925		11,876		11,419	

*, **, *** Indicate that the estimated coefficient is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively.

This table presents the logistic regression results with $DISCI_t$ in year t as the dependent variable, while all control variables are in year $t-1$. All continuous variables are winsorized at the 1st and the 99th percentiles. All t-statistics are corrected using the Huber-White procedure.

All variables are defined as in Table 2.

TABLE 4
Post-CSR Disclosure Cost of Equity Capital

Panel A: Mean Comparison

	Full Sample	$DISCI_t = 1$	$DISCI_t = 0$	t-value (difference)
ΔCOC_AVG_{t+1}(%)	1.691	1.393	1.693	−0.90
$\Delta SIZE_t$	−0.003	−0.002	−0.003	0.13
$\Delta BETA_t$	−0.019	0.061	−0.020	2.79
ΔLEV_t	−0.023	−0.027	−0.023	−4.01
ΔMB_t	−0.015	−0.012	−0.015	0.85
ΔLTG_t	0.004	−0.051	0.004	−1.10
$\Delta LNDISP_t$	0.023	0.009	0.023	−1.47

Panel B: Post-CSR Disclosure Cost of Equity Capital (Dependent Variable = ΔCOC_AVG_{t+1})

	I		II		III		IV	
			Full Sample		Removing Environmental Reports		Removing Utilities	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
$DISCI_t$	−0.037	−0.06	2.785***	2.54	4.699***	3.56	1.856	1.45
$HIPERFORM_t$			0.030	0.20	0.041	0.27	0.052	0.33
$DISCI_t * HIPERFORM_t$			−4.618***	−3.38	−6.015***	−3.74	−4.045***	−2.61
$\Delta SIZE_t$	4.698***	3.70	4.849***	3.82	4.814***	3.79	5.040***	3.86
$\Delta BETA_t$	0.342***	3.53	0.331***	3.40	0.334***	3.44	0.298***	2.99
ΔLEV_t	−7.220***	2.86	−7.107***	2.81	−5.116**	−2.04	−6.557***	−2.54
ΔMB_t	−10.137***	−14.19	−10.190***	−14.23	−10.257***	−14.33	−10.107***	−13.86
ΔLTG_t	−0.175**	−2.45	−0.173**	−2.42	−0.170**	−2.37	−0.175**	−2.37
$\Delta LNDISP_t$	0.111	0.30	0.107	0.29	0.109	0.30	0.243	0.64
Year Indicators	Yes		Yes		Yes		Yes	
Industry Indicators	Yes		Yes		Yes		Yes	
Adjusted R^2	0.062		0.064		0.062		0.062	

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Panel B: Post-CSR Disclosure Cost of Equity Capital (Dependent Variable = ΔCOC_AVG_{t+1})

	I		II		III		IV	
			Full Sample		Removing Environmental Reports		Removing Utilities	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
n ($DISCI_t = 1$)	213		213		164		184	
n ($DISCI_t = 1$ and $HIPERFORM_t = 1$)			165		127		150	
n	9,254		9,254		9,205		8,820	

Panel C: Post-CSR Disclosure Cost of Equity Capital Partitioned Conditional on Firm's CSR Performance

	Top 50% *PERFORM.*		Bottom 50% *PERFORM*	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
$DISCI_t$	−1.777**	−2.04	2.130	1.41
$\Delta SIZE_t$	3.200***	6.40	5.673***	3.99
$\Delta BETA_t$	0.360***	3.12	0.239	0.79
ΔLEV_t	−4.857*	−1.68	−7.747	−1.11
ΔMB_t	−12.258***	−14.16	−4.778**	−2.13
ΔLTG_t	−0.332***	−3.87	−0.478**	−2.17
$\Delta LNDISP_t$	0.414	0.93	−0.960	−0.78
Year Indicators	Yes		Yes	
Industry Indicators	Yes		Yes	
Adjusted R^2	0.048		0.059	
n ($DISCI = 1$)	153		60	
n	4,691		4,563	

*, **, *** Indicate that the estimated coefficient is statistically significant at the 10 percent, 5 percent and 1 percent levels, respectively.

All continuous variables are winsorized at the 1st and 99th percentiles. All t-statistics are corrected using the Huber-White procedure. Analyst forecast data are obtained from I/B/E/S.

Variable Definitions:

$DISCI_t$ = indicator variable that equals 1 if it is the earliest reporting year of a firm that issues CSR reports (CSR report initiating year), and 0 otherwise;

ΔCOC_AVG_{t+1} = change in cost of equity capital (in percentage) from year t to year t+1;

(continued on next page)

HIPERFORM$_t$ = indicator variable that equals 1 if the firm's total CSR strength score, namely, *PERFORM* in year *t*, is higher than the industry median (in other words, if the firm is classified as a high CSR performer in its industry), and 0 otherwise;
Δ*SIZE*$_t$ = change in size where *SIZE* is measured as the natural logarithm of the market value of equity (CSHO ∗ PRCC_F) at the beginning of each year;
Δ*BETA*$_t$ = change of beta from year *t*−1 to year *t* where *BETA* is estimated from the market model using the daily CRSP stock returns;
Δ*LEV*$_t$ = change in leverage from year *t*−1 to year *t* where *LEV* is the leverage ratio, which is defined as the ratio of total debt (DLTT + DLC) divided by total assets;
Δ*MB*$_t$ = change of market-to-book ratio from year *t*−1 to year *t* where the market-to-book ratio is defined as the market value of equity divided by book value of equity (CEQ);
Δ*LTG*$_t$ = long-term growth rate where *LTG* is measured as the difference between the mean two-year-ahead analyst consensus EPS forecast and the mean one-year-ahead analyst consensus EPS forecast divided by the mean one-year-ahead analyst consensus EPS forecast; and
Δ*LNDISP*$_t$ = change in analyst forecast dispersion from year *t*−1 to year *t*, where *LNDISP* is measured as the logarithm of the standard deviation of analyst estimates of year *t* earnings divided by the consensus forecast of year *t* earnings.

tively. Overall, the evidence is consistent with our H2 that CSR-disclosing firms with superior CSR performance achieve a reduction in the cost of equity capital.[19]

Table 4, Panel C presents the results from estimating Equation (2) within the two subsamples partitioned based on annual industry medians of CSR performance (*PERFORM*). Consistent with the results in Panel B, we find a significantly negative coefficient on *DISCI* (coeff. = −1.777, p = 0.04) in the high CSR performance subsample. This coefficient indicates that voluntary CSR disclosure yields a 1.77 percent reduction in the cost of equity capital. In the low CSR performance subsample, there is no significant association between CSR disclosure and the change in the cost of equity capital.[20]

Potential Mechanisms Linking CSR Disclosure and the Cost of Equity Capital

The above results suggest that CSR disclosure combined with superior CSR performance is associated with a reduction in the cost of equity capital. Below, we provide evidence on the potential underlying mechanisms through which voluntary CSR disclosure lowers the cost of equity capital. We focus on two types of financial intermediaries: institutional investors and financial analysts.

CSR Disclosure and Institutional Investors

Shleifer and Vishny (1986) suggest that the large equity stakes in the invested firms and the high levels of sophistication of these investors enable them to reduce agency cost problems and the extent of information asymmetry between managers and shareholders, an effect that leads to a reduction in the cost of equity capital. We consider three different types of institutional investors: dedicated (*DED*), transient (*TRA*), and quasi-indexer (*QIX*) institutional investors. Dedicated institutional investors are more likely to play monitoring and governance roles than the other two types (Bushee 1998). To determine whether CSR disclosure attracts institutional investors, we follow Bushee and Noe (2000) and estimate the following model:

$$\begin{aligned}\Delta INST_{i,t+1} = {} & \beta_0 + \beta_1 DISCI_{i,t} + \beta_2 HIPERFORM_{i,t} + \beta_3 DISCI_{i,t} * HIPERFORM_{i,t} + \beta_4 INST_{i,t-1} \\ & + \beta_5 \Delta MRET_{i,t} + \beta_6 TVOL_{i,t-1} + \beta_7 \Delta MV_{i,t} + \beta_8 BETA_{i,t-1} + \beta_9 IRISK_{i,t-1} \\ & + \beta_{10} \Delta LEV_{i,t} + \beta_{11} \Delta DP_{i,t} + \beta_{12} \Delta EP_{i,t} + \beta_{13} \Delta MB_{i,t} + \beta_{14} \Delta SGR_{i,t} + \beta_{15} \Delta RATE_{i,t} \\ & + \beta_{16} \Delta SHRS_{i,t} + \Sigma IND_{i,t} + \Sigma YEAR_{i,t} + \varepsilon_{i,t}, \end{aligned} \quad (4)$$

[19] In alternative specifications of the model, we examine the effects of two other variables proxying for firms' effort and commitment to better CSR disclosure. (1) We identify firms that provide assurance (*ASSURANCE*) of their reports through independent third parties, most often Big 4 accounting firms and international consulting companies. Simnett et al. (2009) provide evidence that firms seeking to enhance the creditability of their reports and their corporate reputation are more likely to have their sustainability reports assured. (2) We also assess the effect of the length of each CSR report (*LENGTH*) relative to the average report length of the disclosing firm's industry (Leuz and Schrand 2008). Of course, *ASSURANCE* and *LENGTH* are not independent of *DISCI*. We find that, conditional on first-time CSR disclosure (*DISCI*), external assurance and long report length further reduce the cost of equity capital. Specifically, when we use the *ASSURANCE* indicator (equals 1 with an assurance, and 0 otherwise), the coefficient on *DISCI* * *HIPERFORM* is negative and significant (coeff. = −3.523, $p < 0.01$) and the coefficient on *DISCI* * *HIPERFORM* * *ASSURANCE* is negative and significant (coeff. = −3.540, $p = 0.08$). Therefore, assurance doubles the effect of CSR disclosure. When we use the *LENGTH* indicator (equals 1 if longer than the industry-year median, and 0 otherwise), the coefficient on *DISCI* * *HIPERFORM* is negative and significant (coeff. = −2.574, p = 0.02) and the coefficient on *DISCI* * *HIPERFORM* * *LENGTH* is negative and significant (coeff. = −3.930, p = 0.06). Therefore, a long report more than doubles the effect of CSR disclosure.

[20] The coefficient on *DISCI* is not significant but positive, if anything, for poor CSR performers. It is possible that disclosing poor CSR performance could actually be a signal of high risk or firm weakness and, therefore, the cost of equity capital could actually go up. This does explain why the direct effect of *DISCI* is insignificant in the pooled regression.

where Δ denotes a change from year *t* to year *t*+1. *INST* represents stock ownership by dedicated (*DED*), transient (*TRA*), or quasi-indexer (*QIX*) institutional investors. *MRET* is the market-adjusted buy-and-hold stock return measured over the year. *TVOL*, a liquidity proxy, is the average monthly trading volume relative to total shares outstanding. *IRISK* is the logarithmic transformation of the standard deviation of market-model residuals calculated using daily stock returns. Beta (*BETA*), debt ratio (*LEV*), and *IRISK* capture firm risk along different dimensions. *DP* is the ratio of dividends to the market value of equity. *EP* is the ratio of income before extraordinary items to the market value of equity. *SGR* is the percentage change in annual sales. We include *DP*, *EP*, *MB*, and *SGR* to control for changes in firms' fundamentals that can affect the investment decisions of institutional investors (Bushee 2001). *RATE* is the S&P stock rating (9 = A+, 8 = A, 7 = A–, 6 = B+, 5 = B, 4 = B−, 3 = C, 2 = D, 1 = not rated), which captures the preference of institutional investors for well-reputed firms (Del Guercio 1996). *SHRS* is the logarithmic transformation of shares outstanding, and its change form proxies for equity issuance or repurchases that affect both institutional investor following and firms' disclosure policies. All other variables are as defined earlier.

Table 5, Panel A presents comparisons of one-year-ahead holdings and changes in holdings by the three types of institutional investors between initiators and non-initiators. Overall, the univariate comparisons do not reveal significant differences between initiators and non-initiators. If anything, we observe a greater decrease in transient institutional holding among initiators compared to non-initiators ($p = 0.04$), even though the level of this type of holding is still slightly higher among initiators than among non-initiators ($p = 0.07$).

Table 5, Panel B displays the regression results. There is weak evidence that initiating firms with superior CSR performance attract more dedicated institutional investors. The coefficient on *DISCI* ∗ *HIPERFORM* is marginally significantly positive (coeff. = 0.414, $p = 0.16$). To further examine this issue, we run regressions without the interaction term in the two subsamples partitioned based on annual industry medians of CSR performance for dedicated institutional investors. We report the results in Table 5, Panel C. We observe a significantly positive coefficient on *DISCI* (coeff. = 0.438, $p = 0.01$) for the superior-performance group, whereas the coefficient on *DISCI* for the low-performance group is insignificant. In untabulated tests, we do not find a significant association between transient or quasi-indexer institutional investor holdings and the initiation of CSR disclosure for the full sample or the partitioned subsamples.

In sum, the evidence in this subsection suggests that voluntary CSR disclosure attracts dedicated institutional investors, who have long investment horizons and play monitoring and governance roles. Consistent with our previous evidence that superior CSR performers enjoy a reduction in the cost of equity capital through CSR disclosure, the effect of CSR disclosure on dedicated institutional ownership is stronger if disclosing firms have CSR performance superior to their industry peers.

CSR Disclosure and Analyst Forecasts

We also examine three questions related to financial analysts and CSR disclosure. First, we explore whether financial analysts are more willing to cover firms after they initiate CSR disclosure. Second, we investigate whether the level of forecast accuracy increases and finally we determine whether forecast dispersion decreases when CSR reports are available. Increased levels of analyst coverage and forecast accuracy and a reduction in the level of forecast dispersion have the potential to lower the cost of equity capital. To determine the impact of CSR disclosure on the behavior of financial analysts, we run the following three regressions following Lang and Lundholm (1996) and Ali et al. (2007):

TABLE 5

Post-CSR Disclosure Changes in Institutional Ownership

Panel A: Mean Comparison

	Full Sample	$DISCI_t = 1$	$DISCI_t = 0$	t-value (difference)
$DED_{t+1}(\%)$	11.996	11.285	12.019	−0.79
$TRA_{t+1}(\%)$	16.507	18.572	16.440	1.82
$QIX_{t+1}(\%)$	29.809	30.014	29.802	0.24
ΔDED_{t+1}	−0.551	−0.995	−0.536	−0.57
ΔTRA_{t+1}	−0.452	−2.293	−0.390	−2.07
ΔQIX_{t+1}	1.018	1.947	0.986	1.00

Panel B: Post-CSR Disclosure Institutional Investor Holdings

	ΔDED_{t+1}		ΔQIX_{t+1}		ΔTRA_{t+1}	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
$DISCI_t$	0.190	0.80	0.267	0.63	0.053	0.16
$HIPERFORM_t$	−0.037	−0.76	−0.129	−1.44	0.085	1.23
$DISCI_t * HIPERFORM_t$	0.414	1.40	−0.093	−0.17	−0.052	−0.13
DED_{t-1}	−0.018***	−5.94				
QIX_{t-1}			−0.032***	−6.75		
TRA_{t-1}					−0.059***	−15.37
$\Delta MRET_t$	0.043	0.82	−0.107	−1.07	−0.010	−0.13
$TVOL_{t-1}$	0.019	0.57	0.033	0.49	0.066	1.24
ΔMV_t	0.071	0.74	0.026	0.14	−0.149	−1.08
$BETA_{t-1}$	−0.053	−0.78	−0.010	−0.08	−0.082	−0.85
$IRISK_{t-1}$	0.056	0.69	0.065	0.42	−0.087	−0.74
ΔLEV_t	−0.008	−0.02	−0.924	−1.40	0.324	0.63
ΔDP_t	4.032	1.52	11.935**	2.39	6.617**	1.69
ΔEP_t	0.169	0.61	0.152	0.29	−0.356	−0.88

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Panel B: Post-CSR Disclosure Institutional Investor Holdings

	ΔDED_{t+1}		ΔQIX_{t+1}		ΔTRA_{t+1}	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
ΔMB_t	−0.010	−1.14	0.011	0.66	0.026**	1.96
ΔSGR_t	−0.001	−0.22	0.002	0.87	−0.001	−0.18
$\Delta RATE_t$	0.034***	2.79	0.037*	1.66	0.023	1.35
$\Delta SHRS_t$	0.298**	2.34	−0.109	−0.47	−0.287	−1.60
Year Indicators	Yes		Yes		Yes	
Industry Indicators	Yes		Yes		Yes	
Adjusted R^2	0.747		0.792		0.724	
n ($DISCI_t = 1$)	170		170		170	
n ($DISCI_t = 1$ and $HIPERFORM_t = 1$)	126		126		126	
n	9,342		9,342		9,342	

Panel C: Post-CSR Disclosure Institutional Investor Holdings Conditional on Firm's CSR Performance

	TOP 50% *PERFORM*		**Bottom 50% *PERFORM***	
	ΔDED_{t+1}		ΔDED_{t+1}	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
$DISCI_t$	0.438***	2.67	−0.063	−0.24
DED_{t-1}	−0.017***	−3.91	−0.027***	−6.45
$\Delta MRET_t$	0.047	0.60	−0.031	−0.42
$TVOL_{t-1}$	0.028	0.53	0.066	1.41
ΔMV_t	0.145	1.01	0.050	0.38
$BETA_{t-1}$	−0.151	−1.57	0.039	0.39
$IRISK_{t-1}$	0.178	1.57	−0.126	−1.06
ΔLEV_t	0.472	0.90	−0.199	−0.42
ΔDP_t	5.020	1.27	3.690	1.01
ΔEP_t	−0.104	−0.26	0.427	1.08
ΔMB_t	−0.012	−0.97	0.009	0.68

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Panel C: Post-CSR Disclosure Institutional Investor Holdings Conditional on Firm's CSR Performance

	TOP 50% *PERFORM*		Bottom 50% *PERFORM*	
	ΔDED_{t+1}		ΔDED_{t+1}	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
ΔSGR_t	−0.004**	−2.42	0.001	1.00
$\Delta RATE_t$	0.042***	2.49	0.008	0.43
$\Delta SHRS_t$	0.457***	2.55	0.130	0.71
Year Indicators	Yes		Yes	
Industry Indicators	Yes		Yes	
Adjusted R^2	0.519		0.504	
n ($DISCI_t = 1$)	126		44	
n	4,685		4,657	

*, **, *** Indicate that the estimated coefficient is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively.

All continuous variables are winsorized at the 1st and 99th percentiles. All t-statistics are corrected using the Huber-White procedure.

Panel A presents the OLS regression results with ΔDED_{t+1}, ΔQIX_{t+1}, or ΔTRA_{t+1} as the dependent variable.

Variable Definitions:

$DISCI_t$ = indicator variable that equals 1 if it is the earliest reporting year of a firm that issues CSR reports (CSR report initiating year), and 0 otherwise;

DED_{t+1}, QIX_{t+1}, and TRA_{t+1} = percentage of ownership holding by dedicated, quasi-indexer, and transient institutional investors, respectively, relative to total shares outstanding in year t+1;

ΔDED_{t+1}, ΔQIX_{t+1}, and ΔTRA_{t+1} = changes in percentage of ownership from year t to year t+1. If there is a missing value on the percentage holding of any type of institutional investor when a firm's total institutional investor holding does not equal 0, then we assume a value of 0;

$HIPERFORM_t$ = indicator variable that equals 1 if the firm's total CSR strength score, namely, *PERFORM*, is higher than the industry median (in other words, if the firm is classified as a high CSR performer in its industry), and 0 otherwise;

$\Delta MRET_t$ = $MRET_t - MRET_{t-1}$; where *MRET* is the market-adjusted buy-and-hold stock return measured over the year of interest with a minimum of 125 observations;

$TVOL_{t+1}$ = average monthly trading volume relative to total shares outstanding measured over the year of interest;

ΔMV_t = $MV_t - MV_{t-1}$; where *MV* is the logarithm of the market value of equity (CSHO * PRCC_F);

$BETA_{t-1}$ = market-model beta calculated from the daily stock returns in year $t-1$ with a minimum of 125 observations;

$IRISK_{t-1}$ = logarithm of the standard deviation of the market-model residuals calculated from the daily stock returns in year $t-1$ with a minimum of 125 observations;

ΔLEV_t = change in leverage from year $t-1$ to year t where *LEV* is the leverage ratio, which is defined as the ratio of total debt (DLTT + DLC) divided by total assets;

ΔDP_t = $DP_t - DP_{t-1}$; where *DP* is the ratio of dividends (DVC) to the market value of equity;

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$\Delta EP_t = EP_t - EP_{t-1}$; where *EP* is the ratio of income before extraordinary items (IB) to the market value of equity;
$\Delta MB_t = MB_t - MB_{t-1}$; where *MB* is the market-to-book value of equity, which is defined as the market value of equity divided by the book value of equity (CEQ);
$\Delta SGR_t = SGR_t - SGR_{t-1}$; where *SGR* is the percentage change in annual sales (SALE);
$\Delta RATE_t = RATE_t - RATE_{t-1}$; where *RATE* is the S&P stock rating (9 = A+, 8 = A, 7 = A−, 6 = B+, 5 = B, 4 = B−, 3 = C, 2 = D, 1 = not rated); and
$\Delta SHRS_t = SHRS_t - SHRS_{t-1}$; where *SHRS* is the logarithm of shares outstanding.

$$\Delta COVERAGE_{i,t+1} = \beta_0 + \beta_1 DISCI_{i,t} + \beta_2 HIPERFORM_{i,t} + \beta_3 DISCI_{i,t} * HIPERFORM_{i,t} + \beta_4 \Delta SIZE_{i,t} + \beta_5 \Delta STDROE_{i,t} + \beta_6 \Delta INVPRICE_{i,t} + \beta_7 \Delta RETVAR_{i,t} + \beta_8 \Delta RD_{i,t} + \beta_9 \Delta ROA_{i,t} + \beta_{10} \Delta CORR_{i,t} + \varepsilon_{i,t}, \quad (5)$$

$$\Delta |FE|_{i,t+1} = \beta_0 + \beta_1 DISCI_{i,t} + \beta_2 HIPERFORM_{i,t} + \beta_3 DISCI_{i,t} * HIPERFORM_{i,t} + \beta_4 \Delta SIZE_{i,t} + \beta_5 \Delta STDROE_{i,t} + \beta_6 ACHEPS_{i,t} + \beta_7 \Delta RD_{i,t} + \beta_8 \Delta ROA_{i,t} + \beta_9 \Delta CORR_{i,t} + \varepsilon_{i,t}, \quad (6)$$

$$\Delta DISP_{i,t+1} = \beta_0 + \beta_1 DISCI_{i,t} + \beta_2 HIPERFORM_{i,t} + \beta_3 DISCI_{i,t} * HIPERFORM_{i,t} + \beta_4 \Delta SIZE_{i,t} + \beta_5 \Delta STDROE_{i,t} + \beta_6 ACHEPS_{i,t} + \beta_7 \Delta RD_{i,t} + \beta_8 \Delta ROA_{i,t} + \beta_9 \Delta CORR_{i,t} + \varepsilon_{i,t}, \quad (7)$$

where *COVERAGE* is the 12-month average of the number of analysts who issue annual earnings forecasts captured in the I/B/E/S database for a specific firm; |*FE*| is the absolute value of the 12-month average of analyst forecast errors, which is defined as actual earnings minus the mean forecast, deflated by the stock price at the beginning of the fiscal year; and *DISP* is the 12-month average of the standard deviations of analyst forecasts, deflated by the stock price at the beginning of the fiscal year.

We include a number of control variables derived from prior research. We include firm size (*SIZE*) because larger firms have more potential brokerage or investment banking businesses for analysts' brokerage houses (Bhushan 1989), which affects analyst forecasting behavior. We include the inverse of stock prices (*INVPRICE*) because Brennan and Hughes (1991) suggest that it proxies for the brokerage commission rate. Analysts are more likely to follow firms with higher levels of return variability because the anticipated trading benefits based on private information on these stocks are greater (Bhushan 1989). We therefore include *STDROE*, which is measured as the standard deviation of *ROE* in the preceding four quarters, and *RETVAR*, computed as the daily stock return variance over the 200 days prior to the year-end. We include research and development expense (*RD*) as a proxy for the level of information asymmetry (Aboody and Lev 2000) because analysts have relatively stronger incentives to follow firms with higher levels of information asymmetry (Barth et al. 2001). The earnings-return (Pearson) correlation (*CORR*) between *ROE* and annual stock returns in the preceding four quarters captures the difficulty in predicting a firm's earnings. In addition, *ROA* controls for firm profitability. Finally, annual change in *EPS* (*ACHEPS*) controls for the magnitude of the forthcoming earnings information (Ali et al. 2007). All other variables are as defined earlier.

Table 6, Panel A presents a comparison of the levels of and changes in the three main analyst variables in the year following first-time CSR disclosures. Initiators are covered by more analysts than non-initiators (*COVERAGE*: 26.08 for initiators versus 15.72 for non-initiators, $p < 0.01$), and achieve greater improvement in forecast accuracy than non-initiators ($\Delta|FE|$: -0.137 for initiators versus 0.120 for non-initiators, though at a more marginal statistical significance level with $p = 0.07$).

We present the multivariate regression results for Equations (5), Equation (6), and Equation (7) in Panels B, C, and D of Table 6, respectively. Column I of Panel B shows that there is a significantly positive coefficient on *DISCI* * *HIPERFORM* (coeff. = 1.052, $p = 0.05$), which suggests that analyst following increases for initiators with superior CSR performance. When we run the regression separately in the two subsamples portioned based on industry medians of CSR

TABLE 6
Post-CSR Disclosure Changes in Analyst Forecasts

Panel A: Mean Comparison

	Full Sample	$DISCI_t = 1$	$DISCI_t = 0$	t-value (difference)
$COVERAGE_{t+1}$	15.768	26.079	15.718	7.95
$\|FE\|_{t+1}$	0.226	0.215	0.226	−0.22
$DISP_{t+1}$	0.205	0.237	0.205	1.08
$\Delta COVERAGE_{t+1}$	−1.250	−0.753	−1.252	−1.04
$\Delta\|FE\|_{t+1}$	0.011	−0.137	0.120	−1.85
$\Delta DISP_{t+1}$	0.009	−0.011	0.009	−0.70

Panel B: Post-CSR Disclosure Analyst Coverage (Dependent Variable = $\Delta COVERAGE_{t+1}$)

	I		II		III	
	Full Sample		Top 50% *PERFORM*		Bottom 50% *PERFORM*	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
Intercept	−0.409***	−16.88	−0.401***	−8.94	−0.506***	−21.86
$DISCI_t$	−0.439	−1.01	0.904**	2.12	0.008	0.03
$HIPERFORM_t$	−0.020	−0.50				
$DISCI_t * HIPERFORM_t$	1.052**	1.95				
$\Delta SIZE_t$	0.493***	8.45	0.855***	5.59	0.471***	7.71
$\Delta STDROE_t$	−0.112	−0.93	−0.201	−0.68	−0.076	−0.60
$\Delta INVPRICE_t$	4.201***	8.44	9.552***	6.53	3.229***	6.41
$\Delta RETVAR_t$	0.008	0.83	−0.009	−0.44	0.027***	2.46
ΔRD_t	3.660***	7.89	0.144	0.10	4.056***	8.65
ΔROA_t	1.751***	7.11	2.189***	3.60	1.616***	6.18
$\Delta CORR_t$	0.001	0.89	0.001	0.69	0.001	1.21
Adjusted R^2	0.026		0.016		0.017	

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Panel B: Post-CSR Disclosure Analyst Coverage (Dependent Variable = $\Delta COVERAGE_{t+1}$)

	I		II		III	
	Full Sample		Top 50% *PERFORM*		Bottom 50% *PERFORM*	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
n ($DISCI_t = 1$)	213		165		48	
n	15,298		7,664		7,634	

Panel C: Post-CSR Disclosure Analyst Forecast Errors (Dependent Variable = $\Delta|FE|_{t+1}$)

	I		II		III	
	Full Sample		Top 50% *PERFORM*		Bottom 50% *PERFORM*	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
Intercept	1.134***	76.49	0.923***	54.07	1.124***	66.68
$DISCI_t$	−0.496**	−1.92	−0.251*	−1.77	−0.425	−1.42
$HIPERFORM_t$	−0.261***	−5.41				
$DISCI_t * HIPERFORM_t$	0.318	1.04				
$\Delta SIZE_t$	−0.277***	−10.74	−0.198***	−5.10	−0.293***	−5.56
$\Delta STDROE_t$	0.129*	1.71	0.059	0.52	0.189*	1.89
$\Delta ACHEPS_t$	−0.131***	−2.59	−0.065	−0.85	−0.140**	−2.09
ΔRD_t	−0.410*	−1.66	−1.513***	−3.83	0.250	0.79
ΔROA_t	0.610***	7.46	0.187	1.28	0.855***	8.07
$\Delta CORR_t$	−0.001	−0.29	0.001	0.32	−0.001	−0.36
Adjusted R^2	0.020		0.011		0.016	
n ($DISCI = 1$)	213		165		48	
n	13,186		6,587		6,599	

(continued on next page)

Panel D: Post-CSR Disclosure Analyst Forecast Dispersion (Dependent Variable = $\Delta DISP_{t+1}$)

	I		II		III	
	Full Sample		Top 50% *PERFORM*		Bottom 50% *PERFORM*	
Variables	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
Intercept	0.007***	5.59	0.006***	4.67	0.007***	4.98
$DISCI_t$	0.008	0.37	−0.048***	−3.21	−0.020	−1.05
$HIPERFORM_t$	0.001	0.24				
$DISCI_t * HIPERFORM_t$	−0.053**	−2.08				
$\Delta SIZE_t$	−0.015***	−6.67	−0.008**	−2.40	−0.021***	−6.62
$\Delta STDROE_t$	0.002	0.33	−0.005	−0.62	0.010	1.09
$\Delta ACHEPS_t$	−0.064***	−6.34	−0.100***	−7.12	−0.031**	−2.11
ΔRD_t	−0.022	−1.04	0.057*	1.76	−0.071**	−2.38
ΔROA_t	−0.051***	−4.10	−0.058***	−3.44	−0.053***	−2.81
$\Delta CORR_t$	−0.001	−0.49	0.001	1.67	−0.001	−2.01
Adjusted R^2	0.024		0.011		0.011	
n ($DISCI = 1$)	213		165		48	
n	14,363		7,153		7,210	

*, **, *** Indicate that the estimated coefficient is statistically significant at the 10 percent, 5 percent and 1 percent levels, respectively.

All continuous variables are winsorized at the 1st and 99th percentiles. All t-statistics are corrected using the Huber-White procedure.

Variable Definitions:

$DISCI_t$ = indicator variable that equals 1 if it is the earliest reporting year of a firm that issues CSR reports (CSR report initiating year), and 0 otherwise;

$HIPERFORM_t$ = indicator variable that equals 1 if the firm's total CSR strength score, namely, *PERFORM*, is higher than the industry median (in other words, if the firm is classified as a high CSR performer in its industry), and 0 otherwise;

$\Delta COVERAGE_{t+1}$ = $COVERAGE_{t+1} - COVERAGE_t$; where *COVERAGE* is the 12-month average of the number of analysts who issued annual earnings forecasts in I/B/E/S for the firm of interest;

$\Delta|FE|_{t+1}$ = $|FE|_{t+1} - |FE|_t$; where $|FE|$ is the absolute value of the 12-month average of analyst forecast errors defined as actual earnings minus the mean forecast, deflated by the stock price at the beginning of the fiscal year;

$\Delta DISP_{t+1}$ = $DISP_{t+1} - DISP_t$; where *DISP* is the 12-month average of the standard deviation of analyst forecasts, deflated by the stock price at the beginning of the fiscal year;

SIZE = natural logarithm of the market value of equity (CSHO * PRCC_F) at the beginning of the year;

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STDROE = standard deviation of ROE (IB/CEQ) in the four quarters of the preceding year;
INVPRICE = inverse of the stock price (PRCC_F) at the beginning of the fiscal year;
RETVAR = daily stock return variance estimated over the 200 days prior to the year-end;
RD = research and development expense (XRD) deflated by total assets at the beginning of the fiscal year;
ROA = earnings before extraordinary items divided by total assets; and
CORR = Pearson correlation coefficient between *ROE* and annual stock returns in the four quarters of the preceding year.

performance, we find a significantly positive coefficient on *DISCI* (coeff. = 0.904, p = 0.03) but only in the better performing group.[21]

We obtain similar results for the absolute magnitude of analyst forecast errors. Table 6, Panel C demonstrates that, while in the full sample, the coefficient on *DISCI* ∗ *HIPERFORM* is insignificant, the main effect of *DISCI* in the partitioned sample regression is marginally negative (coeff. = −0.251, p = 0.08) for the better performing group. The results for forecast dispersion, presented in Table 6, Panel D show a similar pattern. In the full-sample regression in Column I, the coefficient on *DISCI* ∗ *HIPERFORM* is significantly negative (coeff. = −0.053, p = 0.04). The regressions in the partitioned sample (Columns II and III) yield a significantly negative coefficient on *DISCI* only among better performing firms (coeff. = −0.048, p < 0.01).

In sum, voluntary CSR disclosure is associated with increased analyst coverage, improved forecast accuracy, and a reduction in forecast dispersion among firms with relatively superior CSR performance. These results are consistent with our conjecture that CSR disclosure by strong CSR performers helps reduce information asymmetry between managers and shareholders and among shareholders. The evidence supports our reasoning that CSR disclosure can reduce the cost of equity capital by reducing estimation risk in the market. In other words, consistent with our earlier evidence that the cost of equity capital benefit manifests only among firms with relatively superior CSR performance, the effects of CSR disclosure on analyst coverage and forecast accuracy and dispersion are significant only when firms achieve relatively superior CSR performance.

CSR Disclosure and Subsequent Equity Issuances

As discussed previously, we predict that firms anticipating external financing needs are more likely to initiate CSR disclosures in the hope of obtaining cheaper capital. Hence, we should observe more equity issuances after first-time CSR disclosures. We estimate the following logistic regression for Equation (8) and OLS regression for Equation (9) to empirically test this prediction:

$$\begin{aligned}\log[\text{prob}(SEO_{i,t+T})/(1-\text{prob}(SEO_{i,t+T}))] = {} & \beta_0 + \beta_1 DISCI_{i,t} + \beta_2 MB_{i,t} + \beta_3 LNSALES_{i,t} \\ & + \beta_4 ROA_{i,t} + \beta_5 LEV_{i,t} + \beta_6 CASH_{i,t} + \beta_7 FIN_{i,t} \\ & + \beta_8 PAYOUT_{i,t} + \beta_9 CAPITAL_{i,t} + \beta_{10} RD_{i,t} \\ & + \beta_{11} LNDISP_{i,t} + \varepsilon_{i,t}, \end{aligned} \tag{8}$$

$$\begin{aligned} ISSUE\$_{i,t+T} = {} & \beta_0 + \beta_1 DISCI_{i,t} + \beta_2 MB_{i,t} + \beta_3 LNSALES_{i,t} + \beta_4 ROA_{i,t} + \beta_5 LEV_{i,t} + \beta_6 CASH_{i,t} \\ & + \beta_7 FIN_{i,t} + \beta_8 PAYOUT_{i,t} + \beta_9 CAPITAL_{i,t} + \beta_{10} RD_{i,t} + \beta_{11} LNDISP_{i,t} + \varepsilon_{i,t}, \end{aligned} \tag{9}$$

where T (= 1 or 2) denotes one or two years following CSR disclosure, and other notations follow those of earlier regression equations. SEO_{t+1} (SEO_{t+2}) equals 1 if a firm conducts a seasoned equity offering within one (two) year(s) following CSR disclosure. $ISSUE\$_{t+1}$ ($ISSUE\$_{t+2}$) is the total dollar amount in billions raised in SEOs within one (two) year(s) following CSR disclosure. We obtain information on SEOs from the Security Data Corporation (SDC).

Following prior studies, we control for other potential factors affecting the equity issuance decisions of firms. We include the market-to-book ratio (*MB*), as Stein (1995) suggests that firms will choose the time when their stock is overvalued to issue equity. In addition, growth firms have

[21] A careful examination of the distribution of Δ*COVERAGE* reveals that there are some relatively large values on the negative tail. To determine whether our results are sensitive to these large values, we exclude the bottom 5 percent of Δ*COVERAGE* and get a more symmetric distribution on this variable. We also try excluding extreme values of the upper and the bottom 2 percent of this variable. Overall, our main results are not sensitive to the treatment of the large negative values of Δ*COVERAGE*.

a greater need for capital. We include research and development expenses (*RD*) and capital expenditures (*CAPITAL*) as additional proxies for growth opportunities. The likelihood of an equity issuance can depend on the extent of the financial constraints that a firm faces. Also, firms may follow a specific pecking order in their choice of financing options and rely preferentially on internal reserves and debt financing before issuing equity (Myers and Majluf 1984). Hence, we include profitability (*ROA*), cash flow (*CASH*), payout ratio (*PAYOUT*: cash dividend) and leverage (*LEV*) to capture financial constraints, internally generated funds, and debt capacity. We control for analyst forecast dispersion (*LNDISP*: the logarithm of the standard deviation of analyst forecasts divided by the consensus forecast) as a proxy for the degree of agreement between management and investors because Dittmar and Thakor (2007) argue that firms are more likely to issue equity when the level of agreement is high. Finally, we control for firm size (*LNSALES*: logarithm of total sales) and financing activities (*FIN*) already conducted in the current year.

Equation (8) assesses whether CSR disclosure is related to the likelihood of future equity issuance through SEOs, and Equation (9) examines whether CSR disclosure is associated with the size of SEOs. Table 7, Panel A indicates that firms are more likely to seek equity capital through SEOs in the two years following CSR disclosure. The coefficients on *DISCI* are positive and marginally significant (coeff. = 0.504, p = 0.09 for SEO_{t+1}; coeff. = 0.625, p = 0.06 for SEO_{t+2}). Based on the coefficient estimate for *DISCI* in Column I (II), in the first year (two years) after CSR disclosure, the odds that initiators will issue equity is 65.5 percent (86.8 percent) higher than that of non-initiators.

Table 7, Panel B reveals that, holding other factors constant, disclosing firms not only are more likely to issue equity, but also raise a significantly larger amount than non-initiators. The difference ranges from U.S. $165 million ($ISSUE\$_{t+2}$) to U.S. $173 million ($ISSUE\$_{t+1}$). These results are consistent with managers initiating CSR disclosures before going to the capital market in anticipation of obtaining cheaper external capital and increasing their capacity to raise external capital.

Additional Analyses

Alternative Measures of CSR Disclosure

Our CSR disclosure measure, *DISCI*, which captures first-time reporters, best serves the purpose of testing our hypotheses. However, for the sake of completeness, we also test our hypotheses using alternative measures of CSR disclosure. The first measure, $DISC_{i,t}$, is an indicator variable that equals 1 if Firm *i* discloses a standalone CSR report in Year *t*, and 0 otherwise. The second measure, $DISCN_{i,t}$, indicates whether a firm only sporadically publishes CSR reports. $DISC_{i,t}$ takes a value of 1 if Firm *i* issues a CSR report in year *t*, but not in year *t*+1 (even though it resumes reporting in year *t*+2 or later), and 0 otherwise. Allowing for non-first-time disclosing years significantly increases our sample size. We obtain results qualitatively similar to those based on *DISCI*. Finally, after excluding first-time reports, we use only continuing reports, $DISC_{i,t}$, which can be just mundane duplications of earlier reports containing less incremental information. We find a much weaker, albeit still significant, result.

Individual Measures of the Cost of Equity Capital

In the above analyses, we use the average of the three cost of equity capital measures based on Gebhardt et al. (2001), Claus and Thomas (2001), and Easton (2004). These estimation methods are based on different earnings growth assumptions and therefore have distinct strengths and weaknesses. The merit of each measure is debated among researchers, and it is not our intention to resolve this debate. Averaging across the three estimates potentially reduces noise in individual measures (Larcker and Rusticus 2010), and is widely used in the literature (Hail and Leuz 2006;

TABLE 7

Post-CSR Disclosure Seasoned Equity Offerings

	Panel A: Incidence of SEOs				Panel B: Size of SEOs			
	Column I		Column II		Column I		Column II	
	SEO_{t+1}		SEO_{t+2}		$ISSUEAMT_{t+1}$		$ISSUEAMT_{t+2}$	
Variables	**Coeff.**	**Prob.**	**Coeff.**	**Prob.**	**Coeff.**	**t-stat.**	**Coeff.**	**t-stat.**
Intercept	−1.700***	0.00	−2.826***	0.00	−0.406***	−10.76	−0.380***	−6.65
$DISCI_t$	0.504*	0.09	0.625*	0.06	0.173***	2.95	0.165**	2.32
MB_t	0.024***	0.01	0.013	0.25	0.008***	4.38	0.013***	4.63
$LNSALES_t$	−0.234***	0.00	−0.138***	0.00	0.077***	16.71	0.076***	11.60
ROA_t	−1.475***	0.00	−2.046***	0.00	0.257***	3.09	0.260**	2.02
LEV_t	2.599***	0.00	2.487***	0.00	0.115***	3.55	0.096**	1.95
$CASH_t$	−0.968***	0.00	−0.582*	0.10	0.121**	2.38	0.115	1.46
FIN_t	2.135***	0.00	1.310***	0.00	0.059	1.56	0.018	0.30
$PAYOUT_t$	1.261*	0.10	0.554	0.43	0.202***	2.94	0.069	0.26
$CAPITAL_t$	0.870***	0.00	0.772***	0.00	0.104***	3.71	0.058	1.39
RD_t	−1.891**	0.03	−2.483**	0.03	0.417***	2.78	0.494**	2.06
$LNDISP_t$	0.046	0.73	−0.134	0.44	0.073***	3.05	0.090***	2.63
Pseudo-R^2	0.109		0.073		0.322		0.307	
Likelihood Ratio	567.38		272.51					
Percent Concordant	72.50		70.00					
n ($DISCI = 1$)	189		189					
n ($SEO = 1$)	885		517					
n	13,013		13,013		885		517	

*, **, *** Indicate that the estimated coefficient is statistically significant at the 10 percent, 5 percent and 1 percent levels, respectively. All continuous variables are winsorized at the 1st and 99th percentiles. All t-statistics are corrected using the Huber-White procedure.

Variable Definitions:

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TABLE 7 (continued)

$DISCI_t$ = indicator variable that equals 1 if it is the earliest reporting year of a firm that issues CSR reports (CSR report initiating year), and 0 otherwise;
$HIPERFORM_t$ = indicator variable that equals 1 if the firm's total CSR strength score, namely, *PERFORM*, is higher than the industry median (in other words, if the firm is classified as a high CSR performer in its industry), and 0 otherwise;
SEO_{t+1} (SEO_{t+2}) = 1 if a firm conducts a seasoned equity offering within one (two) year(s) after CSR disclosure, and 0 otherwise;
$ISSUEAMT_{t+1}$ ($ISSUEAMT_{t+2}$) = total dollar amount in billions issued by a firm's seasoned equity offering within one (two) year(s) after the firm issues a CSR report;
MB_t = market-to-book ratio, which is defined as the market value of equity (CSHO * PRCC_F) divided by the book value of equity (CEQ);
$LNSALES_t$ = natural logarithm of total sales (SALE);
LEV_t = leverage ratio, which is defined as the ratio of total debt (DLTT + DLC) divided by total assets;
$CASH_t$ = total cash-to-asset ratio, which is defined as cash and short-term investments (CHE) divided by total assets;
FIN_t = amount of debt or equity capital raised by the firm scaled by total assets at the beginning of year *t*. It is measured as the sale of common stock and preferred shares minus the purchase of common stock and preferred shares (SSTK – PRSTKC) plus the long-term debt issuance minus the long-term debt reduction (DLTIS – DLTR);
$PAYOUT_t$ = cash dividend (DVC) relative to total assets;
$CAPITAL_t$ = capital expenditures (CAPX) scaled by total assets;
RD_t = research and development expense (XRD) scaled by total assets. We assume a value of 0 if a firm's research and development expense is missing; and
$LNDISP_t$ = forecast dispersion in year *t*, which is measured as the logarithm of the standard deviation of analyst estimates of year *t* earnings divided by the consensus forecast of year *t* earnings.

Dhaliwal et al. 2006). To provide assurance that our results are not sensitive to the choice of these measures, we repeat our analyses using the three measures separately and obtain similar results.

Correlation between KLD Performance and CSR Disclosure

KLD performance scores (*PERFORM*) are correlated with the decision of firms to issue CSR reports for the first time (*DISCI*), but their correlation coefficients (Table 2, Panel B) are moderate at about 10 percent.[22] As discussed earlier, we control for CSR performance in all regression equations. To further alleviate the concern regarding the correlation between the KLD performance scores and CSR disclosure of firms and the potential impact of this correlation on our results, we conduct the following robustness analyses. First, we remove the transparency-related category, that is, "Corporate Governance," from the KLD performance ranking scores, as this category contains a subcategory, "Transparency," which is a dimension that is likely to reflect the CSR disclosure policy of firms. Our main inferences are unchanged. Second, we use the performance score of each KLD CSR category to measure firms' social performance. Our main inferences are unchanged. Finally, we match each *DISCI* observation with a non-disclosing firm that has the closest industry-adjusted KLD CSR performance score in the same year and industry and run regression Equation (2). The coefficient on *DISCI* is significantly negative at the conventional level, suggesting that CSR initiators enjoy a subsequent reduction in the cost of equity capital.

Alternative Measures of CSR Performance

To determine if our results are sensitive to alternative measures of CSR performance, we use two additional measures. One measure is an indicator *DJSI* that equals 1 if a firm appeared in the Dow Jones Sustainability Index in any year during the period 2002–2007, and 0 otherwise. The other is an indicator *CRO* that equals 1 if a firm was on the "100 Best Corporate Citizens" list for 2007 from the Corporate Responsibility Officer, and 0 otherwise.[23] We do not consider year-to-year variation because of data constraint. It turns out *DJSI* (*CRO*) is correlated with our KLD performance scores with a Pearson coefficient of 30 percent (23 percent). Using these two measures in place of the KLD scores produces qualitatively similar results.

V. SUMMARY AND CONCLUSIONS

We examine a potential benefit associated with the initiation of voluntary disclosure of CSR activities: a reduction in the cost of equity capital. We find that the likelihood of a firm initiating standalone disclosure of CSR activities is associated with a higher prior year cost of equity capital. Firms with CSR performance superior to that of their industry peers enjoy a reduction in the cost of equity capital after they initiate CSR reports. Further, firms initiating CSR disclosure with superior CSR performance attract dedicated institutional investors and analyst coverage, and these analysts achieve lower absolute forecast errors and dispersion following such disclosure. Finally, CSR disclosure initiators appear to exploit this potential benefit of a reduction in the cost of equity

[22] Consistent with this low correlation, KLD provides the following information regarding how it rates the CSR performance of firms (see http://www.kld.com/research/methodology.html): "KLD researches the social, environmental, and governance performance of corporations. KLD research relies on five distinct data sources to inform our ratings and analysis. Data are collected in a disciplined process from a wide variety of company, government, and non-government organization and media sources. KLD tracks each company through more than 14,000 global media sources daily." These five distinct data sources include (1) direct communication with company officers; (2) a network of global ESG research firms that cover non-U.S. markets; (3) review of more than 14,000 global news sources; (4) public documents of companies, including annual reports and proxy statements; and (5) information obtained from government and non-government organizations including the U.S. Department of Labor, EPA, Human Rights Watch, OSHA, CANICOR, Ceres, ICCR, and DoD. Hence, it appears that the CSR reports of firms constitute only one of the numerous information sources employed by KLD.

[23] See http://www.thecro.com/.

capital. They are more likely than non-disclosing firms to conduct SEOs to raise capital in the two years following the disclosure. In addition, among firms conducting SEOs, CSR disclosure initiators raise a significantly larger amount of equity capital than non-initiators.

This study adds to the voluntary disclosure literature by extending the traditional research on voluntary disclosure beyond the narrow focus of financial disclosure. Our analyses enhance our understanding of the rationales behind and the consequences of the recent trend in voluntary CSR disclosure. These results have important implications for companies, regulators, and investors.

A few caveats are worth noting. Most of the control variables that we use in the CSR determination model are obtained from the standard voluntary disclosure literature. To the extent that CSR disclosure is distinct from other forms of voluntary disclosure examined in the literature, we may have missed important determinants of CSR disclosure. In addition, it is possible that we missed some reports on stale websites because of their lack of maintenance, which would add noise to our results. Also, we do not examine the content of the CSR reports. To the extent that the detailed information of these reports is not fully captured by the KLD scores, we fail to capture some important characteristics of CSR reports. Further, it is important to control for the other disclosure policies of firms when examining the impact of CSR disclosure. Our empirical proxies using management guidance and earnings quality may not be sufficient to capture these potential confounding effects. Finally, although the KLD rating is widely used in the management literature, a significant amount of future research is warranted to further establish its validity in measuring the social performance of firms.

These caveats notwithstanding, we believe that our study opens various venues for future research. For example, CSR disclosure and performance could have a different impact on the cost of debt as debtholders have a payoff function different from that of equityholders. Further, the effect of CSR disclosure could be a function of differences in legal environment and institutional setting. Therefore, an international study could help us better understand CSR disclosure. Last, as mentioned previously, it would be worthwhile to investigate the effect of the information content of CSR reports on the valuation decisions of investors.

APPENDIX
CSR CATEGORIES AND PERFORMANCE SCORES BY INDUSTRY

Industries	Total Strength	Community	Corporate Governance	Diversity	Employee Relations	Environment	Human Rights	Product
Mining/Construction	0.789	0.143	0.130	0.189	0.200	0.084	0.027	0.016
Food	2.351	0.399	0.231	1.065	0.401	0.203	0.022	0.028
Textiles/Print/Publish	1.751	0.159	0.143	0.670	0.322	0.296	0.003	0.158
Chemicals	2.224	0.298	0.145	0.713	0.525	0.442	0.000	0.101
Pharmaceuticals	1.599	0.201	0.136	0.752	0.309	0.116	0.000	0.085
Extractive	1.266	0.147	0.159	0.210	0.488	0.241	0.002	0.020
Manf: Rubber/Glass/etc.	1.638	0.311	0.168	0.485	0.404	0.162	0.036	0.072
Manf: Metal	1.186	0.060	0.126	0.204	0.426	0.285	0.000	0.085
Manf: Machinery	1.300	0.134	0.128	0.316	0.318	0.237	0.004	0.163
Manf: Electrical Eqpt	1.397	0.138	0.135	0.426	0.331	0.182	0.007	0.179
Manf: Transport Eqpt	1.985	0.193	0.176	0.606	0.537	0.330	0.000	0.144
Manf: Instruments	1.398	0.127	0.184	0.557	0.230	0.174	0.001	0.126
Manf: Misc.	1.970	0.463	0.232	0.713	0.335	0.055	0.030	0.140
Computers	1.687	0.120	0.183	0.769	0.391	0.114	0.001	0.110
Transportation	1.273	0.118	0.139	0.631	0.269	0.041	0.002	0.076
Utilities	1.919	0.203	0.173	0.721	0.364	0.440	0.001	0.016
Retail: Wholesale	0.757	0.030	0.119	0.341	0.122	0.065	0.000	0.081
Retail: Misc.	1.598	0.192	0.149	0.870	0.230	0.070	0.016	0.071
Retail: Restaurant	1.545	0.110	0.140	0.932	0.235	0.110	0.004	0.015
Financial	1.624	0.352	0.265	0.710	0.227	0.009	0.005	0.055
Insurance/Real Estate	0.534	0.036	0.153	0.256	0.085	0.004	0.000	0.001
Services	0.822	0.026	0.146	0.492	0.106	0.020	0.000	0.032
Mean	1.478	0.180	0.174	0.611	0.292	0.137	0.005	0.078

This table provides a brief summary of the seven categories included in the KLD Research & Analytics database, which are used to rate the CSR performance of firms. The data cover the 1991–2007 period. Within each of these seven categories, KLD defines a set of potential strengths and assigns a value of 1 if the strength exists, and 0 otherwise. The statistics provided in this table are the mean performance scores (non-industry-adjusted raw performance scores) for each industry. The seven main categories and their subcategories are summarized below.

Main Categories	Sub-Categories	Max. Strength (Perfect Score)	Actual Max. Strength	Actual Mean Strength
Community	(1) Charitable Giving, (2) Innovative Giving, (3) Non-U.S. Charitable Giving, (4) Support for Education, (5) Support for Housing, (6) Volunteer Programs, and (7) Other Strengths	7	5	0.189
Corporate Governance	(1) Compensation, (2) Ownership, (3) Political Accountability, (4) Transparency, and (5) Other Strengths	5	3	0.167
Diversity	(1) Board of Directors, (2) CEO, (3) Employment of the Disabled, (4) Promotion, (5) Women and Minority Contracting, (6) Work/Life Benefits, (7) Gay and Lesbian Policies, and (8) Other Strengths	8	7	0.605
Employee Relations	(1) Health and Safety, (2) Retirement Benefits, (3) Union Relations, (4) Cash Profit Sharing, (5) Employee Involvement, and (6) Other Strengths	6	5	0.292
Environment	(1) Beneficial Products and Services, (2) Clean Energy, (3) Pollution Prevention, (4) Recycling, and (5) Other Strengths	5	4	0.140
Human Rights	(1) Labor Rights, (2) Relations with Indigenous Peoples, and (3) Other Strengths	3	2	0.004
Product	(1) Benefits the Economically Disadvantaged, (2) Quality, (3) R&D/Innovation, and (4) Other Strengths	4	3	0.077
Total Strength	The sum of all of the above seven main categories.	38	29	1.474

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