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James N. Connon
Utah State University

Zhejia Ling
Iowa State University, zhejia@iastate.edu

Qian Wang
Iowa State University, qianwang@iastate.edu

Olena Watanabe
Iowa State University, watanabe@iastate.edu

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Keywords

Corporate social responsibility, Non-financial disclosure, Competitive advantage, Operating performance

Disciplines

Accounting | Corporate Finance | Finance and Financial Management | Strategic Management Policy

Comments

10-K Disclosure of Corporate Social Responsibility and Firms' Competitive Advantages[‡]

James N. Cannon[a], Zhejia Ling[b], Qian Wang[b] and Olena V. Watanabe[b]*

[a]*School of Accountancy, Jon M. Huntsman College of Business, Utah State University, Logan, UT, U.S.A.;* [b]*Department of Accounting, Debbie and Jerry Ivy College of Business, Iowa State University, Ames, IA, U.S.A.*

*Corresponding author
Department of Accounting
Ivy College of Business
Iowa State University
3157 Gerdin Business Building
2167 Union Drive
Ames, IA 50011
U.S.A.
watanabe@iastate.edu
+1 (515) 294-7908

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Abstract:
In this paper, we offer evidence that disclosure of corporate social responsibility (CSR) in the 10-K provides information about firms' competitive advantages. We create a textual measure of CSR disclosure that aggregates CSR keywords found in 10-Ks. We measure firms' competitive advantages by using levels of and persistence of industry-adjusted gross margin; selling, general, and administrative (SG&A) margin; and operating margin. We first show that 10-K CSR disclosure intensity is associated with lower levels of gross margin but higher SG&A margin. We then observe that firms with more CSR keywords in their 10-Ks maintain more persistent above-industry-median gross and operating margins. Upon sorting our full set of 10-K CSR keywords into three subcategories (philanthropy, business practice, and product), we find that the intensities of disclosure in these CSR subcategories have associations with varying competitive advantages.

Data Availability: All data are publicly available from the sources identified in the text.

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1. Introduction

In a global trend of recent years, companies are increasingly disclosing activities of corporate social responsibility (CSR) in their annual 10-K reports (KPMG, 2017). Numerous studies suggest that CSR activities can lead to competitive advantages through channels such as consumer social identification or brand and product evaluations (e.g., Bhattacharya, Korschen, & Sen, 2009; Bhattacharya & Sen, 2004; Perez & del Bosque, 2015). A separate stream of literature argues that well-performing firms will disclose to differentiate themselves from poor performers and to align market expectations with management's beliefs about future performance (e.g., Ajinkya & Gift, 1984; Hummel & Schlick, 2016). Therefore, by disclosing information about their firm's CSR activities, managers can convey expectations about their firm's competitive advantages to stakeholders.

Existing CSR studies have relied primarily on third-party assessment of firms' CSR activities or on disclosure contained in stand-alone CSR reports (e.g., Davis, Guenther, Krull, & Williams, 2016; Dhaliwal, Radhakrishnan, Tsang, & Yang, 2012). Only a handful of papers have examined specific types of CSR information contained in the 10-K (e.g., Loughran, McDonald, & Yun, 2009; Matsumura, Prakash, & Vera-Munoz, 2017), and large-sample evidence on the information content of CSR disclosure in 10-K filings is lacking. Yet such filings represent a primary source of information for investors, creditors, and other financial market participants (Griffin, 2003). In addition, the U.S. Securities and Exchange Commission (SEC, 2016) called for commentary about whether and how expanded CSR information in the 10-K would be useful. In this study, we investigate whether CSR disclosure in 10-Ks is informative about firms' competitive advantages.

According to Baginski, Lorek, Willinger, and Branson (1999), to gain competitive advantages, firms engage in strategic investment and operating decisions, which create

conditions of sustained current earnings and earnings increases. Correspondingly, the CSR literature supports the conjecture that CSR activities would influence both the level and persistence of performance by enticing customers to buy, increasing customer satisfaction, enhancing customer loyalty, and improving relationships with employees and external stakeholders. Thus, we examine competitive advantage using levels and persistence of performance (Baginski et al., 1999; Lev, 1983).

Furthermore, marketing and management studies argue that different types of CSR activities affect performance in different and perhaps opposing ways (Aguilera, Rupp, Williams, & Ganapathi, 2007; Maignan & Ferrell, 2004; Peloza & Shang, 2011). For example, Lev, Petrovits, and Radhakrishnan (2010) argue that philanthropic spending can increase product margins by augmenting and sustaining sales revenue through improved customer attraction and retention. Conversely, though, reducing the ecological footprint of a firm's business practice may put offsetting downward pressure on product margins by increasing manufacturing costs (McWilliams & Siegel, 2001). Thus, without studying disclosures of individual types of CSR, one might overlook associations due to the countervailing effects of different types of CSR activities on performance. We therefore repeat our primary investigation of CSR disclosure by using subcategories of CSR activities defined by Peloza and Shang (2011).

We employ a sample of 50,757 U.S. firm-year 10-K observations from 1996 through 2015 to examine associations between 10-K CSR disclosure and the level and persistence of firm performance. To measure 10-K CSR disclosure, we compile a broad vocabulary of keywords from the *Encyclopedia of Corporate Social Responsibility* by Idowu, Capaldi, Zu, and Das Gupta (2013). We then search each 10-K for these CSR-related keywords. First, we proxy for *overall* intensity of 10-K CSR disclosure by calculating the total number of CSR-related keywords per 1,000 words in each 10-K. Second, we classify the extracted keywords

into four different subcategories: *philanthropy-related*, *business-practice-related*, *product-related*, and *general.* To draw inferences about how CSR activities could affect various elements of overall performance—such as sales, cost of goods sold, and selling, general, and administrative (SG&A) expenses—we use three industry-median-adjusted performance measures: gross margin, SG&A margin, and operating margin.[1]

Our empirical findings show that the overall intensity of CSR keywords included in 10-Ks is negatively associated with industry-adjusted gross margin, suggesting that CSR-related production costs are greater than any positive sales effects. In contrast, overall CSR disclosure intensity is positively associated with industry-adjusted SG&A margin, suggesting that firms with more CSR disclosure make more efficient use of their SG&A resources in generating sales. Although we do not find a significant association between overall CSR disclosure intensity and the level of industry-adjusted operating margin, we do find a positive association between overall CSR disclosure and the persistence of above-industry-median gross and operating margins.[2] Thus, we conclude that firms with more intensive 10-K CSR disclosure achieve a competitive advantage in which they retain above-industry margins longer than do firms with less CSR disclosure.

Next, we turn our attention to associations between CSR subcategories and industry-adjusted performance. We find that the level of gross margin is higher and SG&A margin is lower in firms with more philanthropy-related CSR disclosure, consistent with the expectation that philanthropic activities impose SG&A expenses on firms but result in higher product margins. Conversely, we find that more business-practice-related disclosure is associated with lower gross margin and higher SG&A margin, suggesting any direct costs of socially related production processes are offset by lower marketing costs. Furthermore, above-industry

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[1] All industry groups are defined based on the two-digit Standard Industry Classification (SIC) codes.

[2] Harris (1998) argues that a significantly positive persistence of above-industry earnings suggests the inability of rival firms in the industry to drive down a firm's profitability to a normal rate of return.

operating margins are more persistent in firms with more philanthropy- and product-related CSR disclosure. In sum, our findings suggest that managers disclose different types of CSR activities in their 10-Ks to communicate information about various aspects of firms' competitive advantages.[3]

This study makes several contributions. First, we contribute to the literature that examines the benefits of CSR activities and their disclosure. While there is a growing body of research examining the associations among CSR disclosure, CSR performance, and firm value (Cahan, De Villers, Jeter, Naiker, & Van Staden, 2016; Clarkson, Fang, Li, & Richardson, 2013; Gao, Dong, Ni, & Fu, 2016), research that links 10-K CSR disclosure with competitive advantages is limited.[4] We document that textual 10-K CSR disclosure is informative about firms' competitive advantage.

Second, we use a novel approach to capture CSR disclosure by analyzing public machine-readable 10-K documents. Existing literature focuses on specific types of CSR disclosure in 10-Ks, such as environment- or ethics-related activity, and is often limited to specific industries or short time periods (Cho, Roberts, & Patten, 2010; Chen, Cho, & Patten, 2014; Loughran et al., 2009; Matsumura et al., 2017). We expand that literature by applying a broad CSR dictionary and performing a comprehensive 10-K text search of CSR information. Our paper complements broader CSR research by offering a starting point for better understanding the range of CSR disclosure in 10-Ks.

Third, our paper provides evidence in support of the SEC's call for assessing the

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[3] We acknowledge that there is always a potential for self-selection bias when managers have discretion over voluntary disclosure and, to some degree, discretion over their disclosure response to mandatory reporting standards. It is possible that managers choose to disclose information about CSR activities when they expect performance to reflect a competitive advantage unrelated to CSR. Alternatively, managers may engage in CSR activities when they anticipate a competitive advantage that is unrelated to CSR. However, in both cases, we would not have reason to expect performance to vary across disclosures of different types of CSR as we find in our empirical analyses. However, we draw no causal inferences but instead document associations between CSR disclosure and firm competitive advantage.

[4] We note that measuring the quality of CSR performance to gauge the truthfulness of disclosure claims is not the focus of our study. Rather, we argue that 10-K CSR disclosure represents managers' desire to convey information about competitive advantage.

usefulness of expanded CSR disclosure in the 10-K in response to investors' increasing interest in disclosure about sustainability. For example, in their commentary to the SEC, investment firm managers argue that companies with strong positive CSR policies can develop a 'competitive edge' and improve their long-term performance but that CSR information contained in sustainability reports or voluntarily disclosed by public firms in other media (i.e., corporate web pages) is insufficient to address investors' needs (Kron, 2016; Kumar & McKnett, 2016; Rawlins, 2016).[5] Our findings show that CSR disclosure in public mandatory filings is informative about competitive advantages and thus may benefit financial stakeholders.

We organize the remainder of the paper as follows: Section 2 motivates our research question and reviews the relevant literature. Sections 3 and 4 explain the research design and the sample. Section 5 presents the empirical results, while section 6 discusses and concludes.

2. Background and Hypotheses Development

2.1. 10-K CSR Disclosure

The SEC requires that managers disclose all material information in 10-K filings, including any narrative that provides qualitative information. Furthermore, annual 10-K filings are standardized and externally audited. To the extent that managers present CSR-related information in their firms' financial statements or the notes to financial statements, such information is also audited (e.g., recognized amounts of pending litigation losses related to environmental lawsuits). In addition, auditors review for consistency qualitative information such as a description of the business and its risks, or management discussion and analysis (PCAOB, 2003).[6]

Despite the 10-K being a regulated medium for financial reporting, most qualitative

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[5] These and other comment letters are available at https://www.sec.gov/comments/s7-06-16/s70616.htm.
[6] In our observation, the two sections in 10-K filings that are most likely to include CSR disclosure are 'Part I: Business' and 'Management Discussion and Analysis.' For illustration, in supplementary online Appendix S1, we present extracts of text with related CSR disclosures from 10-Ks for four company-years.

CSR content included in the 10-K is subject to the manager's discretion, particularly when it is in the management discussion and analysis section. In that sense, consistent with arguments outlined by Muslu, Radhakrishnan, Subramanyam, and Lim (2015), 10-K CSR information constitutes quasi-voluntary disclosure. Existing studies document the usefulness of similar quasi-voluntary 10-K narratives in providing information about capital expenditures, research and development (R&D) investments, and competition (Cole & Jones, 2014; Li, Lundholm, & Minnis, 2013; Merkley, 2014).

The literature has also established that managers of well-performing firms voluntarily disclose positive information (i.e., competitive advantages) to differentiate themselves from poor performers (e.g., Ajinkya & Gift, 1984; Hummel & Schlick, 2016). Similarly, we posit that managers who expect to realize a competitive advantage through CSR activities will offer, on average, more disclosure about such activities than will other firms.[7] Thus, to establish expectations about associations between CSR disclosure and competitive advantages, we turn to the literature on the performance implications of CSR activities.

2.2. CSR Activities and Competitive Advantages

CSR may contribute to firms' competitive advantages by affecting the most direct driver of sales: consumer purchasing decisions. Bhattacharya and Sen (2004) report that 84% of Americans say they would switch to brands they associate with CSR, and 79% of Americans report considering corporate citizenship when making a purchasing decision. Consistent with this sentiment, social identification theory predicts and empirical research shows that consumers gain psychosocial benefits from transacting with firms that engage in CSR

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[7] It is also possible that firms use CSR disclosure to legitimize their subpar CSR or financial performance. That is, firm managers may use CSR disclosure to enhance readers' perception of the firm's purported CSR performance (Cho, Guidry, Hageman, & Platten, 2012; Clarkson, Li, Richardson, & Vasvari, 2008). Or, as an extension, firm managers may use CSR disclosure to attribute poor operating performance to their engagement in CSR activities (e.g., Hummel & Schlick, 2016). In the former case, we would expect no association between CSR disclosure and competitive advantage, while in the latter case, we would expect a negative association between CSR disclosure and competitive advantage.

(Bhattacharya et al., 2009; Choi & Ng, 2011; Marin, Ruiz, & Rubio, 2009; Peloza & Papania, 2008; Perez & del Bosque, 2015).

Specifically, Klein and Dawar (2004) and Kang and Hustvedt (2014) find that firms' CSR activities influence consumers' brand and product evaluations and create a 'halo effect' that positively impacts consumers' evaluations of new products.[8] Moreover, experimental evidence shows that firms cannot compensate for a lack of social responsibility by lowering selling prices and providing consumers with other economic benefits (Choi & Ng, 2011; Gao & Mattila, 2015; Kim, 2017; Lii & Lee, 2012). Furthermore, customers who derive psychosocial benefits from affiliating with a CSR firm (i.e., more satisfied customers) are more likely to remain loyal (Ittner & Larcker, 1998; Perez & del Bosque, 2015; Plewa, Conduit, Quester, & Johnson, 2015; Reichheld & Sasser, 1990). Customer loyalty, in turn, tends to result in competitive advantage (Anderson, Fornell, & Lehmann, 1994; Ittner & Larcker, 1998).

In addition, CSR activities may positively influence the firm's relations with its employees and other non-consumer external stakeholders. First, Turban and Greening (1997) provide evidence that CSR activities broaden the hiring pool of employee candidates by enhancing prospective employees' perceptions of a firm's reputation and attractiveness. Moreover, these positive perceptions lead to the attraction and retention of more talented and productive workers (Bode, Singh, & Rogan, 2015; Waddock & Graves, 1997). Second, Baron (2001) theorizes that firms use CSR activities to build productive relationships within the community, leveraging the goodwill of community officials and non-profit entities such as educational institutions (see also Neiheisel, 1994). Thus, in addition to customer-driven factors, we expect CSR activities to contribute to an operating cost competitive advantage by leveraging the goodwill of the company's employees and community partners.

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[8] We note that CSR activities impact not only business-to-consumer transactions but also business-to-business dealings. For example, Drumwright (1994) finds that social responsibility factors into corporations' buying decisions in business-to-business transactional settings.

In sum, based on the extant research, we expect that when firms invest costly resources to engage in CSR activities, they are more likely to: 1) motivate customers' purchase decisions, 2) increase customers' satisfaction with products/services, 3) improve relationships with employees and external stakeholders, and 4) increase customer and employee loyalty. We expect the effects of CSR activities on customers' purchase decisions and satisfaction and on employee and partner relationships to manifest in a higher level of earnings, while the customer and employee loyalty effects to manifest in higher earnings persistence. Based on the arguments above, firms engage in strategic CSR-related investment and operating decisions to gain competitive advantages, which create conditions of earnings increases and sustained current earnings (Baginski et al., 1999).[9]

Notably, for CSR to result in a competitive advantage, the strategy would be resource-heavy and led by superior managers, so as not to be easily mimicked by competitors (Christmann, 2000; Radhakrishnan, Tsang, & Liu, 2018; Sharma & Vredenburg, 1998).[10] However, earnings are only informative about the degree of competitive advantage when they are compared with the earnings of a group of competitors. Therefore, we consider two dimensions of competitive advantage: 1) the level of operating performance above an industry benchmark and 2) the persistence of operating performance in excess of an industry benchmark.[11] Thus, we state our hypotheses as follows:

H1: Disclosure of CSR activities is positively associated with competitive advantage as measured by the level of above-industry-median operating performance.

H2: Disclosure of CSR activities is positively associated with competitive advantage as measured by the persistence of above-industry-median operating performance.

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[9] In a parallel line of thought, Lev (1983) argues that monopolistic firms would exhibit more persistent earnings than would competing firms. By extension, we expect that a monopolist's market power is similar to a competitive advantage for a particular firm in a competitive industry.

[10] Supporting this view, Clarkson, Richardson, and Vasvari (2011) show that firms that dedicate significant resources to environmental strategies experience subsequent increases in cash flows and performance. Similarly, Radhakrishnan et al. (2018) cite numerous cases in which firms invested significant resources to achieve CSR-related competitive advantages.

[11] As discussed later, in section 3, we measure 'operating performance' using industry-median-adjusted gross margin, SG&A margin, and operating margin to capture various types of competitive advantage.

2.3. CSR Subcategories

We now consider how the diversity of CSR activities may refine our expectations about how CSR disclosure may be associated with competitive advantage. Godfrey, Merrill, and Hansen (2008) point out that CSR comprises a set of heterogeneous firm activities rather than one monolithic undertaking. Peloza and Shang (2011) offer a framework in which they divide CSR into philanthropy-, business-practice-, and product-related activities. In the following subsections, we discuss how various types of CSR activities could affect revenue and expense components of operating performance differently.

2.3.1. Philanthropy

Philanthropy often takes the form of cause-related marketing, charitable support, community involvement, and employee volunteerism (Peloza & Shang, 2011). The literature on philanthropic CSR activities generally concludes that consumers are more satisfied with firms that are more charitable (e.g., Gupta & Pirsch, 2006; Lii & Lee, 2012; Vlachos, Tsamakos, Vrechopoulos, & Avramidis, 2009). Further, Arora and Henderson (2007) find that firms can use philanthropy as a surrogate for price discounts. In addition, Simmons and Becker-Olsen (2006) find that consumers' identification with a company's philanthropic efforts increases referral intentions. Ellen, Webb, and Mohr (2006) find that, all else equal, customers are willing to switch to a philanthropic company. Thus, we expect philanthropy to increase revenue through both higher prices and increased sales volumes.

In terms of costs, many philanthropic activities (e.g., charitable giving) directly increase a firm's SG&A expenses. However, there are several avenues through which philanthropy might also produce cost savings. For instance, Porter and Kramer (2002) argue that philanthropy can reduce a firm's costs by enabling the firm to benefit from other institutions' expenditures (e.g., fostering R&D and/or employee skills through educational institutions). Moreover, Hajjat (2003) finds that philanthropy enhances the value of a firm's advertising

expenditures, thus reducing marketing costs.

2.3.2. Business Practice

Business practice CSR activities refer to structuring firms' operations such that they enhance rather than detract from society. Over half of the existing CSR-related business practice studies surveyed by Peloza and Shang (2011) relate to environmental protection, followed by treatment of employees. Existing research shows that when firms engage in business practice CSR activities, their customers are more willing to purchase their products and to pay a higher price since the customers can gain social identification benefits. Such transactions result in higher revenue for the companies.[12]

When it comes to expenses, on the one hand, business-practice-related CSR activities are likely to increase direct and indirect costs. To illustrate, a firm may incur greater labor costs by offering enhanced benefits, such as longer maternity/paternity leave and premium health insurance policies. Similarly, responsible manufacturing may result in higher overhead costs driven by low-pollution manufacturing. Furthermore, ethical R&D practices—for example, products created without animal testing—are likely more expensive than their alternatives. Companies may also incur additional advertising and marketing costs to promote their products through methods that are inclusive and sensitive to social diversity.

On the other hand, responsible business practices may also yield long-term efficiencies. For example, a U.S. supplier of flooring materials may save costs of exploration and transportation by harvesting renewable domestic hard maple instead of non-renewable hardwood sourced from foreign tropical rainforests. In addition, Auger et al. (2003) and Auger, Devinney, Louviere, and Burke (2008) provide survey evidence that CSR-friendly business practices serve as substitutes for marketing expenses because consumers are more likely to

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[12] See Auger, Burke, Devinney, and Louviere (2003); Choi and La (2013); Elliott and Freeman (2004); Folkes and Kamins (1999); and Mandhachitara and Poolthong (2011) for examples.

purchase from such firms.

2.3.3. Product

Product-related CSR refers to product or service features that enhance environmental or social good. Peloza and Shang (2011) observe that most studies on product-related CSR concern products that generate fewer pollutants, followed by products that are not harmful to consumers.[13] The benefits of product-related CSR may accrue to the consumer both directly and indirectly. Thus, we expect product-related CSR to generate higher sales revenue because consumers may be willing to pay premiums (i.e., higher selling prices) for both the products' attributes as well as for the social identification benefits of purchasing responsible products.

However, the CSR-specific product features may require incremental direct costs. Consider a poultry farm that spends more on production because it relies on free-range-raised birds. Similarly, ecological products generally require material inputs that are more expensive than their counterparts (Gross & Kalra, 2002; Ikada & Tsuji, 2000). Conversely, we might expect product-related CSR to be associated with lower marketing expenditures because the product features themselves serve as elements of advertising (Auger et al., 2003; Auger et al., 2008).

Our discussion above emphasizes that the overall effect of CSR activities on competitive advantage encompasses the net effects of variant CSR activities on components of operating performance such as revenue, cost of goods sold, and SG&A expense. Because we cannot, *ex ante*, predict to what extent revenue and costs advantages would offset cost disadvantages for any particular type of CSR activity, we do not hypothesize a relationship between types of CSR disclosure and levels and persistence of operating performance. Instead, we investigate whether any competitive advantage is associated with specific CSR subcategory

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[13] The distinction between product and business practice CSR activities lies in whether the CSR attribute is a feature intrinsic to the product (e.g., organic coffee) or is part of the process through which the product was created (e.g., fair-trade coffee) (Peloza & Shang, 2011).

disclosures in an exploratory analysis.

3. Research Design

3.1. Measures of CSR Disclosure

We follow prior literature that has used textual analysis of 10-K filings to measure non-financial disclosures (e.g., Hoberg & Phillips, 2016; Kravet & Muslu, 2013; Li et al., 2013). Because CSR activities can encompass a wide variety of initiatives, CSR is a difficult concept to define. Thus, in order to extract an extensive set of CSR disclosures from 10-K filings, we used keywords taken from the *Encyclopedia of Corporate Social Responsibility* (Idowu et al., 2013) as our search terms. We started with 2,058 keywords and identified their occurrences in all 10-K filings from 1996 through 2015. Over half of those keywords were not found in any of the 10-K filings. Of those that were found, following Loughran and McDonald's (2016) recommendation that studies remove terms with ambiguous meanings, we manually deleted keywords such as 'trust' and 'business strategy' because they commonly refer to non-CSR-related activities. We also removed keywords such as 'alcohol' and 'gamble' because, in specific industries, they can be used to describe the firms' primary operations rather than activities explicitly relating to social responsibility.[14] These procedures resulted in a final keyword count of 219.

Following Peloza and Shang (2011), we classify the CSR keywords in three subcategories: *philanthropy*, *business practice*, and *product-related*.[15] We sorted 18 CSR keywords as philanthropy, including 'charity', 'community giving', and 'altruism'. We classified 155 keywords as business practice CSR. Some common keywords in this subcategory are 'hazardous', 'recycling', 'microlending', and 'human right'. The product-

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[14] We recognize that some may consider the entire gambling and alcohol industries' operations to be socially irresponsible, due to risks of consumer addiction. However, in this study, we omitted these terms in favor of capturing within-industry variation in disclosed CSR activities.

[15] Three of the co-authors independently assigned the keywords to Peloza and Shang's (2011) categories. The fourth co-author reconciled the differences between the three codings and finalized the keyword classifications.

related subcategory includes the remaining 18 keywords. Examples of such keywords are 'local food', 'organic', and 'green technology'. We also identified 28 keywords that do not clearly fit in any one of the three subcategories but rather capture a broader concept of CSR activities, such as 'corporate accountability', 'social responsibility', and 'corporate citizenship'. We coded these keywords as the *general* subcategory of CSR disclosure. We present the entire list of keywords in supplementary online Appendix S2.

We follow an approach outlined by Li et al., (2013) to compute our CSR disclosure intensity variables. First, we sum the occurrences of all CSR-related keywords found within each 10-K. We then scale the sum by the total number of words in each 10-K and multiply the quotient by 1,000 to create an overall disclosure score, *PCTCSR.* Second, we repeat the same computation for each subcategory of CSR disclosure (philanthropy, business practice, product, and general). We term these scores *PhiCSR, BusiCSR, ProdCSR*, and *GCSR*, respectively. Thus, each measure is a continuous variable that reflects the number of CSR-related keywords per 1,000 10-K words.

3.2. Measures of Operating Performance

As discussed earlier, different CSR activities may have different implications for revenue, cost of goods sold, and SG&A expenses. To capture how this variation may reflect different competitive advantages, in our primary tests we employ three measures of operating performance: gross margin, SG&A margin, and operating margin. Each measure is calculated as the value relative to the annual industry median. The measure *adjGM* equals sales revenue less cost of goods sold; *adjSGAM* equals sales revenue less SG&A expenses; and *adjOM* equals operating income after depreciation—each one scaled by beginning-of-the-year total assets.[16] In supplementary analyses, we separately examine components of operating performance:

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[16] Following a paper by Bostwick, Lambert, and Donelan (2016), who find that significant discrepancies may exist between the Compustat cost-of-goods-sold data item and cost of goods sold as reported in the 10-Ks, we compute cost of goods sold using a Compustat adjustment procedure to reduce the discrepancy. Our inferences are not qualitatively different when we do not perform this adjustment procedure.

scaled-by-beginning-assets sales revenue, cost of goods sold, and SG&A expense (*adjSales*, *adjCOGS*, *adjSGA*).

3.3. Empirical Model

We test relations between firms' CSR disclosure in 10-K filings and competitive advantages by employing two lead-lag models of (1) levels and (2) persistence of industry-adjusted performance:

$$
\begin{aligned}
adjPERF_t = {} & \alpha_0 + \alpha_1 CSR_{t-1} + \alpha_2 adjSales_t + \alpha_3 lnAssets_{t-1} + \alpha_4 ROA_{t-1} + \alpha_5 MTB_{t-1} \\
& + \alpha_6 Leverage_{t-1} + \alpha_7 Z\text{-}Score_t + \alpha_8 R\&D_t + \alpha_9 Advertising_t \\
& + \alpha_{10} RiskDiscl_{t-1} + \alpha_{11} Fog_{t-1} + \alpha_{12} Tone_{t-1} \\
& + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_t. \quad (1)
\end{aligned}
$$

$$
\begin{aligned}
adjPERF_t = {} & \beta_1 Pos\_adjPERF_{t-1} + \beta_2 Neg\_adjPERF_{t-1} + \beta_3 adjPERF_{t-1} \times Pos\_adjPERF_{t-1} \\
& + \beta_4 adjPERF_{t-1} \times Neg\_adjPERF_{t-1} + \beta_5 CSR_{t-1} \times Pos\_adjPERF_{t-1} \\
& + \beta_6 CSR_{t-1} \times Neg\_adjPERF_{t-1} + \beta_7 CSR_{t-1} \times adjPERF_{t-1} \times Pos\_adjPERF_{t-1} \\
& + \beta_8 CSR_{t-1} \times adjPERF_{t-1} \times Neg\_adjPERF_{t-1} + \beta_9 adjSales_t + \beta_{10} lnAssets_{t-1} \\
& + \beta_{11} ROA_{t-1} + \beta_{12} MTB_{t-1} + \beta_{13} Leverage_{t-1} + \beta_{14} Z\text{-}Score_t + \beta_{15} R\&D_t \\
& + \beta_{16} Advertising_t + \beta_{17} RiskDiscl_{t-1} + \beta_{18} Fog_{t-1} + \beta_{19} Tone_{t-1} \\
& + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varphi_t. \quad (2)
\end{aligned}
$$

In both equations, *adjPERF* is one of three measures of industry-median-adjusted operating performance: gross margin (*adjGM*), SG&A margin (*adjSGAM*), and operating margin (*adjOM*) or, in additional analysis, sales (*adjSALES*), cost of goods sold (*adjCOGS*), and SG&A (*adjSGA*). When we examine overall CSR disclosure, we replace *CSR* with *PCTCSR*. To examine the operating performance of firms that disclose different types of 10-K CSR disclosure, we replace variable *CSR* with three specific categories: philanthropy-related, business-related, and product-related CSR (*PhiCSR*, *BusiCSR*, *ProdCSR*). We control for all other CSR disclosure by including general CSR (*GCSR*) in our regression.

In equation (1), α_1 captures differences in the levels of industry-median-adjusted performance among firms that provide varying levels of 10-K CSR disclosure. In equation (2), we examine the persistence of industry-adjusted performance by regressing performance in year *t* on performance in year *t*–1. Following Harris (1998), we interact industry-adjusted performance with two dichotomous variables, *Pos_adjPERF* and *Neg_adjPERF*, to capture

persistence separately for positive industry-adjusted earnings and negative industry-adjusted earnings.[17] *Pos_adjPERF* is set equal to one if a firm's industry-adjusted performance in year t–1 is greater than zero, and set to zero otherwise. Conversely, *Neg_adjPERF* is set equal to one if a firm's industry-adjusted performance in year t–1 is less than or equal to zero, and set equal to zero otherwise. Note that *Pos_adjPERF* (*Neg_adjPERF*) represents performance that is higher (lower) than half of the firms in the same industry, but not earnings that are strictly above or below zero. In equation (2), β_3 captures the persistence of positive performance in firms that do not provide any 10-K CSR disclosure. β_7 in equation (2) captures incremental persistence of positive performance for firms that provide more 10-K CSR disclosure.

Because not all assets generate sales revenue with the same efficiency, we control for contemporary industry-adjusted sales revenue, scaled by beginning-of-the-period total assets (*adjSales*). We also include a set of control variables that are potentially associated with both CSR disclosure and firms' competitive advantages. We include the natural logarithm of total assets to proxy for firm size (*lnAssets*) because larger firms may feel greater pressure from stakeholders to engage in CSR activities and may have more monetary resources to do so (Lys, Naughton, & Wang, 2015; Wu, 2006). We also include return on assets (*ROA*) and Altman's bankruptcy score (*Z-Score*) to proxy for past firm performance and current cash health, which are potential indicators of external demand or lack thereof for CSR expenditures (Campbell, 2007; Lys et al., 2015).

Insomuch as CSR is associated with value premiums, and therefore superior future prospects, we expect both CSR and competitive advantage to be associated with growth prospects (Cochran & Wood, 1984). We include market-to-book ratio (*MTB*) to control for these growth opportunities. Less-risky firms may be more likely to devote resources to engage

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[17] Less persistent negative industry-adjusted performance would reflect a quicker erosion of competitive disadvantage in firms that disclose CSR in their 10-Ks.

in CSR activities (Orlitzky & Benjamin, 2001). We use financial leverage (*Leverage*) to proxy for risk. Many competitive advantages may result from R&D expenditures that create product and/or process innovations (McWilliams & Siegel, 2000). As such, we control for the level of R&D investments scaled by total assets (*R&D*). We control for the level of advertising expenses scaled by assets (*Advertising*) because Servaes and Tamayo (2013) argue and find evidence that firms investing in advertising gain a greater return on their CSR expenditures.

Lastly, we control for textual characteristics that may be correlated with CSR disclosure and firm performance (Loughran & McDonald, 2016). We implement three widely accepted textual measures of 10-K narratives: risk disclosure (*RiskDiscl*), poor readability (*Fog*), and tone in disclosure (*Tone*), measured at the beginning of the year. Specifically, *RiskDiscl* equals to Loughran-McDonald uncertainty word count scaled by total word counts; *Fog* is measured as the Gunning Fog Readability Index; and *Tone* is measured as Loughran-McDonald (Positive – Negative) word count, scaled by total word counts.

Detailed variable definitions are included in the Appendix. In all regressions, we include year and industry fixed effects to control for time- and industry-invariant unobserved characteristics that might be associated with our variables of interest. We cluster standard errors at the firm level to control for the time-series correlation of residuals (Petersen, 2009).

4. Sample, Data, and Descriptive Statistics

4.1. Sample and Data

We first download parsed 10-K filings from 1996 through 2015 from Loughran and McDonald's data repository.[18] Because our model makes use of lagged occurrences of textual disclosure, the 2015 textual data is paired with 2016 performance data. To calculate dependent and control variables, we obtain financial information from Compustat. We use WRDS SEC

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[18] The repository is available online at https://sraf.nd.edu/data/. The detailed parsing procedures are described in our online Appendix S3.

Analytics Suite to extract measures of risk disclosure, readability, and tone. We require that firms have sufficient data to calculate all industry-adjusted financial performance measures and all control variables used in our regression models. We eliminate the highly regulated industries of utility (SIC codes 4000–4999) and financial (SIC codes 6000–6999) companies. Similar to Li et al. (2013), we also eliminate firms with sales or total assets less than zero and firms with a market value less than $1 million. We winsorize all variables at the 1% and 99% levels to reduce the impact of extreme values. After satisfying these requirements, the final sample consists of 50,757 firm-years from 6,882 companies.

4.2. Descriptive Statistics

In Table 1, we report descriptive statistics for the distribution of our sampled firms. In Panel A, we report mean values of overall CSR disclosure intensity (*PCTCSR*) and the mean values of philanthropy-related, business-related, product-related, and general CSR disclosures (*PhiCSR*, *BusiCSR*, *ProdCSR*, and *GCSR*). We observe that firms' CSR disclosure has increased over time, by 2015 reaching an average of 0.420 CSR-related keywords per 1,000 words in a 10-K. Business-related, product-related, and general CSR keywords have also seen significant increases, and philanthropy-related keywords increased modestly over time. In Panel B, we report that, in most of the sampled firm-years, we observe 15 or fewer keywords per 10-K. Specifically, only 29.4% disclose more than 15 keywords, while we do not find any keywords in approximately 15.7% of firm-years.

[Insert Table 1 here]

Table 2 presents summary statistics of variables used in ordinary least squares (OLS) regressions. Our dependent variables, industry-adjusted gross margin (*adjGM*), SG&A margin (*adjSGAM*), and operating margin (*adjOM*) have means of 0.076, 0.162, and 0.002, and medians of 0.032, 0.038, and 0.018, respectively; and industry-adjusted sales revenue (*adjSales*), cost of goods sold (*adjCOGS*), and SG&A expenses (*adjSGA*) have means of 0.196,

0.148, and 0.040, and medians of 0.049, 0.000, and –0.009, respectively.[19] The mean and median of total assets (de-logged *lnAssets*) are \$279 million and \$250 million. The means of other control variables—return on assets (*ROA*), market-to-book ratio (*MTB*), leverage (*Leverage*), and bankruptcy score (*Z-Score*)—are –0.013, 3.542, 0.453, and 4.015, respectively. On average, our sampled firms have R&D (*R&D*) and advertising expenses (*Advertising*) of 0.050 and 0.014 when divided by beginning-of-year total assets. Finally, the mean values of textual measures for risk disclosure (*RiskDiscl*), readability (*Fog*), and tone disclosure (*Tone*) are 0.014, 19.826, and –0.007, respectively. We provide univariate comparisons between subsamples bifurcated by the median value of *PCTCSR* in online Appendix S4.

[Insert Table 2 here]

In Table 3, we present bivariate correlation comparisons of test and control variables. We observe a negative correlation between CSR disclosure intensity (*PCTCSR*) and industry-adjusted gross margin (*adjGM*). In contrast, we observe positive correlations between CSR disclosure (*PCTCSR*) and SG&A margin (*adjSGAM*) and operating margin (*adjOM*). To provide further insight into these correlations, we consider scaled-by-assets sales, cost of goods sold, and SG&A expenses individually (*adjSales*, *adjCOGS*, *adjSGA*). We find positive associations between CSR disclosure (*PCTCSR*) and both sales (*adjSales*) and cost of goods sold (*adjCOGS*) but a negative association between CSR disclosure (*PCTCSR*) and SG&A expenses (*adjSGA*). The comparisons of sales and cost of goods sold suggest that although CSR disclosure is associated with a sales advantage, that advantage is overpowered by higher production costs. However, the lower SG&A expenses in firms that disclose more CSR (e.g., have more efficient use of SG&A resources) appear to result in an overall operating performance advantage (higher *adjOM*). Finally, we note that all control variables are

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[19] We calculate the industry-median operating performance benchmark using the entire Compustat population. The median values of the operating performance measures (*adjGM*, *adjSGAM*, *adjOM*, *adjSales*, *adjCOGS*, and *adjSGA*) differ from zero as a result of the sample reduction criteria described in subsection 4.1. Specifically, we find that the reduced sample is skewed toward firms with better-than-industry-median operating performance.

correlated with levels of CSR disclosure (*PCTCSR*), supporting the need for multivariate analysis.

Furthermore, we find positive correlations between subcategories of CSR disclosure (*PhiCSR*, *BusiCSR*, and *ProdCSR*) and industry-adjusted operating margin (*adjOM*). Consistent with our discussion in section 2, we also find varying significant correlations between overall CSR disclosure and CSR disclosure subcategories, and industry-adjusted gross margin (*adjGM*) and SG&A margin (*adjSGA*), as well as their individual sales and expense components (*adjSales*, *adjCOGS*, *adjSGA*). Finally, we observe several instances of high bivariate correlations (e.g., *adjSales* and *adjSGAM*, *adjOM* and *ROA*). To alleviate multi-collinearity concerns, we estimated variance inflation factors, none of which exceed 5.0.

[Insert Table 3 here]

5. Empirical Findings

5.1. Primary Results

5.1.1. Test of H1 and H2: Overall CSR Disclosure

To test H1 and H2, we examine associations between overall CSR disclosure (*PCTCSR*) and both the levels and persistence of industry-adjusted performance. Results are presented in Panels A and B of Table 4. Models in Panel A yield an adjusted R^2 that ranges from 50.2% to 92.5%, and models in Panel B have an adjusted R^2 ranging from 68.5% to 94.2%.

[Insert Table 4 here]

In Panel A of Table 4, we see a negative coefficient (–0.011, $p < 0.05$) on *PCTCSR* when we use *adjGM* as our competitive advantage measure, and a positive coefficient (0.014, $p < 0.01$) for *adjSGAM*. We also observe that the coefficient on *PCTCSR* is insignificant for *adjOM*. To illustrate the economic significance of a change in CSR disclosure intensity, we find that the marginal effect of moving from the first to the third quartile of *PCTCSR* is a 0.4 percentage point decrease in *adjGM* and a 0.5 percentage point increase in *adjSGAM*. The

combination of these results provides mixed support for H1: that CSR disclosure is positively associated with competitive advantage.

Turning to control variables, we find that firms with higher industry-adjusted scaled-by-assets sales, higher past performance, higher financial leverage, those less likely to enter bankruptcy, and those with easier-to-read and more positively toned disclosure generally have higher industry-adjusted performance. Furthermore, larger firms and firms with smaller market-to-book values, R&D investments, and advertising expenditures have lower industry-adjusted gross margin but higher industry-adjusted SG&A and operating margins.

In Panel B, we generally find support for H2. We see more persistent above-industry-median gross margin (0.051, $p < 0.05$) and operating margin (0.052, $p < 0.05$), and a positive, albeit insignificant, coefficient (0.008, $p = 0.14$) for above-industry-median SG&A margin ($PCTCSR \times adjPERF \times Pos\_adjPERF$). These results suggest a stronger competitive advantage for firms with higher CSR disclosure via more persistent above-industry-median performance.

Recall that firms with more CSR disclosure generally have lower industry-adjusted gross margin (Table 4, Panel A). We also see that the coefficient on below-industry-median gross margin ($PCTCSR \times adjPERF \times Neg\_adjPERF$) is negative (–0.050, $p < 0.05$). This combination of results suggests that the below-average gross margin competitive disadvantage erodes faster for firms that provide more CSR disclosure. We conclude that the levels and persistence evidence generally support our expectation that CSR disclosure is associated with competitive advantage.

5.1.2. Disclosures of Different Types of CSR

We now turn our attention to Table 5, Panels A and B, in which we report tests of associations between philanthropy-, business-practice-, and product-related CSR disclosures and the level and persistence of industry-adjusted performance margins.

[Insert Table 5 here]

In Panel A, first considering *PhiCSR*, we note that association with *adjGM* is positive (0.184, $p < 0.01$), while in contrast, the *PhiCSR* coefficient for *adjSGAM* is negative (–0.145, $p < 0.01$). The aggregate effect on *adjOM* is insignificant. Conversely, we observe that *BusiCSR* is negatively associated with *adjGM* (–0.018, $p < 0.01$) but positively associated with *adjSGAM* (0.021, $p < 0.01$), also resulting in an insignificant association with *adjOM*. Finally, *ProdCSR* is unassociated with any of our levels-based measures of competitive advantage. These results suggest that philanthropic CSR activities generally increase product markup but decrease the return on SG&A expenses, while business practice CSR activities detract from product markup but enhance the return on SG&A.

In Panel B, we find that philanthropic CSR disclosure is positively associated with both the persistence of above-industry-median gross margin and operating margin (coeffs. *PhiCSR×adjPERF×Pos_adjPERF* = 1.110, 0.630; $p < 0.01$). We observe a similar relationship between product-related CSR disclosure and gross and operating margins (coeffs. *ProdCSR×adjPERF×Pos_adjPERF* = 0.114, 0.122; $p < 0.10, 0.05$). Notably, *BusiCSR* is positively associated with the persistence of above-industry-median gross margin and negatively associated with *below-industry-median* gross margin (coeff. *BusiCSR×adjPERF×Pos_adjPERF* = 0.049, $p < 0.05$; *BusiCSR×adjPERF×Neg_adjPERF* = –0.048, $p < 0.05$). The positive association with above-industry-median margins and negative association with below-industry-median gross margin are consistent with a CSR-related competitive advantage. However, business-practice-related CSR disclosure is unassociated with the persistence of above-industry-median operating margin, and we find no significant associations between any disclosure subcategory and the persistence of above-industry-median SG&A margin.

5.2. Additional Analyses

So far, our dependent variables reported in Tables 4 and 5 reflect competitive advantages

through *net effects* of sales and various expense components. To gain further insight into those net effects, we replace the dependent variables in equations (1) and (2) with industry-median-adjusted sales, cost of goods sold, and SG&A, each scaled by beginning-of-period total assets.[20,21] Abbreviated results for overall CSR disclosure (*PCTCSR*) are reported in Table 6 and for CSR subcategories (*PhiCSR*, *BusiCSR*, *ProdCSR*) in Table 7.

[Insert Table 6 here]

In Panel A of Table 6, we observe that *PCTCSR* is unassociated with *adjSales*, positively associated with *adjCOGS* (0.010, $p < 0.05$) and negatively associated with *adjSGA* (–0.010, $p < 0.01$). We infer from these results that the disclosed CSR is consistent with activities that increase cost of goods sold and decrease SG&A expenses. Coupling these findings with those results presented in Panel A of Table 4, it appears that the negative gross margin is driven by higher cost of goods sold in the absence of an observed sales effect. Similarly, the observed positive SG&A margin effect seems to be driven by lower SG&A expenses rather than by a sales advantage.

In Panel B of Table 6, we see that both above-industry-median sales and below-industry-median sales are increasingly persistent in *PCTCSR* (0.032, $p < 0.10$; 0.051, $p < 0.01$). These results are consistent with sales revenue, across both above- and below-industry levels, that tends to be more persistent in firms that provide more CSR disclosure. In addition, below-industry-median SG&A expense is also more persistent in firms with more CSR disclosure (0.126, $p < 0.01$), suggesting an SG&A-related competitive advantage. Combining levels with persistence analyses, these results are consistent with both a sales advantage and disadvantage, higher but no more persistent cost of goods sold, and more persistent lower SG&A expenses.

[Insert Table 7 here]

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[20] We thank the referees for suggesting that we separately examine components of margins.
[21] Given that *adjSales* is the dependent variable in our analysis of sales, we omit it as a control variable in that model specification.

In Table 7, we display associations between disclosures of subcategories of CSR and revenue and expenses. In Panel A, we note that *PhiCSR* is unassociated with industry-median-adjusted sales, negatively associated with cost of goods sold (–0.194, $p < 0.01$), and positively associated with SG&A expenses (0.145, $p < 0.01$). Lower cost of goods sold is consistent with Porter and Kramer's (2006) argument that employees of philanthropic firms are more motivated and efficient because they identify with their firm's social causes. In turn, the higher SG&A expenses are likely explained by the direct costs of engaging in philanthropic activities.

Conversely, we observe that *BusiCSR* is positively associated with *adjCOGS* (0.016, $p < 0.01$) and negatively associated with *adjSGA* (–0.023, $p < 0.01$). The higher cost of goods sold is consistent with direct costs of socially responsible business practice. The lower SG&A expense may be driven by marketing cost savings due to consumers' preference to purchase from socially active firms and from positive word-of-mouth advertising (Auger et al., 2003; Auger et al., 2008). In contrast, product-related CSR disclosure is unassociated with industry-adjusted sales and expenses.

Turning to Panel B of Table 7, we observe that philanthropy disclosure is positively associated with persistence of above-industry sales revenue (0.584, $p < 0.05$), suggesting that such disclosures signal philanthropic activities resulting in a sales competitive advantage. In contrast, the magnitude of business practice CSR disclosure is positively associated with the persistence of below-industry-median sales (0.047, $p < 0.01$). However, more business-practice-related CSR disclosure is associated with more persistent below-industry-level SG&A expense (0.047, $p < 0.01$). Thus, it appears that business-practice-related CSR disclosure provides information about activities that enhance the persistence but not the level of sales revenue, and also suggests an SG&A expense competitive advantage. In addition, product-related CSR disclosures are associated with more persistent below-industry-median cost of goods sold (0.159, $p < 0.10$). In sum, these results offer more granular evidence about the

overall competitive advantages observed in association with 10-K CSR disclosure.

5.3. Robustness Tests

5.3.1. Stand-alone CSR Reports and Other Measures of CSR Activities

We perform the next set of analyses to address a concern that the findings in our study may be driven by a subset of CSR-active firms that use alternative forms of CSR disclosure, namely, stand-alone CSR reports. Existing literature argues for and finds evidence of lower information asymmetries in firms that issue stand-alone reports (Dhaliwal, Li, Tsang, & Yang, 2011; Dhaliwal, et al., 2012). In untabulated tests, we first re-estimate the OLS models excluding those firm-years in which firms publish stand-alone CSR reports.[22] In doing so, we focus on firms that may place greater emphasis on the 10-K as a medium for CSR disclosure, while eliminating firms that may benefit from alternative forms of CSR reporting. The results show that the exclusion of firms that report their CSR activities via stand-alone reports does not alter our conclusions. Alternatively, we include a stand-alone report indicator variable in our models, coded one if the firm provides a stand-alone report in a given year, and zero otherwise, and find that our inferences remain unchanged.

We next turn to an alternative measure of CSR activities—KLD—which is commonly used in academic research to proxy for CSR performance (e.g., Davis, et al., 2016; Hoi, Wu, & Zhang, 2013; Hong & Kostovetsky, 2013; Kim, Park, & Wier, 2012). However, KLD has limited coverage. In fact, firms with available KLD scores represent only 37% of observations in our sample and represent a more homogeneous set of firms that generally have competitive advantages (e.g., positive above-industry-median operating performance). Thus, by restricting our sample to firms with KLD coverage, we would severely limit the generalizability of our

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[22] We procured information on firms that publish stand-alone CSR reports from the Corporate Register (http://www.corporateregister.com/).

study.

Nevertheless, first we re-estimated equations (1) and (2) while restricting the subsample to those firms covered by KLD and including a KLD CSR performance score.[23] Our levels results remain qualitatively similar to our primary results. However, the persistence results suggest that firms covered by KLD that provide more CSR disclosure in their 10-K erode any competitive disadvantage faster. Specifically, we find the coefficients on *PCTCSR×adjPERF×Neg_adjPERF* are negative and significant across all three measures of below-industry-median operating performance. In contrast, we find no incremental persistence of above-industry-median operating performance. When we limit the sample to those firms that are not covered by KLD, we find that our inferences remain unchanged. We conclude from these analyses that CSR-related economic information found in 10-K reports augments that information offered by KLD CSR rankings. For brevity, we do not tabulate these estimations.

5.3.2. Distance between Keywords

The 'distance' between occurrences of CSR keywords within the 10-K text may provide additional information about the nature of CSR disclosure proxied by our keyword count.[24] Keywords that are clustered together may represent a more comprehensive narrative about CSR (*depth* of disclosure captured by smaller distance). The depth of disclosure could represent either more detail about effective CSR or obfuscation of information about ineffective CSR activities. Moreover, to the extent that keywords are distributed throughout the 10-K text, *breadth* of disclosure (captured by larger distance) may communicate either a more diverse set of CSR activities resulting in a stronger competitive advantage or a set of superficial references to less effective CSR. Hence, we cannot predict the marginal effect of distance on the relation

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[23] KLD uses a number of positive indicators (strengths) and negative indicators (concerns) to assess social performance along six dimensions: community, diversity, employee relations, environment, human rights, and product. Following prior literature, we calculate KLD score as total strengths minus total concerns in KLD's six social rating categories, reported by the MSCI (e.g., Kim et al. 2012).
[24] We thank the anonymous reviewer for bringing this issue to our attention.

between CSR disclosure and competitive advantage. Nevertheless, in untabulated analysis, we investigate the association between CSR disclosure and competitive advantage for firms with high and low distance.

To calculate distance between CSR keywords, we assign each word in the 10-K text a sequential numbering position. We then calculate the unscaled distance between keywords by averaging the sequential position differences between pairs of keywords found within each 10-K. We scale the average distance by total word counts. We note that this calculation renders distance unmeasurable for firms that disclose less than two CSR keywords (including non-disclosers). We re-evaluate the empirical results from equations (1) and (2) on subsamples split between firms with above- and below-median (by year) distance.

We find that our primary levels results are concentrated in firms with high distance, implying a stronger relation between CSR disclosure and competitive advantage for firms with sufficient breadth of disclosure. The persistence results, however, support two of our expectations. Specifically, we find that breadth of disclosure is associated with more persistent above-industry-median gross margin. However, we also find that when operating performance is below the industry median, the breadth of disclosure is consistent with a competitive disadvantage. Those latter results support our expectation that, in some cases, managers offer a dispersed disclosure of potentially superficial CSR activities.

5.3.3. Non-linear Association

It is possible that incremental information about competitive advantages decreases with respect to the quantity of CSR disclosure within the 10-K. That is, each additional keyword found may be associated with a smaller increment of favorable performance. We account for this potential non-linear relation by substituting decile, quintile, and across-median ranks of CSR disclosure for our continuous CSR disclosure variables in equations (1) and (2). In addition, we re-form the decile (quintile) ranks by clustering all of the non-disclosing firm-year observations in the

bottom decile (quintile). Finally, we analyze the data while excluding all non-disclosing firm-years. The untabulated results of the aforementioned analyses are consistent with those presented in Tables 4 and 5.

5.3.3. Change Analysis

Our primary analyses focus on cross-sectional differences in the associations between CSR disclosure and levels and persistence of performance. We do not expect to identify a strong relationship between changes in CSR disclosure and changes in competitive advantage because the timing of CSR implementation and its disclosure may not be aligned. Further, we do not consider 10-K CSR disclosure to be the sole or initial source of information about CSR activities, but rather a conduit through which managers can draw investors' attention to the impact of such activities. That being said, we perform a robustness test that associates changes in the amount of CSR disclosure with changes in the levels of performance to alleviate the concern that our results are driven by unobservable firm-specific characteristics.

We first rank *PCTCSR* within each firm over time in quintiles. We then calculate the annual change of *PCTCSR* Rank (e.g., *PCTCSR* Rank$_t$ – *PCTCSR* Rank$_{t-1}$), annual changes in within-firm gross margin, SG&A margin, and operating margin, as well as annual changes in the control variables. Finally, we regress changes of gross margin, SG&A margin, and operating margin on changes in *PCTCSR* Rank and in the control variables. We continue to include year and industry fixed effects, and cluster the standard errors by firms. Untabulated results show that, consistent with results in Panel A of Table 4, changes in *PCTCSR* Rank are positively associated with changes in SG&A margin ($p < 0.05$) and unassociated with changes in operating margin. However, rather than negatively associated with industry-adjusted gross margin (Panel A of Table 4), reflective of competitive disadvantage, changes in *PCTCSR* Rank are unassociated with changes in gross margin. In sum, the change analyses are largely consistent with the inferences drawn from the main analyses, namely, that CSR disclosure is

associated with a competitive advantage.

6. Discussion and Conclusion

In this study, we use a vocabulary of CSR terms to extract CSR-related disclosure from 10-K filings spanning the years 1996 to 2015. Our CSR disclosure intensity measures capture overall CSR disclosure and disclosures in the subcategories of philanthropy-, business-practice-, and product-related CSR. We proxy for firm competitive advantages using levels and persistence of industry-adjusted gross, SG&A, and operating margins.

We show that 10-K CSR disclosure is associated with competitive advantages manifesting through differences in both the levels and persistence of above-industry-median performance metrics. Further, we find that the patterns of competitive advantage vary between the subcategories of CSR activities that are disclosed. To gather further insights, we decompose the industry-adjusted margins into their sales and expense components: sales, cost of goods sold, and SG&A expense. We find evidence that the variation in patterns of competitive advantage is driven by differences in production cost versus SG&A expenses across CSR subcategories, rather than by a sales advantage. Our findings suggest that CSR disclosure in structured, information-rich 10-K filings could offer information about competitive advantage across firms, consistent with the sentiment expressed by investors (e.g., Heugh & Fox, 2017; Kron, 2016; Kumar & McKnett, 2016; Rawlins, 2016).

Our study is not without limitations. First, we recognize that, while we draw on an extensive set of CSR-related terms from the *Encyclopedia of Corporate Social Responsibility* by Idowu et al. (2013), CSR-related language is fluid and constantly evolving. Thus, it is possible that we do not fully capture the variety of CSR-related disclosure in a given 10-K. Second, we acknowledge that our CSR subcategory classification schema relies on Peloza and Shang (2011) and that the assignment of terms to each subcategory may be subject to individual interpretation. In consequence, some CSR words could potentially be classified in more than

one subcategory.

Third, we point out that there are many dimensions to textual disclosure that cannot be fully investigated in our study. Thus, we implore future research to consider dimensions of textual CSR disclosure that can help to refine our understanding of its information content. For example, continuing inquiry into textual disclosure might address the differences between *depth* and *breadth* of CSR disclosure. Furthermore, such attributes of textual CSR disclosure as tone, readability, complexity, valence, and verifiability might offer a fruitful avenue for future study.

Fourth, some may argue that it is not CSR activities that cause positive future firm performance but rather that firms anticipating positive future performance engage in CSR activities and thus provide more CSR-related disclosure. Specifically, Lys et al. (2015) point out that their results likely mean that CSR expenditures have signaling value in predicting positive economic outcomes, rather than actually causing such outcomes. If this were the case, we would observe invariant positive performance associated with CSR disclosures of all types and for all types of competitive advantage measures. In contrast, we find significant variation in future performance across firms that disclose different types of CSR activities. Despite finding this variation, we acknowledge that it is challenging to attribute those performance outcomes directly to disclosed CSR activities.

Supplemental Data and Research Materials

Appendix S1. Select examples of CSR disclosure in 10-K filings

Appendix S2. CSR disclosure keyword vocabulary

Appendix S3. Summary of Bill McDonald's detailed textual data parsing procedures

Appendix S4. Univariate analysis

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Appendix. Variable definitions

Variable	Definition
PCTCSR	The proportion of all CSR keywords per 1,000 words reported in the 10-K.
PhiCSR	The proportion of philanthropy-related CSR keywords per 1,000 words reported in the 10-K.
BusiCSR	The proportion of business-process-related CSR keywords per 1,000 words reported in the 10-K.
ProdCSR	The proportion of product-related CSR keywords per 1,000 words reported in the 10-K.
GCSR	The proportion of general CSR keywords per 1,000 words reported in the 10-K.
adjGM	Industry-adjusted gross margin, which is firm-level gross margin adjusted by industry median within the same year. Gross margin is defined as (sales – cost of goods sold)/beginning total assets. Industry groups are based on two-digit SIC code.
adjSGAM	Industry-adjusted selling, general, and administrative (SG&A) margin, which is firm-level SG&A margin adjusted by industry median within the same year. SG&A margin is defined as (sales – SG&A expense)/beginning total assets. Industry groups are based on two-digit SIC code.
adjOM	Industry-adjusted operating margin, which is the firm-level operating income adjusted by industry median within the same year. Operating income is operating income before depreciation scaled by beginning total assets. Industry groups are based on two-digit SIC code.
Pos_adjPERF	An indicator variable that equals one if the firm's *adjGM*, *adjSGAM*, or *adjOM* is greater than zero, zero otherwise.
Neg_adjPERF	An indicator variable that equals one if the firm's *adjGM*, *adjSGAM*, or *adjOM* is less than or equal to zero, zero otherwise.
adjSales	Industry-adjusted sales revenue, which is the firm-level revenue, scaled by beginning total assets, adjusted by industry median within the same year.
adjCOGS	Industry-adjusted cost of goods sold, which is the firm-level cost of goods sold, scaled by beginning total assets, adjusted by industry median within the same year. Cost of goods sold is adjusted for Compustat discrepancy following Bostwick et al. (2016).
adjSGA	Industry-adjusted selling, general, and administrative (SG&A) expense, which is firm-level SG&A expense, scaled by beginning total assets, adjusted by industry median within the same year.
Pos_adjCOMP	An indicator variable that equals one if the firm's *adjSales*, *adjCOGS*, or *adjSGA* is greater than zero, zero otherwise.
Neg_adjCOMP	An indicator variable that equals one if the firm's *adjSales*, *adjCOGS*, or *adjSGA* is less than or equal to zero, zero otherwise.
lnAssets	Natural logarithm of total assets for a firm.
ROA	Income before extraordinary items scaled by the beginning-of-the-fiscal-year total assets.
MTB	The ratio of market value of equity to book value of equity.
Leverage	Total liabilities scaled by total assets.
Z-Score	Altman's bankruptcy score, estimated as 1.2×(Current Assets – Current Liabilities)/Total Assets + 1.4×Retained Earnings/Total Assets + 3.3×Pretax Income/Total Assets + 0.6×Market Value of Equity/Total

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	Liabilities + Net Sales/Total Assets. A higher *Z-Score* indicates a lower likelihood of bankruptcy.
R&D	Research and development expenses scaled by beginning total assets at the beginning of the fiscal year.
Advertising	Advertising expenses scaled by beginning total assets at the beginning of the fiscal year.
RiskDiscl	Risk disclosure score, which follows a metric by Loughran-McDonald (2011) uncertainty word count in the 10-K.
Fog	Readability score, measured as Gunning Fog Readability Index in the 10-K. Interpreted as the level of education needed to interpret the written information.
Tone	Disclosure tone, measured as Loughran-McDonald (2011) (Positive – Negative) word count in the 10-K.
Distance	CSR keyword distance, measured as the average number of word counts between two adjacent CSR keywords, divided by the total words in the 10-K.

Table 1. Descriptive statistics of CSR disclosure in 10-K filings

Panel A. Average disclosure by year

Year	N	$PCTCSR_t$	$PhiCSR_t$	$BusiCSR_t$	$ProdCSR_t$	$GCSR_t$
1996	3,186	0.279	0.007	0.262	0.008	0.001
1997	3,178	0.280	0.006	0.262	0.010	0.001
1998	3,055	0.267	0.007	0.243	0.015	0.001
1999	2,998	0.266	0.007	0.241	0.016	0.002
2000	2,908	0.269	0.008	0.243	0.015	0.003
2001	2,814	0.255	0.007	0.229	0.017	0.003
2002	2,701	0.234	0.007	0.209	0.015	0.003
2003	2,578	0.257	0.009	0.225	0.020	0.002
2004	2,514	0.255	0.008	0.222	0.022	0.003
2005	2,464	0.273	0.008	0.238	0.024	0.003
2006	2,391	0.280	0.008	0.241	0.028	0.003
2007	2,433	0.298	0.008	0.255	0.031	0.004
2008	2,436	0.299	0.008	0.249	0.036	0.006
2009	2,375	0.335	0.007	0.284	0.036	0.008
2010	2,301	0.377	0.008	0.321	0.038	0.009
2011	2,190	0.398	0.009	0.338	0.041	0.010
2012	2,202	0.409	0.009	0.344	0.045	0.011
2013	2,196	0.414	0.008	0.349	0.047	0.010
2014	2,166	0.414	0.008	0.344	0.051	0.011
2015	1,671	0.420	0.008	0.350	0.050	0.011
Total	50,757	0.307	0.008	0.268	0.026	0.005

Panel B. Frequency of CSR keywords

Keywords in a 10-K	Number of Firm-years	Percentage
0	7,961	15.7%
1 – 5	15,486	30.5%
6 – 10	7,669	15.1%
11 – 15	4,736	9.3%
More than 15	14,905	29.4%
Total	50,757	100.0%

Notes: Panel A displays the proportion of overall CSR keywords and subcategorical CSR keywords per 1,000 words reported in the previous year's 10-K. Panel B shows the distribution of CSR keyword frequencies across those sample firm-years. A complete list of keywords by CSR subcategory is available in the supplementary online Appendix S1.

Table 2. Descriptive statistics of regression variables

Variable	Mean	SD	25%	Median	75%
Dependent Variables					
$adjGM_t$	0.076	0.259	−0.085	0.032	0.187
$adjSGAM_t$	0.162	0.684	−0.226	0.038	0.406
$adjOM_t$	0.002	0.191	−0.055	0.018	0.096
$adjSales_t$	0.196	0.735	−0.257	0.049	0.478
$adjCOGS_t$	0.148	0.627	−0.226	0.000	0.338
$adjSGA_t$	0.040	0.251	−0.108	−0.009	0.123
Independent Variables					
$PCTCSR_{t-1}$	0.307	0.447	0.054	0.177	0.410
$PhiCSR_{t-1}$	0.008	0.033	0.000	0.000	0.000
$BusiCSR_{t-1}$	0.268	0.398	0.034	0.144	0.361
$ProdCSR_{t-1}$	0.026	0.184	0.000	0.000	0.009
$GCSR_{t-1}$	0.005	0.034	0.000	0.000	0.000
Control Variables					
$lnAssets_{t-1}$	5.632	1.961	4.187	5.520	6.972
ROA_{t-1}	−0.013	0.248	−0.034	0.040	0.092
MTB_{t-1}	3.542	4.916	1.247	2.117	3.746
$Leverage_{t-1}$	0.453	0.218	0.276	0.448	0.612
$Z\text{-}Score_t$	4.015	6.232	1.748	3.274	5.510
$R\&D_t$	0.050	0.083	0.000	0.007	0.072
$Advertising_t$	0.014	0.036	0.000	0.000	0.009
$RiskDiscl_{t-1}$	0.014	0.004	0.011	0.014	0.017
Fog_{t-1}	19.826	1.302	19.108	19.759	20.427
$Tone_{t-1}$	−0.007	0.005	−0.011	−0.007	−0.004

Notes: This table presents summary statistics for variables used in our regression analysis. The sample includes 50,757 firm-years from 6,882 companies. Definitions of all variables are reported in the Appendix.

Table 3. Spearman correlations of regression variables

		1	2	3	4	5	6	7	8	9	10	11
1	$PCTCSR_{t-1}$	1.00										
2	$PhiCSR_{t-1}$	0.13	1.00									
3	$BusiCSR_{t-1}$	0.95	0.03	1.00								
4	$ProdCSR_{t-1}$	0.33	0.04	0.18	1.00							
5	$GCSR_{t-1}$	0.19	0.06	0.12	0.14	1.00						
6	$adjGM_t$	−0.07	0.02	−0.09	0.00	−0.02	1.00					
7	$adjSGAM_t$	0.07	−0.01	0.06	0.07	0.00	0.37	1.00				
8	$adjOM_t$	0.06	0.04	0.04	0.07	0.04	0.52	0.44	1.00			
9	$adjSales_t$	0.04	−0.01	0.04	0.05	−0.02	0.58	0.90	0.35	1.00		
10	$adjCOGS_t$	0.08	−0.02	0.08	0.06	−0.02	0.23	0.92	0.16	0.88	1.00	
11	$adjSGA_t$	−0.08	−0.02	−0.08	−0.04	−0.04	0.64	0.03	−0.16	0.36	0.13	1.00
12	$lnAssets_{t-1}$	0.25	0.12	0.23	0.16	0.18	−0.11	0.02	0.30	−0.12	−0.09	−0.36
13	ROA_{t-1}	0.04	0.02	0.02	0.04	0.04	0.32	0.29	0.64	0.20	0.10	−0.12
14	MTB_{t-1}	−0.06	0.04	−0.06	0.00	0.02	0.29	0.00	0.27	0.08	−0.07	0.17
15	$Leverage_{t-1}$	0.17	0.06	0.17	0.07	0.05	−0.01	0.18	0.00	0.17	0.20	−0.03
16	$Z\text{-}Score_t$	−0.11	0.00	−0.12	−0.03	−0.01	0.35	0.24	0.49	0.22	0.08	0.02
17	$R\&D_t$	−0.21	−0.07	−0.19	−0.06	−0.01	0.10	−0.25	−0.08	−0.14	−0.24	0.17
18	$Advertising_t$	−0.10	0.08	−0.12	0.03	0.01	0.18	−0.03	0.01	0.03	−0.05	0.20
19	$RiskDiscl_{t-1}$	0.09	−0.02	0.08	0.16	0.09	−0.02	−0.09	−0.05	−0.07	−0.09	0.03
20	Fog_{t-1}	0.06	0.07	0.06	0.10	0.07	−0.05	−0.06	−0.01	−0.07	−0.07	−0.07
21	$Tone_{t-1}$	−0.15	−0.03	−0.16	−0.09	−0.08	0.09	0.09	0.13	0.07	0.06	0.00

		12	13	14	15	16	17	18	19	20	21
12	$lnAssets_{t-1}$	1.00									
13	ROA_{t-1}	0.26	1.00								
14	MTB_{t-1}	0.09	0.24	1.00							
15	$Leverage_{t-1}$	0.30	−0.12	0.09	1.00						
16	$Z\text{-}Score_t$	0.04	0.49	0.24	−0.45	1.00					
17	$R\&D_t$	−0.16	−0.15	0.26	−0.27	0.06	1.00				
18	$Advertising_t$	0.04	0.05	0.08	0.00	0.09	−0.02	1.00			
19	$RiskDiscl_{t-1}$	0.11	−0.07	0.09	−0.15	0.02	0.19	0.08	1.00		
20	Fog_{t-1}	0.18	−0.07	0.10	0.05	−0.07	0.12	−0.04	0.15	1.00	
21	$Tone_{t-1}$	−0.14	0.22	0.02	−0.02	0.14	−0.11	−0.02	−0.46	−0.30	1.00

Notes: This table presents Spearman correlations between variables used in our regression analysis. Definitions of all variables are reported in the Appendix. Significant correlations ($p < 0.01$) are represented by bold font.

Table 4. OLS regressions of overall CSR disclosure intensity on levels and persistence of competitive advantages

Panel A. Levels of competitive advantage						
	$adjGM_t$ (1)		$adjSGAM_t$ (2)		$adjOM_t$ (3)	
Intercept	0.185		0.116		0.063	
	(1.09)		(1.25)		(0.44)	
$PCTCSR_{t-1}$	−0.011	**	0.014	***	0.001	
	(−2.20)		(3.06)		(0.68)	
$adjSales_t$	0.158	***	0.869	***	0.044	***
	(28.91)		(163.65)		(20.94)	
$lnAssets_{t-1}$	−0.015	***	0.035	***	0.021	***
	(−10.46)		(26.09)		(30.12)	
ROA_{t-1}	0.252	***	0.127	***	0.368	***
	(31.06)		(13.34)		(56.45)	
MTB_{t-1}	0.006	***	−0.008	***	−0.001	***
	(13.92)		(−14.49)		(−3.07)	
$Leverage_{t-1}$	0.017		0.039	***	0.042	***
	(1.64)		(3.82)		(8.24)	
$Z\text{-}Score_t$	0.006	***	0.002	***	0.008	***
	(15.82)		(6.73)		(30.35)	
$R\&D_t$	0.868	***	−1.294	***	−0.366	***
	(28.57)		(−37.05)		(−18.70)	
$Advertising_t$	1.564	***	−1.765	***	−0.078	***
	(19.27)		(−16.15)		(−2.59)	
$RiskDiscl_{t-1}$	−1.125		1.111		0.189	
	(−1.61)		(1.51)		(0.62)	
Fog_{t-1}	−0.002	*	0.001		−0.002	***
	(−1.91)		(0.58)		(−3.60)	
$Tone_{t-1}$	1.126	***	0.061		0.986	***
	(2.68)		(0.15)		(5.19)	
Year Fixed Effects	Yes		Yes		Yes	
Industry Fixed Effects	Yes		Yes		Yes	
N	50,757		50,757		50,757	
Adj. R^2	50.2%		92.5%		62.0%	

Table 4. (continued)

Panel B. Persistence of competitive advantage

	$adjGM_t$ (1)		$adjSGAM_t$ (2)		$adjOM_t$ (3)	
$Pos\_adjPERF_{t-1}$	−0.094	*	−0.089		−0.159	***
	(−1.90)		(−0.73)		(−5.37)	
$Neg\_adjPERF_{t-1}$	−0.139	***	−0.089		−0.187	***
	(−2.81)		(−0.73)		(−6.31)	
$adjPERF \times Pos\_adjPERF_{t-1}$	0.352	***	0.168	***	0.503	***
	(28.11)		(20.44)		(36.68)	
$adjPERF_t \times Neg\_adjPERF_{t-1}$	0.578	***	0.232	***	0.414	***
	(34.48)		(16.78)		(31.23)	
$PCTCSR_{t-1} \times Pos\_adjPERF_{t-1}$	−0.019	***	0.009	*	−0.008	***
	(−3.27)		(1.76)		(−3.18)	
$PCTCSR_{t-1} \times Neg\_adjPERF_{t-1}$	−0.009	**	0.010	*	0.003	
	(−2.08)		(1.84)		(1.33)	
$PCTCSR_{t-1} \times adjPERF_{t-1} \times Pos\_adjPERF_{t-1}$	0.051	**	0.008		0.052	**
	(2.23)		(1.46)		(2.51)	
$PCTCSR_{t-1} \times adjPERF_{t-1} \times Neg\_adjPERF_{t-1}$	−0.050	**	0.012		0.016	
	(−2.28)		(0.92)		(0.74)	
$adjSales_t$	0.106	***	0.729	***	0.034	***
	(27.24)		(78.99)		(20.04)	
$lnAssets_{t-1}$	−0.008	***	0.031	***	0.014	***
	(−8.79)		(28.76)		(26.80)	
ROA_{t-1}	0.070	***	−0.001		−0.006	
	(10.04)		(0.06)		(−0.64)	
MTB_{t-1}	0.001	***	−0.007	***	−0.002	***
	(4.94)		(−15.28)		(−8.13)	
$Leverage_{t-1}$	0.044	***	0.018	**	0.044	***
	(6.41)		(2.06)		(9.91)	
$Z\text{-}Score_t$	0.004	***	0.002	***	0.007	***
	(13.94)		(8.48)		(29.52)	
$R\&D_t$	0.536	***	−1.016	***	−0.285	***
	(24.86)		(−29.85)		(−17.16)	
$Advertising_t$	0.775	***	−1.469	***	−0.080	***
	(14.83)		(−16.09)		(−3.43)	
$RiskDiscl_{t-1}$	−2.665	***	−0.209		−0.231	
	(−6.32)		(0.34)		(0.97)	
Fog_{t-1}	−0.003	***	0.000		−0.002	***
	(−3.57)		(0.19)		(−4.25)	
$Tone_{t-1}$	−0.825	***	−0.613	*	0.168	
	(−3.28)		(−1.81)		(1.17)	
Year Fixed Effects	Yes		Yes		Yes	
Industry Fixed Effects	Yes		Yes		Yes	
N	50,757		50,757		50,757	
Adj. R^2	70.9%		94.2%		68.5%	

Notes: Panel A presents results from OLS regressions of levels of industry-adjusted earnings

on overall intensity of CSR disclosure in 10-K filings. Panel B presents results from OLS regressions of the persistence of industry-adjusted earnings conditioned by the intensity of CSR disclosure in 10-K filings. Definitions of all variables are reported in the Appendix. Standard errors are clustered at the firm level, and t-statistics are reported in the brackets. Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

Table 5. OLS regressions of CSR disclosure intensities by subcategory on levels and persistence of competitive advantages

Panel A. Levels of competitive advantage						
	$adjGM_t$ (1)		$adjSGAM_t$ (2)		$adjOM_t$ (3)	
Intercept	0.188		0.113		0.063	
	(1.11)		(1.23)		(0.44)	
$PhiCSR_{t-1}$	0.184	***	−0.145	***	0.020	
	(3.91)		(−2.88)		(1.24)	
$BusiCSR_{t-1}$	−0.018	***	0.021	***	0.001	
	(−2.86)		(3.70)		(0.31)	
$ProdCSR_{t-1}$	0.011		−0.010		0.002	
	(1.29)		(−1.16)		(0.65)	
$GCSR_{t-1}$	−0.002		0.050		0.021	
	(−0.04)		(0.95)		(1.21)	
$adjSales_t$	0.158	***	0.869	***	0.044	***
	(28.95)		(163.75)		(20.94)	
$lnAssets_{t-1}$	−0.015	***	0.036	***	0.020	***
	(−10.58)		(26.17)		(30.09)	
ROA_{t-1}	0.252	***	0.127	***	0.368	***
	(31.08)		(13.36)		(56.42)	
MTB_{t-1}	0.006	***	−0.008	***	−0.001	***
	(13.86)		(−14.46)		(−3.09)	
$Leverage_{t-1}$	0.019	*	0.037	***	0.043	***
	(1.83)		(3.67)		(8.28)	
$Z\text{-}Score_t$	0.006	***	0.002	***	0.008	***
	(15.89)		(6.70)		(30.36)	
$R\&D_t$	0.868	***	−1.294	***	−0.366	***
	(28.58)		(−37.09)		(−18.69)	
$Advertising_t$	1.564	***	−1.765	***	−0.078	***
	(19.29)		(−16.16)		(−2.60)	
$RiskDiscl_{t-1}$	−1.054		1.058		0.199	
	(−1.50)		(1.44)		(0.65)	
Fog_{t-1}	−0.002	*	0.001		−0.002	***
	(−1.95)		(0.61)		(−3.60)	
$Tone_{t-1}$	1.057	**	0.120		0.977	***
	(2.52)		(0.30)		(5.14)	
Year Fixed Effects	Yes		Yes		Yes	
Industry Fixed Effects	Yes		Yes		Yes	
N	50,757		50,757		50,757	
Adj. R^2	50.3%		92.5%		62.0%	

Table 5. (continued)

Panel B. Persistence of competitive advantage

	$adjGM_t$ (1)		$adjSGAM_t$ (2)		$adjOM_t$ (3)	
$Pos\_adjPERF_{t-1}$	−0.087	*	−0.087		−0.157	***
	(−1.84)		(−0.73)		(−5.42)	
$Neg\_adjPERF_{t-1}$	−0.133	***	−0.089		−0.185	***
	(−2.82)		(−0.74)		(−6.39)	
$adjPERF_{t-1} \times Pos\_adjPERF_{t-1}$	0.343	***	0.167	***	0.499	***
	(28.04)		(20.42)		(36.34)	
$adjPERF_{t-1} \times Neg\_adjPERF_{t-1}$	0.580	***	0.228	***	0.412	***
	(33.49)		(16.35)		(31.03)	
$PhiCSR_{t-1} \times Pos\_adjPERF_{t-1}$	−0.099	*	−0.208	**	−0.051	**
	(−1.67)		(−2.41)		(−2.23)	
$PhiCSR_{t-1} \times Neg\_adjPERF_{t-1}$	−0.070		0.001		0.06	**
	(−1.19)		(0.02)		(2.19)	
$PhiCSR_{t-1} \times adjPERF_{t-1} \times Pos\_adjPERF_{t-1}$	1.110	***	0.059		0.630	***
	(4.43)		(0.59)		(3.33)	
$PhiCSR_{t-1} \times adjPERF_{t-1} \times Neg\_adjPERF_{t-1}$	−0.100		0.246		0.514	*
	(−0.30)		(1.40)		(1.79)	
$BusiCSR_{t-1} \times Pos\_adjPERF_{t-1}$	−0.026	***	0.015	**	−0.007	**
	(−4.25)		(2.31)		(−2.43)	
$BusiCSR_{t-1} \times Neg\_adjPERF_{t-1}$	−0.009	**	0.012	*	0.002	
	(−2.01)		(1.79)		(0.53)	
$BusiCSR_{t-1} \times adjPERF_{t-1} \times Pos\_adjPERF_{t-1}$	0.049	**	0.007		0.034	
	(2.02)		(1.16)		(1.53)	
$BusiCSR_{t-1} \times adjPERF_{t-1} \times Neg\_adjPERF_{t-1}$	−0.048	**	0.000		0.008	
	(−2.27)		(0.01)		(0.33)	
$ProdCSR_{t-1} \times Pos\_adjPERF_{t-1}$	−0.008		−0.001		−0.013	**
	(−1.24)		(−0.16)		(−2.39)	
$ProdCSR_{t-1} \times Neg\_adjPERF_{t-1}$	−0.015		0.025		0.006	**
	(−0.66)		(1.49)		(2.09)	
$ProdCSR_{t-1} \times adjPERF_{t-1} \times Pos\_adjPERF_{t-1}$	0.114	*	−0.013		0.122	**
	(1.71)		(−0.95)		(2.32)	
$ProdCSR_{t-1} \times adjPERF_{t-1} \times Neg\_adjPERF_{t-1}$	−0.223		0.295	*	0.094	
	(−0.67)		(1.80)		(1.30)	
$GCSR_{t-1} \times Pos\_adjPERF_{t-1}$	0.049		0.019		−0.036	*
	(1.30)		(0.32)		(−1.81)	
$GCSR_{t-1} \times Neg\_adjPERF_{t-1}$	−0.030		−0.028		−0.013	
	(−0.47)		(−0.66)		(−0.20)	
$GCSR_{t-1} \times adjPERF_{t-1} \times Pos\_adjPERF_{t-1}$	−0.123	***	0.111	**	0.309	*
	(−3.56)		(2.42)		(1.82)	
$GCSR_{t-1} \times adjPERF_{t-1} \times Neg\_adjPERF_{t-1}$	0.379		0.127		−0.218	
	(1.01)		(0.44)		(−0.56)	
$adjSales_t$	0.106	***	0.730	***	0.034	***
	(27.25)		(79.46)		(20.08)	
$lnAssets_{t-1}$	−0.008	***	0.031	***	0.014	***
	(−8.99)		(28.90)		(26.74)	
ROA_{t-1}	0.070	***	0.000		−0.006	
	(10.11)		(0.04)		(−0.66)	
MTB_{t-1}	0.001	***	−0.007	***	−0.002	***
	(4.81)		(−15.41)		(−8.14)	
$Leverage_{t-1}$	0.045	***	0.016	*	0.044	***

	(6.68)			(1.92)		(9.91)
$Z\text{-}Score_t$	0.004	***	0.002	***	0.007	***
	(14.03)		(8.49)		(29.50)	
$R\&D_t$	0.540	***	−1.019	***	−0.285	***
	(25.13)		(−30.06)		(−17.19)	
$Advertising_t$	0.774	***	−1.473	***	−0.082	***
	(15.00)		(−16.16)		(−3.51)	
$RiskDiscl_{t-1}$	−2.644	***	−0.280		−0.234	
	(−6.28)		(−0.45)		(−0.97)	
Fog_{t-1}	−0.003	***	0.000		−0.002	***
	(−3.69)		(0.12)		(−4.24)	
$Tone_{t-1}$	−0.869	***	−0.521		0.163	
	(−3.47)		(−1.54)		(1.14)	
Year Fixed Effects	Yes		Yes		Yes	
Industry Fixed Effects	Yes		Yes		Yes	
N	50,757		50,757		50,757	
$Adj.\ R^2$	71.03%		94.17%		68.49%	

Notes: Panel A presents results from OLS regressions of industry-adjusted earnings on subcategories of CSR disclosure in 10-K filings. Panel B presents results from OLS regressions of the persistence of industry-adjusted earnings across subcategories of CSR disclosure in 10-K filings. *GCSR*, *PhilCSR*, *BusiCSR*, and *ProdCSR* are calculated as the sum of general, philanthropy, business practice, and product CSR keywords found in the 10-K, divided by the total number of 10-K keywords, and then multiplied by 1,000. Definitions of all variables are reported in the Appendix. Standard errors are clustered at the firm level, and *t*-statistics are reported in the brackets. Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

Table 6. OLS regressions of overall CSR disclosure intensity on levels and persistence of components of competitive advantage

Panel A. Levels of performance components

	$adjSales_t$ (1)		$adjCOGS_t$ (2)		$adjSGA_t$ (3)	
Intercept	0.225		0.015		0.080	**
	(0.58)		(0.12)		(2.48)	
$PCTCSR_{t-1}$	0.009		0.010	**	−0.015	***
	(0.55)		(2.27)		(−3.18)	
Control variables	Yes		Yes		Yes	
N	50,757		50,757		50,757	
Adj. R^2	19.37%		89.34%		55.98%	

Panel B. Persistence of performance components

	$adjSales_t$ (1)		$adjCOGS_t$ (2)		$adjSGA_t$ (3)	
$PCTCSR_{t-1} \times adjComp_{t-1} \times Pos\_adjCOMP_{t-1}$	0.032	*	0.006		0.005	
	(1.75)		(0.88)		(0.25)	
$PCTCSR_{t-1} \times adjComp_{t-1} \times Neg\_adjCOMP_{t-1}$	0.051	***	0.010		0.126	***
	(2.96)		(0.80)		(3.63)	
Control variables	Yes		Yes		Yes	
N	50,757		50,757		50,757	
Adj. R^2	67.95%		92.42%		69.57%	

Notes: Panel A presents condensed results from OLS regressions of levels of industry-adjusted performance components on the overall intensity of CSR disclosure in 10-K filings. Industry-adjusted performance components include *adjSales*, *adjCOGS*, and *adjSGA*, which are measured as sales, cost of goods sold, and SG&A expenses, scaled by total assets and adjusted by the industry median, respectively. Panel B presents condensed results from OLS regressions of the persistence of industry-adjusted performance components on the overall intensity of CSR disclosure in 10-K filings. *adjComp* refers to *adjSales*, *adjCOGS*, and *adjSGA* in models (1), (2), and (3), respectively. *Pos_adjComp* (*Neg_adjComp*) is an indicator variable that equals one if a firm's industry-adjusted sales are greater (less) than zero or its industry-adjusted cost of goods sold or SG&A expenses are less (greater) than zero, and equal to zero otherwise. Definitions of all variables are reported in the Appendix. Standard errors are clustered at the firm level, and *t*-statistics are reported in the brackets. Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

Table 7. CSR disclosure intensities on components of competitive advantage

Panel A. Levels of performance components

	$adjSales_t$ (1)		$adjCOGS_t$ (2)		$adjSGA_t$ (3)	
Intercept	0.231		0.014		0.084	**
	(0.60)		(0.11)		(2.53)	
PhiCSR$_{t-1}$	−0.138		−0.194	***	0.145	***
	(−1.04)		(−3.79)		(2.98)	
BusiCSR$_{t-1}$	0.001		0.016	***	−0.023	***
	(0.05)		(2.80)		(−3.90)	
ProdCSR$_{t-1}$	0.039		−0.006		0.011	
	(1.07)		(−0.81)		(1.41)	
Control variables	Yes		Yes		Yes	
N	50,757		50,757		50,757	
Adj. R^2	19.38%		89.35%		56.07%	

Panel B: Persistence of performance components

	$adjSales_t$ (1)		$adjCOGS_t$ (2)		$adjSGA_t$ (3)	
PhiCSR$_{t-1}$×adjComp$_{t-1}$×Pos_adjCOMP$_{t-1}$	0.584	**	0.074		0.261	
	(2.56)		(0.58)		(1.49)	
PhiCSR$_{t-1}$×adjComp$_{t-1}$×Neg_adjCOMP$_{t-1}$	−0.150		0.084		−0.118	
	(−0.82)		(0.57)		(−0.44)	
BusiCSR$_{t-1}$×adjComp$_{t-1}$×Pos_adjCOMP$_{t-1}$	0.031		0.004		−0.006	
	(1.62)		(0.65)		(−0.29)	
BusiCSR$_{t-1}$×adjComp$_{t-1}$×Neg_adjCOMP$_{t-1}$	0.047	***	0.005		0.126	***
	(2.81)		(0.36)		(3.49)	
ProdCSR$_{t-1}$×adjComp$_{t-1}$×Pos_adjCOMP$_{t-1}$	0.057		−0.007		0.006	
	(0.88)		(−0.42)		(0.32)	
ProdCSR$_{t-1}$×adjComp$_{t-1}$×Neg_adjCOMP$_{t-1}$	−0.077		0.159	*	0.083	
	(−0.30)		(1.92)		(0.91)	
Control variables	Yes		Yes		Yes	
N	50,757		50,757		50,757	
Adj. R^2	67.96%		92.42%		66.81%	

Notes: Panel A presents condensed results from OLS regressions of levels of industry-adjusted performance components on subcategories of CSR disclosure in 10-K filings. Industry-adjusted performance components include *adjSales*, *adjCOGS*, and *adjSGA*, which are measured as sales, cost of goods sold, and SG&A expenses, scaled by total assets and adjusted by the industry median, respectively. Panel B presents condensed results from OLS regressions of the persistence of industry-adjusted performance components on subcategories of CSR disclosure in 10-K filings. *adjComp* refers to *adjSales*, *adjCOGS*, and *adjSGA* in models (1), (2), and (3), respectively. *Pos_adjComp* (*Neg_adjComp*) is an indicator variable that equals one if a firm's industry-adjusted sales are greater (less) than zero or its industry-adjusted cost of goods sold or SG&A expenses are less (greater) than zero, and equal to zero otherwise. Definitions of all variables are reported in the Appendix. Standard errors are clustered at the firm level, and *t*-statistics are reported in the brackets. Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

Online supplemental materials to 10-K Disclosure of Corporate Social Responsibility and Firms' Competitive Advantages[‡]

James N. Cannon[a], Zhejia Ling[b], Qian Wang[b] and Olena V. Watanabe[b]

[a]School of Accountancy, Jon M. Huntsman College of Business, Utah State University, Logan, UT, U.S.A.; [b]Department of Accounting, Debbie and Jerry Ivy College of Business, Iowa State University, Ames, IA, U.S.A.

September 16, 2019

Appendix S1. Select examples of CSR disclosure in 10-K filings

A. Campbell Soup Co. – fiscal year 2009

Item 1. Business.
The Company
　　In fiscal 2009, the company continued its focus on delivering superior long-term total shareowner returns by executing against the following seven key strategies:
- Expanding the company's icon brands within simple meals, baked snacks and healthy beverages;
- Driving higher levels of consumer satisfaction by offering superior value and focusing on wellness, quality and convenience;
- Making the company's products more broadly available in existing and new markets;
- Strengthening the company's business through outside partnerships and acquisitions;
- Increasing margins by improving price realization and company-wide productivity;
- Improving overall organizational excellence, diversity, engagement and innovation; and
- Advancing a powerful commitment to sustainability and corporate social responsibility.

Item 7. Management's Discussion and Analysis of Results of Operations and Financial Condition
Key Strategies
Advance a powerful commitment to sustainability and corporate social responsibility (CSR).
　　The company has developed a comprehensive strategy to advance its commitment to corporate social responsibility and sustainability, rooted in four key pillars relating to environmental sustainability, community outreach, workplace excellence, and consumer concerns about wellness and nutrition. Building on a strong heritage of corporate citizenship outlined in the company's first CSR Report, "Nourishing People's Lives," the company is now defining enterprise-wide goals and targets that address environmental performance, workplace excellence, social impact in its communities, and the nutrition and wellness attributes of its product portfolio. The company has established an internal governance structure to manage and direct these commitments as core business disciplines and is working with its customers and suppliers to identify common CSR and environmental sustainability priorities. In fiscal 2009, the company also joined the United Nations Global Compact and issued formal policies in the areas of human rights and political accountability.

B. Dean Foods Co. – fiscal year 2011

Item 1. Business.
Current Business Strategy
　　WhiteWave-Alpro
　　WhiteWave-Alpro competes in categories such as organic milk, creamers and plant-based beverages (such as soy, almond, coconut and hazelnut drinks) that we believe have strong long-term growth potential due to their relative immaturity, low household penetration numbers and strong consumer interest. Within these categories, WhiteWave-Alpro brands are often category leaders. To further build growth, the WhiteWave-Alpro strategy encompasses the following:
- Expanding the plant-based beverage category's scope by further expansion with products such as almond, coconut and hazelnut drinks, and continuing to innovate behind the *Silk* and *Alpro* brands;
- Investing in emerging and alternative channels and expanding the geography and

platform of our portfolio;

- Reducing costs to increase profitability, including creation of a new, centrally-located U.S. production facility to add needed capacity and further optimize the supply chain for growth;
- Developing commercial, marketing, innovation, customer logistics, financial management and strategic sales capabilities to enhance growth within the organization; and
- Continuing to support our environment, community and employees through sustainability efforts, building organizational diversity and safeguarding the unique culture and reputation of the organization.

Corporate Responsibility

Within these strategies, a sense of corporate responsibility remains an integral part of our efforts, despite the economic challenges we have faced. As we work to strengthen our business, we are committed to do it in a way that is right for our employees, shareholders, consumers, customers and the environment. We intend to realize savings by reducing waste and duplication while we continue to support programs that improve our local communities.

Item 1A. Risk Factors.

Product, Supply Chain and Systems Risks

We Must Identify Changing Consumer Preferences and Develop and Offer Products to Meet Their Preferences.

Consumer preferences evolve over time and the success of our products depends on our ability to identify the tastes, dietary preferences and purchasing habits of consumers and to offer products that appeal to their preferences. Introduction of new products and product extensions requires significant development and marketing investment, and we may fail to realize anticipated returns on such investments due to lack of consumer acceptance of such products. Currently, we believe consumers are trending toward health and wellness beverages. Although we continue to invest in research and development in order to capitalize on this trend, there are currently several global companies with greater resources that compete with us in the health and wellness space. In addition, as consumers become increasingly aware of the environmental and social impacts of the products they purchase, their preferences and purchasing decisions may change. If our products fail to meet changing consumer preferences, the return on our investment in those areas will be less than anticipated and our product strategy may not succeed.

C. Baxter International – fiscal year 2012

Item 7. Management Discussion and Analysis
Responsible Corporate Citizen

The company strives for continued growth and profitability, while maintaining and accelerating its focus on acting as a responsible corporate citizen. At Baxter, sustainability means creating a lasting social, environmental and economic value by addressing the needs of the company's wide-ranging stakeholder base.

Baxter's comprehensive sustainability program is focused on areas where the company is uniquely positioned to make a positive impact. Baxter and the Baxter International Foundation provide financial support and product donations in support of critical needs, from assisting underserved communities to providing emergency relief for countries experiencing natural disasters.

Baxter's priorities also include sound environmental stewardship. Throughout 2012 the

company continued to implement a range of water conservation strategies and facility-based energy saving initiatives. In the area of product stewardship and life cycle management, Baxter is pursuing efforts such as sustainable design and reduced packaging. Baxter is also responding to the challenges of climate change through innovative greenhouse gas emissions-reduction programs, such as shifting to less carbon-intensive energy sources and modes of product transport.

D. Lowe's Companies Inc. – fiscal year 2015

Item 1. Business.
Environmental Stewardship

Lowe's recognizes how efficient operations can help protect the environment and our bottom line. We examine our operations regularly to deliver energy efficiency, reduce fuel consumption, and minimize waste generation through increased recycling. We also invest in technology that will help us operate our facilities more efficiently and environmentally responsibly.

We annually track our carbon footprint and participate in the Carbon Disclosure Project, an independent nonprofit organization hosting the largest database of primary corporate climate change information in the world. To further reduce our carbon footprint, we incorporate energy-efficient technologies and architectural systems into new stores and retrofits of existing stores, such as energy-efficient lighting, white membrane cool roofs, and HVAC units that meet or exceed ENERGY STAR qualifications. We also participate in demand response programs by voluntarily reducing our lighting and HVAC loads during peak demand periods to support electric grid reliability.

During 2015, we began testing a state-of-the-art building management system in stores to control lighting, air conditioning and other building systems. We also implemented a light-emitting diode (LED) lighting initiative in select markets and new stores. All light sources for new stores constructed in the future will be LED.

We strive to deliver products to our stores in a fuel-efficient and an environmentally responsible manner through participation in the SmartWay® Transport Partnership, an innovative program launched by the U.S. Environmental Protection Agency (EPA) in 2004 that promotes cleaner, more fuel-efficient transportation options. Lowe's received a 2015 SmartWay Excellence Award from the EPA, our seventh consecutive SmartWay honor, for our commitment to environmental excellence in freight management operations and reduction of carbon dioxide emissions and other harmful pollutants. We have also increased shipping of products by rail and increased the efficiency of truckload shipments to and from our RDCs.

We continue to take steps to improve our recycling programs and reduce the amount of waste we generate. Through these efforts, we are able to reduce our disposal costs and minimize the impact on the environment of the operation of our stores and other facilities. We also offer convenient recycling for our customers at many of our stores for items such as rechargeable batteries, plastic bags and compact fluorescent light bulbs.

Additionally, we continue to focus on helping consumers reduce their energy and water use and their environmental footprint while saving money when they purchase our products and services. We offer a wide selection of environmentally responsible and energy-efficient products for the home, including ENERGY STAR® appliances, WaterSense® labeled toilets, paint with no volatile organic compounds (VOC), and indoor and outdoor LED lighting. Through our in-home sales specialists, we offer customers installation of insulation and energy efficient windows.

Compliance with Environmental Matters

Our operations are subject to numerous federal, state and local laws and regulations that have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment. These laws and regulations may increase our costs of doing business in a variety of ways, including indirectly through increased energy costs, as utilities, refineries, and other major emitters of greenhouse gases are subjected to additional regulation or legislation that seeks to better control greenhouse gas emissions. We do not anticipate any material capital expenditures during fiscal 2016 for environmental control facilities or other costs of compliance with such laws or regulations.

Investing in Our Communities

Lowe's has a long and proud history of supporting local communities through public education and community improvement projects, beginning with the creation of the Lowe's Charitable and Educational Foundation in 1957. In 2015, Lowe's and the Lowe's Charitable and Educational Foundation donated more than $33 million to schools and community organizations in the United States, Canada, and Mexico.

Our commitment to improving educational opportunities is best exemplified by our signature education grant program, Lowe's Toolbox for Education®, and 2015 marked the program's 10-year anniversary. Since its inception, Lowe's Toolbox for Education has provided approximately $48 million in grants, funding improvements at nearly 11,000 schools and benefiting more than six million children along the way.

Each year, we work with national nonprofit partners to strengthen and stabilize neighborhoods in the communities we serve. In 2015, Lowe's contributed $7 million and teamed with Habitat for Humanity and Rebuilding Together to provide housing solutions in partnership with families across the country. We also continued to build on our longstanding partnerships with the Boys & Girls Clubs of America, SkillsUSA, The Nature Conservancy, and Keep America Beautiful to improve communities and build tomorrow's leaders.

Lowe's is also committed to helping residents of the communities we serve by being there when we're needed most - when a natural disaster threatens and in the recovery that follows. In 2015, Lowe's donated nearly $1.5 million and mobilized hundreds of Lowe's Heroes employee volunteers to help families recover from disasters across the United States.

Altogether, Lowe's completed 3,795 community improvement projects in 2015. And for the first time, every single Lowe's store in the United States participated in a Lowe's Heroes volunteer project.

Appendix S2. CSR disclosure keyword vocabulary

Philanthropy (18): altruism, altruist, altruistic, charitable, charities, charity, community giving, corporate giving, corporate political activities, corporate political activity, employee volunteer effort, employee volunteer program, philanthropic, philanthropist, philanthropy, social campaign, social object, volunteerism

Business Practice (155): age discrimination, alternative trade, animal ethics, atmospheric pollution, beneficial reuse, biodiversity, biological diversity, biomass energy, biomass fuel, biomimicry, bribery and corruption, business and society, business ethics, business in the community, carbon capture, carbon cost, carbon dioxide emission, carbon disclosure, carbon emission, carbon footprint, carpooling, cause marketing, cause related marketing, CERES, climate change, climatic change, common good, community activism, conscious consumption, conservation, consumer activism, consumer protection, consumerism, contamination, deceptive advertising, declaration of human right, design for environment, discrimination, eco efficiency, ecological community, ecological economy, ecological footprint, ecology, energy from biomass, environmental accounting, environmental audit, environmental economics, environmental ethics, environmental impact analysis, environmental impact assessment, environmental law, environmental legislation, environmental management, environmental marketing, environmental performance, environmental protection agency, environmental risk, environmental rule, environmentalist, environmentally responsible, environs, ethical action, ethical business, ethical leadership, ethical policy, ethical sourcing, ethical trading initiative, ethics education, exploitation, fair trade, false advertising, forest stewardship council, free choice, free speech, freedom of expression, freedom of speech, friends of the earth, FTSE4good index, gender balance, gender equality, gender equity, global environmental, global warming, green business, green chemistry, green jobs, green marketing, greenhouse effect, greenhouse gas, greenwashing, hazardous, health and safety, health and social care, health value, human ecology, human right, illegal employment, inclusive business, Kyoto protocol, living wage, local community, marketing ethics, microlending, minimum wage, nondiscrimination, offshoring, ozone layer, pollution, poverty, preservation, racism, recycling, renewable energies, renewable energy, resource efficiency, responsible business, responsible consumption, responsible investment, responsible investor, responsible leadership, responsible management, responsible practice, responsible supply chain, ride sharing, rightsizing, social acceptance, social advertising, social auditing, social benefit, social collaboration, social contract, social control, social cost, social dialogue, social enterprise, social entrepreneur, social innovation, social investment, social justice, social movement, social promotion, social reporting, social risk, socially responsible, sustainable innovation, sustainable investment, sustainable leadership, sustainable marketing, sustainable site development, sustainable workplace, vanpooling, waste management, waste reclamation, work life balance, world commission on environment

Product (18): clean technologies, clean technology, consumer product safety, dangerous product, eco design, eco-design, eco-innovation, green building, green design, green technologies, green technology, ISO14001, local food, locally grown, organic, regional food, sustainable design, sustainable production

General (28): accountability 1000, corporate accountability, corporate citizenship, corporate social and environmental responsibilities, corporate social and environmental responsibility, CSR, DJSI, Dow Jones Sustainability Index, global reporting initiative, good corporate practice, integrated reporting, ISO 26000, responsible care, social accountability, social responsibilities,

social responsibility, socially sustainable, sustainability, sustainable business, sustainable company, sustainable corporation, sustainable development, sustainable enterprise, sustainable organization, sustainable tourism, sustainable use of resource, triple bottom, World Business Council for Sustainable Development

Note: We point out that our search method was such that we capture variations of a keyword with a single search term (i.e., "altruism" and "altruistic" are captured by "altruis", while "philanthropic" and "philanthropy" are captured with "philanthrop" in our search).

The following information was extracted and summarized from https://sraf.nd.edu/data/stage-one-10-x-parse-data/ on August 7, 2019:

Because most textual analysis studies focus on the textual content of the document, the Stage One Parse creates files where all of the 10-X documents have been parsed to exclude markup tags, ASCII-encoded graphics, and tables. Tables are excluded.

Markup Tags

All of the original markup language tags (HTML, XBRL, XML) are deleted from the original document. Additional markup tags are inserted within a header at the beginning of the compressed document and tags to delineate all exhibits in the document. The structure of the tagging system is as follows:

1. The following information appears at the beginning of each file:

    <Header>
    <FileStats>
      <FileName>20150209_10-K_edgar_data_1288776_0001288776-15-000008_1.txt</FileName>
      <GrossFileSize>22027068</GrossFileSize>
      <NetFileSize>284322</NetFileSize>
      <ASCII_Embedded_Chars>5868153</ASCII_Embedded_Chars>
      <HTML_Chars>5442273</HTML_Chars>
      <XBRL_Chars>6857933</XBRL_Chars>
      <XML_Chars>3286498</XML_Chars>
      <N_Tables>97</N_Tables>
      <N_Exhibits>12</N_Exhibits></FileStats>
    <SEC-Header>
     … All text contained in the original SEC-Header

    </SEC-Header>
    </Header>

    Note that the <FileStats> data contain character counts for the size of the raw file, the post-parsing size, and character counts for the items deleted from the document.

2. All exhibits preceded by the original tags of "<TYPE>EX-##" are encapsulated in the parsed files as:

<EX-##>
… original text
</Ex-##>

Parsing Details

Each raw text file downloaded from EDGAR is parsed using the following sequence.

1. Remove ASCII-Encoded segments – All document segment <TYPE> tags of GRAPHIC, ZIP, EXCEL, JSON, and PDF are deleted from the file. ASCII-encoding is a means of converting binary-type files into standard ASCII characters to facilitate transfer across

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various hardware platforms. A relatively small graphic can create a substantial ASCII segment. Filings containing multiple graphics can be orders of magnitude larger than those containing only textual information.

2. Remove <DIV>, <TR>, <TD>, and <FONT> tags – Although we require some HTML information for subsequent parsing, the files are so large (and processed as a single string) that, for processing efficiency, we initially simply strip out some of the formatting HTML.

3. Remove all XML – all XML embedded documents are removed.

4. Remove all XBRL – all characters between <XBRL …> … </XBRL> are deleted.

5. Remove SEC Header/Footer – All characters from the beginning of the original file thru </SEC-HEADER> (or </IMS-HEADER> in some older documents) are deleted from the file. Note however that the header information is retained and included in the tagged items discussed in section 4.1. In addition, the footer "-----END PRIVACY-ENHANCED MESSAGE-----" appearing at the end of each document is deleted.

6. Replace \&NBSP and \&#160 with a blank space.

7. Replace \&AMP and \&#38 with "&"

8. Remove all remaining extended character references (ISO-8859-1, see http://www.sec.gov/info/edgar/edgarfm-vol2-v34.pdf section 5.2.2.6.

9. Remove tables – all characters appearing between <TABLE> and </TABLE> tags are removed.

   a) Note that some filers use table tags to demark paragraphs of text, so each potential table string is first stripped of all HTML and then the number of numeric versus alphabetic characters is compared. For this parsing, only table encapsulated strings where *numeric chars/(alphabetic+numeric chars)* > 10% are removed.

   b) In some instances, Item 7 and/or Item 8 of the filings begins with a table of data where the Item 7 or 8 demarcation appears as a line within the table string. Thus, any table string containing "Item 7" or "Item 8" (case insensitive) is *not* deleted.

10. Tag Exhibits – At this point in the parsing process all exhibits are tagged as discussed in section 3.2.

11. Remove Markup Tags – remove all remaining markup tags (i.e., <…>).

12. Excess linefeeds are removed.

Appendix S4. Univariate analysis

Variable	Low $PCTCSR_{t-1}$ Mean	Median	High $PCTCSR_{t-1}$ Mean	Median	Difference Mean		Median	
Dependent Variables:								
$adjGM_t$	0.095	0.049	0.057	0.019	−0.038	***	−0.030	***
$adjSGAM_t$	0.134	0.003	0.189	0.070	0.055	***	0.067	***
$adjOM_t$	−0.011	0.013	0.015	0.023	0.026	**	0.010	***
$adjSales_t$	0.187	0.031	0.206	0.065	0.019	***	0.034	***
$adjCOGS_t$	0.127	−0.031	0.168	0.021	0.041	***	0.053	***
$adjSGA_t$	0.067	0.008	0.014	−0.020	−0.053	***	−0.028	***
Independent Variables:								
$PCTCSR_{t-1}$	0.067	0.054	0.546	0.410	0.480	***	0.356	***
$PhiCSR_{t-1}$	0.005	0.000	0.011	0.000	0.006	***	0.000	***
$BusiCSR_{t-1}$	0.053	0.037	0.482	0.361	0.429	***	0.324	***
$ProdCSR_{t-1}$	0.007	0.000	0.046	0.000	0.038	***	0.000	***
$GCSR_{t-1}$	0.002	0.000	0.008	0.000	0.007	***	0.000	***
Control Variables:								
$lnAssets_{t-1}$	5.268	5.114	5.996	5.943	0.728	***	0.828	***
ROA_{t-1}	−0.032	0.036	0.005	0.043	0.037	***	0.008	***
MTB_t	3.838	2.235	3.246	2.024	−0.592	***	−0.211	***
$Leverage_t$	0.421	0.404	0.484	0.491	0.063	***	0.087	***
$Z\text{-}Score_t$	4.305	3.609	3.725	3.047	−0.580	***	−0.563	***
$R\&D_t$	0.067	0.022	0.033	0.000	−0.034	***	−0.022	***
$Advertising_t$	0.016	0.000	0.012	0.000	−0.004	***	0.000	***
$RiskDiscl_{t-1}$	0.014	0.014	0.014	0.014	0.000	***	0.000	***
Fog_{t-1}	19.806	19.777	19.845	19.743	0.040	***	−0.034	
$Tone_{t-1}$	−0.007	−0.007	−0.008	−0.007	−0.001	***	−0.001	***
N		25,375		25,382				

Notes: This table presents univariate comparisons for variables used in our regression analysis. The sample includes 50,757 firm-years from 6,882 companies. Definitions of all variables are reported in the Appendix in the manuscript. We split the sample into firm-years with low and high CSR disclosure by using the annual median of $PCTCSR_{t-1}$. We compare the means (based on t-tests) and medians (based on Wilcoxon tests) of all variables for these two subsamples. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.