

Product Market Competition and Voluntary Corporate Social Responsibility Disclosures*

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ABSTRACT

This study examines whether and how firms' voluntary forward-looking nonfinancial disclosure, specifically their corporate social responsibility (CSR) disclosure, is associated with the intensity of product market competition (PMC). Despite the importance of the proprietary cost argument in explaining corporate disclosure incentives, there is little empirical evidence of the relationship between firms' proprietary cost concerns and their voluntary nonfinancial disclosure decisions. Using a reduction in industry-level import tariffs as an exogenous shock to competition intensity, we find that the likelihood, frequency, and length of stand-alone CSR reports decrease in response to heightened PMC. We also find that higher PMC intensity is associated with a reduced likelihood of CSR disclosure with external assurance, CSR disclosure in accordance with the Global Reporting Initiative guidelines, and CSR disclosure integrated with financial statements. Our results are robust to multiple alternative measures of PMC—namely, the level of nonprice competition, product similarity, and managers' perceptions of competition. Further analysis suggests that firms facing intense competition tend to commit more resources to advertising activities after reducing their CSR disclosure, presumably to mitigate the effect of this reduction. Overall, our findings suggest that proprietary cost concerns reduce firms' incentive to report their competition-sensitive CSR activities.

Keywords: proprietary cost, voluntary disclosure, corporate social responsibility, product disclosure, nonfinancial disclosure, competition

La concurrence sur le marché des produits et la communication volontaire d'information sur la responsabilité sociale des entreprises

RÉSUMÉ

Cette étude examine si et comment la communication volontaire d'information prospective et non financière, en particulier la communication en matière de responsabilité sociale des entreprises (RSE), est associée à l'intensité de la concurrence sur le marché des produits (CMP). Malgré l'importance de l'argument relatif au coût exclusif pour expliquer les incitations des entreprises à communiquer de l'information, il existe peu de preuves empiriques de la relation entre les

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préoccupations des entreprises en matière de coût exclusif et leurs choix de communiquer volontairement de l'information non financière. En utilisant une réduction des tarifs d'importation au niveau de l'industrie comme choc exogène sur l'intensité de la concurrence, les auteurs constatent que la probabilité, la fréquence et la longueur des rapports RSE indépendants diminuent en réponse à une intensification de la CMP. Les auteurs constatent également qu'une plus grande intensité de la CMP est associée à une réduction de la probabilité de communiquer de l'information sur la RSE avec assurance externe, de communiquer de l'information sur la RSE conformément aux lignes directrices de la Global Reporting Initiative, et de communiquer de l'information sur la RSE intégrée aux états financiers. Les résultats de l'étude résistent à de multiples mesures alternatives de la CMP, à savoir le niveau de la concurrence non tarifaire, la similarité des produits et la perception de la concurrence par les dirigeants. Une analyse plus poussée suggère que les entreprises confrontées à une concurrence intense ont tendance à engager plus de ressources dans les activités publicitaires après avoir réduit leur communication d'information sur la RSE, vraisemblablement pour atténuer l'effet de cette réduction. Dans l'ensemble, les résultats suggèrent que les préoccupations relatives au coût exclusif réduisent l'incitation des entreprises à déclarer leurs activités liées à la RSE qui sont sensibles à la concurrence.

Mots-clés : coût exclusif, communication volontaire, responsabilité sociale des entreprises, information sur le produit, communication d'information non financière, concurrence

1. Introduction

In response to an increasing awareness of the positive implications of corporate social responsibility (CSR) activities for firm revenue, many firms voluntarily provide product information in their stand-alone CSR reports to demonstrate their ability to develop products responsibly. Indeed, product performance is considered to be an important dimension of the CSR performance of firms.¹ This new trend toward voluntary disclosure illustrates the importance that firms attach to CSR activities and to communicating their CSR initiatives to their key stakeholders, such as their customers (Luo and Bhattacharya 2006; Muslu et al. 2019; Patten and Zhao 2014; Servaes and Tamayo 2013). However, such CSR disclosure may also reveal sensitive information that can be exploited by the competitors of the disclosing firms. To the extent that managers have proprietary cost concerns about their CSR disclosure, these concerns are likely to affect both the issuance decision and the reporting characteristics of CSR disclosure. Examining the determinants and characteristics of CSR reporting is important as it contributes to our understanding of the heterogeneity of CSR reporting and its associated capital market consequences.²

Despite the importance of the proprietary cost argument in explaining corporate disclosure incentives, a substantial part of the literature focuses on the role of proprietary costs in financial disclosure (Ali et al. 2014; Darrough and Stoughton 1990; Dhaliwal et al. 2014; Li 2010; Skinner 1994). There is little empirical evidence of the relationship between firms' proprietary cost concerns and their voluntary nonfinancial disclosure decisions. Cao et al. (2018) argue that firms can incur significant proprietary costs as a result of their competitors taking action in response to their disclosure.³ Christensen et al. (2021) suggest that

1. Our data are manually collected from standard CSR reports of firms and show that approximately 70% of the CSR reports contain product-related sections that are longer than five pages and that a product-related section accounts for 14% of the number of pages of a report on average.
2. As an example, Muslu et al. (2019) show that the reporting characteristics of corporate CSR disclosure vary substantially across firms and that better CSR reporting characteristics tend to have a greater effect on analysts' earnings forecasts. A more recent study by Christensen et al. (2022) find that a greater level of environmental, social, and governance (ESG) disclosure leads to greater ESG rating disagreement and that a greater level of ESG rating disagreement is associated with higher estimation risk.
3. Financial disclosures tend to contain less actionable information that competitors can use to impose costs on disclosing firms (Cao et al. 2018), whereas voluntary nonfinancial disclosures (e.g., CSR disclosure) often contain specific or detailed forward-looking information that is directly related to the core operations of the firms, such as information on product innovation, development, and improvement (Cohen et al. 2012).

proprietary cost is a key concern of mandatory CSR reporting requirements. To the extent that stand-alone CSR reports are likely to contain sensitive information about firms' core operations ([Appendix 2](#) provides examples of such CSR disclosure), this study examines whether and how firms' stand-alone CSR reports are affected by the intensity of product market competition (PMC).

Despite extensive acknowledgement of the potential benefits of CSR disclosure (e.g., see [Huang and Watson \(2015\)](#) and [Radhakrishnan et al. \(2018\)](#) for a review of the CSR reporting literature), the literature provides conflicting implications for the CSR disclosure decisions of firms under intense PMC. Increased competition can drive companies beyond the conventional marketing mix to incorporate CSR attributes into their marketing initiatives and thereby gain a competitive advantage ([Sen et al. 2006](#)). Supporting this view, some studies argue that CSR engagement is an important product attribute with the potential to increase the attractiveness of firms' products, improve customer satisfaction and loyalty, and ultimately create higher revenue and firm value ([Bhattacharya and Sen 2004](#); [Creyer 1997](#); [Lev et al. 2010](#); [Luo and Bhattacharya 2006](#); [Sen and Bhattacharya 2001](#)).⁴

More directly supporting the importance of CSR in enhancing the competitive advantage of firms, [Fernández-Kranz and Santaló \(2010\)](#) and [Flammer \(2015\)](#) find that increased PMC leads to increased CSR engagement. In the same vein, [Fisman et al. \(2008\)](#) and [Johnson \(1966\)](#) argue that the benefits of CSR may be more substantial in industries that are more competitive. As a signal of product quality, CSR allows firms to differentiate themselves from their rivals. In addition, CSR awareness among stakeholders is an important channel through which firms' CSR initiatives can positively affect the decision-making of their stakeholders and the overall beliefs and attitudes of these stakeholders toward the firms ([Boesso et al. 2013](#); [Servaes and Tamayo 2013](#)). This line of research suggests that CSR disclosure is an important way for firms to communicate their CSR activities to their stakeholders and realize the benefits of CSR. Thus, to the extent that CSR activities have the potential to foster future sales and create product/capital market benefits, especially when competition is intense, there may be a positive association between PMC intensity and firms' CSR reporting.

The proprietary cost hypothesis suggests that managers face a trade-off between the potential benefits associated with voluntary disclosure and the costs of revealing proprietary information. This hypothesis has been tested in the context of forward-looking financial disclosure. However, it may also be applicable to forward-looking nonfinancial disclosure, such as CSR disclosure, as long as the information can aid firms' current and potential competitors. To the extent that CSR disclosure contains competition-sensitive information—that is, information about the firms' development process, technologies used, plans for future products, and selling strategies that the existing and potential competitors of the disclosing firms can use to gain a competitive advantage over the CSR information disclosers—there may be a negative association between PMC intensity and firms' CSR reporting.

The above discussion suggests that it is unclear *ex ante* whether and how proprietary cost concerns or PMC pressures are associated with firms' incentive to report their CSR activities, especially when their reports include product information. Given the ambiguity of the predicted relationship, whether and how voluntary CSR disclosure is affected by PMC intensity are empirical questions that we address in this study.

To empirically examine these questions, we conduct a textual analysis to obtain data on the amount and characteristics of the CSR information disclosed in more than 1,100 stand-alone CSR reports manually collected from US firms. Furthermore, we identify whether each stand-alone CSR report contains product-related information and, if so, how much space (i.e., the total number of pages and words) is dedicated to such content. To address the concern regarding the

4. We use "CSR engagement" to broadly refer to CSR practices and commitment.

endogeneity of PMC, we use the large reduction in import tariff rates during our sample period as an exogenous shock to the competitive environment of firms (Fresard 2010; Valta 2012) and examine how firms' CSR reporting practices change following this large tariff reduction.

Using a difference-in-differences (DiD) design, we show that a substantial reduction in import tariffs leads to a significant decrease in the likelihood, frequency, and length (measured by page and word counts) of overall and product-related CSR disclosure. In addition, we examine the characteristics of CSR disclosure and find that firms facing higher levels of PMC intensity have a lower likelihood of providing CSR disclosure with external assurance, CSR disclosure in accordance with the Global Reporting Initiative (GRI) guidelines, and CSR disclosure integrated with financial statements. These results are consistent with the proprietary cost hypothesis that predicts that PMC reduces the level of CSR disclosure in general and product-related CSR reporting in particular. Our inference remains unchanged when we use multiple alternative proxies for PMC intensity, including nonprice competition (Chen et al. 2015), product similarity (Hoberg and Phillips 2016), and perceived competition by managers (Li et al. 2013).⁵

Studies suggest that firms' engagement in CSR activities plays an important role in determining their competitive advantage (Cannon et al. 2020; Homburg et al. 2013; Porter and Kramer 2006; Saeidi et al. 2015). Thus, changes in CSR reporting can be related to changes in the CSR performance of firms when they are more concerned about PMC. In line with the results of prior studies but in contradiction with the negative effect of PMC on CSR reporting, we document that PMC increases firms' CSR investments. More importantly, we find that firms with better product-related CSR performance reduce both their overall and product-related CSR disclosure and that the reduction is more pronounced when PMC is high. We also find that firms reduce their CSR reporting when facing competitive pressure, regardless of the level of their financial constraints. This result excludes the alternative explanation that the negative effect of PMC on CSR reporting observed is driven by financial constraints.

Given that firms reduce their CSR reporting while increasing their CSR investments when facing intense competition, our results suggest that firms may use alternative channels that have lower proprietary costs to communicate their CSR engagement to their stakeholders (e.g., customers and investors). Given the benefits of advertising and the presumably less actionable information (and/or less detailed information) contained in advertising, advertising is an alternative channel that firms may use to communicate their CSR investments.⁶ Supporting this view, we find evidence that firms tend to spend more resources in advertising activities as an alternative means of securing a competitive advantage, especially when they reduce their level of CSR disclosure in response to intense competition.

We contribute to the literature in several ways. First, one of the most notable global changes in corporate disclosure practices in recent decades has been the increase in the number of companies voluntarily publishing CSR reports (KPMG 2013). However, little is known about the determinants of this emerging disclosure practice (Ramanna 2013). The literature on CSR reporting identifies multiple firm-level characteristics related to the motivation of firms to report their CSR activities, such as gaining external capital and reducing information asymmetry (Dhaliwal et al. 2011, 2012; Tan et al. 2020), demonstrating their CSR commitment (Clarkson et al. 2018;

5. The magnitude of the effect of PMC on CSR disclosure is nontrivial. For example, we find that a large tariff reduction reduces the probability of an average firm issuing CSR reports by 27%. The negative relationship between PMC and CSR reporting is even more pronounced when considering the length of CSR reports. For example, for an average firm in our sample, a large tariff reduction reduces the total number of pages and words by 89% and 75%, respectively, for overall CSR reporting and by 15.9% and 22.6%, respectively, for product-related CSR reporting.

6. Studies note that advertising is not only a means of promoting products and services to customers but also a channel for firms to communicate with investors (Fehle et al. 2005), promote their image (Drumwright 1996; Luo and Bhattacharya 2006), and strategically protect their value when facing adversity that may reduce firm value (Wies et al. 2019).

Simnett et al. 2009), and signaling their future financial performance (Lys et al. 2015) or the ability of their CEO (Chen et al. 2017). By providing evidence that PMC intensity reduces firms' CSR reporting incentives, we add to the literature by identifying an important but previously unidentified determinant of CSR reporting: firms' concern about revealing competition-sensitive proprietary information to rivals. Examining this issue is also of contemporary importance for regulators and other parties concerned with CSR reporting. This importance is evidenced by the call of the US SEC for feedback on the potential challenges and costs associated with disclosing CSR information (SEC 2016). Given the growing trend of CSR reporting regulations around the world (Chen et al. 2018; Ioannou and Serafeim 2019) and the potential implication of CSR reporting for capital markets, we believe that examining the factors that affect firms' voluntary CSR disclosure is both timely and important.⁷

Economic theory posits that proprietary costs are an important determinant inhibiting firms' voluntary disclosure (Verrecchia 1983, 2001). As a result, the relationship among PMC intensity, a proxy for proprietary costs, and voluntary disclosure has attracted considerable interest from researchers in the fields of economics, finance, and accounting. However, the empirical evidence of this relationship is mixed (Berger 2011; Beyer et al. 2010).⁸ A plausible explanation for the conflicting results concerns the multidimensional nature of both competition and disclosure (Cao et al. 2018). Studies typically focus on the effect of proprietary costs on financial disclosure.⁹ However, the potential effects of proprietary costs on the quantity and quality of nonfinancial CSR disclosure have not been explored. By directly examining the effect of proprietary cost concerns on the stand-alone CSR reporting practices of firms, we extend research on the effect of PMC on the reporting choices of managers to this new type of disclosure.

We also add to recent research on the relationship between PMC and CSR. Several studies use KLD CSR scores as a proxy for the CSR activity or performance of firms (Dupire and M'Zali 2018; Fernández-Kranz and Santaló 2010; Flammer 2015). These studies find that firms facing increased competition increase their CSR commitment to improve their financial performance. Consistent with these studies, we confirm that firms' CSR investments increase with PMC intensity. However, we add to this literature by documenting that an increase in the intensity of competition decreases the amount and quality of CSR disclosure. This finding suggests that the underlying determinants of firms' CSR reporting decisions may be distinct from those of their actual CSR investments. More importantly, we find that firms tend to commit more resources to advertising activities, especially after reducing their CSR disclosure, in response to the increase in PMC. Thus, we add to the literature by disentangling CSR reporting from actual CSR activities and by providing new insight into the potential strategic choices of firms regarding the channels they use to communicate CSR information in response to increased competition.

The remainder of this paper is organized as follows. Section 2 summarizes the literature and develops the hypotheses. Section 3 presents the sample, variable definitions, and empirical model specification. Section 4 presents the summary statistics and reports the main empirical results. Section 5 discusses additional analyses. Section 6 presents the conclusions drawn from the results of the study.

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7. In line with this view, recent studies show that CSR disclosure has cost implications (Christensen et al. 2021).
 8. For example, using industry concentration as a proxy for PMC, Verrecchia and Weber (2006) find that firms in more concentrated industries are more likely to issue proprietary information. In contrast, Bamber and Cheon (1998) report that firms competing in more concentrated product markets issue earnings forecasts that are less specific—that is, they disclose less informative proprietary information. Furthermore, Ajinkya et al. (2005) find no relationship between industry concentration and the decision of firms to issue earnings forecasts.
 9. For example, studies mainly examine the effects of proprietary costs on management earnings forecasts (Ali et al. 2014; Li 2010), segment information (Botosan and Stanford 2005), information about major customers (Ellis et al. 2012), and information about firms' strategies (Bhojraj et al. 2004).

2. Background and hypothesis development

Importance of voluntary CSR disclosure

Global competition has thrived over the past two decades. At the same time, both research and anecdotal evidence demonstrate the importance of CSR activities for firms, especially in a highly competitive environment. For example, Fombrun and Shanley (1990, 239) argue that firms' CSR engagement is an important element of product differentiation and reputation building. Similarly, other studies (Bhattacharya et al. 2004; Luo and Bhattacharya 2006; Pérez and Del Bosque 2015) suggest that CSR is an important aspect of strategic marketing in terms of promoting and differentiating firms' products and increasing customer satisfaction and loyalty.¹⁰ In line with these arguments, a survey by Cone/Ebiquity (2015) reveals that 91% of global consumers expect companies to act responsibly and that 9 out of 10 consumers are as likely to purchase responsible products and services as they are to boycott irresponsible companies. Similarly, the Nielsen Global Survey on Corporate Social Responsibility and Sustainability (2014), completed by more than 30,000 consumers in 60 countries, suggests that 55% of global consumers are willing to pay higher prices for products or services provided by companies committed to positive CSR activities.¹¹

As the understanding of the corporate effect on business and society increases, stakeholders, such as customers, expect businesses to operate responsibly and demand that firms robustly communicate their CSR efforts and results. Along with increasing media coverage of CSR issues, the survey results of Cone/Ebiquity (2015) show that almost 88% of global consumers expect companies to report the progress of their CSR efforts. A more recent report examining consumer attitudes and perceptions reveals that 86% of the surveyed consumers in the United States expect companies not only to commit to good CSR activities but also to publicly communicate their CSR activities, with 79% of the consumers perceiving that public communication of CSR activities increases the credibility of firms' CSR commitment (Cone 2017).

Although capital market participants such as investors seem more interested in the financial information of firms, recent evidence suggests that they are showing increasing interest in and paying greater attention to how management deals with social and environmental issues (Dhaliwal et al. 2011, 2012; Naughton et al. 2019; PwC 2017; Li et al. 2021; Liao et al. 2021).¹² In response to the strong demand for CSR information, regulators around the world have increased their commitment to requiring and encouraging firms to provide CSR information in recent years (KPMG 2016).¹³

Despite the unprecedented pressure on companies to communicate their CSR engagement and results, many firms choose not to publish CSR reports (Dhaliwal et al. 2011). Furthermore, there is a substantial deficit in the amount of useful CSR information available to stakeholders (Chen et al. 2016; Muslu et al. 2019). According to a survey by Ernst and Young (2015), almost two-thirds of institutional investors surveyed around the world agree that companies do not

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10. Laboratory experiments reveal that CSR may directly or indirectly affect consumer-company identification (Mohr and Webb 2005), consumer product responses (Brown 1998), and consumer product attitudes (Beren et al. 2005).
 11. Reference can be made to *Global consumers are willing to put their money where their heart is when it comes to goods and services from companies committed to social responsibility* (<http://www.nielsen.com/ca/en/press-room/2014/global-consumers-are-willing-to-put-their-money-where-their-heart-is.html>).
 12. Supporting this view, recent accounting studies show the increasing importance of and various benefits associated with voluntary CSR reporting for capital market participants, such as building social capital (Patten and Zhao 2014), reducing information asymmetry between firms and investors (Crifo et al. 2015; Dhaliwal et al. 2011, 2012), and protecting firm value (Christensen 2016).
 13. One high-profile attempt to regulate CSR reporting is the European Union's adoption of Directive 2014/95/EU on nonfinancial disclosure in 2014, requiring public interest entities of a certain size to issue CSR reports. Many firms in China have been mandated to disclose their CSR activities since 2008 (Chen et al. 2018). Although CSR reporting is voluntary in the United States, the SEC issued a Concept Release in April 2016 with a call for public comments on its consideration of the inclusion of CSR disclosure in its corporate disclosure requirements.

adequately disclose their CSR information and nearly 40% call for companies to disclose CSR information more comprehensively. The appreciable gap between the demand for and supply of CSR reports highlights the need to explore the barriers to CSR reporting.

PMC and voluntary CSR disclosure

Potential positive relationship between PMC and voluntary CSR disclosure

The literature finds that from a consumer perspective, CSR activities can positively affect the attitudes, perceptions, purchase intentions, and satisfaction of consumers (Brown and Dacin 1997; Olsen et al. 2014; Sen et al. 2006; Servaes and Tamayo 2013). This consequently increases the premiums requested for products and services, attracts new customers, and improves customer loyalty and advocacy behaviors, such as positive word-of-mouth recommendations and resilience to negative company news (Lev et al. 2010; Sen and Bhattacharya 2001). Recognizing consumers as key drivers of CSR who are more concerned about firms' CSR initiatives (Bhattacharya and Sen 2004; Servaes and Tamayo 2013), studies argue that CSR disclosure can serve as an important tool to more effectively manage today's increasingly competitive business environment (McWilliams and Siegel 2011; Nikolaeva and Bicho 2011). Accordingly, Hildebrand et al. (2011, 1359) contend that CSR is a "near-perfect vehicle" for corporate marketing that reveals not only the fundamental and enduring characteristics of a firm but also more distinct and evolving characteristics. In line with these views, Eccles et al. (2014) observe a stronger positive association between CSR and financial performance in sectors in which firms compete on the basis of brand and reputation.

More directly, CSR may be perceived as a type of product innovation (e.g., the creation of new socially responsible product features or categories), process innovation (e.g., the use of a socially responsible production process), or marketing strategy (e.g., green marketing). As such, it can differentiate a firm's products from those of its competitors and give the firm a competitive advantage (Fernández-Kranz and Santaló 2010; Flammer 2015; Fombrun and Shanley 1990; McWilliams and Siegel 2011; Tsang, Hu et al. 2021; Tsang, Wang et al. 2021). Further supporting this view, most major CSR databases (e.g., KLD, ASSET4, MSCI's IVA, and Bloomberg's Sustainability) indicate that firms' product performance is an important dimension of their CSR engagement.¹⁴

Studies also show that increased competition erodes growth opportunities, increases firm risk and uncertainty, affects the relative positions of firms in the capital market, and increases the external financing costs of firms (Frésard and Valta 2013; Hoberg et al. 2014; Valta 2012). Therefore, more intense competition presumably leads to more CSR disclosure if firms use such disclosure as a means of reducing the information asymmetry between them and their investors and thus improving their access to external capital.

The positive effect of CSR disclosure in a competitive environment may not be restricted to or primarily manifested in the customer and capital market domains. The stakeholder perspective suggests that CSR disclosure is a form of stakeholder management that builds and strengthens stakeholder relationships, which has multifaceted benefits and can improve the competitive positions of firms. Stakeholder theory emphasizes the need to go beyond traditional fiduciary interests to take responsibility in front of a broad range of stakeholders and to thereby obtain their support, which is crucial to the survival and long-term success of firms (Clarkson 1995; Freeman 1984). In particular, in the presence of increased competition that weakens a firm's grip on its stakeholders (Zingales 2000), establishing and maintaining close stakeholder relationships has increasingly replaced traditional economies of scale and become a primary driver of the sustained competitive advantages of firms (Hildebrand et al. 2011; Hillman and Keim 2001; Lev 2000). The efficiency and importance of CSR in strengthening stakeholder relationships, especially under

14. For example, KLD measures a firm's product quality according to its "efforts to improve [the] safety and health effects of its products/services." Similarly, the professional CSR data vendor ASSET4 measures firms' CSR engagement according to their product innovation and product responsibility.

intense competition, can be further magnified as firms often maintain multiple stakeholder relationships (e.g., employees, investors, and customers) simultaneously (Sen et al. 2006).

Potential negative relationship between PMC and voluntary CSR disclosure

The proprietary cost hypothesis (Verrecchia 1983, 2001) predicts that disclosing proprietary information jeopardizes the competitive position of the disclosing firm in the product market if its rivals or other actors strategically use the information to the firm's disadvantage.¹⁵ Supporting this view, managers frequently rank proprietary costs as a major concern affecting their voluntary disclosure decisions (Graham et al. 2005). The literature mainly applies the proprietary cost hypothesis to voluntary financial disclosure. Cao et al. (2018) argue that for a disclosure to impose proprietary costs on the disclosing firm, it must contain information that is actionable by the competitor. In this vein, CSR disclosure has the potential to incur nontrivial proprietary costs because it often contains specific and/or detailed information that is directly related to the core operations of the disclosing firm, such as its employee and customer relationships, supply chain operations, and product innovation and development.

The above discussions suggest that CSR disclosure may contain valuable information that can attract stakeholders and differentiate the disclosing firm from its competitors. In turn, this information may benefit the competitors of the disclosing firm by revealing competition-sensitive information that can be exploited. For example, a firm's CSR disclosure regarding how to integrate CSR activities into its business model, and especially how to harness technology and innovation to deliver CSR-oriented products and services, is likely to provide know-how to its competitors. This in turn enables the disclosing firm's competitors to mimic its successful business models and diminish its competitive advantage. Indeed, survey evidence shows that CEOs increasingly consider competitor information, especially long-term information (e.g., information regarding new product initiatives and changes in corporate strategies) as an important factor in gaining a competitive advantage. Thus, many firms constantly monitor the product disclosure of their rivals for their own strategic planning purposes (Helm 2011).

In addition, CSR disclosure can reveal non-product-related information with the potential to enhance the competitive position of third parties vis-à-vis the disclosing firm in contract negotiation (García-Sánchez and Martínez-Ferrero 2017). For example, Li et al. (1997) suggest that environmental disclosure may represent costs to a firm when it is made public because environmental commitments can be used to damage its competitive position. Social disclosure containing information on employee training costs and regional and community spending is another type of proprietary information relating to cost reduction and productivity improvement (Cormier and Magnan 2003; Edmans 2011).¹⁶

Therefore, to the extent that CSR disclosure contains competition-sensitive information, the decisions of managers regarding whether and how to report CSR information are likely to involve a trade-off between the benefits of informing market participants, such as customers and investors, and the proprietary costs of informing existing and potential rivals in a competitive environment. Given the competing arguments on the effects of competition on CSR reporting, especially that with product disclosure, we present our hypotheses in the null form as follows.

HYPOTHESIS 1 (H1). *PMC has no effect on CSR reporting.*

HYPOTHESIS 2 (H2). *PMC has no effect on product-related CSR reporting.*

15. This prediction is supported by a large body of empirical studies conducted in various contexts, such as segment reporting (Bens et al. 2011), management forecasts (Huang et al. 2017), and R&D information (Jones 2007).

16. Consistent with concerns about the proprietary costs of CSR disclosure, industry commenters responding to the SEC's 2016 Concept Release argue that disclosing CSR information benefits competitors (Ioannou and Serafeim 2019; Thomas and Maguire 2016).

3. Sample, variable definitions, and methodology

Sample selection and data

To test our hypotheses, we follow prior studies (Chen et al. 2016; Dhaliwal et al. 2011; Muslu et al. 2019) and collect all stand-alone CSR reports issued by US firms from 1999 to 2011 from the Corporate Register (an online directory of CSR reports). Compared with the disclosure of CSR information through other channels (e.g., in annual reports and on corporate websites), stand-alone CSR reports tend to cover topics that are broader in scope (e.g., product responsibility such as investment in environmentally friendly production processes) and that are likely to provide more extensive information on the products of the disclosing firm.¹⁷ As such, we focus on stand-alone CSR reports. Doing this also minimizes the concern that the CSR information disclosed through other channels can be bundled with other competition-sensitive information (e.g., competition-sensitive financial information and/or information about major clients), which is also subject to proprietary cost concerns.¹⁸

For each stand-alone CSR report collected, we conduct a textual analysis to determine the number of pages and words contained in the CSR report. By examining the information disclosed in each CSR report, we further manually collect information on whether a stand-alone CSR report contains product-related information. We consider CSR reports containing information on firms' product R&D, future product development and improvement, product technology, and patents and patent development as CSR reports with product disclosure. If a report contains product disclosure, we further collect data on the total number of pages and words dedicated to such information in the CSR report.¹⁹

In our regression analyses using a large reduction in import tariff rates as a proxy for PMC, our final sample comprises 9,774 firm-years for 1,804 distinct firms (1999–2011), among which 213 distinct firms issued 887 stand-alone CSR reports for 793 firm-years.²⁰ These 9,774 firm-years include 1,694 firm-years in which there was a large reduction in tariff rates during the sample period. In our regression analyses using alternative measures of competition (i.e., nonprice competition, product similarity, and intensity of competition perceived by managers), our final sample comprises 13,989 firm-years for 2,565 distinct firms, with 1,120 firm-years being associated with stand-alone CSR reports issued by 319 distinct firms.

Measures of PMC

Reduction in import tariff rates

The potential endogeneity of PMC is a common concern in research on the effect of PMC. Specifically, in our setting, competition intensity and a firm's choice to disclose its CSR activities may be jointly determined. For example, a firm may strategically use its financing policy to affect market competition by hurting the profitability of its rivals and driving them out of the market (Valta 2012). In addition, the probability of the firm disclosing CSR information may be affected by its financing decisions (Dhaliwal et al. 2011). To address this concern, we exploit a

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17. Supporting this view, Dhaliwal et al. (2011, footnote 8) find that on average, stand-alone CSR reports are significantly more comprehensive (28 pages vs. less than 2 pages) and discuss significantly more CSR issues (6.4 issues vs. 1.5 issues) than the CSR disclosure in firms' annual reports (i.e., integrated CSR reports).
 18. In our additional analyses, we examine the effect of PMC on the CSR information voluntarily provided in firms' annual reports (i.e., integrated CSR reporting). Our inference remains unchanged.
 19. We then collect financial statement data from Compustat, stock return data from CRSP, CSR performance data from MSCI (formerly KLD), management earnings guidance data from the First Call database, and US import data from the website of Professor Peter Schott (<http://faculty.som.yale.edu/peterschott/>). We require that no data be missing to construct the test and control variables.
 20. The sample is smaller using the tariff-cut proxy for product market competition than the samples that use the other proxies for product market competition, because import tariff data is available only for firms in the manufacturing industry.

quasi-natural experimental setting using a large reduction in import tariff rates as an exogenous shock that radically increases the competitive pressure on domestic firms (Fresard 2010; Huang et al. 2017; Valta 2012) and use a DiD design to examine the change in the CSR reporting practices of firms in response to this exogenous shock to their competitive environment.

Import tariff rates are an appreciable trade cost (Anderson and Van Wincoop 2004). Higher rates reduce pressure from foreign competition on domestic firms by imposing additional costs on imported goods and services, thereby increasing the price of these goods and services relative to the price of domestically produced goods and services. A general consensus in the international trade literature (Bernard et al. 2006; Guadalupe and Wulf 2010; Tybout 2003) is that lowering trade barriers and reducing tariff rates reduce the costs of entry into domestic product markets for foreign companies and increase the presence of foreign goods and services in domestic markets, which puts competitive pressure on domestic firms.²¹

We first identify all industries that experience a large reduction in import tariff rates during our sample period. We define a large reduction as an import tariff reduction that is at least three times the sample median tariff reduction (Fresard 2010; Huang et al. 2017; Valta 2012).²² We then define *Comp_TariffCut* as an indicator variable equal to one if an industry in which a firm operates experiences a large reduction in import tariffs in year *t*, and zero otherwise. Following recent studies on the corporate consequences of exogenous shocks (Huang et al. 2017), we adopt a staggered DiD research design when testing the effect of this large tariff reduction on CSR disclosure.

Alternative measures of PMC

Drawing on the literature (Chen et al. 2015; Fresard 2010; Hoberg and Phillips 2016; Karuna 2007; Li et al. 2013; Valta 2012), we also use several alternative proxies to measure PMC intensity. Doing so allows us to capture the different dimensions of PMC that companies face. Following Chen et al. (2015), we use nonprice competition (*Comp_NonPrice*) as our first alternative proxy for PMC. *Comp_NonPrice* is calculated as the sum of firm-level advertising expenditure and R&D expenses divided by the sum of firm-level sales in an industry. This measure is based on the argument from the economics literature that increasing advertising and R&D expenses is a nonprice approach to increasing the demand for a product or service (Chen et al. 2015). A higher value of *Comp_NonPrice* corresponds to greater nonprice competition.

Our second alternative proxy for PMC is the text-based product similarity score (*Comp_ProdSimilarity*). Hoberg and Phillips (2016) provide firm-by-firm pairwise similarity scores by parsing product descriptions from firms' 10-K filings and forming word vectors for each firm to compute continuous measures of product similarity for each firm pair each year. A higher value of *Comp_ProdSimilarity* corresponds to higher PMC.

Our third alternative proxy for PMC is the intensity of competition perceived by managers (*Comp_MgmPerception*), as suggested by Li et al. (2013). It is recommended by the SEC that a discussion of a firm's competitive position be included in the Management Discussion and Analysis (MD&A) section of the firm's 10-K filing. The MD&A section is therefore a valuable resource for measuring managers' perceptions of competition. *Comp_MgmPerception* is calculated as the number of occurrences of the terms "competition," "competitor," "competitive," "compete," and

21. Research documents that as the tariff rate decreases, US firms in affected industries experience substantially higher import penetration (Huang et al. 2017; Valta 2012), reduced profitability and market power (Huang et al. 2017; Katics and Petersen 1994; Xu 2012), and a higher probability of plant closure (Bernard et al. 2006), which is consistent with the argument that competition increases for domestic firms after a reduction in tariff rates.

22. In robustness tests (untabulated), we find qualitatively similar results if we (i) use the sample mean tariff reduction as the cut-off value, (ii) define a large tariff reduction as being at least twice the sample mean or median tariff reduction, and (iii) exclude the tariff reduction of industries that also experienced an increase in their tariff rate of more than 50% of the reduction in the previous or following five years.

“competing” scaled by the total number of words in the MD&A section of a firm’s 10-K filing. This measure represents management concerns about PMC at the firm level.

Measures of CSR disclosure

To test H1, we use several variables to measure the different dimensions of a firm’s overall CSR reporting (*CSRR*), namely (i) incidence (*Ind(CSRR)*), (ii) frequency (*Num(CSRR)*), (iii) number of pages (*Page(CSRR)*), and (iv) number of words (*Word(CSRR)*) in a firm’s CSR reports. *Ind(CSRR)* is an indicator variable equal to one if a firm voluntarily provides a stand-alone CSR report in a given year, and zero otherwise. *Num(CSRR)* is the frequency (or total number) of voluntary stand-alone CSR reports issued by a firm in a given year. *Page(CSRR)* (*Word(CSRR)*) is the total number of pages (words) of all stand-alone CSR reports voluntarily issued by a firm in a given year. To test H2, we introduce a set of additional CSR reporting variables pertaining to product-related CSR reporting (*CSRR_P*), namely (v) *Ind(CSRR_P)*, (vi) *Num(CSRR_P)*, (vii) *Page(CSRR_P)*, and (viii) *Word(CSRR_P)*, and control for the corresponding overall CSR reporting in the regressions.²³

Control variables

Following prior studies (Dhaliwal et al. 2011), we control for factors that may affect firms’ stand-alone CSR reports, including factors that may incentivize or disincentivize CSR disclosure and the voluntary disclosure policy and financial disclosure quality of firms, as discussed below. The literature (Johnson 1966; Lev et al. 2010) suggests that doing good helps firms do well financially (i.e., their CSR performance increases their financial performance). Following this logic, firms are more likely to improve their financial performance by increasing their CSR activities in the face of severe competition. This increase in CSR activities is likely to lead to an increase in CSR reporting as part of the firms’ efforts to increase CSR awareness among their stakeholders (Clarkson et al. 2018; Dhaliwal et al. 2011). Thus, the actual CSR performance of a firm is an important variable that may correlate with both PMC and CSR reporting. Therefore, we control for CSR performance (*CSRPERF*).²⁴ When testing H2 on the effect of PMC on product-related CSR disclosure, we also control for a firm’s overall CSR disclosure in the current year (*CSRR*).²⁵

Firm size (*SIZE*) is included because larger firms may face more public pressure or have more financial resources to engage in CSR reporting (Lang and Lundholm 1993). We include return on assets (*ROA*) to control for the effect of profitability, as firms with better financial performance are likely to engage more in CSR activities and CSR reporting (Dhaliwal et al. 2011). The financial leverage ratio (*LEVERAGE*) is included because firms with higher leverage are subject to increased monitoring from debtholders, who may demand more disclosure (Leftwich et al. 1981). We use foreign income to control for the global activities of firms (*GLOBAL*), as firms with a global focus tend to face greater pressure to commit to CSR activities and disclosure. Research shows that voluntary disclosure can improve information transparency, which reduces adverse selection and improves stock liquidity (Bischof and Daske 2013). Consequently, firms with low liquidity may voluntarily disclose more CSR information to improve stock liquidity. Therefore, we control for stock liquidity (*LIQUIDITY*) and expect the sign of the coefficient to be negative.

23. We also adopt an alternative approach by calculating each measure of product-related CSR reporting as a proportion of overall CSR reporting (without controlling for overall CSR reporting in the regressions) and find that our inferences remain unchanged. For brevity, we do not tabulate the results.
24. *CSRPERF* is defined as the industry-adjusted total CSR strength scores for the six major CSR rating categories obtained from the KLD Research and Analytics database—that is, (i) environment, (ii) community, (iii) human rights, (iv) employee relations, (v) diversity, and (vi) product. We obtain consistent results when using the net KLD index and subtracting concerns from strengths (Tsang, Hu et al. 2021; Tsang, Wang et al. 2021).
25. The specific measure of *CSRR* depends on the dimension of product-related CSR disclosure examined. For example, *CSRR* is measured as *Ind(CSRR)* when *Ind(CSRR_P)* is the dependent variable and as *Num(CSRR)* when *Num(CSRR_P)* is the dependent variable.

The effects of external financing needs and growth opportunities on firms' choice in terms of CSR disclosure are unclear ex ante. Firms with greater external financing needs or growth opportunities may issue more CSR disclosure to attract investors and reduce the cost of financing, as they tend to face higher levels of information asymmetry (Dhaliwal et al. 2011; Frankel et al. 1995). However, these firms are more financially constrained and have fewer slack resources for CSR activities, which in turn may reduce their CSR disclosure. Given the conflicting theoretical predictions, we control for financing needs using *FINANCE* and for growth opportunities using Tobin's Q (*TOBINQ*) but do not predict the signs of their coefficients.

In addition to the above factors, which may potentially incentivize or disincentivize CSR disclosure, we include a management forecast indicator (*FORECAST*) and earnings quality (*ACCRUALS*) to control for the voluntary disclosure policy and financial disclosure quality of firms, respectively. The CSR practices of firms, including their CSR reporting, may be associated with their general disclosure policies and financial transparency (Kim et al. 2012). We calculate *ACCRUALS* as the absolute value of abnormal accruals estimated using the modified Jones model.²⁶ Appendix 1 provides detailed definitions of the variables.

Methodology

To test H1, we run the following model:

$$CSRR_{i,j,t} = \beta_0 + \beta_1 Comp_{i,j,t} + \beta_2 CSRPERF_{i,j,t-1} + \sum_s \beta_s Other\ controls_{i,j,t-1} + \sum_y \beta_y Firm\ FE + \sum_n \beta_n Year\ FE + \varepsilon_{i,j,t}. \quad (1)$$

To test H2 on the effect of PMC on CSR reporting with product information, we run the following model:

$$CSRR_P_{i,j,t} = \beta_0 + \beta_1 Comp_{i,j,t} + \beta_2 CSRR_{i,j,t} + \beta_3 CSRPERF_{i,j,t-1} + \sum_s \beta_s Other\ controls_{i,j,t-1} + \sum_y \beta_y Firm\ FE + \sum_n \beta_n Year\ FE + \varepsilon_{i,j,t}. \quad (2)$$

Here, subscripts *i*, *j*, and *t* refer, respectively, to firm *i*, industry *j*, and year *t*. *CSRR* (*CSRR_P*) represents the different CSR reporting variables (product-related CSR reporting variables) defined in the "Measures of CSR disclosure" section. *Comp* represents the different competition measures discussed in the "Measures of PMC" section. In equation (1), we include firms' CSR performance (*CSRPERF*) and other controls discussed in the "Control variables" section. In equation (2), we include *CSRR* as an additional control to test the incremental effect of PMC on product-related CSR disclosure over overall CSR disclosure. Finally, firm and year fixed effects are included in all regressions to account for firm-invariant characteristics and unobserved heterogeneity that varies over time, respectively.

When *Comp_TariffCut* is used as the measure of competition, equations (1) and (2) represent a staggered DiD specification (Huang et al. 2017) that accounts for the staggered reduction in import tariff rates occurring in different industries in different years. In this design, firms in industries that do not experience a large reduction in import tariff rates in a given year serve as the control group and firms in industries that experience a large

26. In a robustness test, we use an alternative measure of abnormal accruals based on the ranking value of the absolute value of abnormal accruals (*RANK_ABSACC*), which is calculated by ranking *ACCRUALS* for each industry and year. The results of our test variable are similar.

TABLE 1
Descriptive statistics and univariate analysis

Variables	Mean	SD	25%	Median	75%
Main CSR reporting variables (N = 13,989)					
<i>Ind(CSRR)</i>	0.080	0.271	0.000	0.000	0.000
<i>Ind(CSRR_P)</i>	0.061	0.240	0.000	0.000	0.000
<i>Num(CSRR)</i>	0.089	0.319	0.000	0.000	0.000
<i>Num(CSRR_P)</i>	0.062	0.246	0.000	0.000	0.000
<i>Page(CSRR)</i>	3.130	14.288	0.000	0.000	0.000
<i>Page(CSRR_P)</i>	0.434	2.366	0.000	0.000	0.000
<i>Word(CSRR)</i> (in thousands)	0.931	4.947	0.000	0.000	0.000
<i>Word(CSRR_P)</i> (in thousands)	0.112	0.795	0.000	0.000	0.000
CSR reporting variables (within CSR report sample, N = 1,120)					
<i>Ind(CSRR)</i>	1.000	0.000	1.000	1.000	1.000
<i>Ind(CSRR_P)</i>	0.757	0.429	1.000	1.000	1.000
<i>Num(CSRR)</i>	1.126	0.370	1.000	1.000	1.000
<i>Num(CSRR_P)</i>	0.770	0.452	1.000	1.000	1.000
<i>Page(CSRR)</i>	38.623	33.868	17.000	30.000	50.000
<i>Page(CSRR_P)</i>	5.360	6.536	0.000	3.000	8.000
<i>Word(CSRR)</i> (in thousands)	11.756	13.558	2.847	8.016	16.099
<i>Word(CSRR_P)</i> (in thousands)	1.381	2.462	0.000	0.488	1.779
PMC variables (N = 9,774 for <i>Comp_TariffCut</i>; N = 13,989 for other measures)					
<i>Comp_TariffCut</i>	0.177	0.381	0.000	0.000	0.000
<i>Comp_NonPrice</i>	0.046	0.038	0.006	0.047	0.074
<i>Comp_ProdSimilarity</i>	3.742	4.851	1.290	1.985	3.912
<i>Comp_MgmPerception</i>	0.336	0.294	0.151	0.258	0.428
Control variables (N = 13,989)					
<i>CSRPERF</i>	1.477	2.334	0.000	1.000	2.000
<i>SIZE</i>	7.311	1.556	6.189	7.123	8.262
<i>ROA</i>	0.042	0.140	0.015	0.054	0.099
<i>FINANCE</i>	0.029	0.198	−0.043	−0.001	0.034
<i>TOBINQ</i>	1.818	1.423	0.954	1.369	2.160
<i>LEVERAGE</i>	0.213	0.206	0.021	0.190	0.326
<i>GLOBAL</i>	0.562	0.496	0.000	1.000	1.000
<i>LIQUIDITY</i>	0.939	0.100	0.911	0.998	1.000
<i>FORECAST</i>	0.436	0.496	0.000	0.000	1.000
<i>ACCRUALS</i>	0.228	0.602	0.028	0.075	0.206

Notes: This table presents the summary statistics for variables used in the regression analyses. Refer to [Appendix 1](#) for variable definitions.

reduction in import tariff rates in that year serve as the treatment group. The coefficient on *Comp_TariffCut* is the DiD estimate, which captures the average effect of the tariff reduction on CSR disclosure and product-related CSR disclosure for the treatment group relative to the control group. We use OLS regressions for all of the models.²⁷ As PMC reporting

27. Because our model includes a large number of firm fixed effects, we follow prior studies (Huang et al. 2017) and adopt OLS regression (a linear probability model) for dichotomous dependent variables to avoid the incidental parameter problem and potential bias or inconsistency in the coefficient estimates and standard errors (Angrist and Pischke 2009; Greene 2004). A linear probability model is particularly useful for interpreting the marginal effects and the economic significance of the findings (Angrist and Pischke 2009). Nevertheless, our inferences are unchanged when using a logit model (untabulated results).

and CSR reporting tend to cluster by industry and by year, we cluster all standard errors by industry and by year to account for the possible correlation between firms at the industry and year levels (Petersen 2009).²⁸

4. Results

Descriptive statistics

Table 1 reports the descriptive statistics of our key variables. Consistent with prior studies, a small percentage of firms provide stand-alone CSR reports during our sample period (8% and 6% for overall CSR reporting and product-related CSR reporting, respectively). Over 17% of the firm-years in the sample experienced a large reduction in tariff rates, which is similar to previously reported statistics (e.g., 19.6% reported by Huang et al. 2017). The mean values are 0.046, 3.742, and 0.336 for nonprice competition (*Comp_NonPrice*), the product similarity score (*Comp_ProdSimilarity*), and the intensity of competition perceived by managers (*Comp_MgmPerception*), respectively; these values are comparable to those reported in previous studies (Li et al. 2013; Chen et al. 2015; Hoberg and Phillips 2016).²⁹

The results show an average of approximately 38.6 pages and 11,756 words (*Page(CSRR)* and *Word(CSRR)*, respectively) per stand-alone CSR report, with 5.4 pages (14%) and 1,381 words (11.7%) dedicated to product-related disclosure (*Page(CSRR_P)* and *Word(CSRR_P)*, respectively). The level of product-related content included in the CSR reports is thus nontrivial. Table 1 also shows that the firms in our sample are profitable, with an average *ROA* of 4.2%, and that most have foreign income. In addition, more than 40% of the firms voluntarily issue earnings forecasts.

Table 2 presents the correlation matrix of our key variables, with Pearson's (Spearman's rank) correlation coefficients given in the lower (upper) triangle. The CSR reporting variables are negatively correlated with our proxies for PMC, with the exception of *Comp_NonPrice*. This confirms the importance of using multiple proxies. In addition, consistent with the literature, all of the CSR reporting variables tend to be positively correlated with larger and more globally oriented firms, firms issuing earnings forecasts, and firms with more CSR strengths.

Regression results obtained using import tariff reduction as a proxy for PMC

Table 3 reports the results of testing H1 (H2) on the impact of PMC on overall (product-related) CSR reporting in columns (1), (3), (5), and (7) (columns (2), (4), (6), and (8)). The coefficients on *Comp_TariffCut* are significantly negative across all of the CSR reporting variables. These results indicate that greater competitive pressure reduces firms' incentive to engage in overall CSR reporting and product-related CSR reporting, rejecting our null hypotheses that PMC is not related to CSR reporting (H1) or product-related CSR reporting (H2). The effects are also economically significant. For example, relative to firms in industries with no large tariff reduction, firms that experience a large tariff reduction reduce the incidence, frequency, number of pages, and number of

28. The results are similar when we use robust standard errors clustered by firm.

29. Untabulated summary statistics show that the CSR reporting variables for the sample of firms that experienced a large reduction in tariff rates are smaller than those for the sample of firms that did not experience such a reduction. In addition, the results (untabulated) of splitting the sample into high and low PMC subgroups based on the sample median of each alternative competition measure show that the CSR reporting variables are generally smaller in the high PMC group than in the low PMC group across all measures. These results provide preliminary evidence that PMC is negatively associated with voluntary CSR disclosure.

TABLE 2
Correlation matrix of selected variables (Pearson/Spearman)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1 <i>Ind(CSRR)</i>	1.00	0.99	0.84	0.84	0.84	0.84	0.91	0.73	-0.04	0.00	0.02	-0.13	0.33	0.33	0.00	0.04	-0.06	-0.02	0.07	0.10	-0.14	0.06	-0.03
2 <i>Ind(CSRR_P)</i>	0.94	0.99	0.84	0.84	0.84	0.84	0.92	0.72	-0.02	0.01	0.02	-0.13	0.33	0.33	0.00	0.04	-0.06	-0.02	0.07	0.10	-0.14	0.06	-0.03
3 <i>Num(CSRR)</i>	0.73	0.78	0.84	0.84	0.84	0.85	0.92	0.73	-0.04	0.01	0.01	-0.13	0.33	0.33	0.00	0.04	-0.07	-0.02	0.07	0.11	-0.14	0.06	-0.03
4 <i>Num(CSRR_P)</i>	0.84	0.81	0.66	1.00	0.99	0.99	0.79	0.85	-0.03	0.01	0.01	-0.11	0.30	0.28	0.00	0.03	-0.07	-0.03	0.07	0.10	-0.14	0.06	-0.04
5 <i>Page(CSRR)</i>	0.81	0.78	0.64	0.99	0.99	0.99	0.78	0.85	-0.04	0.01	0.01	-0.11	0.30	0.28	0.00	0.03	-0.07	-0.03	0.07	0.10	-0.14	0.06	-0.04
6 <i>Page(CSRR_P)</i>	0.63	0.64	0.65	0.73	0.71	0.79	0.79	0.86	-0.04	0.01	0.01	-0.11	0.30	0.28	0.00	0.03	-0.06	-0.03	0.07	0.10	-0.13	0.06	-0.04
7 <i>Word(CSRR)</i>	0.66	0.72	0.87	0.61	0.59	0.59	0.80	-0.03	0.01	0.00	-0.12	0.30	0.30	0.30	0.00	0.03	-0.06	-0.03	0.07	0.10	-0.13	0.05	-0.03
8 <i>Word(CSRR_P)</i>	0.49	0.41	0.41	0.57	0.55	0.68	0.54	-0.03	0.01	0.00	-0.08	0.25	0.23	0.00	0.02	-0.06	-0.04	0.06	0.09	-0.13	0.05	-0.04	
9 <i>Comp_TariffCut</i>	-0.04	-0.02	-0.03	-0.03	-0.01	0.00	-0.01	-0.01	-0.01	-0.01	0.01	-0.05	-0.09	-0.10	0.01	0.05	0.04	0.01	-0.11	0.02	0.08	-0.01	-0.01
10 <i>Comp_NonPrice</i>	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.00	-0.01	-0.07	0.24	0.07	-0.01	0.39	0.08	-0.07	0.34	-0.25	0.38	-0.08	0.05	0.37
11 <i>Comp_ProdSimilarity</i>	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.03	-0.02	0.01	0.12	0.08	0.06	0.10	0.22	0.22	0.10	0.12	0.04	0.03	-0.18	0.21	-0.07	0.03
12 <i>Comp_MgmPerception</i>	-0.09	-0.09	-0.08	-0.08	-0.08	-0.06	-0.08	-0.05	-0.03	0.17	0.05	-0.10	-0.15	0.16	0.16	0.02	0.04	0.21	-0.18	0.01	0.10	-0.04	0.13
13 <i>CSRPERF</i>	0.40	0.40	0.36	0.37	0.37	0.33	0.35	0.25	-0.08	0.11	0.00	-0.06	0.48	0.06	0.02	-0.12	-0.02	0.08	0.14	-0.15	0.10	-0.04	0.13
14 <i>SIZE</i>	0.29	0.28	0.20	0.25	0.26	0.17	0.20	0.13	-0.04	0.04	0.03	-0.02	0.49	0.02	0.24	-0.10	0.21	0.16	0.16	-0.18	0.18	-0.08	-0.08
15 <i>LITIGATION</i>	0.00	0.01	0.00	0.00	0.00	0.01	-0.01	0.00	0.01	0.39	0.30	0.10	0.08	0.11	0.01	0.00	0.17	-0.16	0.05	0.06	0.02	0.08	0.08
16 <i>ROA</i>	0.04	0.04	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.00	-0.13	0.03	0.05	0.12	-0.01	-0.11	0.54	-0.30	0.06	-0.08	0.10	0.02	0.02
17 <i>FINANCE</i>	-0.06	-0.06	-0.04	-0.06	-0.06	-0.05	-0.04	-0.04	0.04	-0.02	0.13	0.03	-0.11	-0.06	-0.01	-0.09	-0.02	0.13	-0.11	0.21	-0.06	0.06	0.06
18 <i>TOBINQ</i>	-0.02	-0.01	-0.01	-0.02	-0.02	-0.01	-0.02	-0.03	0.00	0.30	0.16	0.18	0.03	0.18	0.22	0.33	0.05	-0.31	0.08	0.07	0.02	0.16	0.16
19 <i>LEVERAGE</i>	0.04	0.04	0.03	0.04	0.04	0.04	0.02	0.03	-0.10	-0.20	0.03	-0.10	0.03	-0.02	-0.13	-0.23	0.15	-0.23	-0.14	-0.10	0.06	-0.14	0.09
20 <i>GLOBAL</i>	0.10	0.10	0.09	0.10	0.10	0.07	0.08	0.05	0.02	0.36	-0.13	-0.01	0.15	0.11	0.05	0.03	-0.08	0.05	-0.15	-0.17	0.04	0.09	0.06
21 <i>LIQUIDITY</i>	-0.13	-0.12	-0.09	-0.12	-0.13	-0.07	-0.09	-0.05	0.07	-0.08	0.18	0.06	-0.16	-0.09	0.04	-0.08	0.16	0.05	-0.07	-0.13	-0.08	0.06	-0.01
22 <i>FORECAST</i>	0.06	0.05	0.04	0.06	0.05	0.06	0.02	0.04	-0.01	0.07	-0.08	-0.05	0.11	0.06	0.02	0.09	-0.04	0.01	0.01	0.04	-0.06	-0.01	-0.01
23 <i>ACCRUALS</i>	0.00	0.01	0.00	-0.01	-0.01	-0.02	0.00	-0.01	0.00	0.25	0.03	0.03	0.00	-0.01	0.05	-0.01	0.05	0.05	0.01	0.05	0.02	-0.02	-0.02

Notes: This table reports a correlation matrix of the key variables. Pearson's correlation coefficients are shown in the lower triangle, including the diagonal, while Spearman's rank correlations appear above the diagonal. The sample size for the correlation between *Comp_TariffCut* and other variables is 9,774. The sample size for other correlations is 13,989. Bold type indicates that the correlations are statistically significant at the 5% level based on two-tailed tests. Refer to [Appendix 1](#) for variable definitions.

TABLE 3
Tariff cut and CSR disclosure

DV	(1) <i>Indl(CSRR)</i>	(2) <i>Indl(CSRR_P)</i>	(3) <i>Numl(CSRR)</i>	(4) <i>Numl(CSRR_P)</i>	(5) <i>Page(CSRR)</i>	(6) <i>Page(CSRR_P)</i>	(7) <i>Word(CSRR)</i>	(8) <i>Word(CSRR_P)</i>
<i>Comp_TariffCut</i>	-0.2706 (-16.98)***	-0.0091 (-3.32)***	-0.4417 (-24.39)***	-0.0099 (-2.51)**	-34.4911 (-56.53)***	-0.8519 (-5.98)***	-8.8685 (-57.63)***	-0.3119 (-3.73)***
<i>CSRR</i>		0.7053 (38.76)***		0.6915 (20.11)***		0.3554 (62.14)***		0.1072 (24.98)***
<i>CSRPERF</i>	0.0324 (15.10)***	0.0032 (27.01)***	0.0377 (31.70)***	0.0036 (1.91)*	1.8491 (12.43)***	0.4725 (2.87)***	0.4420 (7.98)***	0.1073 (4.17)***
<i>SIZE</i>	0.0001 (1.92)	-0.0000 (-1.07)	0.0001 (1.21)	-0.0000 (-0.58)	0.0001 (0.59)	-0.0000 (-1.20)	0.0001 (0.56)	-0.0000 (-2.25)
<i>ROA</i>	0.0089 (0.36)	-0.0027 (-0.60)	0.0045 (0.21)	-0.0030 (-0.41)	0.2249 (0.21)	0.2700 (1.50)	0.1913 (0.64)	0.1408 (0.89)
<i>FINANCE</i>	0.0065 (0.86)	-0.0083 (-12.81)***	0.0103 (0.91)	-0.0098 (-2.28)**	0.3376 (0.91)	0.0316 (0.19)	0.1031 (1.06)	-0.0036 (-0.18)
<i>TOBINQ</i>	-0.0112 (-4.29)***	0.0002 (0.06)	-0.0129 (-4.59)***	0.0001 (0.12)	-0.5617 (-2.59)***	-0.0637 (-0.75)	-0.1577 (-1.44)	-0.0225 (-2.01)**
<i>LEVERAGE</i>	-0.0196 (-0.89)	-0.0145 (-0.93)	-0.0357 (-1.16)	-0.0182 (-1.72)*	-2.3724 (-1.59)	-0.6673 (-1.43)	-0.6989 (-1.65)*	-0.3033 (-1.84)*
<i>GLOBAL</i>	0.0170 (2.58)***	0.0187 (3.45)***	0.0240 (2.46)**	0.0193 (1.69)*	0.0173 (0.04)	-0.2026 (-1.48)	0.0003 (0.00)	-0.0438 (-1.16)
<i>LIQUIDITY</i>	-0.0922 (-4.58)**	0.0408 (1.09)	-0.0983 (-4.66)***	0.0279 (0.84)	-2.2638 (-1.99)**	1.6316 (3.75)***	-0.5977 (-1.53)	0.4587 (1.52)
<i>FORECAST</i>	0.0087 (1.12)	-0.0008 (-0.19)	0.0068 (0.70)	-0.0023 (-0.42)	-0.1971 (-0.36)	-0.3812 (-2.59)***	-0.1370 (-1.23)	-0.1482 (-1.97)**
<i>ACCRUALS</i>	0.0104 (3.12)***	0.0067 (1.63)	0.0126 (2.58)***	0.0077 (5.00)***	0.4720 (1.57)	0.0254 (0.08)	0.1101 (0.92)	-0.0169 (-1.04)
Firm and year fixed effects	Included	Included	Included	Included	Included	Included	Included	Included
Obs.	9,774	9,774	9,774	9,774	9,774	9,774	9,774	9,774
Adj. <i>R</i> ²	0.570	0.784	0.610	0.738	0.443	0.620	0.336	0.501

Notes: This table reports the regression results for testing the effect of tariff reductions on overall CSR reporting (columns (1), (3), (5), and (7)) and product-related CSR reporting (columns (2), (4), (6), and (8)). All firm-level continuous variables are winsorized at the 1st and the 99th percentiles. All regressions include firm and year fixed effects with robust standard errors clustered by industry and year. *t*-statistics based on robust standard errors clustered by industry and year are given in parentheses. ***, **, and * indicate that the estimated coefficients are statistically significant at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. Refer to [Appendix 1](#) for variable definitions.

words in their CSR reports by 27%, 44%, 89% (34.49/38.62), and 75% (8.87/11.76), respectively.^{30,31}

The coefficients of the control variables generally have the expected signs and are consistent across different measures of CSR reporting. For example, *CSRPERF* is significantly positively associated with all of our CSR reporting measures, which is consistent with the argument that firms with more CSR activities are more likely to demonstrate their CSR commitment (Clarkson et al. 2018; Dhaliwal et al. 2011). Firms with a global focus tend to issue more CSR reports, supporting the idea that firms tend to commit to more disclosure when investors' demand for information is greater (Chen et al. 2019; Leftwich et al. 1981). However, firms tend to refrain from publishing CSR reports when they have better growth opportunities (as proxied by *TOBINQ*), suggesting that these firms are more financially constrained and have fewer slack resources for CSR activities and disclosure.

One concern with the DiD design is that the reduction in CSR reporting may precede the reduction in tariffs. To address this concern, we follow prior studies (Bourveau et al. 2018; Tsang, Hu, et al. 2021; Tsang, Wang, et al. 2021; Wang et al. 2020) and conduct a trend analysis by decomposing the occurrence of a tariff reduction into separate periods relative to the tariff reduction event in year t for each industry.³² This dynamic DiD model allows us to examine the difference in CSR reporting between the treatment and control firms during the four years preceding the tariff reduction. Table 4 presents the corresponding results. We do not find a systematic difference in CSR reporting in the years leading up to the tariff reduction. While the parallel trends assumption appears to be violated in some pre-treatment years (mostly in year $t - 3$), for the majority of the models, the violation seems to be fairly minor, as the economic magnitude of the significant coefficients in the pre-period appears to be quite small relative to the size of the treatment effect in year t .^{33,34} Overall, the results indicate that the reduction in the likelihood,

-
30. Controlling for overall CSR reporting, the incidence, frequency, number of pages, and number of words for product disclosure in the CSR reports decrease by 0.91%, 0.99%, 15.9% (0.8519/5.36), and 22.6% (0.3119/1.38), respectively, following the tariff reduction.
 31. We attribute the greater effect of the tariff reduction on the probability and frequency of firms providing CSR reports to a greater level of managerial discretion in determining whether to provide a stand-alone CSR report than in determining whether to disclose product-related information conditional on CSR reporting. For example, to the extent that CSR reports containing product-related information represent an important channel for promoting products, firms may be more concerned about reducing such disclosure in their CSR reports. In addition, although our study focuses on product-related proprietary information in CSR disclosure, it is possible that firms consider other information (e.g., information on environmental commitment and community involvement) to be proprietary and thus would like to reduce such information disclosure when the level of PMC is high.
 32. These period indicators are *Comp_TariffCut_{t-4}*, *Comp_TariffCut_{t-3}*, *Comp_TariffCut_{t-2}*, *Comp_TariffCut_{t-1}*, *Comp_TariffCut_t*, *Comp_TariffCut_{t+1}*, *Comp_TariffCut_{t+2}*, and *Comp_TariffCut_{t+3}&After*. *Comp_TariffCut_{t-4}* is an indicator variable equal to one for four years before the tariff reduction in the industry, and zero otherwise, with year t being the tariff reduction year. The other indicator variables are defined analogously.
 33. For the models where the violations appear to be meaningful (e.g., Table 4, columns (6) to (8)), those results should be interpreted with caution.
 34. We note that there are few positive and significant coefficients in the pre-tariff reduction periods. Although these results appear random and do not indicate a systematic trend, we still conduct a test to exclude the concern that the reduction in CSR reporting during the different post-tariff reduction periods may simply capture mean reversion (i.e., CSR disclosure returning to normal levels). Specifically, we test whether the sum of the coefficients on *Comp_TariffCut* from $t - 4$ to $t + 2$ is different from zero. Table 4 shows that the sum of the coefficients is significantly negative across all models, indicating that our results are unlikely to be driven by mean reversion.

frequency, and length of the CSR reports following the tariff reduction is unlikely to be driven by the preexisting trend in CSR reporting.³⁵

In addition, we find that firms experience a decrease in CSR disclosure for all of the post-tariff reduction subperiods and that this decrease appears to last during the post-tariff reduction periods. Notably, across all measures of CSR reporting except for *Page(CSRR_P)*, the tariff reduction year saw the largest reduction in CSR reporting, suggesting that firms react most strongly when the shock to firms' competitive environment is the strongest.³⁶

To more intuitively illustrate the effect of the tariff reduction on CSR reporting, Figure 1 presents a graphical representation of the coefficients for the year indicator variables and their 90% confidence intervals. We observe a sharp drop in product-related CSR reporting in the tariff reduction year, suggesting a strong response from firms to the exogenous shock to their competitive environment. The graphs of the other CSR reporting measures (not shown here) reveal a similar pattern.

Regression results obtained using alternative measures of PMC

Table 5 presents the regression results obtained using three alternative measures of PMC to shed further light on the effects of different dimensions of PMC on CSR disclosure. Panel A shows the results obtained using nonprice competition (*Comp_NonPrice*) as the first alternative proxy for PMC. Across the CSR reporting variables, *Comp_NonPrice* is significantly and negatively associated with CSR disclosure. In terms of economic significance, for example, a one unit increase in PMC measured by *Comp_NonPrice* reduces the frequency, number of pages, and number of words in CSR reports by 12%, 11.6% (4.48/38.62), and 10.4% (1.22/11.76), respectively.

To check the robustness of our results, we use two additional alternative PMC measures based on the textual analysis of firms' 10-K filings: product similarity (*Comp_ProdSimilarity*) and management perceptions of competition intensity (*Comp_MgmPerception*). Unlike *Comp_NonPrice*, neither of these PMC measures relies on predetermined industry groups. To the extent that managers develop reasonably accurate perceptions of the type and level of competition they face, *Comp_ProdSimilarity* and *Comp_MgmPerception* should capture the dynamic competitive environment in which firms operate. Panels B and C of Table 5 show significantly negative coefficients on *Comp_ProdSimilarity* and *Comp_MgmPerception*, respectively, across all of the CSR reporting variables.³⁷ Together, the results in Table 5 are consistent with our main finding that an increase in PMC intensity reduces CSR reporting.

35. We also conduct a placebo test (untabulated) for the post-tariff reduction periods. If the documented reduction in CSR reporting is simply due to unknown time-varying variables or time trends and is not the result of the tariff reduction, we expect CSR reporting to decrease in the placebo test. To conduct this test, we redefine the post-tariff reduction periods by increasing the actual tariff reduction years by three, four, and five years. We find no evidence that firms reduce their CSR reporting after these pseudo tariff reduction years, indicating that the observed reduction in CSR reporting is indeed attributable to the reduction in import tariffs.

36. A potential explanation for why the treatment effect dissipates over time is that firms could react really strongly in the tariff reduction year to increased competition, and then become less concerned over time as they find ways to deal with it (we thank an anonymous referee for suggesting this possible explanation). In addition, prior studies suggest that firms' CSR decisions can be affected by peer firms' CSR practices (Cao et al. 2019; Gupta et al. 2021; Husted et al. 2016). For example, Cao et al. (2019) document that firms tend to adopt similar CSR practices after their industry competitors pass and implement a CSR proposal. Thus, another plausible explanation for the dissipating effect of tariff reductions on CSR reporting is that, with a growing number of competitors over time following the tariff reductions, the proprietary cost concerns of CSR reporting become smaller when more firms are adopting similar CSR strategies because of peer effect of CSR.

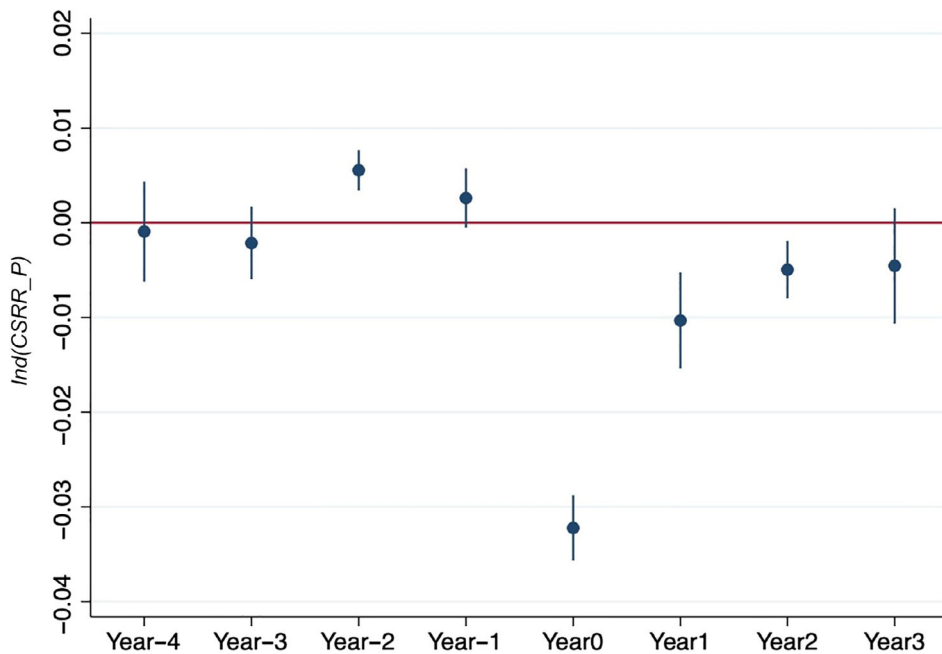
37. In panels B and C, we do not report the coefficients of the control variables (which are generally similar to those reported in panel A of Table 6) for brevity.

TABLE 4
Trend analysis of the relation between tariff cuts and CSR disclosure

DV	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>Ind(CSRR)</i>	<i>Ind(CSRR_P)</i>	<i>Num(CSRR)</i>	<i>Num(CSRR_P)</i>	<i>Page(CSRR)</i>	<i>Page(CSRR_P)</i>	<i>Word(CSRR)</i>	<i>Word(CSRR_P)</i>
<i>Comp_TariffCut_{t-4}</i> ⁽¹⁾	0.0071 (2.08)**	-0.0009 (-0.24)	0.0120 (1.46)	-0.0017 (-0.44)	0.7060 (1.41)	0.0869 (1.88)	0.1623 (0.70)	0.0132 (0.59)
<i>Comp_TariffCut_{t-3}</i> ⁽²⁾	-0.0078 (-2.86)***	-0.0021 (-0.77)	-0.0116 (-3.16)***	0.0006 (0.16)	-0.7523 (-3.20)***	-0.0898 (-4.43)***	-0.2889 (-3.20)***	-0.0179 (-2.06)**
<i>Comp_TariffCut_{t-2}</i> ⁽³⁾	0.0039 (0.49)	0.0055 (3.57)***	0.0021 (0.48)	0.0069 (4.46)***	-0.2137 (-0.98)	0.0262 (0.60)	-0.2219 (-9.17)***	-0.0029 (-0.14)
<i>Comp_TariffCut_{t-1}</i> ⁽⁴⁾	-0.0010 (-0.13)	0.0026 (1.14)	-0.0010 (-0.12)	0.0023 (0.98)	-0.1970 (-0.46)	0.0488 (1.51)	0.1806 (0.86)	0.0257 (5.38)***
<i>Comp_TariffCut_t</i> ⁽⁵⁾	-0.1123 (-15.34)***	-0.0322 (-12.74)***	-0.1087 (-10.86)***	-0.0335 (-12.27)***	-2.1071 (-9.52)***	-0.0303 (-2.10)**	-0.3847 (-7.79)***	-0.0221 (-7.09)***
<i>Comp_TariffCut_{t+1}</i> ⁽⁶⁾	-0.0045 (-2.13)**	-0.0103 (-2.78)***	-0.0048 (-1.80)*	-0.0105 (-2.91)***	-0.0976 (-0.42)	-0.1224 (-3.46)***	-0.2223 (-2.56)**	-0.0140 (-0.44)
<i>Comp_TariffCut_{t+2}</i> ⁽⁷⁾	-0.0159 (-2.48)**	-0.0050 (-2.23)**	-0.0181 (-2.57)***	-0.0081 (-2.73)***	-1.0042 (-5.73)***	-0.0591 (-6.18)***	-0.4826 (-7.77)***	-0.0313 (-2.53)**
<i>Comp_TariffCut_{t+3&After}</i>	-0.0221 (-4.06)***	-0.0045 (-1.02)	-0.0277 (-2.48)**	-0.0040 (-0.98)	-1.2605 (-2.80)***	-0.0758 (-6.20)***	-0.3383 (-2.07)**	-0.0140 (-0.36)
Controls	Included	Included	Included	Included	Included	Included	Included	Included
Firm fixed effects	Included	Included	Included	Included	Included	Included	Included	Included
Obs.	9,774	9,774	9,774	9,774	9,774	9,774	9,774	9,774
Adj. R ²	0.659	0.801	0.648	0.763	0.487	0.512	0.427	0.500

t-test of the sum of the coefficients (superscripts (1)–(7))
 $H_0: (1) + (2) + (3) + (4) + (5) + (6) + (7) = 0$
Sum of the coefficients -0.1305
t-statistic (-24.78)***

Notes: This table reports the regression results for a trend analysis of the effect of tariff reductions on overall CSR reporting (columns (1), (3), (5), and (7)) and product-related CSR reporting (columns (2), (4), (6), and (8)). *Comp_TariffCut_{t-4}* is an indicator variable that equals one for four years before the tariff reductions in the industry and zero otherwise, with year *t* being the tariff cut year. The other indicator variables are defined analogously. All firm-level continuous variables are winsorized at the 1st and the 99th percentiles. All regressions include firm and year fixed effects with robust standard errors clustered by industry and year. *t*-statistics based on robust standard errors clustered by industry and year are given in parentheses. ***, **, and * indicate that the estimated coefficients are statistically significant at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. Refer to [Appendix 1](#) for variable definitions.

Figure 1 Effect of large import tariff rate reductions on product-related CSR reporting

Notes: This figure plots the two-tailed 90% confidence interval around each point estimate of the impact of large tariff rate reductions on the incidence of product-related CSR reporting. The x-axis represents the year relative to the year of a large import tariff rate reduction (Year0). The y-axis represents the incidence of product-related CSR reporting ($Ind(CSRR_P)$). Each dot on the graph represents the regression coefficient for the event year from a dynamic DiD regression estimation as reported in column (2) of Table 5.

5. Additional analyses

Product disclosure in CSR reporting and future sales growth

The literature, including survey evidence (Cone 2017; Fernández-Kranz and Santaló 2010; Flammer 2015; Fombrun and Shanley 1990; McWilliams and Siegel 2011), suggests that CSR can be used to differentiate a firm's products from those of its competitors and can contribute to the firm's competitiveness. Thus, we directly test the potential implications of CSR reporting for the future financial performance of firms by examining the relationship between the level of product disclosure, measured as the ratio of the total number of pages dedicated to product-related information to the total number of pages in a given CSR report ($Ratio(Product/Total)$), and future sales growth, measured using $SALESGR_{t+1}$, $SALESGR_{t+2}$, and $SALESGR_{t+3}$.

Consistent with the results of prior studies (Lev et al. 2010; Lys et al. 2015), Table 6 shows a significantly positive association between the issuance of stand-alone CSR reports ($Ind(CSRR)$) and future sales growth across all models. More importantly, the results in columns (1) to (3) indicate a positive association between the level of product disclosure in CSR reports and future sales growth after controlling for the publication of CSR reports. In columns (4) to (6), we replace $Ratio(Product/Total)$ with $Ratio(Product/Total)_{First}$, which is $Ratio(Product/Total)$ measured for the first CSR report issued by a firm during our sample period, and rerun

TABLE 5
Alternative measures of competition

Panel A: Measurement of competition: <i>Comp_NonPrice</i>								
DV	(1) <i>Ind(CSRR)</i>	(2) <i>Ind(CSRR_P)</i>	(3) <i>Num(CSRR)</i>	(4) <i>Num(CSRR_P)</i>	(5) <i>Page(CSRR)</i>	(6) <i>Page(CSRR_P)</i>	(7) <i>Word(CSRR)</i>	(8) <i>Word(CSRR_P)</i>
<i>Comp_NonPrice</i>	-0.0996 (-4.38)***	-0.0086 (-2.57)**	-0.1201 (-4.38)***	-0.0134 (-3.40)***	-4.4849 (-3.92)***	-0.0398 (-0.89)	-1.2232 (-3.60)***	-0.0156 (-1.76)*
<i>CSRR</i>		0.7511 (187.85)***		0.6118 (152.69)***		0.1155 (114.42)***		0.1900 (19.30)***
<i>CSRPERF</i>	0.0308 (8.51)***	0.0019 (1.71)*	0.0361 (7.86)***	0.0030 (2.29)**	1.7787 (5.84)***	0.0678 (4.55)***	0.4408 (4.83)***	0.0002 (2.79)***
<i>SIZE</i>	0.0001 (3.19)***	-0.0001 (-1.50)	0.0001 (2.06)**	0.0001 (0.53)	0.0001 (1.14)	0.0001 (2.95)***	0.0001 (1.25)	0.0001 (0.74)
<i>ROA</i>	0.0203 (1.79)*	-0.0040 (-0.34)	0.0182 (1.35)	0.0008 (0.05)	0.5636 (0.83)	-0.0148 (-0.09)	0.2973 (1.11)	-0.0001 (-0.14)
<i>FINANCE</i>	0.0091 (1.41)	-0.0075 (-1.12)	0.0122 (1.55)	-0.0094 (-1.19)	0.3212 (1.10)	-0.0583 (-0.65)	0.1371 (1.35)	-0.0002 (-1.35)
<i>TOBINQ</i>	-0.0091 (-3.32)***	0.0006 (0.43)	-0.0100 (-3.17)***	-0.0001 (-0.05)	-0.4089 (-2.42)**	0.0165 (0.91)	-0.0990 (-1.33)	0.0001 (0.70)
<i>LEVERAGE</i>	-0.0197 (-1.16)	-0.0140 (-1.22)	-0.0342 (-1.75)*	-0.0102 (-0.75)	-2.4058 (-2.29)**	0.0220 (0.14)	-0.5189 (-1.49)	0.0003 (0.41)
<i>GLOBAL</i>	0.0117 (1.42)	0.0049 (0.94)	0.0164 (1.66)*	0.0044 (0.71)	-0.1582 (-0.37)	-0.0741 (-1.07)	-0.0708 (-0.50)	-0.0004 (-2.18)**
<i>LIQUIDITY</i>	-0.0607 (-4.39)***	0.0043 (0.57)	-0.0607 (-3.82)***	-0.0043 (-0.48)	-1.5090 (-1.98)**	-0.1425 (-1.39)	-0.4634 (-1.85)*	0.0024 (1.30)
<i>FORECAST</i>	0.0142 (1.94)*	-0.0008 (-0.23)	0.0123 (1.44)	0.0018 (0.42)	0.2857 (0.64)	0.0726 (1.48)	0.0134 (0.10)	0.0002 (1.66)*
<i>ACCRUALS</i>	0.0087 (1.90)*	0.0043 (2.08)**	0.0105 (1.89)*	0.0052 (2.12)**	0.3433 (1.45)	0.0301 (1.08)	0.0817 (0.84)	-0.0038 (-0.21)
Firm and year fixed effects	Included	Included	Included	Included	Included	Included	Included	Included
Obs.	13,989	13,989	13,989	13,989	13,989	13,989	13,989	13,989
Adj. <i>R</i> ²	0.509	0.726	0.532	0.638	0.413	0.498	0.398	0.443

(The table is continued on the next page.)

TABLE 5 (continued)

Panel B: Measurement of competition: *Comp_ProdSimilarity*

DV	(1) <i>Ind(CSRR)</i>	(2) <i>Ind(CSRR_P)</i>	(3) <i>Num(CSRR)</i>	(4) <i>Num(CSRR_P)</i>	(5) <i>Page(CSRR)</i>	(6) <i>Page(CSRR_P)</i>	(7) <i>Word(CSRR)</i>	(8) <i>Word(CSRR_P)</i>
<i>Comp_ProdSimilarity</i>								
Controls	−0.0005 (−2.81)*** Included	−0.0004 (−2.90)*** Included	−0.0006 (−2.76)*** Included	−0.0001 (−0.82) Included	−0.0216 (−2.38)** Included	−0.0023 (−1.75)* Included	−0.0056 (−1.90)* Included	−0.0001 (−2.83)*** Included
Firm and year fixed effects	13,989	13,989	13,989	13,989	13,989	13,989	13,989	13,989
Obs.								
Adj. R^2	0.508	0.726	0.531	0.699	0.412	0.600	0.396	0.443

Panel C: Measurement of competition: *Comp_MgmPerception*

DV	(1) <i>Ind(CSRR)</i>	(2) <i>Ind(CSRR_P)</i>	(3) <i>Num(CSRR)</i>	(4) <i>Num(CSRR_P)</i>	(5) <i>Page(CSRR)</i>	(6) <i>Page(CSRR_P)</i>	(7) <i>Word(CSRR)</i>	(8) <i>Word(CSRR_P)</i>
<i>Comp_MgmPerception</i>								
Controls	−0.0174 (−3.02)*** Included	−0.0031 (−2.91)*** Included	−0.0209 (−3.02)*** Included	−0.0042 (−3.33)*** Included	−0.7269 (−2.66)** Included	−0.0492 (−3.75)*** Included	−0.1878 (−2.42)** Included	−0.0047 (−7.86)*** Included
Firm and year fixed effects	6,877	6,877	6,877	6,877	6,877	6,877	6,877	6,877
Obs.								
Adj. R^2	0.458	0.707	0.495	0.615	0.403	0.431	0.386	0.433

Notes: This table reports the regression results for testing the effect of competition on overall CSR reporting (columns (1), (3), (5), and (7)) and product-related CSR reporting (columns (2), (4), (6), and (8)) using alternative measures of competition. All continuous variables are winsorized at the 1st and the 99th percentiles. All regressions include firm and year fixed effects with robust standard errors clustered by industry and year. t -statistics based on robust standard errors clustered by industry and year are given in parentheses. ***, **, and * indicate that the estimated coefficients are statistically significant at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. Refer to [Appendix 1](#) for variable definitions.

the regressions to better address reverse causality concerns. Our inferences remain unchanged.³⁸

Possible alternative explanations

CSR investments

Our findings are consistent with the argument that intense competition disincentivizes CSR reporting. However, a possible alternative explanation is that managers are compelled to reduce their CSR activities to cut costs or allocate limited resources to more favorable investment opportunities when PMC is high, which in turn reduces CSR disclosure. In other words, the reduction in CSR reporting is not the result of an increase in proprietary cost concerns but the result of a reduction in CSR investments. This explanation is plausible given that CSR investments are largely discretionary and often perceived as a costly diversion of scarce resources that can worsen the competitive position of a firm (Barnett 2007).

To address this alternative explanation, we include the CSR performance variable (*CSRPERF*) in all of our regressions as an important control variable. As controlling for *CSRPERF* in our model does not fully address this concern about our finding, we directly test the relationship between PMC and firms' CSR investments. To this end, we adopt the model specification of Flammer (2015). The results of this additional analysis (Table 7) show that an increase in the level of PMC increases firms' CSR investments. While this finding is consistent with the argument that firms increase their CSR activities to better differentiate themselves from their competitors when facing fierce competition (Dupire and M'Zali 2018; Fernández-Kranz and Santaló 2010; Flammer 2015), it casts doubt on the possible alternative explanation.

We conduct an additional analysis on the relationship between CSR reporting and firms' product-related CSR engagement (*CSRPERF_Product*) and the role of PMC in this relation. Controlling for other factors and firm and year fixed effects, the results (Table 8) show that firms with better product-related CSR performance generally tend to publish fewer CSR reports. Furthermore, the reduction in CSR disclosure is more pronounced when PMC is high. The results are consistent with our argument that firms engaging in more product development activities are likely to provide less product disclosure in their CSR reports, especially when faced with more intense competition.

Financial constraints

We adopt two approaches to directly test whether our findings can be explained by financial constraints to further address the concern that our finding of a lower level of CSR reporting by firms facing intense competition may represent a mechanical relationship capturing the limited resources of firms operating under competitive pressure. First, we add financial constraints (*HPINDEX*) as an additional control and rerun equations (1) and (2). *HPINDEX* is constructed following Hadlock and Pierce (2010),³⁹ with a higher value indicating a higher level of financial constraint. We find that the results for our test variables remain quantitatively and qualitatively similar (panel A of Table 9). Second, we follow prior studies (Chen and Chen 2013; Hann et al. 2013; Koo et al. 2017) and split the sample into two subsamples with high and low financial constraints using the median of *HPINDEX* as the cutoff value, and rerun the regressions for our main analyses.⁴⁰ Across all

38. We do not find a significant relationship between CSR performance (*CSRPERF*) and future sales growth, which is consistent with the mixed findings in the literature regarding the effect of CSR performance on future financial performance (Margolis et al. 2009).

39. *HPINDEX* is calculated as $(-0.737 \times \ln \text{ASSETS}) + (0.043 \times \ln \text{ASSETS}^2) - (0.040 \times \text{AGE})$, where *LNASSETS* is the natural logarithm of book assets, and *AGE* is the number of years the firm is listed with a nonmissing stock price on Compustat.

40. The sample median value of *HPINDEX* is -3.0702 , which is comparable to the statistic reported by prior research (Farrell et al. 2014). Our inference remains unchanged when partitioning our sample into terciles (Dyreng and Markle 2016) and quartiles (Pang and Wang 2020).

measures of competition and CSR reporting, we find that firms reduce their CSR reporting when facing competitive pressure, regardless of their level of financial constraint (panels B and C of Table 9). Our conclusion remains unchanged when using other measures of competition (untabulated). Finally, we follow prior research (Lamont et al. 2001) and use the Kaplan-Zingales index of financial constraints (*KZINDEX*) as an alternative measure of financial constraints and obtain similar results (untabulated). In summary, the results suggest that our finding of a negative relationship between PMC and CSR reporting is unlikely to be driven by financial constraints.⁴¹

PMC, advertising, and CSR disclosure

Our findings suggest that CSR reporting is an important way for firms to disseminate their product information to their customers and to differentiate their products from those of their competitors, which in turn increases sales. However, we also show that although PMC increases firms' product-related investments to better differentiate their products/services, firms are likely to reduce their CSR reporting when facing intense competition. To reconcile these findings, we suggest that given the growing concern about proprietary information and its association with the disclosure of detailed CSR information, especially product-related information in CSR reports, firms are likely to adopt other channels (e.g., advertisements) with lower proprietary costs to communicate with their customers and investors when PMC is high. Supporting this view, studies note that firms use advertising "not only to promote their products and services to customers but also as a communication channel to their current and potential future investors" (Fehle et al. 2005, 626) and that firms have increasingly conducted large advertising campaigns with CSR dimensions to promote their image (Drumwright 1996; Luo and Bhattacharya 2006).⁴² Compared to CSR disclosure, advertising provides less actionable information (and/or less detailed information) for competitors to exploit. As such, we examine the effect of PMC on the relationship between CSR disclosure and advertising expenditure, and expect firms that reduce their CSR disclosure in the face of increased competition to increase their advertising to mitigate the potential financial damage associated with their reduced CSR disclosure.

We measure a firm's advertising intensity (*ADEXP*) as advertising expenditure divided by total assets at the end of fiscal year t . We then regress *ADEXP* on our PMC variable and its interaction with the indicator variable *CSRR_Stop*, other determinants of advertising intensity, and firm and year fixed effects. *CSRR_Stop* is equal to one if a firm does not issue a CSR report in year t but issues a CSR report in year $t - 1$, and zero otherwise. *CSRR_Stop* captures a firm's complete cessation of CSR reporting, which is the most drastic reduction in CSR disclosure. The significant positive coefficient on *Comp* × *CSRR_Stop* supports our expectation. Column (1) of Table 10 shows that the advertising intensity of the firms in our sample increases with PMC and that firms that stop disclosing their CSR activities tend to increase their advertising more when PMC increases.⁴³

As a robustness test, we use three alternative measures of reduced CSR reporting: *CSRR_ReduceNum*, *CSRR_ReducePage*, and *CSRR_ReduceWord*. These variables indicate a

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41. A caveat worth acknowledging is that our findings may suffer from a potential concern commonly found in empirical studies. Although we have adopted various approaches to address endogeneity concerns (e.g., a DiD design using a large reduction in import tariff rates as an exogenous shock to firms' competitive environment, and the exclusion of alternative explanations), we cannot fully exclude the possibility that our findings might also partially be a result of confounding factors other than those known and controlled in our study.
 42. Research also documents that firms strategically use advertising to protect their value. For example, Wies et al. (2019) show that firms facing shareholder complaints pertaining to nonfinancial concerns are more likely to increase their advertising investments to buffer against the loss in firm value. Using firms' advertising intensity as a proxy for consumer awareness, Servaes and Tamayo (2013) provide evidence that advertising intensity strengthens the positive relationship between CSR and firm value.
 43. Our inference remains unchanged when using other measures of competition. For brevity, we only tabulate the results obtained using *Comp_TariffCut* as a measure of PMC.

TABLE 6
CSR disclosure and future sales growth

DV	(1) SALESGR _{t+1}	(2) SALESGR _{t+2}	(3) SALESGR _{t+3}	(4) SALESGR _{t+1}	(5) SALESGR _{t+2}	(6) SALESGR _{t+3}
<i>Ratio(Product/Total)</i>	0.0147 (2.52)**	0.0125 (3.10)***	0.0636 (3.13)***			
<i>Ratio(Product/Total)_First</i>						
<i>Ind(CSRR)</i>	0.1027 (4.58)**	0.2272 (4.21)***	0.5694 (7.16)***	0.0301 (2.74)***	0.0096 (3.29)***	0.0449 (2.67)**
<i>CSRPERF</i>	-0.0028 (-0.42)	-0.0076 (-0.55)	-0.0282 (-0.56)	0.1034 (4.14)***	0.2304 (4.12)***	0.5788 (7.01)***
<i>WORKCAPITAL</i>	-0.6888 (-4.65)**	-1.4657 (-3.22)***	-2.9640 (-4.53)***	-0.0027 (-0.42)	-0.0076 (-0.56)	-0.0283 (-0.56)
<i>LNSALE</i>	-0.1276 (-4.42)**	-0.2623 (-7.62)***	-0.6199 (-2.55)**	-0.6890 (-4.07)***	-1.4659 (-3.58)***	-2.9649 (-3.52)***
<i>SALESGR</i>	2.3126 (4.80)***	2.7030 (7.76)***	4.6080 (3.34)***	-0.1275 (-7.01)***	-0.2622 (-7.39)***	-0.6194 (-2.31)**
<i>SIZE</i>	0.0262 (1.53)	0.0054 (1.08)	0.0001 (0.02)	2.3125 (4.73)***	2.7028 (7.59)***	4.6072 (3.19)***
<i>LEVERAGE</i>	-0.2769 (-1.67)	-0.3246 (-1.59)	0.1296 (0.89)	0.0261 (1.76)*	0.0053 (0.97)	-0.0002 (-0.04)
<i>ROA</i>	-1.9323 (-2.61)***	-3.2764 (-3.04)***	-8.0800 (-4.72)***	-0.2770 (-1.10)	-0.3246 (-1.56)	0.1292 (0.88)
<i>BTM</i>	-0.2345 (-3.21)***	-0.3169 (-3.47)***	-0.23470 (-3.79)***	-1.9322 (-3.58)**	-3.2764 (-3.04)***	-8.0798 (-4.70)***
<i>RDEXP</i>	-0.2537 (-1.88)*	0.2092 (1.04)	-2.1712 (-1.47)	-0.2344 (-2.13)**	-0.3171 (-2.51)**	-0.3471 (-3.81)***
<i>ADEXP</i>	0.0706 (3.00)***	0.1443 (3.89)***	0.3212 (3.87)***	-0.2534 (-1.87)*	0.2093 (1.04)	-2.1704 (-1.46)
<i>FIRMAGE</i>	-0.0048 (-2.81)**	-0.0077 (-3.00)***	-0.0237 (-4.95)***	(3.16)*** (-2.66)***	0.1444 (3.92)***	0.3219 (4.94)***
				-0.0048 (-2.66)***	-0.0077 (-2.81)***	-0.0236 (-3.82)***

(The table is continued on the next page.)

TABLE 6 (continued)

DV	(1) SALESGR _{t+1}	(2) SALESGR _{t+2}	(3) SALESGR _{t+3}	(4) SALESGR _{t+1}	(5) SALESGR _{t+2}	(6) SALESGR _{t+3}
Firm and year fixed effects	Included	Included	Included	Included	Included	Included
Obs.	13,265	12,575	11,978	13,265	12,575	11,978
Adj. <i>R</i> ²	0.391	0.481	0.473	0.336	0.321	0.383

Notes: This table reports the regression results for testing the effect of product disclosure in CSR reporting on sales growth. $SALESGR_{t+h}$ is the average sales growth during year $t + n$. $Ratio(Product/Total)$ is the ratio of the total number of pages dedicated to product-related information over the total number of pages of a given CSR report. $Ratio(Product/Total)_{First}$ is $Ratio(Product/Total)$ measured based on the CSR report published for the first time during our sample period. All firm-level continuous variables are winsorized at the 1st and the 99th percentiles. All regressions include firm and year fixed effects with robust standard errors clustered by industry and year. *t*-statistics based on robust standard errors clustered by industry and year are given in parentheses. ***, **, and * indicate that the estimated coefficients are statistically significant at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. Refer to [Appendix 1](#) for variable definitions.

TABLE 7
PMC and CSR performance

DV	(1) <i>CSRPERF</i>	(2) <i>CSRPERF</i>	(3) <i>CSRPERF</i>	(4) <i>CSRPERF</i>
<i>Comp_TariffCut</i>	4.6621 (17.62)***			
<i>Comp_NonPrice</i>		8.4971 (6.31)***		
<i>Comp_ProdSimilarity</i>			0.0008 (0.76)	
<i>Comp_MgmPerception</i>				0.1534 (2.82)***
<i>SIZE</i>	−0.0144 (−0.66)	−0.0787 (−4.39)***	−0.0976 (−3.29)***	0.7898 (3.72)
<i>BTM</i>	−0.0003 (−1.29)	−0.0002 (−1.04)	−0.0004 (−0.97)	−0.0036 (−1.06)
<i>ROA</i>	0.2206 (1.56)	0.1954 (1.68)	0.2399 (1.27)	1.4957 (0.87)
<i>CASH</i>	−0.3052 (−1.49)	−0.4441 (−1.94)*	−0.2364 (−1.11)	0.0624 (0.25)
<i>LEVERAGE</i>	−0.2536 (−1.47)	0.0642 (0.38)	0.0022 (0.01)	3.8904 (2.53)
Obs.	9,774	13,989	13,989	6,877
Adj. <i>R</i> ²	0.396	0.401	0.325	0.244

Notes: This table reports the regression results for testing the effect of PMC on CSR performance (*CSRPERF*). *CSRPERF* is defined as the industry-adjusted total CSR strength scores from the six major CSR rating categories obtained from the KLD Research and Analytics database: (i) environment, (ii) community, (iii) human rights, (iv) employee relations, (v) diversity, and (vi) product. All continuous variables are winsorized at the 1st and the 99th percentiles. All regressions include industry and year fixed effects and robust standard errors clustered by industry and year. *t*-statistics based on robust standard errors clustered by industry and year are given in parentheses. *** and * indicate that the estimated coefficients are statistically significant at the 1% and 10% levels, respectively. We follow Flammer (2015) in selecting control variables in our examination of the relation between the level of PMC and CSR performance. *CASH* is the ratio of cash and short-term investment to the book value of assets. Refer to Appendix 1 for other variable definitions.

decrease in the frequency, total number of pages, and total number of words in CSR reports from year $t - 1$ to year t , respectively. Compared with *CSRR_Stop*, these measures capture less dramatic reductions in CSR reporting. The results show that firms with reduced CSR disclosure tend to increase their advertising more when PMC increases (columns (2) to (4) of Table 10).⁴⁴ In summary, these findings suggest that firms may strategically choose information channels with lower proprietary cost concerns to inform their stakeholders about their products and differentiate themselves from their competitors when PMC is high.

CSR disclosure in annual reports (integrated CSR reporting)

In our main analyses, we focus on stand-alone CSR reports, which are dedicated to the disclosure of nonfinancial CSR information. Unlike stand-alone CSR reporting, integrated reporting is a new

44. We find similar results when using other measures of PMC. For brevity, we only tabulate the results for our main measure of competition (*Comp_TariffCut*). The nonsignificant result in column (4) of Table 10 is likely to be due to the limited variation in *CSRR_ReduceWord*.

TABLE 8
Competition, product-related CSR performance, and CSR disclosure

DV	(1) <i>Ind(CSRR)</i>	(2) <i>Ind(CSRR_P)</i>	(3) <i>Num(CSRR)</i>	(4) <i>Num(CSRR_P)</i>	(5) <i>Page(CSRR)</i>	(6) <i>Page(CSRR_P)</i>	(7) <i>Word(CSRR)</i>	(8) <i>Word(CSRR_P)</i>
<i>CSRPERRF_Product</i>	-0.0801 (-6.43)***	0.0013 (0.07)	-0.0901 (-7.05)***	0.0180 (1.00)	-2.6829 (-8.79)***	0.4413 (1.07)	-0.5102 (-7.58)***	0.1050 (2.27)**
<i>Comp_TariffCut</i>	0.0131 (1.30)	0.0127 (2.13)**	0.0125 (1.12)	0.0122 (2.01)**	-0.7680 (-0.90)	0.0435 (1.40)	0.0734 (0.90)	-0.0273 (-2.35)**
<i>CSRPERRF_Product</i> × <i>Comp_TariffCut</i>	-0.0275 (-2.85)***	-0.0577 (-2.70)**	-0.0240 (-1.79)*	-0.0754 (-3.43)***	-1.2229 (-1.82)*	-0.2917 (-0.70)	-0.2520 (-3.30)***	-0.0410 (-5.85)***
<i>CSRR</i>		1.9230 (4.87)***		1.9211 (4.87)***		5.1620 (19.10)***		7.6780 (77.26)***
<i>SIZE</i>	0.0001 (3.24)***	0.0001 (0.73)	0.0001 (1.95)*	0.0001 (0.66)	0.0001 (0.88)	0.0001 (0.01)	0.0001 (3.20)***	0.0001 (1.36)
<i>ROA</i>	0.0160 (1.23)	0.0135 (1.50)	0.0123 (0.78)	0.0139 (1.46)	0.4991 (0.52)	-0.0363 (-0.57)	0.1547 (1.43)	0.0320 (0.83)
<i>FINANCE</i>	0.0102 (2.09)**	0.0006 (0.21)	0.0146 (2.64)***	-0.0007 (-0.23)	0.4898 (2.45)**	-0.0505 (-0.48)	0.0680 (3.01)***	-0.0103 (-0.40)
<i>TOBINQ</i>	-0.0144 (-3.93)***	-0.0097 (-3.30)***	-0.0167 (-4.21)***	-0.0094 (-3.14)***	-0.7691 (-2.97)***	-0.0086 (-0.42)	-0.1072 (-3.34)***	0.0034 (0.50)
<i>LEVERAGE</i>	-0.0056 (-0.33)	-0.0218 (-1.38)	-0.0201 (-1.07)	-0.0240 (-1.44)	-1.7099 (-1.61)	-0.1445 (-0.81)	-0.1892 (-1.23)	-0.1461 (-2.83)***
<i>GLOBAL</i>	0.0127 (2.42)**	0.0196 (4.15)***	0.0193 (2.40)**	0.0206 (4.26)***	-0.1407 (-0.29)	-0.0977 (-2.95)***	0.0733 (1.33)	-0.0244 (-0.79)
<i>LIQUIDITY</i>	-0.0708 (-8.31)***	-0.0496 (-7.92)***	-0.0733 (-5.98)***	-0.0517 (-8.50)***	-0.9792 (-1.14)	0.1605 (1.71)*	-0.4672 (-4.45)***	0.0763 (1.35)
<i>FORECAST</i>	0.0122 (2.70)***	0.0093 (1.96)**	0.0109 (2.29)**	0.0082 (1.58)	0.0152 (0.07)	0.0291 (1.06)	0.0517 (1.15)	-0.0420 (-1.66)
<i>ACCRUALS</i>	0.0138 (5.92)***	0.0152 (7.22)***	0.0165 (6.21)***	0.0160 (8.01)***	0.6332 (4.75)***	0.0413 (0.85)	0.0906 (5.01)***	-0.0155 (-0.85)
Firm and year fixed effects	Included	Included	Included	Included	Included	Included	Included	Included
Obs.	9,774	9,774	9,774	9,774	9,774	9,774	9,774	9,774
Adj. R^2	0.538	0.497	0.589	0.506	0.443	0.391	0.432	0.432

Notes: This table reports regression results for the interaction effect of competition and product-related CSR performance on CSR reporting. *CSRPERRF_Product* measures firms' product performance using the industry-adjusted total product strength scores obtained from the KLD database. All firm-level continuous variables are winsorized at the 1st and the 99th percentiles. All regressions include firm and year fixed effects with robust standard errors clustered by industry and year. *t*-statistics based on robust standard errors clustered by industry and year are given in parentheses. ***, **, and * indicate that the estimated coefficients are statistically significant at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. Refer to [Appendix 1](#) for variable definitions.

TABLE 9
Accounting for financial constraints

Panel A: Full sample controlling for financial constraints							
DV	(1) <i>Ind(CSRR)</i>	(2) <i>Ind(CSRR_P)</i>	(3) <i>Num(CSRR)</i>	(4) <i>Num(CSRR_P)</i>	(5) <i>Page(CSRR)</i>	(6) <i>Page(CSRR_P)</i>	(8) <i>Word(CSRR_P)</i>
<i>Comp_TariffCut</i>	-0.2110 (-8.90)***	-0.0815 (-2.76)***	-0.1393 (-5.61)***	-0.1188 (-5.05)***	-6.9424 (-2.29)**	-0.3108 (-2.64)***	-2.2448 (-2.80)***
<i>HPINDEX</i>	-0.1031	-0.0091	-0.1185	-0.0161	-41.4283	-0.1150	-12.5855
Other controls	(-7.37)***	(-1.72)*	(-5.13)***	(-5.51)***	(-4.65)***	(-8.02)***	(-4.45)***
Firm and year fixed effects	Included	Included	Included	Included	Included	Included	Included
Obs.	Included	Included	Included	Included	Included	Included	Included
9,747	9,747	9,747	9,747	9,747	9,774	9,747	9,774
Adj. <i>R</i> ²	0.572	0.823	0.638	0.757	0.454	0.682	0.438
Panel B: Subsample analysis for firms with high financial constraints (high <i>HPINDEX</i>)							
DV	(1) <i>Ind(CSRR)</i>	(2) <i>Ind(CSRR_P)</i>	(3) <i>Num(CSRR)</i>	(4) <i>Num(CSRR_P)</i>	(5) <i>Page(CSRR)</i>	(6) <i>Page(CSRR_P)</i>	(8) <i>Word(CSRR_P)</i>
<i>Comp_TariffCut</i>	-0.1436 (-2.59)***	-0.2041 (-2.96)***	-0.2749 (-2.57)***	-0.2691 (-2.95)***	-6.9128 (-2.57)***	-0.7940 (-7.07)***	-2.2138 (-4.03)***
Controls	Included	Included	Included	Included	Included	Included	Included
Firm and year fixed effects	Included	Included	Included	Included	Included	Included	Included
Obs.	Included	Included	Included	Included	Included	Included	Included
4,862	4,862	4,862	4,862	4,862	4,862	4,862	4,862
Adj. <i>R</i> ²	0.568	0.821	0.532	0.749	0.461	0.682	0.451

(The table is continued on the next page.)

TABLE 9 (continued)

Panel C: Subsample analysis for firms with low financial constraints (low *HPINDEX*)

DV	(1) <i>Ind(CSRR)</i>	(2) <i>Ind(CSRR_P)</i>	(3) <i>Num(CSRR)</i>	(4) <i>Num(CSRR_P)</i>	(5) <i>Page(CSRR)</i>	(6) <i>Page(CSRR_P)</i>	(7) <i>Word(CSRR)</i>	(8) <i>Word(CSRR_P)</i>
<i>Comp_TariffCut</i>	−0.0800 (−5.57)***	−0.0038 (−4.69)***	−0.0859 (−3.01)***	−0.0077 (−8.01)***	−2.2131 (−2.94)***	−0.0151 (−1.85)*	−0.8868 (−2.25)**	−0.0136 (−4.96)***
Controls	Included	Included	Included	Included	Included	Included	Included	Included
Firm and year fixed effects	Included	Included	Included	Included	Included	Included	Included	Included
Obs.	4,887	4,887	4,887	4,887	4,887	4,887	4,887	4,887
Adj. <i>R</i> ²	0.676	0.833	0.651	0.823	0.541	0.860	0.433	0.637

Notes: This table reports regression results accounting for the effect of financial constraints on the relation between PMC and CSR reporting. Following Hadlock and Pierce (2010), financial constraint (*HPINDEX*) is calculated as $(-0.737 \times LNASSETS) + (0.043 \times LNASSETS^2) - (0.040 \times AGE)$, where *LNASSETS* is the natural logarithm of book assets, and *AGE* is the number of years the firm is listed with a nonmissing stock price on Compustat. A larger value of *HPINDEX* indicates a higher level of financial constraints. Panel A reports the results controlling for *HPINDEX*. Panels B and C report the results for subsamples of firms with high and low financial constraints, respectively. The cutoff for high and low financial constraints is the sample median value of *HPINDEX* in the year. All firm-level continuous variables are winsorized at the 1st and the 99th percentiles. All regressions include firm and year fixed effects with robust standard errors clustered by industry and year. *t*-statistics based on robust standard errors clustered by industry and year are given in parentheses. ***, **, and * indicate that the estimated coefficients are statistically significant at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. Refer to Appendix 1 for variable definitions.

TABLE 10
PMC, advertising intensity, and CSR disclosure

DV	(1) <i>ADEXP</i>	(2) <i>ADEXP</i>	(3) <i>ADEXP</i>	(4) <i>ADEXP</i>
<i>Comp_TariffCut</i>	0.0110 (12.07)***	0.0109 (14.72)***	0.0106 (16.18)***	0.0110 (14.10)***
<i>CSRR_Stop</i>	0.0016 (0.95)			
<i>Comp_TariffCut</i> × <i>CSRR_Stop</i>	0.0068 (2.73)***			
<i>CSRR_ReduceNum</i>		−0.0022 (−1.10)		
<i>Comp_TariffCut</i> × <i>CSRR_ReduceNum</i>		0.0073 (2.33)**		
<i>CSRR_ReducePage</i>			−0.0028 (−2.20)**	
<i>CompTariffCut</i> × <i>CSRR_ReducePage</i>			0.0061 (2.53)**	
<i>CSRR_ReduceWord</i>				−0.0020 (−1.52)
<i>Comp_TariffCut</i> × <i>CSRR_ReduceWord</i>				0.0036 (1.44)
<i>CSRPERF</i>	0.0002 (0.31)	0.0003 (0.47)	0.0003 (0.42)	0.0003 (0.43)
<i>SIZE</i>	0.0001 (0.35)	0.0001 (0.51)	0.0001 (0.46)	0.0001 (0.44)
<i>ROA</i>	0.0003 (0.16)	0.0003 (0.13)	0.0003 (0.14)	0.0003 (0.14)
<i>FINANCE</i>	0.0004 (0.25)	0.0004 (0.23)	0.0004 (0.22)	0.0004 (0.22)
<i>TOBINQ</i>	0.0002 (0.58)	0.0002 (0.55)	0.0002 (0.55)	0.0002 (0.56)
<i>LEVERAGE</i>	−0.0035 (−0.96)	−0.0036 (−1.00)	−0.0036 (−0.98)	−0.0036 (−0.99)
<i>GLOBAL</i>	0.0020 (1.91)*	0.0020 (1.97)**	0.0019 (1.93)*	0.0020 (1.95)*
<i>LIQUIDITY</i>	−0.0003 (−0.26)	−0.0006 (−0.46)	−0.0005 (−0.39)	−0.0006 (−0.43)
<i>FORECAST</i>	0.0013 (0.91)	0.0013 (0.91)	0.0013 (0.91)	0.0013 (0.92)
<i>ACCRUALS</i>	0.0001 (0.11)	0.0001 (0.11)	0.0001 (0.08)	0.0001 (0.09)
Firm and year fixed effects	Included	Included	Included	Included
Obs.	9,774	9,774	9,774	9,774
Adj. <i>R</i> ²	0.132	0.132	0.131	0.131

(The table is continued on the next page.)

TABLE 10 (continued)

Notes: This table reports regression results for the interaction effect of competition and reduced CSR reporting on advertising intensity. Advertising intensity (*ADEXP*) is calculated as advertisement expenditure divided by total assets at the end of fiscal year t . A firm's advertising expenditure is set to zero if it is missing. We use several measures to proxy for reduced CSR reporting, including: (i) *CSRR_Stop*, which is an indicator variable that equals one if a firm does not issue a CSR report in year t but does issue a CSR report in year $t - 1$, and zero otherwise; (ii) *CSRR_ReduceNum*, which is an indicator variable that equals one if the firm reduces the frequency of voluntary stand-alone CSR reports (*Num(CSRR)*) from year $t - 1$ to year t , and zero otherwise; (iii) *CSRR_ReducePage*, which is an indicator variable that equals one if the firm reduces the total number of pages of voluntary stand-alone CSR reports (*Page(CSRR)*) from year $t - 1$ to year t , and zero otherwise; and (iv) *CSRR_ReduceWord*, which is an indicator variable that equals one if the firm reduces the total number of words of voluntary stand-alone CSR reports (*Word(CSRR)*) from year $t - 1$ to year t , and zero otherwise. All firm-level continuous variables are winsorized at the 1st and the 99th percentiles. All regressions include firm and year fixed effects with robust standard errors clustered by industry and year. t -statistics based on robust standard errors clustered by industry and year are given in parentheses. ***, **, and * indicate that the estimated coefficients are statistically significant at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. Refer to [Appendix 1](#) for other variable definitions.

CSR reporting framework characterized by the integration of financial and nonfinancial information in a single report. It has become more common in the past decade. Given that more and more firms provide CSR information in their annual reports, we examine the possible effect of PMC on the CSR information disclosed in firms' annual reports. We define *CSRR_Integrated* as an indicator variable equal to one if a firm integrates CSR information in its annual report in a given year, and zero otherwise. (Data are taken from ASSET4.) We then run a linear probability regression of *CSRR_Integrated* on each of our PMC variables controlling for other factors. Across all of our PMC measures (panel A of Table 11), we find consistent results, showing that an increase in PMC intensity reduces the likelihood of firms to disclose their CSR activities in their annual reports.

PMC and other CSR reporting characteristics

When disclosed information cannot be verified, competition may reduce the quality of disclosure because firms may engage in a “cheap-talk” communication game (Crawford and Sobel 1982).⁴⁵ The implication for CSR reporting is that firms may publish CSR reports that are less informative to obfuscate competition-sensitive information when competition is intense. Examining the effects of PMC on the characteristics of CSR reporting allows for a more direct test. We focus on the assurance of CSR reporting (*CSRR_Assurance*) and the adoption of the GRI guidelines for CSR reporting (*CSRR_GRI*), both of which suggest better disclosure quality of CSR reports (Muslu et al. 2019). [Appendix 1](#) provides definitions of these two variables. We find that PMC has a significantly negative association with *CSRR_Assurance* (Table 11, panel B) and *CSRR_GRI* (Table 11, panel C). This suggests that higher competition intensity is associated with a lower quality of CSR reporting.⁴⁶

Recent studies propose readability as another measurable variable of disclosure quality (Li 2008; Miller 2010; Rennekamp 2012). Thus, in additional analyses (untabulated), we examine whether and how PMC is associated with the readability of CSR reports. We construct two

45. For example, Newman and Sansing (1993) show that firms may distort their voluntary disclosure to discourage potential new competitors from entering the market.

46. We note that the scope of assurance and the level of GRI compliance in CSR reports may differ across firms. For example, some firms provide assurance statements for their entire CSR reports, whereas others only provide assurance for part of their CSR reports. As manually collected CSR assurance and GRI data appear coarser, we use the CSR assurance and GRI data obtained from ASSET4 in a robustness test. We also conduct an additional robustness test on CSR assurance using data obtained from Sustainalytics. Our inference remains unchanged in these additional tests.

TABLE 11
PMC and other CSR reporting characteristics

Panel A: Integrated reporting

DV	(1) <i>CSRR_Integrated</i>	(2) <i>CSRR_Integrated</i>	(3) <i>CSRR_Integrated</i>	(4) <i>CSRR_Integrated</i>
<i>Comp_TariffCut</i>	−0.1504*** (−3.62)			
<i>Comp_NonPrice</i>		−0.0008*** (−5.14)		
<i>Comp_ProdSimilarity</i>			−0.0060*** (−4.83)	
<i>Comp_MgmPerception</i>				−0.1051 (−1.72)*
Firm and year fixed effects	Included	Included	Included	Included
Obs.	9,774	13,989	13,989	6,877
Adj. R^2	0.308	0.293	0.293	0.155

Panel B: CSR reporting assurance

DV	(1) <i>CSRR_Assurance</i>	(2) <i>CSRR_Assurance</i>	(3) <i>CSRR_Assurance</i>	(4) <i>CSRR_Assurance</i>
<i>Comp_TariffCut</i>	−0.0183 (−3.58)***			
<i>Comp_NonPrice</i>		−0.0003 (−1.90)*		
<i>Comp_ProdSimilarity</i>			−0.0021 (−2.38)**	
<i>Comp_MgmPerception</i>				−0.0544 (−1.92)*
Firm and year fixed effects	Included	Included	Included	Included
Obs.	9,774	13,989	13,989	6,877
Adj. R^2	0.392	0.349	0.350	0.294

(The table is continued on the next page.)

measures of CSR reporting readability based on the textual analysis of CSR narratives. First, *CSRR_Readability1* is calculated as the average of the number of words per sentence in the CSR reports issued by a firm in a given year. Second, *CSRR_Readability2* is the Gunning Fog Index calculated as (words per sentence + percentage of complex words) $\times$ 0.4 (Li 2008). We multiply both measures by -1 , such that higher readability scores indicate higher levels of CSR reporting readability. We find some evidence (albeit weak) that competition is associated with less readable CSR reports (untabulated). For example, the coefficients on *Comp_NonPrice* are -0.0659 ($t = -3.98$) and -0.0293 ($t = -4.61$) when *CSRR_Readability1* and *CSRR_Readability2* are the dependent variables, respectively.

TABLE 11 (continued)

Panel C: GRI CSR reporting				
DV	(1) <i>CSRR_GRI</i>	(2) <i>CSRR_GRI</i>	(3) <i>CSRR_GRI</i>	(4) <i>CSRR_GRI</i>
<i>Comp_TariffCut</i>	−0.0808 (−2.96)***			
<i>Comp_NonPrice</i>		−0.0014 (−2.96)***		
<i>Comp_ProdSimilarity</i>			−0.0110 (−3.53)***	
<i>Comp_MgmPerception</i>				−0.0730 (−2.59)***
Firm and year fixed effects	Included	Included	Included	Included
Obs.	9,774	13,989	13,989	6,877
Adj. R^2	0.448	0.428	0.428	0.319

Notes: This table reports the regression results for testing the effect of PMC on the likelihood of providing integrated CSR reporting (panel A), likelihood of providing CSR reporting with assurance (panel B), and likelihood of providing CSR reporting in accordance with GRI standards (panel C). *CSRR_Integrated* is an indicator variable equal to one if a firm provides CSR information voluntarily in its 10-K filing in a given year, and zero otherwise. *CSRR_Assurance* is an indicator variable that equals one if a firm publishes a stand-alone CSR report with external assurance in a given year, and zero otherwise. *CSRR_GRI* is an indicator variable that equals one if a firm publishes a stand-alone CSR report in accordance with GRI guidelines in a given year, and zero otherwise. Mean marginal effects of the logit models are reported. All firm-level continuous variables are winsorized at the 1st and the 99th percentiles. All regressions include firm and year fixed effects with robust standard errors clustered by industry and year. *t*-statistics based on robust standard errors clustered by industry and year are given in parentheses. ***, **, and * indicate that the estimated coefficients are statistically significant at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. Refer to [Appendix 1](#) for variable definitions.

6. Conclusion

CSR disclosure has gained prominence and increasing visibility in the business world in recent years. As product innovation, product development, and product responsibility are important dimensions of firms' CSR engagement, many firms voluntarily provide such information via CSR reporting. Using the reduction in import tariff rates as an exogenous shock to the competitive environment of firms, we find that the level of CSR disclosure, measured by the likelihood, frequency, and length of stand-alone CSR reports, decreases with PMC intensity. The effect of PMC intensity on the level of CSR disclosure can also be observed for the CSR disclosure of firms voluntarily provided in their annual reports.

In addition to the level of CSR disclosure, our results indicate that PMC intensity reduces the quality of CSR disclosure, as measured by the likelihood of CSR disclosure with external assurance and CSR disclosure in accordance with the GRI guidelines. However, although PMC intensity weakens firms' incentive to provide CSR disclosure, our evidence indicates that firms tend to strategically switch from CSR reporting to information channels with lower proprietary cost concerns, such as advertising, when facing intense competition. Overall, we add to the literature by showing that proprietary costs affect firms' reporting decisions relating to nonfinancial CSR disclosure and are thus an important determinant of voluntary CSR reporting.

Appendix 1: Variable definitions

Variable	Definition
Main CSR reporting variables	
<i>Ind(CSRR)</i>	Indicator variable that equals one if a firm provides any stand-alone CSR reports in a given year, and zero otherwise
<i>Ind(CSRR_P)</i>	Indicator variable that equals one if a firm provides product disclosure in its stand-alone CSR reports, and zero otherwise
<i>Num(CSRR)</i>	Frequency (or total number) of stand-alone CSR reports issued by a firm in a given year
<i>Num(CSRR_P)</i>	Frequency (or total number) of stand-alone CSR reports containing product disclosure voluntarily issued by a firm in a given year
<i>Page(CSRR)</i>	Total number of pages of stand-alone CSR reports issued by a firm in a given year
<i>Page(CSRR_P)</i>	Total number of pages of product disclosure in the stand-alone CSR report issued by a firm in a given year
<i>Word(CSRR)</i>	Total number of words (in thousands) of stand-alone CSR reports issued by a firm in a given year
<i>Word(CSRR_P)</i>	Total number of words (in thousands) of product disclosure in the stand-alone CSR report issued by a firm in a given year
Additional CSR reporting variables	
<i>CSRR_Integrated</i>	Indicator variable that equals one if a firm integrates CSR information into the MD&A section in its annual report in a given year, and zero otherwise
<i>CSRR_Assurance</i>	Indicator variable that equals one if a firm publishes a stand-alone CSR report with external assurance in a given year, and zero otherwise
<i>CSRR_GRI</i>	Indicator variable that equals one if a firm publishes a stand-alone CSR report in accordance with GRI guidelines in a given year, and zero otherwise
<i>CSRR_Stop</i>	Indicator variable that equals one if a firm does not issue a stand-alone CSR report in year t but does issue one in year $t - 1$, and zero otherwise
<i>CSRR_ReduceNum</i>	Indicator variable that equals one if the firm reduces the frequency of stand-alone CSR reports (<i>Num(CSRR)</i>) from year $t - 1$ to year t , and zero otherwise
<i>CSRR_ReducePage</i>	Indicator variable that equals one if the firm reduces the total number of pages of stand-alone CSR reports (<i>Page(CSRR)</i>) from year $t - 1$ to year t , and zero otherwise
<i>CSRR_ReduceWord</i>	Indicator variable that equals one if the firm reduces the total number of words of stand-alone CSR reports (<i>Word(CSRR)</i>) from year $t - 1$ to year t , and zero otherwise
PMC variables	
<i>Comp_TariffCut</i>	Indicator variable that takes the value of one if the industry in which a firm operates experiences a large import tariff reduction in year t , and zero otherwise. We define an import tariff reduction that is three times greater than the median tariff reduction as a large tariff cut. We collect US

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Variable	Definition
<i>Comp_NonPrice</i>	import data from Professor Peter Schott's website (see http://faculty.som.yale.edu/peterschott/) to compute the tariff rate for each industry-year PMC variable measured based on the intensity of nonprice competition (Chen et al. 2015). It is defined as the sum of firm-level advertising expenses and R&D expenses divided by the sum of firm-level sales in an industry
<i>Comp_ProdSimilarity</i>	PMC variable measured based on level of product similarity (Hoberg and Phillips 2016). It is defined as the firm-by-firm pairwise similarity scores by parsing the product descriptions from the firms' 10-K filings and forming word vectors for each firm to compute continuous measures of product similarity for every firm pair in our sample in each year. The product similarity vector data are downloaded from the Hoberg-Phillips Data Library (http://hobergphillips.usc.edu/). We thank Prof. Hoberg and Prof. Phillips for providing these data
<i>Comp_MgmPerception</i>	PMC variable measured based on the perception of level of competition from management (Li et al. 2013). It is defined as the total number of occurrences of competition-related words (<i>NCOMPWORDS</i>) per 1,000 total words in the 10-K filing (<i>NTOTALWORDS</i>). <i>NCOMPWORDS</i> is the number of times "competition, competitor, competitive, compete, competing" occur in the 10-K filing, including those words with an "s" appended. <i>NTOTALWORDS</i> is the total number of words in the 10-K filing. The data on managers' perceived competition are downloaded from Prof. Li's website (http://webuser.bus.umich.edu/feng/). We thank Prof. Li for his generosity in providing these data to the public domain
Other control variables	
<i>CSRPERF</i>	Firm's CSR performance is defined as the industry-adjusted total CSR strength scores from the six major CSR rating categories obtained from the KLD Research and Analytics database: (i) environment, (ii) community, (iii) human rights, (iv) employee relations, (v) diversity, and (vi) product
<i>SIZE</i>	Natural logarithm of the market value of equity
<i>ROA</i>	Total return on assets measured as the ratio of income before extraordinary items over total assets
<i>FINANCE</i>	Amount of debt or equity capital raised by the firm scaled by total assets at the beginning of the year. The amount of debt or equity capital raised by the firm is measured as the issuance of common stock and preferred shares minus the purchase of common stock and preferred shares plus the long-term debt issuance minus the long-term debt reduction

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Variable	Definition
<i>TOBINQ</i>	Market value of common equity plus the book value of preferred stock, book value of long-term debt and current liability, scaled by the book value of total assets
<i>LEVERAGE</i>	Leverage ratio, which is defined as the ratio of total debt divided by total assets
<i>GLOBAL</i>	Indicator variable that equals one if the firm reports nonzero foreign income, and zero otherwise
<i>LIQUIDITY</i>	Ratio of the number of shares traded in year $t - 1$ to the total shares outstanding at the end of the year
<i>FORECAST</i>	Indicator variable that equals one if the firm issues any management earnings forecast in a given year, and zero otherwise
<i>ACCRUALS</i>	Absolute value of abnormal accruals estimated based on the modified Jones model
Other variables	
<i>CSRPERF_Product</i>	Firms' product performance measured as the industry-adjusted total product strength scores obtained from the KLD Research and Analytics database
<i>Ratio(Product/Total)</i>	Ratio of the total number of pages dedicated to product-related information over the total number of pages of a given CSR report
<i>Ratio(Product/Total)_First</i>	Ratio of the total number of pages dedicated to product-related information over the total number of pages of the CSR report published for the first time during our sample period
<i>WORKCAPITAL</i>	Working capital is defined as operating assets minus operating liabilities (Nissim and Penman 2001). Operating assets are equal to total assets minus other investments; and operating liabilities are equal to total assets minus long-term debt, debt in current liabilities, common equity, preferred stock, and minority interest
<i>LNSALE</i>	Natural logarithm of net sales for fiscal year t
<i>SALESGR</i>	Sales growth ratio is defined as the growth in sales in year $t + 1$ over sales in year t
<i>BTM</i>	Book-to-market ratio is calculated as the book value of equity divided by the market value of equity
<i>RDEXP</i>	R&D expenditure divided by total assets at the end of fiscal year t . We set a firm's advertising expenditure as zero if it is missing
<i>ADEXP</i>	Advertisement expenditure divided by total assets at the end of fiscal year t . We set a firm's advertising expenditure to zero if it is missing
<i>FIRMAGE</i>	Measure of firm age, which is defined as the natural logarithm of the number of years that the firm has been listed in Compustat North America

Appendix 2: Examples of competition-sensitive disclosure in voluntary stand-alone CSR disclosure

Example A

2011 Abbott Global Citizenship Customized Report

Abbott Laboratories (a leading global healthcare company; NYSE: ABD)

Innovating for the Future

Developing Promising Products

In pharmaceuticals, we are among the world's leading biologics research, development and manufacturing companies, and we have pioneering programs in small molecules. In 2010, we made progress advancing our internal pipeline, and by the end of 2011 we expect to have nearly 20 new molecular entities and indications in Phase II or Phase III development. These include unique compounds being evaluated for the treatment of chronic kidney disease; women's health; oncology; immunology; the hepatitis C virus; neuroscience and pain management; and other significant areas of unmet need.

Chronic Kidney Disease

Loss of kidney function is on the rise, driven by higher rates of diabetes, obesity, and an aging population. Bardoxolone methyl, which is currently in development, has the potential to change the treatment landscape for CKD. It may prevent patients from progressing to the later stages of the disease and dialysis.

Women's Health

Endometriosis and uterine fibroids, affecting 100 million women worldwide, are associated with a multitude of symptoms, including pain and infertility. New treatments with fewer side effects are needed for both health problems. Abbott's in-licensed compound, elagolix, offers promise in this important area.

Neuroscience and Pain Management

Abbott has 14 compounds in human trials to address such conditions as Alzheimer's disease, schizophrenia, chronic pain and multiple sclerosis (MS)—conditions afflicting millions of patients worldwide. One of our antibodies, Daclizumab, is in Phase III for the treatment of relapsing-remitting MS, the most common form of the disease.

Immunology

Abbott is leveraging its experience with our leading rheumatoid arthritis medicine, Humira, to identify new mechanisms with the potential to treat an array of autoimmune diseases. Our pipeline includes development work in oral DMARD therapies and biologics. We have proprietary combination biologics in early development and several Humira indications in late-stage development.

Hepatitis C Virus

Hepatitis C virus is a major global health concern, affecting more than 180 million people worldwide. It can lead to long-term complications, including severe scarring of the liver, liver cancer, and death. Our goal is to transform current treatment practices by shortening the duration of therapy, improving tolerability, and increasing cure rates. We are among one of few companies with compounds spanning multiple mechanisms of action in clinical development, including protease, polymerase, and NS5A inhibitors.

Oncology

We are investing in cancer therapies that may change the way the disease behaves. Our oncology pipeline includes a number of new molecular entities in clinical development for more than a dozen different cancer types. For example, our partnered compound elotuzumab is in Phase III trials for relapsed multiple myeloma, the second-most common blood cancer in the United States. Our PARP inhibitor may enhance the effectiveness of current cancer therapies and is being studied in a variety of cancer types. Our multitargeted kinase inhibitor seeks to cut off the blood supply to a tumor to stop the progression of cancer, and we are also studying a Bcl-2 family inhibitor for chronic lymphocytic leukemia and other cancers.

Diagnostics

Abbott has a number of new assays and next-generation systems launching over the next several years, including the PLEX-ID biosensor, which has been recognized with top innovation awards from *The Wall Street Journal* and *The Scientist*. PLEX-ID has numerous applications, including forensics, bio-preparedness, public health surveillance, and bio-pharmaceutical testing. In late 2010, Abbott earned a

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Chicago Innovation Award for our new diagnostic tool, the ARCHITECT HIV Ag/Ab Combo Assay, which can simultaneously detect both HIV antigen and antibodies. Studies have demonstrated that this test may detect HIV days earlier than antibody-only tests, which is important in controlling the spread of the virus. We also continue to pursue innovations in pharmacogenomics—the science of matching appropriate therapies with patients based on their genetic makeup.

Nutritionals

There is increasing awareness of the role that nutrition plays in health and wellness. Over the next several years, we plan to introduce nearly 20 new products or product enhancements worldwide. For example, in late 2010, we introduced a new line of Ensure nutritional shakes that feature a proprietary ingredient called Revigor, and it also has protein to help rebuild muscle lost naturally over time. We also continue to introduce next-generation pediatric nutritional products around the world.

Vision Care

Vision disorders affect more than 300 million people globally, a patient group that is growing due to an aging population and an expanding middle class. We expect to introduce 20 new products and technology advancements in the next five years. This includes expanding our intraocular lens portfolio. IOLs are implanted in a patient's eye after removal of a natural lens that has become clouded by a cataract. We also are developing new diagnostic instruments, treatments, and dry eye therapies to improve diagnoses and enhance visual outcomes.

Example B

2009 Social Responsibility Report

https://www.bd.com/documents/corporate/BD_Sustainability-Report-2009_EN.pdf

Becton, Dickinson and Company (BD, a leading global medical technology company; NYSE: BDX)

Strategic Collaborations

BD is committed to saving and improving lives by collaborating with philanthropic, government and non-governmental organizations to improve the delivery of healthcare services. This includes increasing access to clinical and laboratory products and services.

Lab Strengthening

BD collaborates with the US President's Emergency Plan for AIDS Relief (PEPFAR) program on Laboratory Strengthening Programs in sub-Saharan Africa. This ongoing initiative applies BD's knowledge, expertise and resources to expand and improve healthcare systems, build local capacity, and improve patient care. Co-developed with the lab strengthening arm of the US Centers for Disease Control and Prevention and local on-the-ground partners, BD associate volunteers have conducted lab strengthening activities in sub-Saharan Africa since 2008.

These BD volunteers have conducted detailed assessments of on-site diagnostics and lab equipment. Information from these assessments helped them develop and implement tailored training programs for lab workers in several fields of study, including:

- Proper use of new equipment
- Proper laboratory management practices and quality control systems
- Training in specific testing procedures for diagnosing and monitoring HIV/AIDS and tuberculosis
- Teaching lab technicians to train other lab workers

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