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ORIGINAL PAPER

CSR Structures: Evidence, Drivers, and Firm Value Implications

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Abstract
This paper investigates the corporate social responsibility (CSR) structures of U.S. listed firms. We find evidence of a general tendency towards CSR specialization with almost three-quarters (73.91%) of these firms focusing on a single CSR dimension. The degree of specialization varies across industries and the single CSR dimension focused on also varies for industries with similar degrees of specialization. We find that firms with higher exposures to CSR concerns, international activities, larger size, and higher financial slack tend to diversify across multiple CSR dimensions. More importantly, we find evidence that diversified CSR structures positively affect a firm's value relative to a control group before and during the 2008 financial crisis. Our findings have important implications for corporate and portfolio managers, investors, and policy makers.

Keywords Corporate social responsibility · CSR structures · CSR specialization · Stakeholder management

JEL Classification M14 · G34

Introduction

Corporations not only have to make profits but also have to cater to their various stakeholders' social and environmental expectations. To deal with these expectations, corporations are increasingly spending important amounts of money on corporate social responsibility (CSR) activities. According to a survey conducted by Deloitte (2019), a majority of CEOs (59 percent) devote between one to five percent of their firms' revenues to CSR commitments, with two-thirds showing increases in budgets allocated to such commitments over the last 2 years.[1]

A firm's CSR commitment spans a broad range of CSR actions such as those dealing with community, diversity, employee relations, environment, product, human rights, and governance. To structure the firm's CSR commitment, its managers have to choose a set of CSR actions to initiate and the level of commitment for each action or group of actions. Given the large variety of CSR actions and the different possible levels of commitment, there are numerous CSR structures from which managers have the task to select one for the firm.

While the previous CSR literature concentrates primarily only on the level of CSR (Wang & Choi, 2010), some studies have reflected the heterogeneity in CSR structures into their analyses (e.g., Brower & Mahajan, 2013; Cavaco & Crifo, 2014; Fu et al., 2019; Mazutis, 2013; Seo et al., 2021; Tang et al., 2012; Wang & Choi, 2010; Zhang et al., 2020). Despite these important efforts, little is known about the

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[1] Also, a 2014 report in the Financial Times shows that the Fortune Global 500 companies devote more than $15.2 billion a year on CSR activities (The Financial Times Limited, 2020).

differences and/or relatedness among the CSR dimensions, and the value impact of these differences and/or relatedness (Cavaco & Crifo, 2014; Tang et al., 2012).

Some of these studies show the potential of pursuing this line of research for CSR structures heterogeneity. For instance, Seo et al. (2021) investigate variety in corporate donations and find a positive association between such variety and firm profitability. Cavaco and Crifo (2014) study whether there is a complementarity and/or a substitutability between the different CSR dimensions that lead to higher financial performance. They find that human resources and business behavior towards customers and suppliers are complementary, whereas environment and business behavior towards customers and suppliers are substitutable. Tang et al. (2012) examine whether the relatedness between CSR dimensions affects firm financial performance. Their results show that firms focusing on related dimensions and starting with internal CSR dimensions exhibit higher financial performance. The investigation of Wang and Choi (2010) on the degree of consistency in corporate social performance finds that temporal consistency and interdomain consistency interact positively to influence a firm's financial performance.

Clearly, more research is needed to fully explore CSR structures heterogeneity (Brower & Mahajan, 2013; Cavaco & Crifo, 2014; Tang et al., 2012). In this study, we add to this growing literature by addressing the following three important and related but unanswered questions: Do firms specialize or diversify their CSR actions? In other words, what is the main pattern in the heterogeneity of CSR structures? What are the characteristics of the firms which specialize versus those which diversify their CSR structures? What are the firm value consequences of these CSR structures?

The stakeholder theory incorporates the idea that the decision-making of managers needs to consider and balance the interests of a firm's various stakeholders (Clarkson, 1995; Donaldson & Preston, 1995). Consequently, this suggests that managers are expected to diversify rather than to concentrate a firm's CSR actions. In practice, the two constraints of unequal stakeholders' saliency and limited slack resources can impede the efforts of managers to balance or satisfy all stakeholders' claims (Reynolds et al., 2006).

According to Mitchell et al. (1997), stakeholder saliency represents the extent to which a stakeholder possesses one or more of the three attributes of power, legitimacy, and urgency. The more salient a stakeholder is, the more he/she will be prioritized and targeted by a firm's CSR actions. Thus, firms are more likely to specialize their CSR actions given unequal saliency. Under the slack-resources theory, a firm's slack is a prerequisite to CSR engagement (Orlitzky et al., 2003). Since more diversified CSR engagements are more costly for a firm, firms with higher (lower) levels of slack resources are more likely to be associated with more diversified (specialized) CSR actions.

Using a large sample of public U.S. firms from 1991 to 2013, we test the hypothesis of CSR specialization by investigating how the CSR actions of firms are allocated across different CSR dimensions. We measure a firm's CSR structure as the relative level of firm actions in a given CSR dimension (community, diversity, employee relations, environment, product, human rights, and governance) relative to all CSR dimensions. Our primary measure of the degree of CSR specialization (diversification) across firms is a normalized Herfindahl–Hirschman Index (*HHI*) of CSR dimension usage. This measure allows us to capture both the range of CSR commitments and the relative intensity of the commitment for each CSR dimension.[2] Our findings show empirical evidence of a general tendency towards CSR specialization. Almost three-quarters (73.91%) of the firms act as if they focus on one CSR dimension.

To answer our second question, we examine the effect of firm characteristics on whether firms specialize or diversify their CSR structures. We rely on the two theoretical explanations for CSR specialization and the determinants of a firm's CSR commitments documented in the prior literature to define these firm characteristics. Based on the unequal stakeholders' saliency argument, we select three variables which reflect differences in the demands for CSR actions: corporate social "irresponsibility," degree of internationalization, and industry membership. Based on the limited slack resources argument, we consider two variables that capture firms' differences in their abilities to supply a wide variety of CSR actions with high levels of commitment: firm size and financial slack resources. We test and find evidence that firms are facing higher (lower) CSR concerns, having international (domestic) activities, and large (small) size and higher (lower) financial slack have more diversified (specialized) CSR actions. Furthermore, we find that CSR structures and CSR specializations vary across industries.

With regard to the third question, two theoretical views predict opposing effects of CSR structures (specialization versus diversification) on firm value. Under the shareholder theory, firms' managers are expected to make decisions based on the effect of these decisions on shareholders' wealth. While there are various CSR activities for firms to engage in, not all of these activities are value increasing for shareholders (Matten, 2006; Waddock & Graves, 1997). Thus, it is more likely that firms' focus (variety) in their CSR activities positively (negatively) affects firm value. Based on the stakeholder theory, managerial decisions have to consider the broad range of interests not only of shareholders but also those of all firms' stakeholders (Freeman,

[2] A similar methodology is used by Colla et al. (2013) and John et al. (2021) who studied firm debt structures in the U.S. and internationally.

1984) who impact or are impacted by firms' operations. A firm's commitment to CSR activities is a key determinant to achieve that and ultimately can enhance corporate financial performance (Wood & Jones, 1995). Therefore, under this second view it is more likely that focus (variety) of these activities negatively (positively) impacts firm value.

To test these two theoretical predictions with opposite implications for firm value, we match firms with a CSR structure (treatment group) with firms without any CSR structure but are otherwise similar (control group). Then, we exploit the 2008 financial crisis as an unexpected exogenous shock to the value of a firm's CSR activities and use a difference-in-differences methodology. We find evidence that diversified CSR structures increase firm value relative to the control group both before and during the financial crisis.

Our paper contributes to the CSR literature which explores CSR heterogeneity (e.g., Fu et al., 2019; Mazutis, 2013; Seo et al., 2021; Wang & Choi, 2010; Zhang et al., 2020). Our contribution to this line of research is threefold. First, we find that firms exhibit various CSR structures with a general tendency towards CSR specialization. Second, we show that firm characteristics (namely, CSR concerns, degree of internationalization, industry membership, size, and financial slack resources) affect CSR structures. Third, we find evidence that diversified CSR structures increase firm value relative to their counterparts with focused CSR structures.

We also contribute to the corporate strategy literature focusing on firm stakeholders and related CSR issues prioritization. This literature provides different classifications to conceptualize such prioritizations (e.g., Bridoux & Stoelhorstm, 2014; Capelle-Blancard & Petit, 2017; Clarckson, 1995; Fu et al., 2019; Metcalfe, 1998; Mitchell et al., 1997; Phillips, 2003), which can help managers define who and what should receive more CSR actions. Instead of focusing on which stakeholders and CSR issues a firm should prioritize, we investigate how managers actually structure their CSR actions and what are their firm value impacts. Our results provide evidence that while firms use different CSR structures, they tend to focus on a unique CSR dimension.

To illustrate the importance of examining how firms actually behave instead of examining what their stated intentions are, we use the example of Marc Benioff, Chief Executive of Salesforce, who has written books and opinion pieces arguing that earnings are usually not adequate in that firms should do good. After reporting quarterly earnings in August 2020 that smashed Wall Street's estimates, Benioff stated in a Mad Money interview on August 25 (Clifford, 2020): "*This is a victory for stakeholder capitalism because I think, you know, that we did a great job for our shareholders this quarter, but we also did a great job for our stakeholders, as well.*" The following day in the midst of the pandemic, Salesforce notified 1000 staff that their jobs were being eliminated (Admin, 2020). In his explanation of why very few companies, including Salesforce that signed the Business Roundtable statement to broaden the traditional obsession with the bottom line to include societal concerns, did not submit the statement to their governing boards for approval, Benioff stated that it was because member companies have already embraced the statement's principles (Goodman, 2020). Benioff further noted that (Goodman, 2020): "*The statement has to be viewed as both capturing an evolution and expressing an aspiration.*"

The remainder of this paper is organized as follows. The second section provides a literature review and develops testable hypotheses. The third section outlines the data and the variables. The fourth, fifth, and sixth sections describe the different analyses used and the findings from their implementation. The seventh section concludes.

Literature Review and Hypotheses Development

Variety in CSR Structures

According to McWilliams and Siegel (2001), CSR encompasses all actions intended to further some social good, beyond the interests of the firm and that which is legally required. As such, CSR covers a wide variety of actions including, for instance, those dealing with community, diversity, employee relations, environment, product, human rights, and governance issues. Given this variety of actions and the different possible levels of commitment, there are countless combinations from which managers can choose to structure the firm's CSR engagement. This wide range of possible CSR structures is reflected in the important heterogeneity of the CSR behaviors of firms reported in the literature (e.g., Flammer & Kacperczyk, 2019; Nardi et al., 2020; Saridakis et al., 2020). With regard to CSR engagement, a firm has two main options: focusing its CSR actions on one (or few) particular CSR domain(s) or spreading these actions across many different domains (Brower & Mahajan, 2013). For the purpose of this study, we refer to the first option as CSR specialization and the second as CSR diversification based on their engagement in seven important CSR dimensions.

While a large part of the prior CSR literature concentrates primarily only on the level of CSR (Wang & Choi, 2010), some studies reflect the heterogeneity in CSR structures in their tests (e.g., Belu & Manescu, 2013; Benabou & Tirole, 2010; Brammer & Pavelin, 2006; Brower & Mahajan, 2013; Cavaco & Crifo, 2014; Fu et al., 2019; Hillman & Keim, 2001; Mazutis, 2013; Seo et al., 2021; Tang et al., 2012; Wang & Choi, 2010; Zhang et al., 2020). For instance, Fu et al. (2019) define six different corporate

social performance profiles to address the question of why firms may adopt different CSR structures. Mazutis (2013) constructs four CSR structures and links them to executive orientation and Brower and Mahajan (2013) investigate the determinants of such heterogeneity.

Other studies (Cavaco & Crifo, 2014; Seo et al., 2021; Tang et al., 2012; Wang & Choi, 2010) examine whether CSR structures drive some aspects of corporate financial performance. Seo et al. (2021) investigate variety in corporate donations by large U.S. public corporations and find a positive association between such variety and firm profitability. Cavaco and Crifo (2014) study whether there is a complementarity and/or a substitutability between the different CSR dimensions that lead to higher financial performance. Their results show that human resources and business behavior towards customers and suppliers are complementary, whereas environment and business behavior towards customers and suppliers are substitutable. Tang et al. (2012) examine whether the relatedness between CSR dimensions affects firm financial performance. They measure the relatedness based on the correlations among CSR dimensions and find that firms focusing on related dimensions, starting with internal CSR dimensions, exhibit higher financial performance. Wang and Choi (2010) investigate the degree of consistency in corporate social performance across multiple domains and over time with respect to a particular CSR domain. They find that temporal consistency and interdomain consistency interact positively to influence a firm's financial performance.

Although these studies recognize the multidimensionality nature of CSR and start to investigate how CSR is structured, little is known about the differences and/or relatedness among the CSR dimensions, and the value impact of these differences and/or relatedness (Cavaco & Crifo, 2014; Tang et al., 2012). Obviously, more research attention is needed to fully explore CSR structures heterogeneity (Brower & Mahajan, 2013). In this paper, we aim to extend this literature by addressing the following important and related but unanswered questions: What is the main pattern in the CSR structures heterogeneity? Do firms specialize or diversify their CSR actions? What are the characteristics of the firms which specialize versus those that diversify their CSR structures? What is the firm value impact of CSR specialization versus diversification?

Do Firms Specialize Their CSR Commitments?

The stakeholder theory embodies the idea that managers, when adopting policies and enacting activities, need to consider and balance the interests of a firm's various stakeholders (Clarkson, 1995; Donaldson & Preston, 1995). In practice, even if the managers are motivated and interested in doing so, they always do not achieve this end (Reynolds et al., 2006). Two constraints can impede their efforts to balance the claims of stakeholders and lead us to expect more specialized CSR structures: unequal stakeholders' saliency and limited slack resources.

Unequal Stakeholders' Saliency

Stakeholders' claims not only compete for managerial attention but are affected by a firm's scarce resources. Choosing CSR actions to respond to these claims becomes a challenging task for managers. Theoretically, Mitchell et al. (1997) suggest stakeholder saliency as a mean to assess the validity and thereby help to prioritize these stakeholders' claims. They define stakeholder saliency as the extent to which a stakeholder possesses one or more of the three attributes of power, legitimacy, and urgency. Therefore, a firm stakeholder that possesses one, two, or all three attributes is considered as being a "latent stakeholder," an "expectant stakeholder," or a "definitive stakeholder," respectively.

The unequal saliency and thereby prioritization of stakeholders can also be derived using the competitive advantage argument and the resource-based theory. Under the resource-based theory, "resources" refer to anything that allows the firm to conceive and implement strategies that improve its efficiency and effectiveness (Barney, 1991). By engaging in strong relationships with stakeholders, a firm can generate intangible assets (Hillman & Keim, 2001; Tang et al., 2012) such as loyalty among customers and suppliers, lower turnover among employees, or enhanced reputation, which could ultimately translate into a source of competitive advantage. Therefore, a firm is expected to focus on relationships with stakeholders that have high power, to whom the firm has a moral obligation, or with whom the firm expects to create value (Harrison et al., 2007).

Empirically, different studies show that firms prioritize one or some stakeholders, while ignoring or even negatively affecting others (e.g., Bridoux et al., 2014; Oikonomou et al., 2014; Surroca et al., 2013; Tashman & Raelin, 2013). Several real examples of situations where managers prioritize stakeholders' interests also exist. For instance, the computer company ASUS, which exhibits an excellent environmental performance, has repeatedly been targeted and criticized for its mis-conducts in other social domains such as child labor (Fu et al., 2019). Similarly, renewable energy companies prioritize the environmental impacts of energy production (Bird et al., 2002), while some of them have faced criticism about paying low wages (Williamson, 2008).

Based on the stakeholder saliency model (Mitchell et al., 1997), we contend that a firm's stakeholders do not have equal saliency which might constrain managers from equally balancing all stakeholders' interests. Therefore, firms are more likely to specialize their CSR actions.

Slack Resources

The slack-resources theory is widely accepted in the CSR literature (Orlitzky et al., 2003). The theory is rooted within the organizational slack view of discretionary resources and proposes that a firm's slack is a prerequisite to CSR engagement. The more diversified this engagement is, the costlier the engagement will be for the firm. Accordingly, a firm's higher (lower) levels of slack resources are more likely to be associated with diversified (specialized) CSR actions.

Based on both arguments, unequal stakeholders' saliency and scarce slack resources, we argue that managers are more likely to choose to specialize their CSR actions. Hence, our first hypothesis is as follows:

Hypothesis (H1) Firms are more likely to specialize their CSR structures.

Which Firms Specialize Their CSR Actions?

If firms tend to specialize their CSR activities, then which firms do so? To answer this question, we rely on the two explanations for CSR specialization we provided in the previous section and on the determinants of a firm's CSR commitments documented in the prior literature that might also impact CSR structures.

For the unequal stakeholders' saliency explanation, we select three variables which reflect differences in the demands for CSR actions: corporate social "irresponsibility," degree of internationalization, and industry membership. For the limited slack resources explanation, we consider two variables that capture differences in firms' abilities to supply a wide variety of CSR actions with high levels of commitment: firm size and financial slack resources.

Corporate Social "Irresponsibility"

CSR is not reduced to the idea of "doing good" only but integrates also the responsibility for "avoiding bad" deeds or the so-called corporate social "irresponsibility" (CSI) activities (Lin-Hi & Müller, 2013) such as child labor, polluting the environment, corruption, and accounting scandals.[3]

According to the path dependence theory, the history (Tang et al., 2012) or the actual pattern of a process matters (Garud et al., 2010). For a firm's CSR, this means that the choices a firm made in the past would determine the choices that it will undertake in the future. In line with this theory, different studies (e.g., Heal, 2005; Kang et al., 2016; Kotchen & Moon, 2012; McMahon, 1999; Muller & Kräussl, 2011) show that companies engage more in CSR to offset past CSI.

As corporate social "irresponsibility" (or CSR concerns) can be seen as the harm caused by firm operations or at least as the unfulfilled stakeholders' expectations, a firm with more CSI is expected to initiate greater good social actions, as a strategy to offset their bad behavior. Therefore, our second hypothesis is as follows:

Hypothesis (H2) Firms with higher social irresponsible behaviors are expected to have more diversified CSR structures. Conversely, firms with lower social irresponsible behaviors are expected to have more specialized CSR structures.

International Activities

International and domestic firms differ in their exposure to environmental, social, and governance issues and thereby in their engagements in CSR actions. While domestic corporations are affected by different economic, legal, and cultural factors specific to a certain country, international corporations face these challenges in each country in which they operate. Thus, the CSR commitment of domestic firms is far less complicated relative to international firms (Soytas & Atik, 2018). Furthermore, communication is often easier in a domestic versus international business environment (Soytas & Atik, 2018).

Empirical studies find that high CSR commitment is associated with a greater internationalization of a firm's operations (Brammer et al., 2006; Soytas & Atik, 2018). Firms with a greater degree of internationalization exhibit a wide range of CSR activities (Brower & Mahajan, 2013) and thereby a more diversified CSR structure. Based on the above discussion and previous literature, we hypothesize that

Hypothesis (H3) Firms with international activities are expected to have more diversified CSR structures while firms with domestic operations are expected to have more specialized CSR actions.

Industry Membership

Institutional theory is relevant in understanding how CSR commitment is shaped by a firm's institutional environment including a firm's industry. In their search to establish legitimacy and obtain resources, corporations face institutional pressures, including at the industry level, to behave in certain ways (Jackson & Apostolakou, 2010; Meyer & Rowan, 1977) such as initiating more and various CSR practices. These pressures are exerted through rules, negative sanctions

[3] According to Lin-Hi and Müller (2013), corporate social "irresponsibility" (CSI) can be defined as "corporate actions that result in (potential) disadvantages and/or harm to other actors."

or punishments, and through positive mechanisms such as incentives and rewards (Campbell, 2007).

Since these negative and positive mechanisms are industry specific (Dabic et al., 2016), firms belonging to the same industry face the same peer pressures to engage in similar CSR actions.[4] Indeed, different studies suggest that firms operating in the same industry tend to adopt similar CSR practices (e.g., Cano-Rodríguez et al., 2017; Chatterji & Toffel, 2010).[5]

Building on this prior literature, we argue that specialization versus diversification in CSR structures at the firm level can be partially attributed to industry membership. Thus, we hypothesize that

Hypothesis (H4) The level of a firm's CSR specialization depends on its industry membership.

Firm Size

According to legitimacy theory, larger corporations face higher public resentment, consumer hostility, and greater attention from regulators over their behaviors and thus are more likely to engage in CSR initiatives (Brammer & Millington, 2008; Dam & Scholtens, 2012; Marano & Kostova, 2016). Compared to small firms, large firms have a bigger and more diversified group of stakeholders that pressure them to behave in a more responsible way to address different social, environmental, and governance issues (Hackston & Milne, 1996; Knox et al., 2006). A response to such diverse claims from stakeholders requires important resources and capabilities that are only available to larger companies.

Empirically, it is well established that corporate social responsibility is associated with firm size (Marano & Kostova, 2016; Orlitzky et al., 2003; Padgett & Galan, 2010; Reverte, 2009; Waddock & Graves, 1997). With regard to specialization versus diversification of CSR structures, Hockerts and Wüstenhagen (2010) find that large companies, called 'Greening Goliaths,' address multiple environmental and social issues while small companies, called 'Emerging Davids,' focus on one or two issues only. Based on these considerations and previous findings, we contend that

Hypothesis (H5) Firms with large size are expected to have more diversified CSR structure while firms with small size are expected to have more specialized CSR structures.

Financial Resources Availability

Financial slack resources' view of CSR commitment stipulates that firms should have excess funds to finance CSR actions (Mishina et al., 2004; Preston & O'Bannon, 1997; Waddock & Graves, 1997). The more financial slack resources are, the greater and more diversified are the CSR initiatives that firms can afford to pursue.

Empirical evidence shows that higher retained profits are positively linked to corporate social performance (Waddock & Graves, 1997). Orlitzky et al. (2003) conduct a meta-analysis and conclude that returns to investors are positively related to a firm's social performance. Similarly, Cormier and Magnan (1999) and Clarkson et al. (2011) find that profitability is a key determinant of a firm's CSR commitment. Given the theoretical and empirical literatures, we hypothesize that

Hypothesis (H6) Firms with higher financial slack are expected to have more diversified CSR structures, while firms with lower financial slack are expected to have more specialized CSR structures.

Firm Value Implications of CSR Specialization Versus Diversification

Although the existing literature on the effect of CSR on firm financial performance or value remains inconclusive, such may not be the case for the effects of a focus versus a variety strategy for CSR engagements. The shareholders' and the stakeholders' theories are two competing theoretical views for predicting the effect of CSR structures (specialization versus diversification) on firm value.

Under the shareholders theory, the sole responsibility of business is to consider the interests and to increase profits of firm owners (Friedman, 1970). As such, firms' managers are expected to decide to accept or to reject activities and investments, including those related to CSR, on the basis of their contribution to the increase or the decrease in shareholders' wealth.

While firms have various CSR activities to engage in to manage their relations with stakeholders, not all of these activities are value increasing for shareholders (Matten, 2006; Waddock & Graves, 1997). As a consequence, little room is left for managers to engage in these activities (Johnson et al., 2019) and it is more likely that firms will focus on certain CSR activities and adopt a specialized CSR structure. All financially unprofitable social and environmental actions are not considered as a firm priority per se and are best left to governments and not-for-profit organizations (Johnson et al., 2019; Parnell et al., 2013).

In line with this expectation, different empirical studies suggest that CSR dimensions have different implications on

[4] In the same vein, policy makers design regulations for specific industries or sectors.

[5] The materiality of CSR activities also depends on the industry where a firm is operating (Ioannou & Serafeim, 2019; Khan et al., 2016).

firm value or performance. For instance, Hillman and Keim (2001) investigate S&P 500 firms and find that stakeholders (primary stakeholders such as employees, customers, suppliers, and communities) management leads to improved firm value, while social issues (not related to primary stakeholders) participation is negatively associated with firm value. Brammer et al. (2006) show that stock returns are negatively related to environment and community, but positively related to the employee relations CSR dimension. Derwall and Verwijmeren (2007) find that the cost of equity is negatively related to environment, governance, and product CSR dimensions and positively related to a social index including diversity, human rights, employee relations, and community. The findings of El Ghoul et al. (2011) suggest that only environment, employee relations, and product are negatively related to the cost of equity capital.

Based on the above theoretical discussion and on the empirical literature, we posit the following hypothesis:

Hypothesis (H7) Specialized CSR structures positively affect firm value while diversified CSR structures negatively impact firm value.

Under the stakeholders' theory, business corporations have different responsibilities to consider the interests not only of shareholders but also those of all firms' stakeholders (Freeman, 1984). Stakeholders are individuals or groups who impact or are impacted by firms' operations including investors, employees, customers, suppliers, communities, environment, and governments. An effective management of the relationships with these stakeholders is a prerequisite for a firm to achieve high financial performance and value (Freeman & Phillips, 2002; Wood & Jones, 1995).

A firm's successful relationships with its stakeholders can materialize in the form of intangible assets such as legitimacy and reputation (e.g., Hart, 1995; Jones, 1995; Porter & Kramer, 2006, 2011; Wang & Bansal, 2012) and translate into organizational survival and financial performance and value in the long run (e.g., Barney & Hansen, 1994; Hillman & Keim, 2001; Ortiz-de-Mandojana & Bansal, 2016). For instance, by fostering good relations with employees, firms can increase their labor productivity (Flammer, 2015; Flammer & Luo, 2017), innovative productivity (Flammer & Kacperczyk, 2016), and value creation (e.g., Edmans, 2011, 2012). Similarly, environmentally cautious behavior can improve a firm's value (e.g., Flammer, 2013). By acting in environmentally responsible ways, a firm can enjoy a better reputation and can benefit from a cleaner work environment and the improved satisfaction of employees and consumers (e.g., Bansal & Roth, 2000; Hart, 1995; Russo & Fouts, 1997). Empirically, there is a large body of literature suggesting a positive association between a firm's overall engagement with stakeholders and financial performance (e.g., Margolis et al., 2007; Orlitzky et al., 2003). Achieving such successful stakeholders' engagement and relationships implies a higher variety of firm CSR activities. Thus, based on the stakeholders' theory we hypothesize that

Hypothesis (H8) Diversified CSR structures positively impact firm value while specialized CSR structures negatively affect firm value.

Sample and Data

Sample Description

We construct our sample by merging the CSR data from MSCI ESG STATS (henceforth KLD) with financial and accounting data from the COMPUSTAT database. The KLD database assesses firms by assigning binary scores (1 or zero) to different attributes for seven qualitative screens and six exclusionary screens. KLD differentiates between CSR strengths and concerns. While CSR strengths reflect a firm's initiatives and actions in different CSR domains, CSR concerns reflect a firm's social, environmental, and governance issues and therefore inaction in mitigating these concerns.

We follow Mattingly and Berman (2006) and consider KLD strengths as indicators of CSR actions rather than consequences or outcomes of actions. Therefore, we restrict our sample to firms with CSR actions to investigate CSR structures, i.e., the degree of specialization versus diversification. Accordingly, all observations with no CSR strengths are removed. Our final sample includes 16,014 U.S. firm-year observations which correspond to 2727 unique firms over the period 1991–2013.

Measuring CSR Specialization

The KLD database evaluates a firm's CSR commitments over seven dimensions (qualitative screens), namely, community (*COM*), diversity (*DIV*), employee relations (*EMP*), environment (*ENV*), product (*PRO*), human rights (*HUM*), and corporate governance (*GOV*). For each firm-year observation and each CSR dimension, we compute the ratio of the CSR dimension score as the firm's score in this dimension over its total score across all CSR dimensions. Thus, the sum of the ratios of CSR dimensions is 100% by construction. We refer to the composition of the CSR dimension ratios as the CSR structure.

CSR structures can be classified on a continuum ranging from a completely diversified CSR structure across all the CSR dimensions to a specialized CSR structure in only one CSR dimension. To measure the degree of CSR specialization across firms, we compute a normalized

Herfindahl–Hirschman Index (*HHI*) of CSR dimension usage as follows:

$$SS_{i,t} = \left(\frac{COM_{i,t}}{CSR_{i,t}}\right)^2 + \left(\frac{DIV_{i,t}}{CSR_{i,t}}\right)^2 + \left(\frac{ENV_{i,t}}{CSR_{i,t}}\right)^2 + \left(\frac{PRO_{i,t}}{CSR_{i,t}}\right)^2 + \left(\frac{HUM_{i,t}}{CSR_{i,t}}\right)^2 + \left(\frac{EMP_{i,t}}{CSR_{i,t}}\right)^2 + \left(\frac{GOV_{i,t}}{CSR_{i,t}}\right)^2, \quad (1)$$

where $SS_{i,t}$ is the sum of the squared ratios of the seven CSR dimensions for firm i in year t; *COM*, *DIV*, *ENV*, *PRO*, *HUM*, *EMP*, and *GOV* refer to community, diversity, employee relations, environment, product, human rights, and governance scores, respectively. Next, we compute

$$HHI_{i,t} = \frac{SS_{i,t} - 1/7}{1 - 1/7}. \quad (2)$$

If a firm relies exclusively on a single CSR dimension, *HHI* equals one, while if a firm simultaneously uses all seven CSR dimensions in equal proportions, *HHI* equals zero. Higher *HHI* values indicate a firm's tendency to specialize in fewer CSR dimensions.

As an alternative measure to the normalized Herfindahl–Hirschman Index, we also use the normalized and adjusted entropy[6] measure computed for firm i in year t given by

$$Entropy_{i,t} = 1 - \left[-\sum_{j=1}^{7}\left(s_{i,j,t}/\sum_{j=1}^{7} s_{i,j,t}\right) * ln\left(s_{i,j,t}/\sum_{j=1}^{7} s_{i,j,t}\right)\right]/\ln(7), \quad (3)$$

where $s_{i,j,t}$ is the ratio of the CSR dimension j usage by firm i in year t. The seven CSR dimensions are community, diversity, employee relations, environment, product, human rights, and governance.[7]

Evidence on CSR Specialization

Overview of CSR Specialization in Public U.S. Firms

Panel A of Table 1 provides detailed summary statistics for U.S. firms' involvements in the seven CSR dimensions (community, diversity, employee relations, environment, product, human rights, and corporate governance). We find that the mean ratios are different depending on the CSR dimension used. The highest sample mean ratios to total CSR are those of diversity and employee relations dimensions with 0.356 and 0.228, respectively.[8]

Panel B of Table 1 presents summary statistics for our two CSR specialization measures. The *HHI* index (*Entropy*) mean is almost equal to 69% (78%). With these two high values, both indicators provide initial evidence of CSR specialization in our sample.

Cluster Analysis

Cluster analysis is a common statistical technique used in exploring and discovering the structure of data. It relies on the minimization of the variance within clusters (in terms of the Euclidian distance of a firm-year observation from the center of its own cluster) and the maximization of the variance between clusters (in terms of the Euclidian distance of a firm-year observation from the center of other clusters) in the investigated sample. We run this analysis and identify nine distinct clusters for our sample firms.[9]

Figure 1 presents the distribution of different CSR dimensions within each identified cluster (CSR structure) using mean ratios. Six of the nine clusters of firms specialize in only one CSR dimension with a minimum of 0.57 for *HHI*. Only three clusters of firms diversify their CSR with *HHI* around 0.30–0.35.

The nine clusters are sorted in ascending order by the firms' CSR specialization measure *HHI* from the left to the right of the figure. Clusters 1, 2, 3, 4, 5, and 6 predominantly rely on one CSR dimension for their CSR engagement, namely governance, diversity, environment, employee relations, product, and community, respectively. The cluster

[6] We compute the adjusted *Entropy* so that it yields the same directional interpretation as the HHI index so that high (low) values indicate specialization (diversification).

[7] As another alternative measure of CSR specialization, we follow Colla et al. (2013) and John et al. (2021) and compute a dummy variable *Sup90* which equals one if a firm obtains at least 90% of its CSR from one CSR dimension and zero otherwise. A value of one indicates that the firm is highly concentrated in its CSR structure. All the obtained results are qualitatively similar to those with *HHI* and *Entropy* measures.

[8] We compute the percentage of the firms which rely on each CSR dimension for their CSR engagement and find that 54.52% and 42.37% use, respectively, the diversity and employee relations dimensions. Also, an important share of the firms, which is 27.87%, 23.04%, 20.55%, and 16.11%, use, respectively, the environment, governance, community, and product dimensions to structure their CSR actions. Finally, few (almost 2%) of the firms in the sample rely on the human rights dimension for their CSR. The inclusion of this dimension tends to understate the measures of specialization. Overall, firms are different in their usage of the seven CSR dimensions and thereby present various CSR structures.

[9] For the identification of clusters, we use the Stata command cluster *kmeans* with clusters defined over all seven CSR dimensions simultaneously and run *kmeans* for up to 15 clusters. We then apply a stopping rule based on the Calinski/Harabasz index.

Table 1 Summary statistics

CSR ratios	Mean	Std Dev	Minimum	25th Percentile	Median	75th Percentile	Maximum
Panel A: summary statistics on CSR structures							
Governance	0.138	0.310	0.000	0.000	0.000	0.000	1.000
Community	0.075	0.189	0.000	0.000	0.000	0.000	1.000
Diversity	0.356	0.394	0.000	0.000	0.250	0.667	1.000
Environment	0.133	0.267	0.000	0.000	0.000	0.167	1.000
Product	0.064	0.189	0.000	0.000	0.000	0.000	1.000
Human rights	0.006	0.056	0.000	0.000	0.000	0.000	1.000
Employee	0.228	0.334	0.000	0.000	0.000	0.400	1.000
Panel B: summary statistics on CSR specializations							
HHI	0.689	0.343	0.020	0.417	1.000	1.000	1.000
Entropy	0.777	0.262	0.030	0.644	1.000	1.000	1.000
Panel C: summary statistics on firm characteristics							
CSR concerns	2.037	2.143	0.000	1.000	1.000	3.000	18.000
Size	7.598	1.748	1.286	6.300	7.592	8.821	13.590
Cash-flows	0.092	0.179	−4.835	0.060	0.107	0.157	0.910
Leverage	0.188	0.194	0.000	0.025	0.136	0.282	0.968
Profitability	0.099	0.171	−4.847	0.052	0.104	0.165	0.656
R&D intensity	0.039	0.096	0.000	0.000	0.000	0.040	2.313
Tobin's Q	2.175	1.746	0.335	1.248	1.664	2.474	48.395
Cash holdings	0.204	0.303	0.000	0.034	0.105	0.263	5.058
Capital expenditures	0.067	0.081	0.000	0.0233	0.044	0.080	1.271
Advertising intensity	0.015	0.044	0.000	0.000	0.000	0.009	0.606
Sales growth rate	0.143	0.451	−1.000	0.008	0.081	0.181	10.127
Fixed assets/book assets	0.282	0.223	0.000	0.104	0.220	0.406	0.957

This table presents summary statistics on ratios of scores of different CSR dimensions to the total CSR score (CSR structure), measures of CSR specialization (*HHI* and *Entropy*), and a set of firm characteristics in Panel A, B, and C, respectively. *HHI* and *Entropy* are the normalized Herfindahl–Hirschman Index and the adjusted and normalized Entropy computed using ratios of the scores of CSR dimensions. A CSR dimension ratio is the CSR dimension score divided by the total CSR (across all dimensions) scores for a given firm in a given year. *CSR concerns* indicates a firm's exposure to ESG issues. *International* is the Compustat item indicating if a firm has international versus solely domestic activities. *Size* is measured by the natural logarithm of firm book assets at the most recent fiscal year-end. *Cash-Flows* is defined as earnings before extraordinary items plus depreciation and amortization and scaled by the beginning of period total assets. *Leverage* is the ratio of long-term debt plus debt in current liabilities divided by the sum of total debt and market value of equity. *Profitability* is the ratio of net income to book value of total book assets. *R&D intensity* is the ratio of the current annual research and development expense divided by total book assets at the end of the previous year. *Tobin's Q* is computed as market value of equity plus liquidating value of preferred stock plus book value of debt minus balance sheet deferred taxes and investment tax credit divided by total assets at the end of year $t-1$. Market value of equity is defined as number of shares outstanding multiplied by stock price at the end of the year. *Cash holdings* is cash and short-term investments over total assets, both measured at the end of a year. *Capital expenditures* ratio is current annual capital expenditures scaled by total book assets at the end of the previous year. *Advertising intensity* is the ratio of annual advertising expenses to annual sales measured at the end of a fiscal year. *Sales growth* rate is current annual sales divided by sales of the previous year minus one. *Fixed assets to book assets* is the ratio of book value of property, plant, and equipment to value of total book assets. All the continuous variables are winsorized at the first and the 99th percentile

mean ratio of each CSR dimension ratio is 0.999, 0.992, 0.980, 0.934, 0.806, and 0.664, respectively.

Clusters 7, 8, and 9, which represent together 26.09% of the firm-year observations in the sample, include firms which use a mix of CSR dimensions. Cluster 7 is largely dominated by CSR dimensions of diversity and governance with mean ratios, respectively, of 0.419 and 0.408. For Cluster 8 (9), there are four main CSR dimensions: employee relations, environment, product, and community (diversity, employee relations, environment, and community). Their mean ratios, respectively, are 0.472, 0.19, 0.11, and 0.082 (0.45, 0.241, 0.138, and 0.096).

In summary, the evidence from our cluster analysis suggests that there are different CSR structures and that CSR specialization is an important phenomenon for public U.S. firms. Almost three-quarters (73.91%) of the sample firms rely predominantly on one CSR dimension.

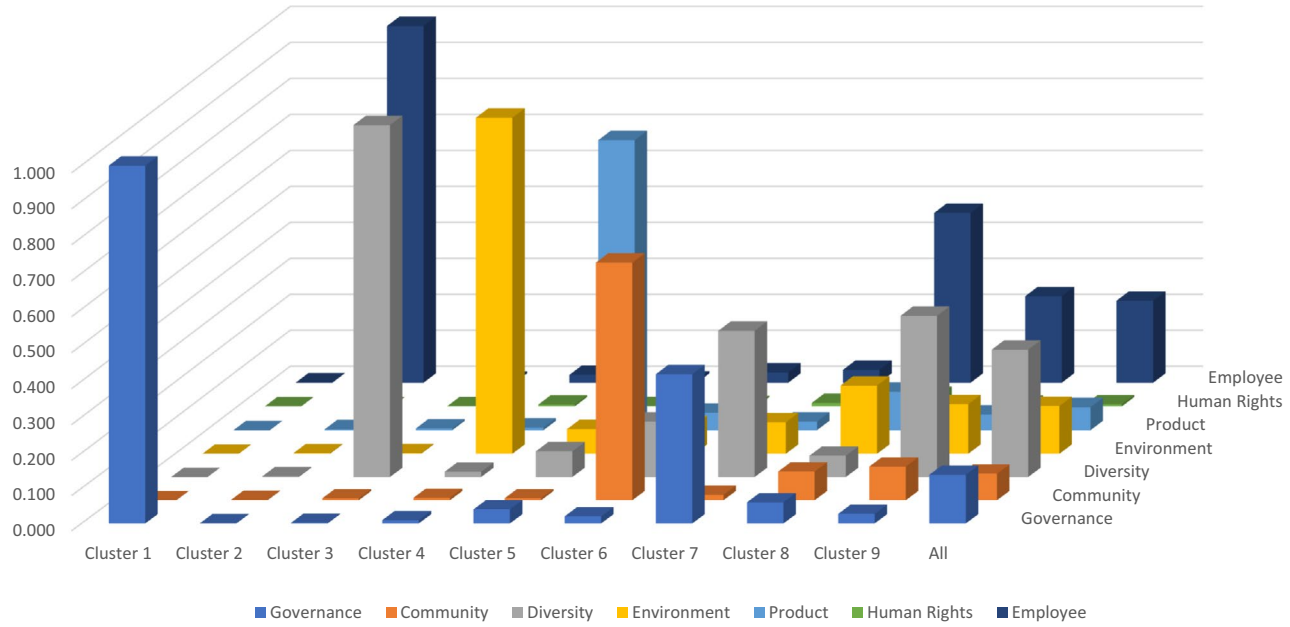

Fig. 1 Proportions of CSR dimensions within a cluster. This figure plots firm-year observations clustered according to their distributions of ratios of CSR dimensions (CSR structures). A CSR dimension ratio is the CSR dimension score divided by the total CSR (across all dimensions) score. For comparison, we also report the CSR structures for the entire sample under the "All" column

Reliance on one CSR Dimension

Another way to provide some initial information about CSR specialization is to compute the number of firms with a positive CSR action for a specific dimension divided by the total number of firm-year observations in the sample (16,014). Panel A of Table 3 presents the results for 10–99% thresholds of a firm's CSR actions allocated to one specific CSR dimension.

The first (second) result reported in Panel A of Table 3 indicates that 21.7% (19.7%) of the firm-year observations are associated with the governance (community) CSR dimension using a 10% threshold. In the row "Total," we report the sum across all CSR dimensions. If firms were to allocate their CSR actions equally into all seven CSR dimensions, then the total in the 10% column would be seven (more than one because the maximum value for each CSR dimension is 100%) and zero in any other column. Conversely, if firms were to specialize in only one CSR dimension, then the total for all thresholds would be one. These results show that more than 53% (64.3%) of our firm-year observations allocate more than 99% (60%) of their CSR actions to one CSR dimension. These findings clearly support the evidence of a general tendency towards specialization in our sample.

Conditional CSR Structures

Alternative evidence of CSR structure and specialization can be obtained by examining conditional CSR structures. Basically, we impose the condition that a firm's involvement in a particular CSR dimension must exceed 30% of total CSR activities. For the set of observations that satisfy this condition, we compute the mean ratio of each CSR dimension to total CSR. The findings of this analysis are reported in Panel B of Table 2.

Using all firms in our sample, the values along the main diagonal show that the conditional mean usage for the CSR dimension upon which we condition is between 55.9 and 79.2%. Off the main diagonal, the conditional means usage for all CSR dimensions other than the one upon which we condition are relatively small (inferior to 0.2). These results show that not many firms rely on other CSR dimensions beyond the one upon which we condition. This adds additional evidence of CSR specialization in our sample.[10]

[10] These results are robust to different specifications of the conditioning threshold. In appendix 4, we provide the findings when the conditioning threshold is 40% and 50%.

Table 2 CSR structures and specializations

Panel A: reliance on one CSR dimension							
	Thresholds						
	10%	30%	50%	60%	70%	90%	99%
Governance	0.217	0.161	0.141	0.101	0.101	0.101	0.101
Community	0.197	0.101	0.062	0.028	0.022	0.022	0.022
Diversity	0.545	0.474	0.388	0.269	0.225	0.209	0.209
Environment	0.276	0.181	0.123	0.072	0.062	0.059	0.059
Product	0.149	0.083	0.057	0.028	0.026	0.026	0.026
Human rights	0.016	0.006	0.004	0.002	0.002	0.002	0.002
Employee	0.420	0.311	0.237	0.143	0.118	0.111	0.111
Total	1.819	1.317	1.011	0.643	0.557	0.530	0.530
Panel B: conditional CSR structures							
Condition	GOV	COM	DIV	ENV	PRO	HUM	EMP
Governance > 30%	0.792	0.008	0.109	0.026	0.019	0.003	0.044
Community > 30%	0.018	0.559	0.190	0.076	0.043	0.004	0.109
Diversity > 30%	0.043	0.055	0.718	0.051	0.025	0.002	0.107
Environment > 30%	0.035	0.048	0.108	0.628	0.042	0.005	0.135
Product > 30%	0.035	0.046	0.089	0.071	0.613	0.001	0.146
Human rights > 30%	0.063	0.037	0.056	0.119	0.015	0.603	0.108
Employee > 30%	0.025	0.037	0.149	0.079	0.045	0.003	0.661

This table presents different analyses of CSR structures and specializations. Panel A reports the share of firm-year observations that use one CSR dimension above a given threshold. For example, column "10%" presents the share of observations for which more than 10% of CSR actions are from one CSR dimension. Other columns are defined similarly. The row "Total" is the sum of all share values in a column and represents the share of firm-year observations that employ more than a given threshold level of CSR actions from at least one CSR dimension. Panel B provides conditional CSR structures. We impose the condition that a firm's involvement in a particular CSR dimension must exceed 30% of total CSR actions. For the set of observations that satisfy this condition we compute the mean ratios of each CSR dimension (CSR structure)

Which Firms Specialize?

The previous analyses indicate that firms in our sample exhibit different CSR structures and that CSR specialization is a widespread practice among them. Now, we examine the relationships between firm characteristics and the degree of CSR specialization or diversification. We measure corporate social "irresponsibility" using KLD CSR concerns. We use an indicator variable, available in Compustat, which equals one for firms having international activities in order to distinguish between firms with international versus domestic activities. The firm industry membership is computed using the Fama and French 17 industries.[11] Firm size is proxied by the natural logarithm of firm book assets at the most recent fiscal year-end. Finally, we define financial slack resources using a firm's cash-flows defined as earnings before extraordinary items plus depreciation and amortization and scaled by the beginning of period total assets. We first present the cross-sectional variation and different bivariate analyses on CSR structure and specialization. Then, we present the multivariate analyses.

Cross-Sectional Variation and Bivariate Analysis

Table 3 presents the correlation matrix between our variables. The obtained correlation coefficients between *CSR concerns*, *International*, *Size*, and *Cash-flows* variables and our two CSR specialization measures (*HHI* and *Entropy*) are negative and statistically significant at the 1% level. These correlations support our hypotheses H2, H3, H5, and H6 suggesting that firms with high (low) CSR concerns, international (domestic) activities, large (small) size, and high (low) financial slack have more diversified (specialized) CSR actions.

Next, we compute means and mean difference tests of the CSR dimension ratios and measures of CSR specialization (*HHI* and *Entropy*) for two samples based on the level of our key firm characteristics. The findings are reported in Table 4. We distinguish between firms with low versus high levels for each of the four firm characteristics *CSR concerns*,

[11] The detailed definition of the 17 industries is available at: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

Table 3 Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) HHI	1.000													
(2) Entropy	0.983***	1.000												
	(0.000)													
(3) CSR concerns	−0.241***	−0.265***	1.000											
	(0.000)	(0.000)												
(4) International	−0.267***	−0.298***	0.315***	1.000										
	(0.000)	(0.000)	(0.000)											
(5) Size	−0.404***	−0.439***	0.543***	0.416***	1.000									
	(0.000)	(0.000)	(0.000)	(0.000)										
(6) Cashflows	−0.084***	−0.083***	0.016	0.062***	0.182***	1.000								
	(0.000)	(0.000)	(1.000)	(0.000)	(0.000)									
(7) Leverage	−0.016	−0.014	0.194***	0.020	0.339***	−0.140***	1.000							
	(1.000)	(0.102)	(0.000)	(0.477)	(0.000)	(0.000)								
(8) Profitability	−0.095***	−0.096***	0.016	0.069***	0.197***	0.883***	−0.129***	1.000						
	(0.000)	(0.000)	(1.000)	(0.000)	(0.000)	(0.000)	(0.000)							
(9) R&D intensity	0.010	0.018**	−0.087***	0.011	−0.227***	−0.526***	−0.215***	−0.515***						
	(1.000)	(0.040)	(0.000)	(1.000)	(0.000)	(0.000)	(0.000)	(0.000)						
(10) Tobin's Q	−0.008	−0.002	−0.122***	0.071***	−0.222***	0.079***	−0.406***	0.139***	0.332***	1.000				
	(0.353)	(0.797)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
(11) Cash holdings	0.079***	0.087***	−0.149***	−0.031***	−0.350***	−0.213***	−0.346***	−0.246***	0.540***	0.401***	1.000			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
(12) Capital expenditures	0.044***	0.045***	−0.029***	0.024***	−0.011	0.158***	0.035***	0.071***	−0.070***	0.049***	−0.026***	1.000		
	(0.000)	(0.000)	(0.001)	(0.006)	(0.199)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)			
(13) Advertising intensity	−0.016	−0.020**	−0.059***	0.036***	−0.064***	0.120***	−0.106***	0.138***	−0.068***	0.139***	0.057***	0.032***	1.000	
	(0.068)	(0.021)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
(14) Sales growth rate	0.067***	0.070***	−0.059***	−0.017**	−0.110***	−0.050***	−0.070***	−0.055***	0.181***	0.169***	0.259***	0.170***	0.004	1.000
	(0.000)	(0.000)	(0.000)	(0.047)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.680)	
(15) Fixed assets/book assets	−0.035***	−0.037***	0.134***	0.033***	0.201***	0.130***	0.297***	0.036***	−0.279***	−0.193***	−0.349***	0.561***	−0.049***	−0.034***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

This table reports the Pearson correlation coefficients among our main variables. All variables are as defined in the notes to Table 1. All the continuous variables are winsorized at the first and the 99th percentile. *P* values are reported in the parentheses. ***, **, * denote statistical significance at 1%, 5%, and 10% levels, respectively

Table 4 Mean differences

Variables	CSR concerns			International			Size			Cash-flows		
	High	Low	Mean Diff	International	Domestic	Mean Diff	Large	Small	Mean Diff	High	Low	Mean Diff
Governance	0.070	0.165	−0.095***	0.070	0.152	−0.082***	0.046	0.262	−0.216***	0.135	0.142	−0.008
Community	0.099	0.067	0.033***	0.130	0.064	0.066***	0.118	0.032	0.085***	0.086	0.061	0.025***
Diversity	0.348	0.366	−0.019**	0.351	0.357	−0.006	0.345	0.363	−0.017**	0.341	0.367	−0.026***
Environment	0.192	0.101	0.091***	0.152	0.129	0.023***	0.178	0.090	0.088***	0.124	0.141	−0.017***
Product	0.056	0.071	−0.015***	0.068	0.063	0.006	0.064	0.059	0.005	0.069	0.064	0.004
Human Rights	0.008	0.004	0.004***	0.008	0.005	0.003***	0.009	0.002	0.007***	0.006	0.007	−0.001
Employee	0.227	0.227	0.000	0.220	0.230	−0.010	0.241	0.192	0.048***	0.240	0.217	0.023***
HHI	0.579	0.737	−0.158***	0.484	0.730	−0.246***	0.537	0.806	−0.269***	0.658	0.714	−0.057***
Entropy	0.682	0.818	−0.136***	0.605	0.811	−0.207***	0.652	0.871	−0.220***	0.751	0.798	−0.047***

This table presents the results of tests of the two-sample differences of the CSR dimension ratios and measures of CSR specialization (*HHI* and *Entropy*) for each of four key firm characteristics. We distinguish firms with low versus high *CSR concerns* based on the industry median for the given year. We similarly distinguish firms with low versus high values for each of the other two firm characteristics based on the industry median for the given year. *International* is the Compustat item indicating if a firm has international versus solely domestic activities. *Size* is the firm size proxied by the natural logarithm of firm book assets at the most recent fiscal year-end. *Cash-flows* is the firm's cash-flow, which is computed as earnings before extraordinary items plus depreciation and amortization, scaled by the beginning of period total assets. All the continuous variables are winsorized at the first and the 99th percentile. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively

International, *Size*, and *Cash-flows*, based on the industry median for the given year. *International* is the Compustat item indicating if a firm has international versus solely domestic activities.

Almost all of the obtained mean difference tests of the CSR dimension ratios for the four firm variables are statistically significant. Therefore, firms with high (low) CSR concerns, international (domestic) activities, large (small) size, and high (low) financial slack are more likely to have different CSR structures.

In the last two lines of Table 4, the results for the two CSR specialization (*HHI* and *Entropy*) metrics show negative and statistically significant mean differences at the 1% level. Thus, firms with low (high) CSR concerns, domestic (international) activities, small (large) size, and low (high) financial slack are more likely to specialize (diversify) their CSR involvements consistent with our H2, H3, H5, and H6.

Table 5 presents the CSR specialization measures (*HHI* and *Entropy*) and the CSR structures of the Fama and French 17 industries. We measure the degree of CSR specialization across industries the same way as we did for individual firms. We use the above Eqs. (1), (2), and (3) where *i* stands for industry rather than for firm.

This industry analysis shows two main findings. First, CSR specialization *HHI* (*Entropy*) ranges from 0.719 and 0.734 (0.805 and 0.812) for fabricated products and other industry, respectively, to 0.562 (0.670) for food industry. Thus, there is an important heterogeneity in CSR specialization among industries as we posit in our hypothesis H4.

Second, even if some industries exhibit almost similar CSR specializations, they present different CSR structures as reported from the third to the ninth column of Table 5. For instance, retail stores, and steel works industries have the same CSR specialization *HHI*, which is 0.708. Nevertheless, their CSR structures are different. They have four main CSR dimensions and have three of them in common. Retail stores (Steel works) industry has CSR dimensions ratios of 0.534 (0.127) for diversity, 0.178 (0.384) for employee relations and 0.113 (0.117) for governance. For the fourth main CSR dimension, retail stores industry uses community with a ratio of 0.092 while the steel works industry relies on environment dimension with a ratio of 0.297.

Therefore, these results show that industries are heterogeneous in both their CSR structures and specialization as expected in our hypothesis H4.

Multivariate Analysis

Based on the two theoretical explanations for CSR specialization (unequal stakeholders' saliency and limited slack resources) that we provided earlier and on the determinants of a firm's CSR commitments documented in the prior literature, we have identified the following set of characteristics which are a firm's CSR concerns, international operations, size, cash-flows, and industry membership.

Using cross-sectional variation and bivariate analysis, we examined the relationships between the degree of CSR specialization or diversification and key firm characteristics. We now use multivariate analysis to test these relationships. Table 6 presents the regression results where our measures of CSR specialization *HHI* and *Entropy* are the dependent variables. We use two specifications without and with a set of control variables.

Table 5 Industry analysis

Industry	Number Obs	HHI	Entropy	CSR structure						
				Governance	Community	Diversity	Environment	Product	Human Rights	Employee
Food	671	0.562	0.670	0.129	0.120	0.357	0.156	0.052	0.015	0.172
Chemicals	497	0.629	0.733	0.104	0.090	0.139	0.326	0.041	0.000	0.301
Machinery and business equipment	2774	0.650	0.750	0.134	0.059	0.264	0.200	0.094	0.003	0.247
Drugs, soap, perfumes, tobacco	956	0.654	0.737	0.089	0.094	0.486	0.079	0.069	0.001	0.182
Automobiles	344	0.659	0.755	0.078	0.053	0.254	0.206	0.146	0.005	0.258
Transportation	761	0.668	0.760	0.168	0.064	0.240	0.124	0.078	0.001	0.324
Construction and const. materials	556	0.674	0.769	0.148	0.106	0.234	0.227	0.059	0.004	0.222
Oil and petroleum products	894	0.683	0.772	0.195	0.086	0.121	0.222	0.016	0.032	0.329
Consumer durables	404	0.696	0.778	0.131	0.142	0.270	0.116	0.110	0.002	0.230
Textiles, apparel, and footware	371	0.703	0.786	0.154	0.121	0.469	0.064	0.021	0.021	0.150
Retail stores	1421	0.708	0.789	0.113	0.092	0.534	0.044	0.034	0.005	0.178
Steel works etc	271	0.708	0.782	0.117	0.026	0.127	0.297	0.046	0.003	0.384
Mining and minerals	224	0.711	0.795	0.203	0.121	0.161	0.191	0.000	0.056	0.267
Fabricated products	117	0.719	0.805	0.219	0.047	0.197	0.293	0.087	0.004	0.153
Other	5 753	0.734	0.812	0.145	0.061	0.443	0.079	0.063	0.001	0.207
Total	16 014	0.689	0.777	0.138	0.075	0.356	0.133	0.064	0.006	0.228

This table presents the CSR specialization measures (*HHI and Entropy*) and the CSR structures of the 17 Fama and French industries. CSR structure is the distribution of the ratios for the different CSR dimensions. A CSR dimension ratio is the CSR dimension score divided by the total CSR (across all dimensions) score for a given firm in a given year. *HHI* (*Entropy*) is the CSR specialization measure computed as the normalized Herfindahl–Hirschman index (Entropy) using the ratios of CSR dimensions

Table 6 Firm characteristics and CSR specialization

	HHI (1)	Entropy (2)	HHI (3)	Entropy (4)
CSR concerns	−0.011***	−0.012***	−0.011***	−0.011***
	(0.000)	(0.000)	(0.000)	(0.000)
International	−0.096***	−0.082***	−0.080***	−0.069***
	(0.000)	(0.000)	(0.000)	(0.000)
Size	−0.060***	−0.051***	−0.069***	−0.057***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash-flows	−0.080**	−0.064***	− −0.088*	−0.079**
	(0.011)	(0.007)	(0.092)	(0.037)
Leverage			0.103***	0.087***
			(0.000)	(0.000)
Profitability			−0.054	−0.034
			(0.339)	(0.404)
R&D intensity			−0.410***	−0.323***
			(0.000)	(0.000)
Constant	0.982***	1.046***	1.123***	1.155***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	10 283	10 283	10 144	10 144
Adj. R-squared	0.217	0.255	0.227	0.266
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

This table presents regression results for the relation between firm characteristics and CSR specialization. Firm variables are *CSR concerns*, *International* (Compustat item indicating if a firm has international versus domestic activities), *Size* (measured by the natural logarithm of the market value of common equity at the most recent fiscal year-end), and *Cash-flows* (measured as earnings before extraordinary items plus depreciation and amortization and scaled by the beginning of period total assets). The dependent variable is CSR specialization measure *HHI (Entropy)*. Models 1 and 2 (3 and 4) exclude (include) firm control variables. All right-hand side variables are lagged one-year. All specifications control for industry fixed effects and year fixed effects. Heteroskedasticity-consistent standard errors are clustered at the firm level. All variables are as defined in the notes to Table 1. All the continuous variables are winsorized at the first and the 99th percentile. *P* values are reported in the parentheses. ***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively

We follow previous studies on the determinants of corporate social and environmental engagement, and control in our analysis for three other firm-level characteristics, all of which are obtained from Compustat (e.g., Attig et al., 2016; Flammer & Kacperczyk, 2019; Gamache et al., 2020; Ioannou & Serafeim, 2012; Lys et al., 2015). Specifically, we control for firm performance, firm risk and R&D intensity. Firm performance (risk) is expected to increase (decrease) firm CSR activities (Campbell, 2007; Ioannou & Serafeim, 2012; Orlitzky & Benjamin, 2001). Also, firms with more R&D spending are expected to invest more in CSR activities (Ioannou & Serafeim, 2012; McWilliams & Siegel, 2001). Together, firms with better performance, lower risk, and more spending on R&D are expected to engage in extended CSR activities and thereby to affect the degree of firm CSR specialization. Given that the previous literature does not provide guidance on how these control variables might impact the degree of firm CSR specialization, their expected signs remain an empirical question.

We compute *Leverage* as the ratio of long-term debt plus debt in current liabilities divided by the sum of total debt and market value of equity. *Profitability* is calculated as the ratio of net income to book value of total assets. *R&D intensity* is measured by the ratio of the current annual research and development expense divided by total book assets at the end of the previous year. All regression specifications control for industry fixed effects and year fixed effects. All firm characteristics are lagged one-year.

The findings show that a firm' CSR concerns, International operations, Size and Cash-flows negatively affect the degree of CSR specialization. Almost all coefficients associated with these variables are statistically significant at the 1% level. Therefore, as we conjecture in our hypotheses H2, H3, H5, and H6, firms with high (low) CSR concerns, international (domestic) activities, larger (smaller) size, and high (low) financial slack have more diversified (specialized) CSR actions.

With regard to industry membership, the related and unreported coefficients are either insignificant or positive and significant with different magnitudes. Therefore, the level of a firm's *CSR specialization* depends on its industry belonging as we expected in our hypothesis H4. The coefficient estimates for the industry dummies in models 3 and 4 of Table 6 are provided in Appendix 6.

Additional support for hypothesis H4 is provided using Jaffe's (1986) distance to capture CSR structures similarities. The findings show an important heterogeneity in CSR structures between and within industries. The details of this analysis are given in "CSR similarity."[12]

[12] We also run probit regressions using the clusters that we have already defined. Our dichotomic-dependent variables are computed based on firm membership in the six specialized clusters of CSR dimensions (Product, Diversity, Governance, Employees, Community, and Environment). We also define the baseline comparison group using the set of our three diversified CSR clusters already computed. The findings are provided in Appendix 3. Except for the community CSR dimension, *Size* negatively, and significantly drives CSR specialization which is consistent with our Hypothesis H5 [Larger (smaller) firms are expected to have more diversified (specialized) CSR structures]. *International* operations are found to negatively and significantly drive CSR specialization in Diversity and Employee relations in support of our Hypothesis H3 [Firms with international (domestic) activities are expected to have more diversified (specialized) CSR actions].

Table 7 Firm characteristics and CSR specialization: robustness checks

	HHI (1)	Entropy (2)	HHI (3)	Entropy (4)
CSR concerns	−0.014***	−0.012***	−0.009**	−0.010***
	(0.002)	(0.000)	(0.037)	(0.000)
International	−0.132***	−0.082***	−0.104***	−0.069***
	(0.000)	(0.000)	(0.000)	(0.000)
Size	−0.104***	−0.051***	−0.123***	−0.060***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash-flows	−0.199***	−0.064***	−0.140*	−0.048
	(0.008)	(0.007)	(0.090)	(0.113)
Leverage			0.191***	0.088***
			(0.000)	(0.000)
Profitability			−0.150*	−0.073**
			(0.072)	(0.016)
R&D intensity			−0.703***	−0.330***
			(0.000)	(0.000)
Constant	1.515***	1.067***	1.639***	1.135***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	10 283	10 283	10 144	10 144
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Pseud R^2	0.127	0.119	0.135	0.125

This table presents robustness checks of the baseline regression results for the relation between firm characteristics and CSR specialization based on Tobit regressions. All the variables are defined in the legend of Table 1. All the continuous variables are winsorized at the first and the 99th percentile. *P* values are reported in the parentheses. Heteroskedasticity-consistent standard errors are clustered at the firm level. ***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively

Robustness and Additional Tests

Tobit Regressions

One possible concern that may impact our earlier multivariate regressions results in Table 6 is that our dependent variable *HHI* is censored at the upper and lower bounds. Firms with the maximum CSR specialization (*HHI* = 1) represent 53% of the total observations. To examine whether our findings are affected by this issue, we rerun our regressions in Table 6 using Tobit models. The results are reported in columns 2–5 in Table 7.

Except for the coefficient of *Cash-flows* in the fourth model, all the other coefficients of CSR specialization drivers (*CSR concerns, International, Size,* and *Cash-flows*) are negative and significant. Thus, our earlier findings remain essentially unaffected.

Difference-in-Differences Regressions

As noted earlier, there is a large literature that finds mixed results for the relationship between corporate social responsibility and financial performance. One important argument proposed to explain these mixed results is the existence of endogeneity issues that render the findings biased and inconsistent. Two potential sources of endogeneity are reverse causality and the path dependence of CSR engagement. Reverse causality implies that the link runs from CSR structure to financial slack and from financial slack to CSR structure. Path dependence argues that history matters (Tang et al., 2012) so that a firm's past CSR influences its current CSR.

To deal with these endogeneity issues and to correct for unobservable fixed effects, we rely on difference-in-differences (DiD) regressions. This approach allows us to test how the external variation in financing availability and *CSR concerns* impact firm CSR structures. This is important because without exogenous variations, it is difficult to attribute changes in CSR structures to a firm's financial slack and/or *CSR concerns*. To implement our DiD regressions, we rely on two specific periods that provide external and unexpected variations in financing availability and *CSR concerns.*

First, we follow Hong et al. (2012) and exploit the internet bubble period as a quasi-natural experiment where the availability of finance for firms in high-tech industries increased. Since firms belonging to the high-tech industries were the primary beneficiary of available finance during this period, we consider them as the treated group while firms in other industries as the control group. If access to financial slack drives CSR structure, then firms with low *Cash-flows* in the treated group (high-tech industries) are expected to be more reactive during the internet bubble by adjusting their CSR structures towards more diversification.

Second, we follow Dyck et al. (2019) and exploit BP Deepwater Horizon oil spill as another quasi-natural experiment to test the path dependence between *CSR concerns* and CSR structure. Although the disaster was enacted by BP, its effects spread to the other firms in the extractive industries and put certain CSR dimensions under high public, media, and government scrutiny and pressure. If *CSR concerns* drive CSR structures, we expect that firms with high *CSR concerns* in the extractive industries (treated group) to be more reactive during the Deepwater shock period by adjusting their CSR structures towards more specialization to deal with the increased pressures from stakeholders.

In the two following sub-sections, we describe the empirical models used and we provide the findings.

Internet Bubble as a Quasi-Natural Experiment We define the internet bubble period as observations from 1996 through 2000. We follow Morris and Alam (2012) and clas-

Table 8 Firm characteristics and CSR specialization: DiD regressions

	HHI	Entropy	HHI	Entropy
	(1)	(2)	(3)	(4)
	Z = Cash-flows		Z = CSR concerns	
Z*Shock*Treated	−0.2226**	−0.2002***	0.4415***	0.2509***
	(0.013)	(0.004)	(0.002)	(0.005)
Z*Shock	0.0592	0.0528*	−0.0093	0.0086
	(0.123)	(0.070)	(0.793)	(0.726)
Z*Treated	0.0693	0.0649	−0.1222	−0.0260
	(0.402)	(0.304)	(0.654)	(0.886)
Shock*Treated	0.0856*	0.0708**	−0.2569***	−0.1436**
	(0.059)	(0.044)	(0.005)	(0.014)
Shock	−0.0414*	−0.0355**	−0.0182	−0.0181
	(0.078)	(0.045)	(0.376)	(0.236)
Treated	−0.1050	−0.0875	−0.2031***	−0.1721***
	(0.172)	(0.149)	(0.001)	(0.000)
CSR concerns	−0.0063	−0.0059	0.0162*	0.0080
	(0.523)	(0.437)	(0.051)	(0.209)
International	−0.0628	−0.0421	−0.1748***	−0.1411***
	(0.128)	(0.208)	(0.000)	(0.000)
Size	−0.0499***	−0.0414***	−0.1122***	−0.0893***
	(0.001)	(0.001)	(0.000)	(0.000)
Cash-flows	−1.0498***	−0.7200**	0.1064	0.0664
	(0.009)	(0.020)	(0.290)	(0.314)
Leverage	0.0377	0.0425	0.1181	0.0931*
	(0.755)	(0.639)	(0.135)	(0.084)
Profitability	0.4311**	0.3021*	−0.0363	−0.0199
	(0.044)	(0.059)	(0.758)	(0.810)
R&D intensity	−0.2485	−0.2266	−0.2038	−0.1729
	(0.595)	(0.529)	(0.231)	(0.107)
Constant	1.2486***	1.2519***	1.3192***	1.2738***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	761	761	728	728
Industry FE	Yes	Yes	Yes	Yes
Year FE	No	No	No	No
Adj. R-squared	0.236	0.240	0.335	0.373

This table presents robustness checks of the baseline regression results for the relation between firm characteristics and CSR specialization using OLS estimations. *Shock* is a dummy variable indicating the shock period for the internet bubble (BP Deepwater) in models 1 and 2 (3 and 4). *Treated* is a binary variable indicating firm membership to the high-tech (extractive) industries in models 1 and 2 (3 and 4). *Cash-flows* is a dummy variable indicating firms with low *Cash-flows* around the industry median. *CSR concerns* is a dummy variable indicating firms with high *CSR concerns* around the industry median. All the other variables are defined in the legend of Table 1. All the continuous variables are winsorized at the first and the 99th percentile. *P* values are reported in the parentheses. Heteroskedasticity-consistent standard errors are clustered at the firm level. ***, **, * denote statistical significance at 1%, 5%, and 10% levels, respectively

sify firms as belonging to high-tech industries based on the following three-digit SIC codes: 283, 357, 360, 361, 362, 363, 364, 365, 366, 368, 481, 737, and 873. The following Eq. (4) shows our regression approach[13]:

$$\begin{aligned} Specialization_{i,t} = {} & \beta_0 + \beta_1 CSR\_concerns_{it} + \beta_2 Size_{i,t} + \beta_3 CF_i \\ & + \beta_4 International_{i,t} + \beta_5 CF_i{*}Shock_t{*}Treated_i \\ & + \beta_6 CF_i{*}Shock_t + \beta_7 CF_i \\ & {*}Treated_i + \beta_8 Shock_t{*}Treated_i \\ & + \beta_9 Shock_t + \beta_{10} Treated_i + \varepsilon_{i,t} \end{aligned} \quad (4)$$

[13] Our testing strategy is similar to that of Bushanan, Cao and Chen (2018) who examine how Corporate Social Responsibility, jointly with influential institutional ownership, affects firm value around the 2008 financial crisis.

Subscripts i and t denote firm and period (pre versus post), respectively. *Specialization* stands for our CSR specialization metric (*HHI* and *Entropy*). *Shock* is a dummy variable indicating the shift in financing availability during the internet bubble period (1996–2000). *Treated* is a binary variable indicating firm membership to high-tech industries. *CF* is a dummy variable indicating firms with low *Cash-flows* around the industry median. To ensure that the estimated effect in the post-shock period is not driven by changes in financial slack, *Cash-flows* is measured as of the pre-shock period. We cover the years 1991–2000 to have balance on each side of the internet bubble shock. We follow Dyck et al. (2019) and compute averages and then collapse the years pre- and post-shock periods (1991–1995 and 1996–2000, respectively) each into one observation.

The key coefficient of interest is the triple-difference interaction term β_5. It captures the change in *CSR specialization* of firms with low *Cash-flows* net of change in *CSR specialization* of firms with high *Cash-flows* from before to during the internet bubble period in the treated group (Hitech) and relative to the control group.

If access to financial slack drives CSR structures, then firms with low *Cash-flows* in the treated group are expected to be more reactive during the internet bubble by adjusting their CSR structures towards more diversification. Therefore, the DiD coefficient β_5 is expected to be significant and negative.

Using Eq. (4) and our two *CSR specialization* measures (*HHI* and *Entropy*) as the dependent variables, we run our difference-in-differences regressions and the results are reported in columns 2 and 3 of Table 8. With a significant and negative DiD coefficient (β_5) for the triple interaction term, our findings provide support for our expectation and thereby to our earlier findings.

BP Deepwater Horizon Oil Spill as a Quasi-Natural Experiment Following Dyck et al. (2019), we define the Deepwater shock period as observations in 2011 and 2012 and classify firms as belonging to the oil and gas extractive industries using the two-digit SIC code number 13. The following Eq. (5) shows our regression approach:

$$\begin{aligned} Specialization_{i,t} = {} & \beta_0 + \beta_1 CON_i + \beta_2 Size_{i,t} \\ & + \beta_3 Cash\_flows_{i,t} + \beta_4 International_{i,t} \\ & + \beta_5 CON_i{*}Shock_t{*}Treated_i + \beta_6 CON_i{*}Shock_t \\ & + \beta_7 CON_i{*}Treated_i + \beta_8 Shock_t{*}Treated_i \\ & + \beta_9 Shock_t + \beta_{10} Treated_i + \epsilon_{i,t}, \end{aligned} \quad (5)$$

where subscripts i and t denote firm and period (pre versus post), respectively. *Specialization* stands for our CSR specialization metric (*HHI* and *Entropy*). *Shock* is a dummy variable indicating the BP Deepwater disaster period (2011–2012). *Treated* is a binary variable indicating firm membership to extractive industries. *CON* is a dummy variable indicating firms with high *CSR concerns* around the industry median. To ensure that the estimated effect in the post-shock period is not driven by changes in *CSR concerns*, this variable is measured as of the pre-shock period. The sample covers the years 2009–2012 to have balance on each side of the period. As in Dyck et al. (2019), we compute averages and then collapse the years pre- and post-shock periods each into one observation.

The coefficient of interest is the triple-difference interaction term β_5. It captures the change in *CSR specialization* of firms with high *CSR concerns* net of change in *CSR specialization* of firms with low *CSR concerns* from before to during the BP Deepwater crisis period in the treated group (Extractive industries) and relative to the control group.

If access to *CSR concerns* drives CSR structures, then firms with high *CSR concerns* in the treated group are expected to be more reactive during the BP Deepwater disaster by adjusting their CSR structures towards more specialization. Therefore, the DiD coefficient β_5 is expected to be significant and positive.

We run our difference-in-differences regressions using Eq. (5) and our two *CSR specialization* measures (*HHI* and *Entropy*) as the dependent variables. The findings are reported in columns 4 and 5 of Table 8. With a significant and positive DiD coefficient (β_5) for the triple interaction term, our results provide support for our expectation. Thus, our earlier findings remain unchanged.[14]

CSR Similarity

We measure the degree of CSR specialization (diversification) across firms by using the Herfindahl–Hirschman Index and Entropy, two indicators that have been frequently used to calculate company and industry concentration or diversification. Although they are practical in their computation and interpretation, they have some limitations such as that they do not account for the nuances and complexities of CSR combinations. For instance, although we find that almost two thirds of firms exhibit a specialized CSR structure, the *HHI* and *Entropy* metrics do not capture differences in specialization depending on the CSR dimension focused on. Similarly, while low values of these measures indicate CSR diversification, they do not reflect the variety in diversified CSR structures. Another limitation of these CSR specialization

[14] Additional tests show that the CSR ratings of firms in the extractive industries changed following the BP Deepwater disaster shock. As expected, the ratios in the parentheses of Eq. (1) decreased for these firms' Environment and Product dimensions, and increased mechanically for these firms' Governance and Human rights dimensions.

Table 9 CSR similarity

Industry number	Industry label	Jaffe distance				CSR specialization	
		Mean	SD	Median	Mean Diff t test	HHI	Entropy
5	Consumer durables	0.351	0.363	0.408		0.696	0.778
2	Mining and minerals	0.379	0.362	0.408	0.0285***	0.711	0.795
12	Automobiles	0.381	0.351	0.447	0.0013	0.659	0.755
8	Construction and construction materials	0.388	0.357	0.500	0.0075	0.674	0.769
11	Machinery and business equipment	0.392	0.356	0.447	0.0039	0.65	0.750
13	Transportation	0.421	0.367	0.500	0.0289***	0.668	0.760
10	Fabricated products	0.431	0.386	0.500	0.0101	0.719	0.805
9	Steel works etc	0.447	0.368	0.500	0.0159	0.708	0.782
17	Other	0.447	0.388	0.500	0.0001	0.734	0.812
6	Chemicals	0.452	0.347	0.500	0.0048	0.629	0.733
1	Food	0.453	0.332	0.500	0.0011	0.562	0.670
3	Oil and petroleum products	0.459	0.373	0.500	0.0059*	0.683	0.772
4	Textiles, apparel and footware	0.477	0.381	0.534	0.0180***	0.703	0.786
7	Drugs, soap, perfumes, tobacco	0.509	0.351	0.577	0.0324***	0.654	0.737
15	Retail stores	0.557	0.368	0.707	0.0483***	0.708	0.790
All industries		0.443	0.382	0.500		0.689	0.777

This table presents some descriptive statistics and mean difference tests of our *CSR similarity* measure. *CSR similarity* is computed using Jaffe's (1986) distance between any pair of firms *i* and *j* within an industry *s* for a given year *t*. It is constructed based on firm indicators of engagement in each one of the seven CSR dimensions (namely community, diversity, employee relations, environment, product, human rights, and corporate governance) and using Eq. (6). Mean difference tests are computed between each two consecutive industry distances means (i.e., the closest possible means). ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively

metrics is their inability to capture the potential interactions, such as complementarities and/or substitutabilities (Cavaco & Crifo, 2014), between CSR dimensions and even the attributes within each dimension.

One possible way to capture the above-mentioned complexities is by using Jaffe's (1986) distance. Previous economics and finance literature has used this metric, for example, to estimate technological similarity (e.g., Bena & Li, 2014; Bloom et al., 2013; Jaffe, 1986) and corporate cultural similarity for firm mergers (Bereskin et al., 2018). In comparison to a Euclidian-distance-based measure, the Jaffe distance has an important advantage that it is not affected by the frequent scores of zeros in KLD data which could cause many firms to mechanically look "similar" to other firms (Bereskin et al., 2018).[15]

We compute Jaffe's (1986) distance as a measure of CSR similarity between any pair of firms *i* and *j* within an industry *s* for a given year *t* using the following equation:

$$CSR.Similarity_{i,j,t,s} = \frac{X_{i,t}X'_{j,t}}{\left(X_{i,t}X'_{i,t}\right)^{0.5}\left(X_{j,t}X'_{j,t}\right)^{0.5'}}, \quad (6)$$

where vector $X_{i,t} = (X_{i,t,1}, X_{i,t,2}, \ldots, X_{i,t,7})$ and $X_{j,t}$ correspond to firm *i*'s and firm *j*'s indicators of engagement in each of the seven CSR dimensions (namely community, diversity, employee relations, environment, product, human rights, and corporate governance). Jaffe's (1986) distance equals 1 for two firms (i, j) with identical CSR structures in terms of their vectors (strings) containing the seven CSR dimensions, and 0 for two firms whose CSR structures are orthogonal.

Some descriptive statistics of the computed distances are provided in Table 9. A first analysis of this table shows that 16.37% of the distances are equal to zero. Thus, more than 83% of distances are inferior to 1 and reveal differences among firms in their CSR engagement structuration. The whole sample mean CSR similarity score, *CSR Similarity*, is 44.3% with a wide range from 35.1% for consumer durables industry to 55.7% for retail stores industry. We compute the difference tests between each two consecutive industry distances means (i.e., the closest possible means) and the results are reported in the 6th column of Table 9. Five of the 14 differences are highly significant at the 1% level. In the last two columns and for comparison, we provide the values of our two measures of CSR specialization. The correlation coefficients between industry Jaffe distances and industry CSR specialization metrics are weak with 0.65% (− 5.00%) for HHI (Entropy). These weak values further indicate that the two groups of measures capture different aspects of CSR engagement complexities. These results also suggest that

[15] Results for an Euclidian distance clustering analysis based on CSR dimensions ratios (CSR specialization measure) are reported in Appendix 1 (2).

researchers should exercise caution when interpreting empirical results for industry dummies and aggregate measures of CSR based on common delineators of industry membership, and they support the importance of examining specific CSR dimensions in the literature (e.g., Cavaco & Crifo, 2014; Tang et al., 2012).

Firm Value Implications of Specialized Versus Diversified CSR Structures

To study whether CSR structures affect firm value, we exploit the 2008 financial crisis as an unexpected and exogenous shock to a firm CSR activities' value and use a difference-in-differences methodology. This approach helps to remove potential endogeneity issues between these two variables. According to the literature, OLS results may suffer from an endogeneity problem since it is possible to have a bi-directional causation between CSR structures and firm value. Waddock and Graves (1997) find support for a positive synergy in that a better social performance can lead to better financial performance, which in turn can lead to better social performance.

In the first step of our analysis setting, we match firms with a CSR structure (treatment group) with firms without any CSR structure but are otherwise similar (control group). In the second step, we compare the difference in firm value before and after the treatment for treated firms with the corresponding difference for controls. In the following, we describe these two steps in more detail before presenting the findings.

Treatment and Control Groups

For the purpose of this study, we define three treatment groups. The first one consists of all firms in our sample, i.e., firms with a CSR structure. The second treatment group consists of all firms with a specialized CSR structure (i.e., firms with $HHI = 1$). The third group consists of all firms with a diversified CSR structure (i.e., firms with *HHI* less than 0.5). To construct the corresponding three control groups, we match firms in each treatment group with firms without any CSR structure, those that we initially excluded from our sample, but are otherwise as similar as possible to the treated firms ex ante.

For the matching, we require treated (control) firms (not) to have a (any) CSR structure during the pre-treatment period. We apply the propensity score matching (PSM) approach to assign firms to control groups in the pre-financial crisis period (2006). We follow prior finance literature, e.g., Buchanan et al. (2018), and match treated firms using two characteristics: industry and firm size. We define industry using Fama and French's 17 industry classification. Out of the remaining control candidates, we choose the closest match using PSM with the following options: one-to-one nearest neighbor, without replacements and common support. This way, we have for each treated observation one control observation. Control (Treated) observations for which there are no treated (control) observations with a sufficiently similar propensity score are discarded from the sample.

Difference-in-Differences Model Specification

The goal of this step is to compare the treated to the corresponding control groups after the treatment using multivariate difference-in-differences regressions. For this, we exploit the last 2008 financial crisis as an exogenous shock to the value of CSR activities and estimate the following equation:

$$Tobin'sQ_{i,t} = \beta_0 + \beta_1 Treated_i * Crisis_t + \beta_2 Treated_i + \beta_3 Crisis_t + Controls_{i,t-1} + \varepsilon_{i,t}, \quad (7)$$

where subscripts i and t denote firm and year, respectively. *Treated* is a dummy variable which equals one (zero) if a firm belongs to the treated (control) group. *Crisis* is a dummy variable indicating the 2008 financial crisis period. *Tobin's Q* is the dependent variable and is computed as market value of equity plus liquidating value of preferred stock plus book value of debt minus balance sheet deferred taxes and investment tax credits divided by total assets at the end of year *t-1*. Market value of equity is defined as number of shares outstanding multiplied by stock price at the end of the year. Following Lins et al. (2017) and Buchanan et al. (2018), we measure a firm's CSR structure in year 2006 to mitigate the potential concern that firms change their CSR engagements in anticipation of, or in response to, the effect of the 2008 financial crisis.

In Eq. (6), the coefficient β_3 reflects the average change in firm value from the pre-crisis to the crisis period that is common to both the treated and the control groups. The coefficient β_2 gives the average difference in firm value between the two groups in the pre-crisis time period. The coefficient β_1 is the DiD coefficient which captures the average differential change in firm value from the pre-crisis to the crisis period of the treatment group relative to the control group. With regard to our goal of assessing whether CSR structures affect firm value, we pay particular attention to β_1, β_2, and $(\beta_1 + \beta_2)$. $(\beta_1 + \beta_2)$ reflects the average difference in firm value between the treated and control groups in the crisis time period.

The DiD coefficient β_1 is expected to be significant and positive or negative. If we consider the 2008 financial crisis, following Amiraslani et al. (2017) and Lins et al. (2017), as an exogenous shock to trust during which social capital as reflected in CSR activities becomes more valuable, then β_1

is expected to be significant and positive. However, if we consider the last financial crisis, following Bushanan et al. (2018), as an exogenous shock to corporate investments that potentially amplifies the costs of CSR activities, then β_1 is expected to be significant and negative.

Under the hypothesis H7 and for firms with specialized CSR structures, we expect both $\beta_1$and β_2 to be significant and positive or at least $\beta_1$and $(\beta_1+\beta_2)$ to be positive. For firms with diversified CSR structures, we expect the opposite sign for all of these coefficients. Under the hypothesis H8 and for firms with specialized CSR structures, we expect both β_1 and β_2 to be significant and negative. For firms with diversified CSR structures, we expect the opposite sign for these coefficients.

Following studies on the determinants of Tobin's Q (e.g., Bushanan et al., 2018; Laeven & Levine, 2008; Servaes & Tamayo, 2013), we control for these firm characteristics: firm size, leverage, cash holdings, sales growth, capital expenditures, fixed assets to book assets, R&D intensity, profitability, and advertising intensity.

We define firm size as the natural logarithm of firm book assets and leverage as the ratio of long-term debt plus debt in current liabilities divided by the sum of total debt and market value of equity. We measure cash holdings as cash and short-term investments over total assets, both measured at the end of a year. Sales growth rate is set as current annual sales divided by sales of the previous year minus one. Capital expenditures ratio is computed as current annual capital expenditures scaled by total book assets at the end of the previous year. We measure fixed assets to book assets as the ratio of book value of property, plant, and equipment to book value of total book assets. We define R&D intensity as the ratio of the current annual research and development expense divided by total book assets at the end of the previous year. When research and development expense is missing, we set it to zero. We measure profitability as the ratio of net income to book value of total book assets. We construct advertising intensity as the ratio of annual advertising expenses to annual sales measured at the end of a fiscal year. In all regression models, our control variables are one-year lagged.[16] Also, we control for firm industry membership. All continuous variables are winsorized at the 1st and 99th percentile.

[16] This lagged modeling specification should further alleviate somewhat the concerns associated with endogeneity biases. A similar argument is used in the corporate governance literature (e.g., Adams et al., 2009; Jiraporn et al., 2009; Kryzanowski & Mohebshahedin, 2016).

Difference-in-Differences Results

As mentioned earlier, we define three treatment groups which represent firms with CSR structures, firms with specialized CSR structures and firms with diversified CSR structures. The PSM matching of firms with CSR structures yields 449 firms in the treatment and 449 in the control groups. Similarly, the matching of firms in specialized (diversified) structures gives 370 (192) firms in the treatment and 370 (192) in the control groups.

Given these three samples, we estimate three DiD regressions and the results are reported in Table 10. For the purpose of comparison, we start by testing whether CSR structures in general, irrespective of whether they are specialized or diversified, affect firm value. We use Eq. (6) and the DiD regression estimates are reported in the second column of Table 10. The estimate of the β_2 coefficient is positive and significant at the 5% level. Thus, the relation between CSR structures and firm value before the crisis is significant and positive. Although the estimate of the DiD coefficient is statistically insignificant, the sum $(\beta_1+\beta_2)$ which captures the average difference in firm value between the treated and control groups in the crisis time period is positive. Consequently, CSR structures positively affect firm value in both periods before and during the financial crisis.

The second estimated regression model [e.g., Eq. (6)] uses firms with specialized CSR structures as the *Treated* group. The coefficient estimates from this test are presented in the third column of Table 10. With both insignificant estimates of $\beta_1$and β_2, these results show an insignificant impact of specialized CSR structures on firm value both before and during the financial crisis.

The third regression model uses firms with diversified CSR structures as the *Treated* group. The coefficient estimates are reported in the fourth column of Table 10. The estimate of the β_2 coefficient is positive and significant at the 1% level. Therefore, the effect of diversified CSR structures on firm value before the crisis is significant and positive. The estimate of the DiD coefficient β_1 is negative and significant at the 10% level. Thus, firms with diversified CSR structures experience a loss in their firm value during the financial crisis compared to the pre-crisis period and relative to firms in the control group. Nevertheless, the average gap in firm value between the treated and control groups in the crisis time period captured by the sum $(\beta_1+\beta_2)$[17] is positive.

In the fifth and sixth columns of Table 10, we report the regression results when we use subsamples of firms with *Entropy* based specialized versus diversified CSR structures respectively. These findings are supportive of those reported in the third and fourth columns. Cumulatively, these results

[17] $(\beta_1+\beta_2)=0.2727-0.1921=0.0806$.

Table 10 Firm value and CSR structures

	Treatment variable (Treated)				
	All CSR structures	Based on HHI		Based on entropy	
		Specialized structures	Diversified structures	Specialized structures	Diversified structures
Treated*crisis	−0.0880	−0.0510	−0.1921*	0.0042	−0.2401
	(0.198)	(0.476)	(0.083)	(0.960)	(0.216)
Treated	0.1416**	0.1076	0.2727***	-0.0615	0.3633*
	(0.045)	(0.142)	(0.004)	(0.443)	(0.058)
Crisis	−0.3325***	−0.3402***	−0.3463***	−0.4319***	−0.1680
	(0.000)	(0.000)	(0.000)	(0.000)	(0.199)
Size	−0.0979***	−0.0826**	−0.0232	−0.0584**	−0.0659
	(0.007)	(0.019)	(0.578)	(0.038)	(0.409)
Leverage	−0.9708***	−0.8965***	−0.6552***	−1.0662***	0.0018
	(0.000)	(0.000)	(0.002)	(0.000)	(0.997)
Cash holdings	0.8390***	1.0871***	0.2227	0.9924***	0.1885
	(0.001)	(0.000)	(0.331)	(0.000)	(0.782)
R&D intensity	1.9407***	1.7933**	3.2632***	2.6762***	7.8513***
	(0.003)	(0.015)	(0.001)	(0.000)	(0.003)
Capital expenditure/book asset	0.9030**	0.7558	2.2906***	0.6491	2.2864*
	(0.034)	(0.133)	(0.000)	(0.141)	(0.100)
Advertising intensity	1.7754**	1.1344	−0.0422	1.6986*	0.2388
	(0.036)	(0.187)	(0.962)	(0.069)	(0.802)
Sales growth rate	0.1701*	0.1411	0.0219	0.3072**	0.2179
	(0.051)	(0.138)	(0.795)	(0.039)	(0.437)
Fixed assets/book assets	0.0098	0.1611	−0.1466	0.1175	-0.4071
	(0.955)	(0.366)	(0.582)	(0.495)	(0.498)
Profitability	1.1310***	0.8608**	2.6270***	1.0178***	6.7021***
	(0.002)	(0.015)	(0.000)	(0.005)	(0.000)
Constant	2.8346***	2.6723***	1.8448***	2.7036***	2.0782***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)
Observations	1 796	1 480	768	1 480	768
Adj. R-squared	0.426	0.444	0.493	0.449	0.559
Industry FE	Yes	Yes	Yes	Yes	Yes

The table reports coefficients estimated from the difference-in-differences regressions of *Tobin's Q* on the indicators of firm CSR structures (Treated), Crisis, and interaction term (Treated*Crisis). All the other variables are defined in the legend of Table 1. In all regression models, control variables are one-year lagged. All regressions control for firm industry membership. All continuous variables are winsorized at the 1st and 99th percentile. *P* values are reported in the parentheses. Heteroskedasticity-consistent standard errors are clustered at the firm level. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively

show that diversified CSR structures increase firm value relative to the control group in periods both before and during the financial crisis.

Overall, these results reveal that, however, the effect of specialized CSR structures on firm value is insignificant. CSR structures in general and diversified CSR structures specifically increase firm value relative to the control group in periods both before and during the financial crisis. The significant findings are consistent with those of previous studies (e.g., Harjoto & Jo, 2015; Jo & Harjoto, 2011, 2012; Waddock & Graves, 1997), which document that CSR firms experience higher firm value than non-CSR firms. Also, the finding of a positive effect of diversified CSR structures on firm value is consistent with the study of Seo et al. (2021) who examine the returns to specialization versus variety in corporate philanthropy. Their findings show a positive association between philanthropic variety across causes and firm profitability for donations by large U.S. public corporations from 2003 to 2011.

Noteworthy, the finding of a significant and negative estimate of the DiD coefficient β_1 indicates a drop in the value of firms with diversified CSR structures during the financial crisis. This result is consistent with the findings of Bushanan et al. (2018) which show that during the crisis

CSR firms experience more of a decrease in firm value than non-CSR firms. They explain this drop by the fact that during a financial crisis scarce financial resources become more valuable and CSR activities are likely to be considered as over-investment costs.[18]

Conclusion

This paper investigates how dimensions of corporate social responsibility are employed by public U.S. firms. We use a large dataset of 16,014 firm-year observations covering the period 1991–2013. We provide evidence of the reliance of firms on different CSR structures and a general tendency towards CSR specialization. Almost three-quarters (73.91%) of the firms focus on one CSR dimension. Also, we show that firms with high exposure to CSR concerns, large size, high financial slack, and with international activities tend to diversify across multiple CSR activities. Furthermore, our findings reveal important heterogeneity within CSR structures and specialization across industries. More importantly, our results provide evidence of a positive effect of diversified CSR structures on firm value relative to the firms in the control group in periods both before and during the financial crisis.

Our findings are particularly important for corporate and portfolio managers as well as for policy makers. They provide corporate managers with useful information about the CSR structures of other firms in their and in related down or upstream industries (e.g., suppliers or customers), which is very important for benchmarking how peer firms are managing their relationships with their stakeholders as well as monitoring the sustainability of their supply chain management. This might help managers to align their CSR strategies to industry peers, learn from good CSR practices, and identify weaknesses to be addressed. Our findings show that CSR specialization is not associated, on average, with higher firm value. This does not necessarily imply that all forms of CSR specialization are not profitable in an absolute sense. Although our empirical design does not allow us to directly test this assertion, we could link our findings to those reported in previous studies for a better understanding of the managerial implications of our results. We argue that some specific forms of CSR specialization might pay off, although the average CSR specialized structure is not as profitable as its counterparts with diversified CSR structures. Tang et al. (2012) show that firms specializing in one (or more) closely related CSR dimension(s) consistently (regularly) have higher financial performance. Similarly, Cavaco and Crifo (2014) show that firms pursuing complementary CSR dimensions have higher financial performance.

For portfolio managers seeking responsible investments, our results are particularly interesting. Beyond the level of a firm's CSR commitment, we show that CSR structures have firm value implications. A socially responsible portfolio manager can favor stocks of firms with diversified CSR structures given our finding that such structures positively affect firm value. Our findings could also help portfolio managers matching preferences of institutional investors regarding specific CSR issues (Rives, 2022a). Knowing the CSR structures and their makeups of the investment universe will allow portfolio managers to make more informed decisions regarding portfolio allocations in an increasingly socially conscious environment.

Our findings will also help policy makers to better understand the CSR structure of a typical firm at the industry level. This is important as many governments prepare to introduce or refine already introduced regulations or market mechanisms to incentivize firms to address several CSR issues, which include the transition to a more sustainable economy regarding climate change, equality, diversity, and inclusion. In particular, policy makers should be aware of the (unintended) consequences of CSR specialization. CSR specialization implies that some important CSR dimensions are probably neglected or not addressed properly in some industries. This might not be optimal from a social welfare perspective. The challenge is how to incentivize firms to also address stakeholders' expectations in neglected CSR domains.

Furthermore, policy makers should also be aware of the potential trade-offs between CSR specialization and diversification. Although our findings show that positive value effects are associated with more diversified CSR structures, most firms specialize their CSR actions. Recent anecdotal evidence (Rives, 2022a) shows that shareholder resolutions submitted in 2022 are mainly about climate change (20%), transparency about corporate political influence and lobbying (19%), and human rights (15%). Considering also the proposed SEC climate-risk disclosure regulation (Rives, 2022b) as well as the increased private equity capital invested in energy transition firms and technologies (Holland, 2022), we could expect firms to even specialize further in upcoming years. Whether shifting attention to a specific item of a single CSR dimension (e.g., climate in this case) will be at the expense of other important CSR dimensions, even other important environmentally related issues, remains an open question and deserves further research.

[18] We also use our subsample of diversified CSR structures and integrate two interactions of CSR dimensions indicators (Employee-Product and Product-Environment) to capture their effects on Tobin's Q. The findings are reported in Appendix 5 (Firm value and CSR structures: CSR dimensions combinations). They are supportive of the finding of Cavaco and Crifo (2014) that environment and business behaviors towards customers and suppliers are substitutable.

While this study provides useful findings, it has some limitations related to the baseline CSR specialization measures we used (*HHI* and *Entropy*). These two indices have the advantages of the simplicity of calculation and interpretation and the ability to capture the range of CSR commitments and the relative intensity of the commitment to each CSR dimension. However, these indices have some limitations such as that they do not account for the nuances and complexities of CSR combinations and how they interact, which are alleviated somewhat by using the similarity measure of Jaffe (1986). Another limitation of these indices is the way CSR dimension ratios are constructed and how different CSR practices (strengths) are combined when their commensurability is questionable. It is unlikely that all dimensions and all intra-dimensions attributes are of equal importance (Capelle-Blancard & Petit, 2017). An additional critic is that the CSR dimensions and even the attributes within each dimension can interact and thereby exhibit a complementarity and/or a substitutability (Cavaco & Crifo, 2014) that *HHI* and *Entropy* metrics cannot capture.

We suggest future research should consider CSR structure (specialization or diversification and dimensional similarity) in addition to the level of CSR. Our findings suggest interesting avenues and questions for future research. First, why do firms choose to specialize? Second, how is an optimal CSR structure designed so that firm value is maximized? Finally, what is the implication of not considering CSR structures and dimensional similarity when examining the relationships between the level of a firm's CSR commitment and a firm's decisions and outcomes such as profitability, risk, investment decisions, financing decisions, and payout policy.

Appendix 1

Cluster analysis on CSR dimensions ratios.

Cluster	Governance	Community	Diversity	Environment	Product	Human Rights	Employee	HHI
Cluster 1	0.999	0.000	0.000	0.000	0.000	0.000	0.001	0.999
Cluster 2	0.001	0.001	0.002	0.002	0.002	0.000	0.992	0.985
Cluster 3	0.002	0.006	0.980	0.002	0.005	0.000	0.005	0.965
Cluster 4	0.010	0.007	0.015	0.934	0.007	0.005	0.022	0.897
Cluster 5	0.040	0.006	0.073	0.069	0.806	0.001	0.006	0.766
Cluster 6	0.020	0.664	0.156	0.079	0.049	0.004	0.029	0.573
Cluster 7	0.419	0.015	0.408	0.088	0.024	0.010	0.036	0.360
Cluster 8	0.060	0.082	0.060	0.190	0.107	0.029	0.472	0.347
Cluster 9	0.027	0.096	0.450	0.138	0.044	0.005	0.241	0.290
All	0.138	0.075	0.356	0.133	0.064	0.006	0.228	0.689

Appendix 2

Cluster analysis on CSR dimensions ratios and CSR specialization (HHI).

Cluster	Governance	Community	Diversity	Environment	Product	Hum Rights	Employee	HHI
2	0.000	0.000	0.999	0.000	0.000	0.000	0.001	0.998
3	0.003	0.001	0.002	0.991	0.001	0.000	0.002	0.984
5	0.999	0.000	0.000	0.000	0.000	0.000	0.001	0.999
6	0.018	0.834	0.024	0.011	0.045	0.062	0.006	0.859
7	0.001	0.007	0.000	0.008	0.976	0.000	0.008	0.962
8	0.000	0.000	0.000	0.002	0.001	0.000	0.996	0.993
1	0.115	0.127	0.561	0.036	0.058	0.003	0.098	0.391
4	0.051	0.078	0.232	0.048	0.090	0.005	0.496	0.361
9	0.077	0.110	0.185	0.356	0.079	0.015	0.177	0.255
All	0.138	0.075	0.356	0.133	0.064	0.006	0.228	0.689

Appendix 3

Firm characteristics and CSR specialization: logistic regressions on CSR dimensions specialized clusters.

Dimension of specialization	PRO	DIV	GOV	EMP	COM	ENV
	(1)	(2)	(3)	(4)	(5)	(6)
CSR concerns	−0.016	−0.054***	0.059*	−0.020	−0.036	0.011
	(0.513)	(0.001)	(0.054)	(0.266)	(0.103)	(0.577)
International	0.075	−0.354***	−0.327*	−0.456***	0.045	−0.095
	(0.604)	(0.000)	(0.069)	(0.000)	(0.694)	(0.457)
Size	−0.226***	−0.107***	−0.578***	−0.211***	−0.007	−0.216***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.834)	(0.000)
Cash-flows	−0.593*	−0.246	−0.111	−0.134	−0.294	0.086
	(0.095)	(0.422)	(0.806)	(0.624)	(0.439)	(0.842)
Leverage	0.346	0.572***	0.051	0.473***	0.546***	0.530**
	(0.174)	(0.001)	(0.848)	(0.005)	(0.009)	(0.014)
Profitability	0.321	−0.406	−0.182	0.171	0.496	−1.317***
	(0.563)	(0.236)	(0.711)	(0.583)	(0.308)	(0.008)
R&D intensity	−1.692**	−2.028***	−1.824***	−0.191	−3.884***	−4.532***
	(0.043)	(0.000)	(0.002)	(0.599)	(0.000)	(0.000)
Constant	−0.060	−0.706**	1.821***	0.826***	−1.941***	0.653**
	(0.868)	(0.017)	(0.000)	(0.003)	(0.000)	(0.039)
Observations	4 798	6 656	5 094	5 536	5 113	5 096
Pseud R^2	0.126	0.216	0.403	0.116	0.122	0.183
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

This table presents the regression results for the relation between firm characteristics and CSR specialization using CSR dimension specialized subsamples. All variables are defined in the legend of Table 1. In all regression models, control variables are one-year lagged. All regressions control for firm industry membership. All continuous variables are winsorized at the 1st and 99th percentile. *P* values are reported in the parentheses. Heteroskedasticity-consistent standard errors are clustered at the firm level. ***, **, * denote statistical significance at 1%, 5%, and 10% levels, respectively

Appendix 4

CSR structures and specialization: additional tests.

Condition	GOV	COM	DIV	ENV	PRO	HUM	EMP
Panel A: Conditional CSR structures (40%)							
Governance > 40%	0.855	0.005	0.081	0.017	0.013	0.002	0.028
Community > 40%	0.014	0.661	0.152	0.063	0.027	0.001	0.082
Diversity > 40%	0.039	0.043	0.775	0.035	0.019	0.001	0.088
Environment > 40 %	0.028	0.032	0.077	0.733	0.031	0.003	0.095
Product > 40%	0.030	0.027	0.057	0.053	0.731	0.001	0.101
Hum Rights > 40%	0.065	0.006	0.035	0.103	0.007	0.720	0.063
Employee > 40%	0.019	0.026	0.109	0.064	0.039	0.002	0.741
Panel B: Conditional CSR structures (50%)							
Governance > 50%	0.998	0.000	0.001	0.000	0.000	0.000	0.001
Community > 50%	0.001	0.931	0.038	0.014	0.006	0.000	0.010
Diversity > 50%	0.010	0.019	0.924	0.008	0.007	0.001	0.032
Environment > 50%	0.008	0.005	0.015	0.941	0.006	0.001	0.024
Product > 50%	0.001	0.007	0.000	0.008	0.976	0.000	0.008
Hum Rights > 50%	0.000	0.000	0.000	0.000	0.000	0.980	0.020
Employee > 50%	0.004	0.007	0.022	0.028	0.015	0.001	0.923

This table presents the results of conditional CSR structures. We impose the condition that a firm's involvement in a particular CSR dimension must exceed 40% (50%) of total CSR actions in Panel A (B). For the set of observations that satisfy this condition, we then compute the mean ratios of each CSR dimension

Appendix 5

Firm value and CSR structures: CSR dimensions combinations.

	Diversified structures	
	Based on HHI	Based on Entropy
EMP*PRO	0.1096	0.2565
	(0.713)	(0.370)
PRO*ENV	−0.6655*	−0.5704*
	(0.065)	(0.084)
PRO	0.6366**	0.3801
	(0.029)	(0.159)
ENV	0.0290	0.0271
	(0.773)	(0.801)
EMP	0.1222	0.0874
	(0.257)	(0.473)
Size	−0.0822**	−0.0947**
	(0.031)	(0.022)
Leverage	−0.9973**	−1.0280***
	(0.011)	(0.008)
Cash holdings	0.7889**	0.8339*
	(0.032)	(0.076)
R&D intensity	4.5289***	4.7736***
	(0.000)	(0.000)
Capital expenditure/book asset	0.9800	0.6850
	(0.256)	(0.476)
Advertising intensity	2.1034	2.6572
	(0.150)	(0.118)
Sales growth rate	0.6852*	0.6572*
	(0.053)	(0.075)
Fixed assets/book assets	0.1616	0.2011
	(0.596)	(0.489)
Profitability	3.4034***	3.3718***
	(0.002)	(0.002)
Constant	2.2983***	2.4330***
	(0.000)	(0.000)
Observations	625	625
Adj. R-squared	0.419	0.428
Industry FE	Yes	Yes

This table presents regression results for the relation between combinations of *Tobin's Q* and CSR dimensions. EMP, PRO, and ENV are indicators of firm engagement in Employee relations, Product, and Environment CSR dimensions, respectively. FF17_2 is the dummy variable indicating that mining and minerals industry, and FF17_3 is the dummy variable indicating the oil and petroleum products industry. The definitions of the remaining industries are provided in the first two columns of Table 9. All the other variables are defined in the legend of Table 1. In all regression models, control variables are one-year lagged. All regressions control for firm industry membership. All continuous variables are winsorized at the 1st and 99th percentile. *P* values are reported in the parentheses. Heteroskedasticity-consistent standard errors are clustered at the firm level. ***, **, * denote statistical significance at 1%, 5%, and 10% levels, respectively

Appendix 6

Firm characteristics and CSR specialization: industry dummies.

	HHI	Entropy
CSR concerns	−0.011***	−0.011***
	(0.000)	(0.000)
International	−0.080***	−0.069***
	(0.000)	(0.000)
Size	−0.069***	−0.057***
	(0.000)	(0.000)
Cash-flows	−0.088*	−0.079**
	(0.092)	(0.037)
Leverage	0.103***	0.087***
	(0.000)	(0.000)
Profitability	−0.054	−0.034
	(0.339)	(0.404)
R&D intensity	−0.410***	−0.323***
	(0.000)	(0.000)
FF17_2	0.156***	0.134***
	(0.003)	(0.001)
FF17_3	0.161***	0.142***
	(0.000)	(0.000)
FF17_4	0.056	0.043
	(0.295)	(0.335)
FF17_5	0.065	0.049
	(0.205)	(0.258)
FF17_6	0.051	0.053
	(0.254)	(0.138)
FF17_7	0.107**	0.077**
	(0.011)	(0.027)
FF17_8	0.050	0.051
	(0.259)	(0.146)
FF17_9	0.141**	0.107**
	(0.030)	(0.046)
FF17_10	0.053	0.054
	(0.328)	(0.179)
FF17_11	0.050	0.049*
	(0.138)	(0.080)
FF17_12	0.155***	0.131***
	(0.001)	(0.000)
FF17_13	0.110***	0.099***
	(0.004)	(0.002)
FF17_15	0.094**	0.077**
	(0.011)	(0.012)
FF17_17	0.107***	0.090***
	(0.001)	(0.001)
Constant	1.123***	1.155***
	(0.000)	(0.000)
Observations	10,144	10,144
Adj. R-squared	0.227	0.266

	HHI	Entropy
Industry FE	Yes	Yes
Year FE	Yes	Yes

This table presents regression results for model 3 and 4 of Table 6 on the relation between firm characteristics and CSR specialization. In this Table, we provide the estimates of industry dummies coefficients. All variables are as defined in the notes to Table 6. All right-hand side variables are lagged one-year. All specifications control for industry fixed effects and year fixed effects. Heteroskedasticity-consistent standard errors are clustered at the firm level. All the continuous variables are winsorized at the first and the 99th percentile. *P* values are reported in the parentheses. ***, **, * denote statistical significance at 1%, 5%, and 10% levels, respectively

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Declarations

Conflict of interest Authors Kais Bouslah, Abdelmajid Hmaittane, Lawrence Kryzanowski, and Bouchra M'Zali declare that they have no conflict of interest.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the author(s).

Research Involving Human Participants or Animals Not applicable.

Informed Consent Not applicable.

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