HOW DO DIFFERENT TYPES OF INDIRECT SIGNALS OF CORPORATE SOCIAL PERFORMANCE INFLUENCE FIRM VALUE?

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THE IMPACT OF INDIRECT CORPORATE SOCIAL PERFORMANCE SIGNALS ON FIRM VALUE: EVIDENCE FROM AN EVENT STUDY

Abstract

Prior research shows that signals sent by institutionalized third parties (i.e., indirect signals) about firms' corporate social performance (CSP) can impact firm value. However, the effects that different types of indirect CSP signals have on firm value have remained largely unexplored. Furthermore, managers often do not fully understand how to communicate CSP effectively. In this article, we operationalize CSP as a multidimensional construct and draw on signaling theory to examine how different types of indirect CSP signals impact firm value. The results of an event study show that institutionalized third parties can play an important role in delivering credible CSP-related information to the market. Results also demonstrate that the valence (positivity vs. negativity) and content (the specific social domain) of indirect CSP signals are important predictors of the magnitude of market reactions, and that shareholders' responses to the valence and content of indirect CSP signals have substantially changed over time.

Keywords: corporate social responsibility; event study analysis; firm value; Domini 400 social index social; signaling theory

INTRODUCTION

Over the years, corporate social performance (CSP) has become a central component of many firms' strategies. This commitment to CSP is often—at least partially—driven by the belief that "virtuous" firms are financially rewarded in the marketplace. Ample empirical evidence supports this belief (Callan and Thomas 2009; Ducassy 2013; Marti et al. 2013; Michelon et al. 2013; Wahba 2008). For instance, prior studies have shown that communicating social responsibility (SR) or irresponsibility (SI) can boost or lower firm value, respectively (Godfrey et al. 2009; Jones et al. 2014; Lawal et al. 2017; Miralles-Quiros et al. 2017).

While extent research provides detailed insights into the effects of direct CSP signals (i.e., CSP signals sent directly by firms), knowledge about the effects of indirect CSP signals (i.e., signals from third parties, such as CSR rating agencies and CSR-related stock indices, which endorse and repudiate firms' CSP) is incomplete. Prior studies have examined the reliability of indirect CSP signals (Chatterji et al. 2009; Delmas and Blass 2010; Delmas et al. 2013) and how firms might respond to such signals (Chatterji and Toffel 2010; Scalet and Kelly 2010). However, the effects of different types of CSP signals on firm value are still not well understood, and managers often lack insights about how to communicate SR and SI to the stock market (Fowler and Hope 2007a; Zerbini *in press*; Ziek 2009).

Against this background, this article explores how the stock market responds to different types of indirect CSP signals. Specifically, we use signaling theory (for a discussion, see Connelly et al. 2011; Zerbini *in press*) as an overarching framework and the event study methodology to shed light on whether and how shareholders respond to the valence and content of indirect CSP signals. We define signal valence as the extent to which a signal carries positive (vs. negative) information about a firm's level of CSP, and signal content as the specific social

domain a signal relates to (e.g., the environment, diversity initiatives). We also investigate

whether and how shareholders' responses to the valence and content of indirect CSP signals have

evolved over time. We use a sample of 195 membership announcements made by a SR stock

index (the Domini 400 Social Index; hereafter: DSI 400) as indirect signals of CSP.

Our investigation contributes to the CSP literature in several ways. We show that, by

reducing the amount of information asymmetry between firms and the market, institutionalized

third parties can enable rewards and punishments from SR and SI actions, respectively. We also

build on and add to previous research (Becchetti et al. 2012; Cheung 2011; Consolandi et al.

2009; Groening and Kanuri *in press*) by theorizing and demonstrating that the valence and

content of indirect CSP signals provide essential information to the market and thus, can

considerably impact firm value. We argue that the valence of indirect CSP signals reduces

information asymmetries about the quality of a firm's overall CSP strategy, whereas the content

of indirect CSP signals reduces information asymmetries about the level of a firm's CSP in a

specific domain. We also demonstrate which types of indirect CSP signals affect firm value the

most and least, and show that the market does not respond to certain indirect CSP signals. Hence,

our study provides new insights about indirect CSP signals by examining CSP as a

multidimensional (vs. aggregate) construct. Furthermore, we demonstrate that market responses

to CSP signals of different valence and content have substantially changed over time. Stated

differently, we show that time is a key predictor of market reactions to indirect CSP signals. This

is an important contribution because "notions of time have been virtually absent in CSR

research" (Wang and Bansal 2012, p. 1136).

These findings have also substantive managerial implications. They suggest that managers

should pay attention to the way they communicate CSP to the market, underscoring the

importance of third parties in this process. Additionally, our findings should advance managers'

understanding of stock market reactions to signals of both SR and SI and thus improve their

ability to design effective and impactful CSP communication strategies.

The remainder of this article is organized as follows. We first review and build on the

related literature to develop our hypotheses. We then present our data, methodology, and

empirical results. We conclude by discussing the theoretical and managerial implications of our

findings, as well as directions for future research.

CONCEPTUAL BACKGROUND AND HYPOTHESES DEVELOPMENT

CSP and Firm Value

Traditionally, the effects of CSP on firm performance have been explained using the

resource-based view, stakeholder theory, and institutional theory (Dal Maso et al. 2017; Doh and

Tashman 2014; Fowler and Hope 2007b; Walker and Mercado 2015). Simply put, CSP-related

theories that draw on the resource-based view (for a discussion, see Branco and Rodrigues 2006)

argue that SR is a valuable and non-substitutable resources that can, in and of itself, lead to a

competitive advantage, or lead to the acquisition and development of tangible and intangible

assets that ultimately determine a firm's competitive advantage. CSP-related theories that draw

on stakeholder theory (for a discussion, see Steurer 2006) suggests that firms can enjoy higher

financial performance from successfully satisfying stakeholders' needs for SR. CSP-related

theories that draw on institutional theory (for a discussion, see Delmas and Toffel 2004) suggests

that conforming to the institutional forces that pressure firms to behave in a SR manner often

result in accrued legitimacy, and thus higher financial performance.

According to these views, a positive change in CSP should thus be associated with higher financial performance. Conversely, a negative change in CSP should lead to lower financial performance. If, however, shareholders cannot adequately assess changes in a firm's CSP and thus financial performance, they are unlikely to revise their expectations of future cash flows, and firm value is unlikely to change. Therefore, a prerequisite to the impact of CSP on firm value might be for shareholders to be able to assess precisely whether a firm behaves globally in a SR or SI manner, and whether a firm achieves a high or low level of performance in social domains they deem important.

Yet, shareholders might often find it exceedingly difficult to perform such assessments accurately for several reasons. First, shareholders are often unaware of the SR activities (or lack of) undertaken by a firm (Barnett 2014; Madsen and Rodgers 2015). Second, their assessments might be influenced by various cognitive and perceptual biases (for a discussion, see Baker and Nofsinger 2002; Hirshleifer 2001). For example, shareholders might tend to ignore or discount any CSP-related information about a firm when this information conflicts with their existing beliefs about the firm's level of CSP (confirmation bias). Similarly, the halo (horns) effect might cause shareholders who like (dislike) one outstanding characteristic of a firm, such as its CEO or level of R&D spending, to judge the firm's level of CSP more favorably (or negatively) than it really is. Complicating further shareholders' assessment of firms' CSP, firms tend to behave simultaneously in SR and SI manners (Lin-Hi and Müller 2013; Strike et al. 2006) and to not fully disclose CSP-related information (Cho and Patten 2007; Kothari et al. 2009). Thus, information asymmetries often impedes shareholders' ability to evaluate a firm's level of CSP correctly (Luo et al. 2015).

Signaling CSP

Given the existence of information asymmetries about the level of a firm's CSP, signaling

theory provides a useful framework to explore the influence of CSP on firm performance (for a

discussion, see Connelly et al. 2011; Zerbini *in press*), and has thus often been used in the CSR

literature (Corazza et al. 2017; Huber and Hirsch 2017; Jones et al. 2017). This theory is

concerned with understanding how two parties resolve information asymmetries about what one

party (e.g., shareholders) knows about the characteristics and behavior of the other party (e.g., a

firm), and proposes that information asymmetries can be resolved by parties conveying

information that is not easily observable (e.g., CSP) through observable and meaningful signals

(e.g., press release, ISO certifications).

Signals can either be direct or indirect. Direct signals are "those that a party claiming to

provide a given quality sends," while indirect signals are those that "a third party endorsing a

party claiming to have a given quality sends" (Zerbini *in press*, p. 3). Direct CSP signals might

not be as effective at reducing information asymmetries as indirect CSR signals because

shareholders might not perceive a firm as an especially trustworthy signaler of its own level of

CSP. Instead, the market might consider CSP signals sent by institutionalized and independent

third parties (e.g., CSR rating agencies and CSR-related stock indices), to be more credible; even

though these signals might sometimes not adequately depict a firm's level of CSP, and different

third parties have different methodologies to evaluate CSP (Chatterji et al. 2009; Delmas and

Blass 2010; Delmas et al. 2013).

Attesting to the potential usefulness of indirect CSP signals for shareholders, the number of

institutionalized third parties rating and ranking firms has grown rapidly in recent years (Scalet

and Kelly 2010). As such, prior studies have started to explore the influence of these ratings on

firms. For instance, prior research shows that firms respond to poor CSP ratings and rankings by third parties by subsequently seeking to improve their CSP (Chatterji and Toffel 2010). Prior work also demonstrate that firms tend not to publicly acknowledge poor CSP ratings and ranking, instead focusing on discussing positive aspects of their CSP (Scalet and Kelly 2010).

In this study, we contribute to the aforementioned literature by first examining whether indirect CSP signals (i.e., those sent by a third party) can provide credible and relevant information that aids shareholders' evaluations of a firm's CSP, and by examining how different types of indirect CSP signals impact firm value. We propose that the valence and content of indirect CSP signals are important predictors of market reactions because these signal characteristics communicate information about the quality of a firm's overall CSP strategy and about the level of CSP in specific domains, respectively. Next, we examine whether and how the responses of the market to different types of indirect CSP signals have changed over time. We propose that shareholders' responses to the valence and content of indirect CSP signals have substantially changed over time.

Valence of Indirect CSP Signals

As discussed previously, shareholders might find it challenging to assess precisely whether a firm behaves globally in a SR or SI manner. Therefore, we expect that the announcement of a firm's addition to a SR index (i.e., an institutionalized and independent third party) should lead shareholders to anticipate that a firm will benefit from higher CSP. In turn, this should lead shareholders to revise their expectations of future cash flows upward, positively impacting firm value. For the same reason, we also expect that the announcement of a firm's deletion from a SR index will lower firm value. More formally, we propose that:

Hypothesis 1: Positive indirect CSP signals cause positive changes in firm value. Conversely, negative indirect CSP signals cause negative changes in firm value.

Adding to existing research (Becchetti et al. 2012; Cheung 2011; Consolandi et al. 2009), we further expect that a signal of deteriorating CSP (i.e., deletion) has a stronger effect on firm value than a signal of ameliorating CSP (i.e., addition). We base this prediction on three arguments. First, firms that experience reputation-damaging events usually receive more public scrutiny than those experiencing reputation-building events (Rhee and Valdez 2009). Therefore, indirect signals of SI could produce relatively greater changes in legitimacy and reputation than indirect signals of SR. Second, because firms are more likely to disclose positive than negative information (Holder-Webb et al. 2009; Kothari et al. 2009; Scalet and Kelly 2010), indirect signals of deteriorating CSP might come as fully unanticipated, leading thus to larger changes in expected future cash flows than signals of ameliorating CSP. Third, negative information might influence shareholders' judgments considerably more than positive information (Baumeister et al. 2001; Epstein and Schneider 2008). For example, a negativity bias might often cause shareholders to give more attention to negative information and find such information more relevant and persuasive (Rozin and Royzman 2001). Similarly, prospect theory argues that negative information is discounted less, given more weight in judgements, and perceived as more diagnostic than positive information (Tversky and Kahneman 1992). Thus, shareholders might be considerably more influenced by signals of deteriorating CSP than signals of ameliorating CSP. More formally, we propose that:

Hypothesis 2: Negative indirect CSP signals cause larger changes in firm value than positive indirect CSP signals.

Content of Indirect CSP Signals

Shareholders might not expect the same changes in future cash flows from different types of SR and SI actions. However, the understanding of the effects of CSP on firm value is limited because only a small number of studies have recognized the multidimensionality of CSP. For instance, past studies have broken down CSP into narrow—but still admittedly aggregated—components, including activities related to people versus product (Johnson and Greening 1999) or institutional versus technical activities (Godfrey et al. 2009). Recently, studies have started to examine CSP using more narrowly defined social domains (Awaysheh and Klassen 2010; Jones et al. 2014; Kumar et al. 2016; Michelon et al. 2013). For instance, Lawal et al. (2017) examined the impact of employee-related and community-related SR on firms' financial performance, and Tebini et al. (2016) explored the impact of environmental-related SR practices.

Building on these studies, we propose that the content of indirect CSP signals might help reduce information asymmetries about the level of a firm's CSP in a specific domain. We also propose that the magnitude of stock market reactions varies according to the content of indirect CSP signals; that is, according to the specific social domain endorsed or repudiated by a third party. More specifically, satisfying the needs and expectations of primary stakeholders is typically more instrumental to financial performance than satisfying the needs and expectations of secondary stakeholders (Clarkson 1995; Jones 1995). Furthermore, SR endeavors targeted at primary stakeholders tend to have more positive effects on the financial performance of firms that endeavors targeted at secondary stakeholders (Kumar et al. 2016). Therefore, shareholders should anticipate larger improvements in future cash flows from the signaling of ameliorating CSP in domains that relate more closely to the needs and expectations of primary, rather than secondary, stakeholders. Similarly, they should anticipate greater deteriorations in future cash

flows from deteriorating CSP in domains that relate more closely to primary stakeholders' needs and expectations.

Given their importance to future cash flows, addressing the concerns of two primary stakeholders, namely employees and customers, is of the utmost importance for a firm's continual financial success and therefore, for shareholders. We expect that signaling changes in a firm's ability to develop strong employee relations through employee welfare, safety, benefits, involvement, or job security (i.e., employee-related CSP), and to deliver higher value to B2B or B2C customers through higher product quality, safety, or innovation (i.e., product-related CSP), should generate stronger market reactions than signaling changes related to other CSP dimensions. For example, activities such as charitable giving (i.e., community-related CSP) and limiting top management compensations (i.e., corporate governance-related CSP) are less likely to be perceived by shareholders as instrumental to firm performance and thus, likely to generate weaker market reactions. More formally, we propose that:

Hypothesis 3: Positive and negative indirect signals related to the employee and product dimensions of CSP cause larger changes in firm value than indirect signals related to other dimensions.

Indirect CSP Signals over Time

Despite the importance of time in the research and practice of strategic management (Ancona et al. 2001), only a handful of CSP studies have incorporated notions of time in their theoretical frameworks and empirical models (for notable exceptions, see Bansal 2005; Flammer 2013; Galbreath 2017). For example, Slawinski and Bansal (2012) and Wang and Bansal (2012) examined the effects of firms' strategic temporal orientations (linear vs. cyclical and short vs. long-term orientation, respectively) on CSP strategies and financial performance. Thus, the

understanding of whether and how the effect of CSP signals on firm value has evolved over time is still incomplete. We seek to fill this gap in the literature.

Over the years, CSP has received growing attention from various stakeholders, and firms have faced increasing external pressure to behave in a SR manner. For example, consumers have become more likely to demand SR products; the media has exposed firms' behaviors to the public with increased frequency, and numerous public policies and regulations have been adopted to promote SR firm behaviors (Albareda et al. 2007; Steurer et al. 2012). Thus, over time, shareholders might have become increasingly more likely to anticipate higher and lower future cash flows from SR and SI actions, respectively. Therefore, we propose that shareholders' reactions to indirect signals of SR and SI have become increasingly more positive and more negative, respectively. More formally, we propose that:

Hypothesis 4: Over time, positive and negative indirect CSP signals have had a more positive and negative impact on firm value, respectively.

Over time, changes in public attention, strategic priorities, financial performance, and regulations can alter the priority that stakeholders give to certain specific social domains (Campbell 2007; Kagan et al. 2003). However, to best of our knowledge, research has not examined the effects of signals related to different dimensions of CSP over time. Building on the aforementioned studies that have incorporated notions of time in their theoretical propositions, we propose that the magnitude of market reactions to indirect CSP signals related to different dimensions of corporate social reputation should vary over time. In particular, concerns about employee relations were mounting and attracting significant attention from stakeholders and shareholders in the late 1990's (Drucker 2002; Hitt and Ireland 2002). Simultaneously,

modifications in the composition of the workforce resulted in the expanding idea among shareholders that a more diverse workforce (e.g., diverse backgrounds) and better diversity management practices were associated with higher financial performance (Cox and Blake 1991; Thomas 1990). Therefore, we expect that the effect on firm value of indirect CSP signals related to the diversity-related and employee-related dimensions of CSP should be of lower magnitude in the early 1990's and of higher magnitude in the 2000's (our sample covers the years 1990 to 2004). More formally, we propose that:

> **Hypothesis 5:** Over time, positive and negative indirect signals related to the employee and diversity dimensions of CSP have had a more positive and negative impact on firm value, respectively.

DATA AND METHODS

We successively used two complementary methodologies to test our hypotheses. We first used the event study methodology to compute the cumulative abnormal returns (CAR) generated by indirect CSP signals and test H1. We then used OLS regressions with CAR as the dependent variable to test H2 through H5.

KLD Database and DSI 400 index

The KLD database is the most widely used CSP dataset in the management literature. It provides firm-level binary ratings on the presence and absence of strengths and weaknesses for particular indicators related to seven CSP dimensions: employee relations, community, product, corporate governance, diversity, environment, and human rights. It also notes firms' involvement in controversial industries (i.e., alcohol, firearms, gambling, military, tobacco, and nuclear power).

The DSI 400 is a SR stock index that was launched in 1990 by KLD (now MSCI). It consists of 400 constituents selected from large, mid, and small market capitalization firms covered in the KLD database. These 400 constituents are selected because they are CSR exemplars within their industries and compared to firms of similar sizes. We use membership announcements of additions and deletions to the DSI 400 as indirect signals of CSP because the KLD is an institutionalized third party that endorses and repudiates firms' CSP. When KLD announces that a firm will be added or dropped from the index, shareholders get credible information that helps them evaluate the quality of a firm's overall CSP strategy and CSP in specific domains more accurately. Therefore, these announcements might cause significant changes to firm value.

The Event Study Methodology

Abnormal returns

We tested H1 by quantifying the effect of addition and deletion announcements by the DSI 400 on firm value using the event study methodology. This methodology is frequently employed in the CSR literature (Cheung 2011; Lee et al. 2015; Lo and Kwan *in press*; Yadav et al. 2016). The use of this methodology was motivated by our desire to measure the net market-based value of indirect CSP signals. We calculated the abnormal returns caused by the announcements of addition and deletion from the DSI 400 as the difference between observed and expected returns. First, observed returns were computed as indicated in equation (1).

$$R_{it} = \alpha_i + \beta_i\, R_{mt} + \varepsilon_{it} \qquad\qquad (1)$$

where R_{it} is the observed rate of return of a stock i on day t, α_i is the intercept for stock i, β_i is the systematic risk of stock i, R_{mt} is the rate of return on the CRSP value-weighted portfolio on day t and ε_{it} is the error term for stock i on day t. The parameters $\hat{S}^2{}_{\varepsilon i}$ (the variance of ε_{it}), $\hat{\beta}_i$ and

$\hat{\alpha}_i$ are estimated using OLS regression over 200 trading days (t -210 to t -10 days relative to the event day t = 0). Once these parameters were estimated, the abnormal return of a stock i on day t (AR$_{it}$) was estimated as indicated in equation (2).

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i \, R_{mt} \qquad\qquad (2)$$

Finally, the CAR were obtained by summing the abnormal returns over a two-day event window that encompasses the day prior to the announcement (day -1) and the day of the announcement (day 0). The (-1, 0) window is often preferred in event studies (Flammer 2013; Godfrey et al. 2009; Groening and Kanuri *in press*) because the use of longer windows makes it difficult to isolate the effect of the event of interest from that of other unrelated events.

Sample

We identified 213 announcements of additions and deletions made by the DSI 400 from its inception in 1990 to 2004. None of these announcements are based on extraordinary events such as bankruptcy, acquisition, or mergers. We then needed to control for confounding events. To do so, we used Factivia to search the Financial Times, New York Times, and The Wall Street Journal for events that occurred in a six-day window around the day of the announcement (-3, +3) and could have affected firm value considerably. Eighteen confounding events (e.g., announcements of exceptional dividends, or share buy-backs) were found, resulting in final sample of 154 addition and 41 deletion announcements. Other event studies have identified and used a comparable number of announcements of addition and deletion from the DSI 400 (Becchetti et al. 2012; Ramchander et al. 2012).

Regression Analyses

Dependent variable

We used OLS regressions with CAR in the (-1, 0) event window as the dependent variable to test H2 through H5. The method we used to compute the CAR is explained in the previous subsection.

Independent variables

We created a binary variable named addition dummy. This variable was coded 1 if a firm was added to the DSI 400 and 0 if it was deleted. We also created a linear time trend variable named time. This variable was generated by assigning an integer number between 0 and 14 to a firm depending on the year it was added or deleted from the DSI 400 (i.e., 1990 = 0, 1991 = 1, … 2004 = 14). Furthermore, we created eight binary variables by coding the reasons behind each addition and deletion. More specifically, we coded whether a firm was added or deleted for one of the seven aforementioned CSP dimensions covered in the KLD dataset or for its involvement in a controversial industry. For instance, the variable named employee-related CSP is a binary variable that is coded 1 if a firm was added or deleted from the DSI 400 for its performance on the employee relations CSP dimension and 0 if otherwise. Similarly, the variable named product-related CSP is a binary variable that was coded 1 if a firm was added or deleted from the DSI 400 for its performance on the product CSP dimension, and 0 if otherwise. Finally, because firms can be added or deleted based on performance related to more than one domain, we also created a binary variable named multiple CSP motives. This variable was coded 1 if an addition or deletion was made based on considerations related to more than one reason, and 0 if otherwise.

Control variables

In all of our regression analyses, we controlled for factors that could systematically affect stock market performance. All of our control variables were obtained from the Compustat database. We controlled for R&D intensity, advertising intensity, market-to-book ratio, ROA,

and firm age at the event date (firm age was log transformed). These controls are used in prior related research (Harjoto and Jo 2011; Ramchander et al. 2012; Saeidi et al. 2015). Table 1 provides summary statistics for all of the variables described in this section. Table 2 provides pairwise correlations.

Insert Tables 1 and 2 about here

RESULTS

Valence of Indirect CSP Signals

The first objective of this study was to examine whether shareholders respond to positive and negative indirect CSP signals. The second was to examine whether negative indirect CSP signals cause larger changes in firm value than positive indirect CSP signals. Supporting H1, the CAR caused by addition announcements were positive (0.85 percent; $p \leq 0.01$; Table 3, Panel B), whereas those caused by deletion announcements were negative (-1.60 percent; $p \leq 0.01$; Table 3, Panel A). In order to quantify the change in firm value associated with addition announcements, we multiplied the market capitalization of each added firm by the CAR associated with addition announcements. On average, each addition announcement led to an increase of $92.33 million in firm value. The same calculations were conducted for deletion announcements. On average, each deletion announcement led to the loss of $133.79 million in firm value.

Insert Table 3 about here

The CAR reported in Table 3 provide support for H2. Specifically, as predicted, the negative CAR caused by deletion announcements (-1.60%) were of higher absolute magnitude than the positive CAR caused by addition announcements (0.85%). We regressed CAR on our addition dummy and control variables to examine whether this difference was statistically significant and still existed after controlling for factors that could systematically affect stock market performance (Table 4, Model 2). The results of this analysis showed that the positive effect of addition announcements on CAR was different from the negative effect of deletion announcements (B = 0.31; p ≤ 0.001), indicating that negative indirect CSP signals have a stronger effect on firm value than positive indirect CSP signals.

Insert Table 4 about here

Content of Indirect CSP Signals

The third objective of this study was to examine whether indirect signals related to the employee and product dimensions of CSP cause larger changes in firm value than indirect signals related to other dimensions. To test H3, we regressed CAR on our multiple CSP motives variable, our eight binary variables (e.g., product-related CSP, employee-related CSP) representing the seven social dimensions and firms' involvement in controversial industries, and our control variables. The same analysis was repeated selecting only firms that were deleted from the DSI 400. Results of these two regression analyses are presented in Table 5 (Panels A and B, Models 2).

We found support for H3. Specifically, addition announcements related to the employee (B = 0.21; p ≤ 0.05) and product dimensions (B = 0.20; p ≤ 0.05) of CSP were associated with

higher CAR than addition announcements based on performance in other social domains. However, shareholders' reactions to deletion announcements did not vary significantly as a function of the specific CSP dimension repudiated. Importantly, the results presented in Table 5 (Models 2) do not indicate that announcements related to other CSP dimensions have no effect on firm value. Instead, these results show that announcements related to CSP dimensions other than the employee and product dimensions have effects that are neither statistically stronger nor statistically weaker than the average effect of all the other announcements.

Insert Table 5 about here

Indirect CSP Signals over Time

The fourth objective of this study was to examine whether the effect of positive and negative indirect CSP signals have had a larger effect over time. To test H4, we regressed CAR on our addition dummy variable, our time variable, their interaction, and our control variables. Results are presented in Table 4 (Model 4) and Figure 1.

Insert Figure 1 about here

Supporting H4, we found a significant addition dummy $\times$ time interaction (B = 0.39; $p \leq$ 0.05). We examined the conditional effects of time for addition and deletion announcements. These conditional effects indicated that the positive effect engendered by addition announcements became more positive over time (t = 1.85; $p \leq 0.10$), whereas the negative effect on CAR engendered by deletion announcements became more negative (t = -1.68; $p \leq 0.10$).

Furthermore, we examined the conditional effects of additions and deletions over time. These conditional effects indicated that the CAR caused by deletion announcements were not statistically different from the CAR caused by addition announcements from 1990 to 1993 (all p's > 0.10). However, this difference was statistically significant between 1994 and 2004 (all p's ≤ 0.05).

The last objective of this study was to examine whether positive and negative indirect signals related to the employee and diversity dimensions of CSP have had a larger impact on firm value over time. To test H5, we regressed CAR on our time variable, our eight binary variables (e.g., product-related CSP, employee-related CSP) representing the seven social dimensions and firms' involvement in controversial industries, their interactions, and our control variables. Again, as in prior research, addition and deletion announcements were analyzed separately. The results of these two regression analyses are presented in Table 5 (Panels A and B, Models 3). Supporting H5, we found positive and significant employee-related CSP × time (B = 0.62; p ≤ 0.05) and diversity-related CSP × time (B = 0.66; p ≤ 0.05) interactions for addition announcements. These interactions indicate that, over time, addition announcements related to the employee and diversity dimensions of CSP have had a more positive impact on firm value than addition announcements related to other CSP dimensions. However, such interactions were not found to be significant for deletion announcements, indicating that the negative effect of deletion announcements has become uniformly more negative across the different CSP dimensions over time.

DISCUSSION

Theoretical Contributions

Although CSP is a key aspect of organizational strategy, the effects of CSP signals on firm value are not well understood (Fowler and Hope 2007a; Zerbini *in press*; Ziek 2009). This research helps fill this gap by complementing prior work on CSP signaling (Awaysheh and Klassen 2010; Becchetti et al. 2012; Cheung 2011; Consolandi et al. 2009; Lee et al. 2015). Using the event study methodology, we showed that shareholders tend to respond to indirect CSP signals. Furthermore, we showed that positive and negative indirect CSP signals cause positive and negative changes in firm value, respectively. These findings demonstrate that, because shareholders value CSP, but often find it exceedingly difficult to assess a firm's level of CSP precisely, signals from institutionalized third parties (e.g., a SR stock index) can play a major role in reducing information asymmetries, and thus can enable rewards and punishments from SR and SI endeavors, respectively. Hence, our research adds to studies that show that better CSP is associated with higher firm performance (Callan and Thomas 2009; Ducassy 2013; Marti et al. 2013; Michelon et al. 2013; Wahba 2008).

Our findings also add to prior work on CSP signaling (Corazza et al. 2017; Huber and Hirsch 2017; Jones et al. 2017; Zerbini *in press*) by shedding light on how the valence and content of indirect CSP signals affect the magnitude of shareholders' responses to CSP-related information. We found that negative indirect CSP signals caused larger changes in firm value than positive indirect CSP signals. This suggests that shareholders can indeed be affected by a negativity bias (Baumeister et al. 2001; Epstein and Schneider 2008; Rozin and Royzman 2001).

We also found that positive indirect signals related to the employee and customer dimensions of CSP had stronger effects on firm value than positive indirect signals related to other CSP dimensions, and that, over time, indirect signals related to diversity have had a more positive impact on firm value. These results are largely in line with recent prior studies that have examined the effect of direct CSP signals related to the seven aforementioned CSP dimensions on firm performance (Kumar et al. 2016; Lawal et al. 2017; Michelon et al. 2013). Interestingly, we found that shareholders' reactions to negative indirect signals did not vary as a function of the specific social domain repudiated by signals from a third party. Adding to a small number of studies (Godfrey et al. 2009; Jones et al. 2014; Michelon et al. 2013), these findings demonstrate that CSP signals should be conceptualized as multidimensional. They also demonstrate that different CSP signals have differing effects on firm value and that shareholders appear to consider the content (i.e., the specific social domain) of indirect CSP signals only when the signal is positively valenced. In addition, our findings demonstrate that shareholders presume that the employee and customer dimensions of CSP are more instrumental to firm performance than other dimensions and that SI hurts firm performance considerably more than SR boosts it.

Our work also shows that the concept of time is critical to understanding CSP signals. We add to a handful of studies (Flammer 2013; Galbreath 2017; Slawinski and Bansal 2012; Wang and Bansal 2012) by showing that time moderates the effect of the valence and content of indirect CSP signals on firm value. Therefore, our findings underscore the need to build theories to account for the effects of time in the relationship between CSP and firm performance. They also demonstrate that extra care is needed when comparing studies conducted with data from different time periods.

Managerial Implications

Our study has relevant implications for practitioners, which add to existing knowledge on how practitioners might want to communicate SR and SI (de Vries et al. 2015). Our findings demonstrate that managers can expect indirect CSP signals to impact firm value, and thus highlight the importance of third parties in designing impactful CSP signaling strategies. Specifically, we found that, on average, firm value changes by about two percent when the market receives an indirect CSP signal. These results suggest that managers should hire or solicit credible third parties (e.g., external auditors, NGOs) to audit CSP and release credible CSP-related information.

Furthermore, our findings advance managers' understanding of shareholders' reactions to CSP signals by showing that shareholders react differently to different types of indirect CSP signals. More specifically, our findings show that negative indirect CSP signals have a stronger effect on firm value than positive indirect CSP signals. Hence, managers might want to allocate more resources to avoiding low levels of performance in specific CSP domains, rather than to reaching high levels of performance in specific CSP domains. This is particularly important because our analyses indicate that the financial rewards and penalties from signaling SR and SI seem to be growing stronger over time.

Our findings also show that positive indirect signals related to product, employee relations, and diversity had more positive effects on firm value than indirect signals related to other CSP dimensions. Conversely, negative indirect signals related to the different CSP dimensions all had equally negative effects on firm value. Therefore, managers should focus on pursuing and signaling social endeavors related to product, employee relations, and diversity, (typically referred to as primary stakeholders) while avoiding a low CSP in all other social domains.

This study also adds to existing guidelines that should help fund managers with investment decisions (Koellner et al. 2005). In line with prior research, our findings demonstrate that fund managers might want to favor investing in "virtuous" firms, as such firm can offer higher returns (Collison et al. 2008). They might also favor investing in firms that adequately communicate CSP, in firms that manage to avoid a low level of CSP in all social domains, and in firms with strong social records related to product, employee relations, and diversity.

Future Research Directions

Our findings open interesting avenues for future research. As with every event study, our findings can only be interpreted in terms of short-term creation or destruction of firm value. Future research should examine longer-term effects. Because the contributions and implications of this study pertain strictly to abnormal market returns, it would also be interesting to examine how indirect CSP signals influence accounting-based performance metrics such as ROA and ROS. Future research might also attempt to replicate our findings with a more recent set of announcements. For example, future research might seek to investigate shareholders' reactions to signals in different social domains over time using data covering a longer or more recent time period. Furthermore, because every SR stock index possesses unique characteristics, caution is required when making comparisons between our study and other related event studies. Future research might attempt to replicate our findings using different or multiple SR stock indices.

CONCLUSION

This study paves the way for a better understanding of the effect of indirect CSP signals on firm value. Using the event study methodology, we examined the effects of signals from the DSI 400 that endorse and repudiate firms' CSP. Our findings show that indirect CSP signals have an

effect on firm value. In addition, they show that the valence (i.e., positivity vs. negativity) and content (i.e., the specific social domain) of indirect CSP signals are important predictors of the magnitude of market reactions. More specifically, we found that negative indirect CSP signals cause larger changes in firm value than positive indirect CSP signals. We also found that positive indirect signals related to the employee and product dimensions of CSP cause larger changes in firm value than indirect signals related to other dimensions. Finally, our findings show that shareholders' responses to indirect signals have evolved over time. More specifically, we found that over time, positive and negative indirect CSP signals have had a more positive and negative impact on firm value, respectively. We also found that positive and negative indirect signals related to the employee and diversity dimensions of CSP have had a more positive and negative impact on firm value, respectively.

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TABLE 1

Summary Statistics

	Panel A Addition Announcements				Panel B Deletion Announcements			
	Mean	Median	Min	Max	Mean	Median	Min	Max
XAD intensity	0.02	0.00	0.00	0.19	0.02	0.00	0.00	0.12
XRD intensity	0.04	0.01	0.00	0.36	0.03	0.00	0.00	0.21
M/B ratio	4.66	2.70	0.42	75.24	3.51	1.88	0.08	41.34
ROA	0.07	0.06	-0.30	0.62	0.04	0.04	-0.47	0.33
Firm age	19.36	12.61	0.42	53.50	33.21	36.15	8.09	52.98

Notes. Number of additions = 154. Number of deletions = 41. XAD intensity, XRD intensity, M/B ratio, and ROA are ratios. Firm age is reported in years.

These variables are described in detail in the section titled "Regression Analyses."

TABLE 2

Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Dependent Variable																	
1	CAR (-1, 0)																
Independent Variables																	
2	Addition dummy	**0.30**															
3	Employee-related CSP	0.11	**0.21**														
4	Product-related CSP	0.05	0.08	0.04													
5	Community-related CSP	0.03	0.12	0.05	-0.08												
6	Diversity-related CSP	0.00	0.08	0.04	**-0.14**	0.05											
7	Human rights-related CSP	-0.03	**-0.19**	**-0.20**	**-0.20**	-0.04	-0.13										
8	Environment-related CSP	0.07	0.12	-0.06	-0.08	-0.06	-0.08	**-0.17**									
9	Corporate governance-related CSP	0.01	0.06	-0.03	-0.10	0.03	0.05	-0.13	0.10								
10	Controversial industries	0.04	**-0.38**	**-0.24**	-0.09	-0.10	-0.12	-0.05	-0.01	-0.06							
11	Multiple-CSP	0.08	**0.21**	**0.40**	**0.16**	**0.28**	**0.45**	**-0.15**	**0.17**	**0.32**	-0.05						
12	Time	0.00	-0.02	0.10	-0.12	0.05	0.12	**-0.28**	0.03	0.13	0.00	0.03					
Control Variables																	
13	XAD intensity	0.05	-0.03	-0.08	0.06	-0.02	0.08	**0.22**	**-0.18**	**-0.15**	-0.04	-0.04	-0.11				
14	XRD intensity	0.01	0.07	0.00	**0.15**	-0.07	-0.01	**0.21**	**-0.21**	-0.09	-0.10	0.01	-0.07	**0.27**			
15	M/B ratio	-0.02	0.07	-0.03	0.04	-0.06	0.09	-0.01	**-0.14**	-0.08	0.00	-0.05	-0.07	0.04	0.10		
16	ROA	**0.16**	**0.15**	0.01	-0.01	-0.02	0.00	0.12	0.01	-0.09	-0.07	-0.08	**-0.21**	0.06	0.05	**0.27**	
17	Log firm age	-0.04	**-0.34**	-0.16	-0.09	0.00	-0.10	0.08	0.03	-0.07	**0.27**	-0.07	0.06	-0.03	-0.11	**-0.15**	-0.06

Notes. Bolded correlations are significant at $p \leq 0.05$.

TABLE 3

CAR (-1, 0) Caused by Announcements by the DSI 400

	Panel A Deletion Announcements			Panel B Addition Announcements		
	CAR Day -1	CAR Day 0	CAR (-1, 0)	CAR Day -1	CAR Day 0	CAR (-1, 0)
Mean abnormal return	-0.67%	-0.93%	-1.60%	0.24%	0.62%	0.85%
t-statistic	-1.49	-1.66 *	-2.23 **	1.03	2.10 **	2.80 **
Median abnormal return	-0.73%	-0.46%	-0.77%	0.11%	0.33%	0.75%
Wilcoxon signed-rank Z-statistic	-0.16 †	-1.58	-2.24 **	1.08	3.31 ***	3.10 ***
% abnormal returns positive	37%	37%	32% *	53%	59% **	60% **

Notes. † $p \leq 0.10$; * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$. Number of additions = 154. Number of deletions = 41. CAR = cumulative abnormal returns.

Interpretation of Key Results. The results of this table indicate that in the (-1, 0) window, deletion announcements tend to cause negative CAR. However, addition announcements tend to cause positive CAR.

TABLE 4

OLS Regressions for the Effects of Signal Valence and Signal Valence over Time

	Model 1	Model 2	Model 3	Model 4
	Beta	Beta	Beta	Beta
Control Variables				
XAD intensity	0.04	0.06	0.07	0.07
XRD intensity	-0.01	-0.02	-0.02	-0.03
M/B ratio	-0.07	-0.06	-0.06	-0.08
ROA	0.17 *	0.13 †	0.14 †	0.13 †
Log firm age	-0.04	0.07	0.07	0.07
Independent Variables				
Addition dummy		0.31 ***	0.31 ***	0.04
Time			0.03	-0.23 †
Addition dummy $\times$ time				0.39 *
Model Summary				
R^2	0.03	0.11 ***	0.11 ***	0.14 ***

Notes. † $p \leq 0.10$; * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$. Number of additions = 154. Number of deletions = 41. The dependent variable is CAR (-1, 0).

Interpretation of Key Results. The significant addition dummy coefficients in Models 2 and 3 indicate that the positive effect of addition announcements on CAR (-1, 0) is significantly different from the negative effect of deletion announcements. As shown in Table 3, the negative CAR caused by deletion announcements (-1.60%) are of higher absolute magnitude than the positive CAR caused by addition announcements (0.85%). Hence, the significant addition dummy coefficients in Models 2 and 3 indicate that deletion announcements cause statistically larger changes in firm value than addition announcements. The significant addition dummy $\times$ time coefficient in Model 4 indicates that over time, the effects of addition and deletion announcements on CAR (-1, 0) have become stronger (Figure 1 shows this clearly).

TABLE 5

OLS Regressions for the Effects of Signal Type and Signal Type over Time

	Panel A Deletion Announcements			Panel B Addition Announcements		
	Model 1	Model 2	Model ·3	Model 1	Model 2	Model ·3
	Beta	Beta	Beta	Beta	Beta	Beta
Control Variables						
XAD intensity	0.15	0.12	-0.04	0.03	0.07	0.07
XRD intensity	-0.02	0.01	0.11	-0.02	0.00	0.00
M/B ratio	0.10	0.07	-0.07	-0.11	-0.10	-0.12
ROA	0.13	0.09	0.30	0.11	0.12	0.13
Log firm age	-0.02	0.05	0.05	0.08	0.09	0.04
Independent Variables						
Employee-related CSP		0.04	2.88		0.21 *	-0.30
Product-related CSP		0.10	2.86		0.20 *	-0.11
Community-related CSP		-0.17	1.80		0.11	0.10
Diversity-related CSP		-0.17	3.37		0.17	-0.37
Human rights-related CSP		0.12	2.56		0.03	-0.06
Environment-related CSP		-0.15	1.93		0.16	0.14
Corporate governance-related CSP		0.00	-1.20		0.10	-0.15
Controversial industries		0.18	3.26		0.19 *	0.15
Multiple CSP motives		0.06	-3.16		-0.19	0.39
Time		-0.06	2.24		0.10	-0.17
Employee-related CSP × time			-2.26			0.62 *
Product-related CSP × time			-2.46			0.33
Community-related CSP × time			-1.70			0.04
Diversity-related CSP × time			-2.92			0.66 *
Human rights-related CSP × time			-1.28			0.02
Environment-related CSP × time			-1.64			0.01
Corporate governance-related CSP × time			1.22			0.30
Controversial industries × time			-2.06			0.12
Multiple CSP motives × time			2.60			-0.74 *
Model Summary						
R^2	0.07	0.21	0.37	0.03	0.10	0.16

Notes. † $p \leq 0.10$; * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$. Number of additions = 154. Number of deletions = 41. The dependent variable is CAR (-1, 0).

Interpretation of Key Results. The results of Panel B, Model 2 show that addition announcements related to the employee and product dimensions of CSP cause larger changes in CAR than announcements related to other CSP dimensions. Addition announcements related to other CSP dimensions have effects that are neither statistically stronger nor statistically weaker than the average effect of all the other types of announcements. The results of Panel B, Model 3 show that the effects of addition announcements related to the employee and diversity dimensions of CSP have become more positive over time. The results of Panel A, Model 2 show that none of the seven types of deletion announcements have a stronger or weaker effect on CAR. The results of Panel A, Model 3 show that the effects of deletion announcements on CAR have not significantly changed over time.

FIGURE 1

Evolution over Time of the Predicted CAR (-1, 0) Surrounding Addition and Deletion

Announcements to the DSI 400
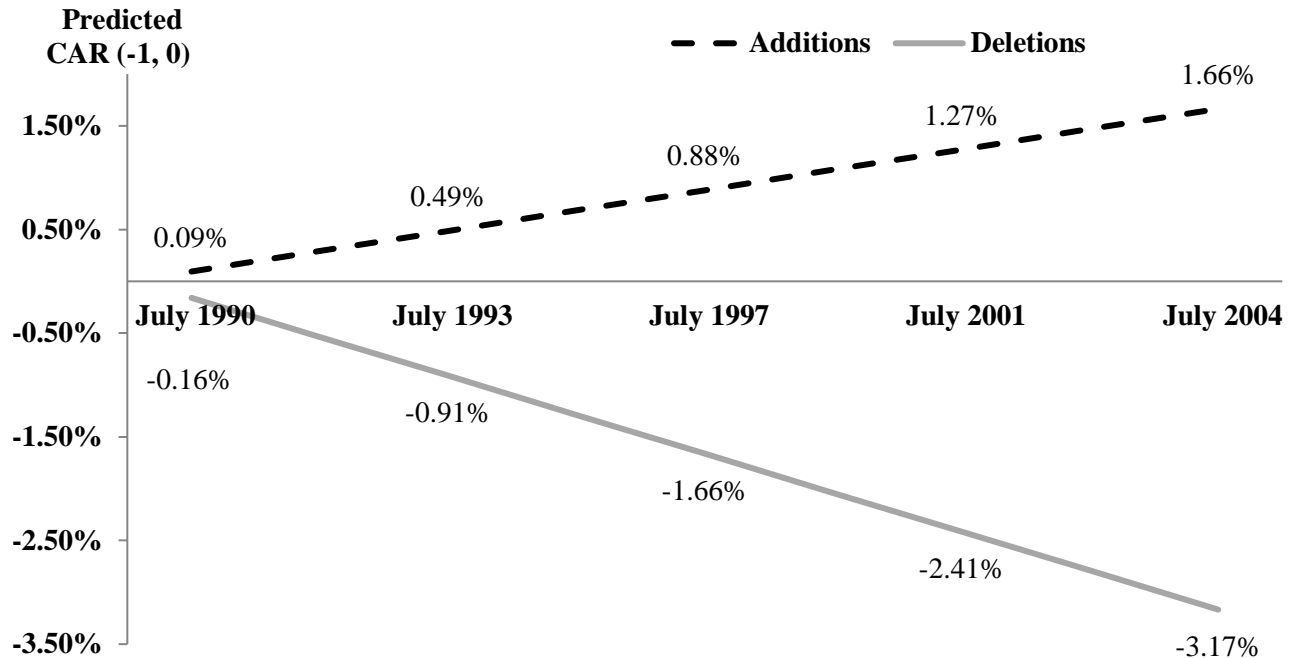
Notes. The predicted CAR (-1, 0) are estimated using the sample mean of our control variable and plotted at the mean of time (Mean of time = 7.59; or July 1997) and at +/- 2, 1.5, 1, and 0.5 standard deviation (SD) from the mean of time.

Statistical Tests and Interpretation of Key Results. The conditional effects of the addition dummy indicate that the difference between the CAR for addition and deletion announcements is insignificant between July 1991 and July 1993 (all p's > .10). However, this difference is constantly significant at, and after, July 1994 (all p's ≤ .05). The conditional effects of time indicate that the negative effect on CAR engendered by deletion announcements becomes more negative over time (t = -1.68; p ≤ 0.10), whereas the positive effect engendered by addition announcements becomes more positive over time (t = 1.85; p ≤ 0.10).