When do Appointments of Corporate Sustainability Executives affect Shareholder Value?

Priyank Arora

Scheller College of Business,
Georgia Institute of Technology,
Atlanta, GA 30308
E-mail: Priyank.Arora@scheller.gatech.edu

Manpreet Hora

Scheller College of Business,
Georgia Institute of Technology,
Atlanta, GA 30308
E-mail: Manpreet.Hora@scheller.gatech.edu

Vinod Singhal

Scheller College of Business,
Georgia Institute of Technology,
Atlanta, GA 30308
E-mail: Vinod.Singhal@scheller.gatech.edu

Ravi Subramanian

Scheller College of Business,
Georgia Institute of Technology,
Atlanta, GA 30308
E-mail: Ravi.Subramanian@scheller.gatech.edu

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This paper investigates the shareholder value effects of appointing corporate sustainability executives (CSEs) to firms’ top management teams (TMTs). Although there is a vast literature on sustainable practices and strategies and their relationships with various measures of firm performance, little is known about the nature of the empirical link between CSE appointments and financial performance. We add to the understanding of this link between CSE appointments and financial performance by using a stock price based performance measure. We use event study methodology to estimate the stock market reactions to a sample of 106 announcements of CSE appointments made by publicly listed firms during the period 2000–2015. The evidence suggests that although the stock market reaction to CSE appointments is overall value neutral, the stock market reacts more positively under certain firm-specific factors. The stock market reacts more positively in instances where the announcing firms faced an adverse prior sustainability-related event, and when announcing firms specify focused as opposed to broad responsibilities for the CSE appointee. However, there is no difference in the stock market reactions to announcements of appointments to newly-created versus existing CSE positions, and to announcements of outsider versus insider CSE appointments. Our findings demonstrate nuances in the market reactions to CSE appointments depending on various firm-specific factors, thereby helping executives and stakeholders better understand the shareholder value effects of appointing CSEs to TMTs.

*Keywords*: corporate sustainability executives; stock market reaction; event study
1. Introduction

Over the last two decades, firms have been appointing sustainability executives to be part of their top management teams (TMTs). Denning (2011) labels this trend as “sustainability reaching the C-suite,” and attributes it to the breadth, complexity and rapid evolution of sustainability issues. The number of firms with sustainability executives in TMTs doubled between 1995 and 2003, and again between 2003 and 2008 (GreenBiz 2013). Indeed, Forbes (2016) lists “sustainability leadership” that combines operational efficiency with optimal resource use as one of the four supply chain career paths for 2025. Titles for sustainability executives include Chief Sustainability Officer, Chief Responsibility Officer, Corporate Social and Environmental Officer, and Executive or Senior Vice-President of Sustainability, etc. (Strand 2013). For the purpose of our study, we refer to these executives as Corporate Sustainability Executives (CSEs).

There is an extensive body of literature investigating the shareholder value effects to firms’ socially and environmentally responsible actions such as philanthropy and equal employment opportunities (Margolis and Walsh 2003); environmental management in the form of process redesign, investment in new environmental technologies, and reduction in emissions of hazardous pollutants into the natural environment (Klassen and McLaughlin 1996); ISO 14000 certification (Corbett and Kirsch 2000); environmental initiatives and awards (Jacobs et al. 2010); and corporate social responsibility (CSR) communications (Yu et al. 2013). The work by Flammer (2013, 2015) posits that engagement in eco-friendly corporate initiatives generates new and competitive resources for the firm and finds a positive stock market reaction when firms announce eco-friendly initiatives or pass CSR-related proposals in their annual board meetings. Research has also established a positive link between CSR engagements of a firm and its environmental and social performance (Kroes et al. 2012, Toffel and Short 2011). Although there is a vast literature on CSR practices and strategies and their relationships with various measures of firm performance, little is known about the nature of the empirical link between CSE appointments and financial performance.
The empirical work linking CSE appointments and financial performance that we are aware of is by Wiengarten et al. (2015), who examine the association between appointments of chief officers of corporate social responsibility and improvement in operating performance as measured by change in return on assets. We add to the understanding of this link between CSE appointments and financial performance by using a stock price based performance measure. More, specifically, we examine the abnormal stock market reaction attributable to announcements of CSE appointments. We also investigate how the stock market reaction depends on the following firm-specific factors: (i) appointments to newly-created as compared to existing positions; (ii) outsider versus insider appointee; (iii) appointments announced subsequent to an adverse sustainability-related event; and (iv) whether the responsibilities specified for the CSE appointee are focused versus broad.

The TMT of a firm comprises a group of executives who are usually one or two levels below the CEO and are responsible for formulating, propagating, and executing the corporate strategy of the firm. Given that these executives have a strong influence in firms’ strategic decision–making, it is of interest to study how appointments to TMTs affect financial performance. The extant literature has examined the stock market reactions to appointments of senior executives in various functional areas, including Chief Financial Officers (CFOs; Mian 2001), Chief Marketing Officers (CMOs; Boyd et al. 2010, Nath and Mahajan 2008), Chief Information Officers (CIOs; Chatterjee et al. 2001), and Supply Chain and Operations Management Executives (SCOMEs; Hendricks et al. 2015). We contribute to this literature by examining the stock market reaction to appointments of CSEs – a relatively recent phenomenon. We also contrast the market reaction to appointments of CSEs with the reactions to appointments of senior executives in the aforementioned functional areas.

Our empirical analyses are based on a sample of 106 announcements of CSE appointments made by publicly listed firms over the period 2000–2015. We find that the stock market reaction to CSE appointments is insignificantly different from zero, indicating that such appointments are overall value-neutral. Our finding is encouraging in the sense that it suggests that these appointments, which are
intended to help improve firms’ social and environmental performance, do not hurt shareholder value. Furthermore, many stakeholders, including customers, regulatory agencies, communities, NGOs, and environmental and social activists are increasingly placing emphasis on the social and environmental performance of the firm (Sarkis et al. 2010). The appointment of a CSE can help address the ongoing demands of this important set of stakeholders.

Although the stock market reaction to CSE appointments is overall value neutral, we find that the stock market reacts more positively under certain firm-specific conditions. We find evidence of a more positive market reaction in instances where the announcing firms faced a prior adverse sustainability-related event. Firms faced with an adverse sustainability-related event in the year prior to the announcement of CSE appointment, have a 0.69% higher mean market reaction relative to announcing firms that did not face such an event. We also find evidence of a more positive market reaction when announcing firms specify focused as opposed to broad responsibilities for the CSE appointee. On average, firms announcing CSE appointments with focused responsibilities have a 0.94% higher mean market reaction as compared to firms announcing CSE appointments with broad responsibilities. However, we do not find evidence of more positive stock market reactions to announcements of appointments to newly-created versus existing CSE positions or to announcements of CSE hires from outside versus inside the firm. Our findings continue to hold when we account for potential self-selection bias and are also robust to alternative methods to estimate the stock market reaction.

The remainder of the paper is organized as follows. Section 2 develops our hypotheses of the relationships between firm-specific factors and the stock market reactions to CSE appointments. Section 3 describes our sample of announcements of CSE appointments. Section 4 outlines the methodology that we use to estimate the stock market reactions to the announcements and to test our hypotheses. Section 5 presents our results, and discusses the implications of our findings. Section 6 summarizes the paper and suggests directions for future research.
2. Theory and Hypotheses

The early literature posited a negative relationship between a firm’s engagement in sustainability practices and its financial performance (Friedman 1970, McGuire et al. 1988). Based on neoclassical economic theory, this literature argued that costs outweigh the economic benefits of a sustainability-focused corporate strategy. However, several subsequent research studies challenged this view by arguing that corporate sustainability efforts enable the firm to: (a) decrease costs – for example, by reducing waste, improving process efficiency, and helping retain employees, (b) increase revenues – for example, by improving brand image, reputation, and trust and opening up new markets (socially-conscious or “green” consumers), (c) mitigate internal and external risks – for example, by ensuring safe working conditions and reducing emissions of hazardous pollutants into the natural environment, and (d) enhance competitiveness – for example, by offering differentiated products (e.g., environmentally-friendly product designs), and improving consumer sentiment (Berry and Rondinelli 1998, Porter and van der Linde 1995).

The literature also highlights the financial benefits of corporate sustainability initiatives such as investments in green technologies, philanthropic contributions, workplace diversity, and the implementation of environmental management systems (Kleindorfer et al. 2005, Lee and Klassen 2008, Sen and Bhattacharya 2001, Sroufe 2003).

Several studies have found empirical evidence of positive stock market reactions to firms’ environmentally responsible actions (e.g., Klassen and McLaughlin 1996 and King and Lenox 2002). Flammer (2013) and Godfrey et al. (2009) establish that sustainability helps develop goodwill and trust that insures the firm against socially and environmentally negative events. In particular, Godfrey et al. (2009) show that a firm’s engagement in sustainability initiatives significantly mitigates the negative stock market reaction that is associated with legal actions such as patent infringement and employment discrimination claims against the firm.

A steady increase in the frequency of introduction of federal environmental laws and amendments, scrutiny by the media and NGOs, push for human rights, demand for improved workplace diversity policies, and green initiatives implemented by other firms, has led to a concomitant increase in
sustainability-related pressures on firms (Flammer 2013). However, a barrier to the adoption of sustainability initiatives is lack of top management commitment (Blass et al. 2014). The literature has established that strong support and conviction from a firm’s leadership and the creation of a CSE position in the TMT provide stimulus for sustainability-related changes across the firm’s business units (Chinander 2001, Eccles et al. 2012). As the primary executive in the TMT with responsibility over sustainability strategy, a CSE can make the business case for resource allocations that ensure an effective integration of sustainability within the firm’s corporate strategy. For example, David E. Kepler, citing an experience related to the development of alternate fuels, stated that – as Dow Chemical’s Chief Sustainability Officer – his opinion carries substantial weight among the technology, manufacturing, and finance teams involved in the firm’s strategic decision making (Deutsch 2007).

Our first hypothesis pertains to the stock market reaction to announcements of appointments of CSEs to newly-created versus existing positions. As compared to appointment to an existing position, appointment to a newly-created CSE position conveys newer and potentially stronger information to the firm’s stakeholders about the firm’s commitment to sustainability and the elevation of the role of sustainability in its corporate strategy. Furthermore, with the creation of a new CSE position, the elevated representation of sustainability at the TMT level can be expected to improve the ability of the firm to exploit synergies among its business units (Guadalupe et al. 2013). We posit that appointments to newly-created CSE positions would be associated with more positive stock market reactions than appointments to existing CSE positions, for the following reasons.

First, creating a new CSE position signals to a firm’s stakeholders an urgency to undertake sustainability initiatives and the establishment of a formal mechanism to implement the firm’s sustainability strategy throughout the organization. Second, the appointment to a newly-created CSE position provides new information about the firm seeking to be proactive in not only undertaking sustainable practices that may reduce costs and improve revenues and competitiveness, but also in mitigating risks such as legal actions, cleanup costs, and reputation loss. Finally, appointment to a newly-created CSE position provides an avenue for stakeholders, including shareholders, customers, the
government, the media, and environmental and social activists to interact and communicate with the firm and have a positive influence on the firm’s sustainability strategy. As an example, Scott Wicker, the first Chief Sustainability Officer of UPS, mentioned that his position was created in response to several internal and external pressures due to the increased complexity of sustainability reporting and enhanced accountability for regulatory non-compliance (Weinreb 2011). Accordingly, we propose the following hypothesis:

HYPOTHESIS H1. The stock market reacts more positively to announcements of appointments to newly-created CSE positions, as compared to appointments to existing CSE positions.

Our next hypothesis pertains to whether the stock market reacts differently to announcements of appointments of outsiders as compared to insiders to CSE positions. Insiders can be expected to possess more specific knowledge about the firm’s markets, technologies, systems and internal employee networks (Harris and Helfat 1997, Puffer and Weintrop 1991). Ocasio (1999) underscores the value of internal promotions when the value of continuity and stability of existing strategies is high and when the value of existing employee social networks is high. For example, while announcing the appointment of an insider to the position of Chief Sustainability Officer at Greif (a manufacturer of industrial packaging products), Michael Gasser, Chairman and CEO, emphasized how the past contributions of the appointee in raising Greif’s profile with stakeholders interested in sustainable practices and the appointee’s “ability to tweak existing Greif products and find new markets and new uses for them,” would help the firm in achieving its sustainability goals (PR Newswire 2011). Additionally, firms may have better information about the skills and potential performance of internal as compared to external appointees (Harris and Helfat 1997, Zajac 1990). Thus, an insider CSE appointment may reduce the risk of the firm hiring an individual who may not be well-suited for the position.

However, compared to insiders, outsiders are likely to bring new experiences, knowledge (including best practices), and perspectives on how other firms and industries manage sustainability (Boeker 1997, Kesner and Sebora 1994). For example, while announcing IAMGOLD’s appointment of an outsider to the position of Vice President, Environment, Health, Safety, and Community, Joe Conway, President and
CEO highlighted how the appointee’s knowledge of developing and implementing best practices at his former firm would add depth to IAMGOLD’s TMT. Further, outsiders may be more willing to challenge the status quo and change existing strategies and practices (Finkelstein et al. 1996, Peteraf and Shanley 1997). For example, announcing the expansion of Office Depot’s TMT by appointing an outsider to the position of Director of Environmental Affairs, Chairman and CEO Bruce Nelson highlighted how the addition would provide “exceptional new perspectives” to Office Depot’s existing sustainability team. Compared to an insider, an outsider CSE may be better able to build relationships with other TMT members without the frictions of previous disagreements or conflicts. Also, outsiders can be expected to be more forthcoming with unbiased and objective assessments of sustainability-related issues, and be less likely to have a stake in legacy decisions.

The literature offers evidence for stronger positive stock market reactions to hiring outsiders versus insiders to TMTs. In 7 out of the 10 studies summarized by Kind and Schläpfer (2011), the stock market reactions to CEO successions were more positive (or less negative) for outsiders as compared to insiders. Hendricks et al. (2015) find evidence that the stock market reacts positively to appointments of outsider SCOMEs as compared to insider SCOMEs. Also, in their study of appointments to newly-created CIO positions, Chatterjee et al. (2001) find that the stock market reacts more positively when the new appointee is an outsider rather than an insider. Based on the above discussion, we hypothesize the following:

**HYPOTHESIS H2.** The stock market reacts more positively to announcements where an outsider is appointed to the CSE position compared to announcements where an insider is appointed.

Our third hypothesis pertains to the stock market reactions to announcements of appointments to CSE positions depending on whether or not the announcing firms faced a prior adverse sustainability-related event. Adverse sustainability-related events faced by announcing firms may include eco-harmful incidents (e.g., chemical spills), violations of federal environmental laws, and occupational safety and health incidents resulting in death and/or significant property damage.

The appointment of a new CSE, either to an existing or a new position, subsequent to an adverse
sustainability-related event signals a focus on damage control and loss minimization by the firm, as well as renewed corporate-level focus on the management of liabilities, reputation losses, and wasted resources associated with the occurrence of such events. The appointment of a new CSE may also reflect the TMT’s commitment to not only undertake remedial measures but also employ a proactive sustainability strategy that helps avoid future adverse events or noncompliance. Further, adverse sustainability-related events bring the firm under stricter monitoring by NGOs, the media, and environmental and social activists, who demand an increased focus on sustainability (The Guardian 2015, Wood and Schneider 2006). In the wake of this increased scrutiny, appointing a new CSE demonstrates a strong intent to rebuild relationships with these stakeholders.

In sum, prior adverse sustainability-related events attract significant additional pressures from the firm’s stakeholders, which are likely to be relieved upon the firm’s appointment of a new CSE. Thus, the stock market reaction to announcements of CSE appointments is likely to be greater in instances where the announcing firms faced a prior adverse sustainability-related event. We therefore hypothesize the following:

HYPOTHESIS H3. The stock market reacts more positively to announcements of CSE appointments by firms that faced a prior adverse sustainability-related event, as compared to announcements by firms that did not face such an event.

Our final hypothesis pertains to the specification of focused versus broad responsibilities for the CSE positions. Longsworth et al. (2012) outline the typical responsibilities of sustainability-related executives in TMTs based on a survey of 25 global companies. These responsibilities include ensuring access to sustainability expertise and knowledge across the firm’s business units, developing a transformational corporate sustainability strategy, monitoring external sustainability issues for the business (such as regulations and compliance), and communicating the firm’s sustainability strategy to its stakeholders.

Given the technical and managerial complexities associated with the sustainability function, there are challenges in aligning sustainability initiatives with organizational practices (Ansari et al. 2010, Corbett and Klassen 2006). These challenges may lead investors to face uncertainty as to the ways through which
the appointed CSE will help improve the firm’s sustainability and financial performance. We argue that the specification of focused responsibilities for the CSE position helps reduce ambiguity about the firm’s expectations for the appointee.

Furthermore, Bansal et al. (2014) underscore that the fit between a firm’s sustainability strategy and its competitive resources plays an important role in determining firm financial performance. We posit that focused, as compared to broadly-specified responsibilities is indicative of the firm paying closer attention to fit among the sustainability objectives of the firm, the skills of the appointee, and organizational resources. Additionally, amidst “greenwashing” concerns, a firm’s announcement of CSE appointment may be seen as another ruse to influence public perception about the firm’s sustainability strategy. However, the specification of focused as opposed to broad responsibilities for a CSE could help the firm credibly signal to its stakeholders about its intent to follow through with sustainability initiatives.

Several research studies, including Nath and Mahajan (2011) and Smith and Tushman (2005), have proposed that a well-defined role for a TMT member along with a clear alignment of responsibilities with goals, enable the TMT member to have more effective control over resources and, thus, greater organizational power. Accordingly, the specification of focused as opposed to broad responsibilities for the CSE position is more likely to elevate the appointee’s organizational power. Drawing from the political view of organizations (Cyert and March 1963, Pfeffer 1981), CSEs with greater organizational power can ensure a better alignment of sustainability decisions with corporate strategy, resulting in a more positive impact on a firm’s financial performance.

Moreover, the setting of clear goals has been identified as a motivating factor for the achievement of those goals (Latham and Locke 1995). Thus, the specification of focused responsibilities for the CSE appointee can be expected to facilitate a more timely implementation of the firm’s sustainability strategy and initiatives. For instance, in a personal interview conducted by the authors of this paper, members of UPS’ Sustainability Steering Management Committee expressed the importance of the specification of focused responsibilities for UPS’ Chief Sustainability Officer in facilitating the company’s achievement
of its sustainability-related goals in a timely fashion. Accordingly, we hypothesize the following:

HYPOTHESIS H4. *The stock market reacts more positively to announcements of CSE appointments that specify focused as compared to broad responsibilities for the appointee.*

3. Sample

As an initial step towards collecting announcements of CSE appointments, we used a preliminary set of search keywords to identify a set of CSE announcements from different business publications and newswires. We read these announcements to identify additional phrases and words that are commonly used in announcements of CSE appointments. The final set of keywords that we used was: (“chief” or “president” or “executive” or “director” or “head”) and (“sustainability” or “environmental” or “social” or “responsibility”), and their variants with different ending letters. We searched the headlines and lead paragraphs of all announcements in the *Wall Street Journal (WSJ)*, *Dow Jones News Service (DJNS)*, *PR Newswire (PRN)*, and *Business Wire (BW)* during 2000–2015 and obtained 291 announcements of CSE appointments. We followed the following steps to generate our final sample of announcements of CSE appointments:

- Given that our focus is on examining stock market reaction, we restrict our sample to announcements made by publicly traded firms. We excluded firms that do not have stock price information available from the University of Chicago’s Center for Research in Security Prices (CRSP) US Stock Databases. Of the 291 announcements, 187 were made by firms that had stock price information available from CRSP.

- We excluded announcements that reported two or more simultaneous personnel changes. For example, one announcement mentioned that in addition to a CSE appointment, the firm was also appointing a new CIO. We exclude such announcements to avoid the conflation of the effects of simultaneous events on the stock market reaction. Out of the 187 announcements, 62 reported two or more simultaneous personnel changes and were excluded.

- We excluded CSE announcements for firms that had confounding events around the announcement
date – specifically, announcements of CEO appointments and earnings announcements by the same firm. For this, we searched our sources for contemporaneous announcements by the firm within a five-day window (± 2 trading days) around the CSE announcement date (Boyd et al. 2010, Jacobs and Singhal 2015). Of the 125 announcements, 19 had contemporaneous announcements and were excluded.

Our final sample comprises 106 announcements of CSE appointments. Some examples include:

- “Exide Technologies, a global leader in stored electrical-energy solutions, announced today that Mark W. Cummings will join the Company as Vice President–Global Environmental, Health & Safety, effective July 25” (Business Wire 2005).
- “AEGON has appointed Executive Vice President Marc van Weede as global Head of Sustainability, reporting to CEO Alex Wynaendts.” (PR Newswire 2010a).
- “Smithfield Foods, Inc. today announced that it has promoted Dennis H. Treacy to senior vice president of corporate affairs and chief sustainability officer as part of the company’s long-term focus on corporate social responsibility and sustainability” (PR Newswire 2010b).

Panel A of Table 1 provides statistics on size and financial performance of the announcing firms. The mean (median) market value of equity of the announcing firms in our sample is $30.8 (8.9) billion, with a standard deviation of $77.4 billion. Panel B summarizes the number of appointments by year-range. A relatively higher proportion of announcements are in the middle year ranges (2004–2007 and 2008–2011) of the time period considered in our study. The mean (median) number of announcements per year is 6.6 (6.5). Panel C summarizes three broad industry groups based on ranges of Standard Industrial Classification (SIC) codes. The majority of the announcements in our sample (70.7%) are from the manufacturing industries (SIC codes 2000 to 4999), including, food, paper, chemicals, rubber, metals, automobile, and aircraft; 18.9% are from wholesaling, retailing, and services (SIC codes 5000 to 9999); and 10.4% are from agriculture and resource-extracting industries (SIC codes 0001 to 1999).

Most announcements in our sample provide background information about the CSE position and the
individual appointed to the position. Panel D of Table 1 summarizes this information. There is an almost even split between appointments to newly-created CSE positions (47.2%) and to existing CSE positions (52.8%). For comparison with other C-level appointments, 66% of the CMO positions during 1996-2005 in the sample in Boyd et al. (2010) were newly created. However, only 12% of the CFO positions during 1984-1997 in the sample in Mian (2001) were newly created and 29% of the SCOME positions during 2000-2011 in the sample in Hendricks et al. (2015) were newly created.

Additionally, in our sample, there is an almost even split between appointments of outsiders (48.1%) and insiders (51.9%) to CSE positions. The percentage of outsider CSEs is lower than that of outsider CMOs (73%) reported by Boyd et al. (2010) and outsider SCOMEs (67%) reported by Hendricks et al. (2015) but is similar to the percentage of outsider CFOs (50%) reported by Mian (2001). For 53.8% of the announcements in our sample, information was provided on whom the CSE appointee would report to. 28.3% of the CSE appointees in our sample were stated as reporting directly to the firm’s CEO or COO.

Approximately 30% of CSE appointees in our sample are women. This is significantly higher than the percentage of women SCOMEs (7%) reported by Hendricks et al. (2015). For 73.6% of the sample, information about the educational background of the appointed CSE was available within the announcement. For another 23.6% of the sample, we were able to collect information on educational backgrounds by accessing the profiles of the CSE appointees on LinkedIn. We were unable to obtain information on educational backgrounds for the remaining 2.8% of the sample. The highest educational degree for 30.2% of the CSEs is a bachelor’s degree, for 56.6% it is a master’s degree, and for 13.2% it is a Ph.D. 30% of the CSE appointees have an MBA degree. For 61.3% of the announcements in our sample, information about the number of years of work experience for the appointed CSE was available; the mean (median) prior work experience of the CSE appointees was 22 (21) years.

4. Methodology

This section first discusses the methodology and statistical tests that we use for estimating the stock market reactions to the announcements of CSE appointments, and then describes the methodology we use
to test the hypotheses introduced in Section 2.

4.1 Estimating Stock Market Reactions: Abnormal Returns

We use event study methodology to estimate the stock market reactions to the announcements of CSE appointments. This methodology estimates the stock market reaction (referred to as “abnormal” returns) to an event, while adjusting for market-wide and other factors that may influence stock returns (see Brown and Warner 1985). The abnormal returns are an estimate of the percent change in stock price associated with an event. The basis of event study methodology is that, in an efficient market, the shareholder value effects of an event are immediately reflected in the stock price.

All announcements in our sample first appeared in either DJNS, PRN, or BW and indicate the time when the announcement was publicly released. We use the time of release of information to determine the announcement date. If the announcement was released before 4:00 p.m. EST, then no adjustment is necessary to the announcement date. If the announcement was released after 4:00 p.m. EST, we set the announcement date as the next trading day since investors cannot act on the information contained in the announcement until the next trading day. For instance, the announcement of Northwest Natural Gas Company’s CSE appointment was publicly released at 7:38 p.m. EST on June 1, 2006 (Business Wire 2006). Thus, we set June 2, 2006 as the announcement day for this announcement. We translate calendar days into event days such that the announcement day is Day 0, Day 1 is the trading day following the announcement day, Day –1 is the trading day before the announcement day, and so on. We use the announcement day, or Day 0, as the (one-day) event period to measure the stock market reaction.

Consistent with recent event studies (e.g., Flammer 2015, Hendricks et al. 2015), we use the Four-Factor model to estimate abnormal returns The Four-Factor model incorporates the market return factor, size factor, book-to-market factor, and the momentum factor (Fama and French 1993, Carhart 1997). The Four-Factor model posits a linear relationship between the stock return and the four factors over a given time period, as:

\[ R_{it} = \alpha_i + R_{ft} + \beta_{i1} [R_{mt} - R_{ft}] + \beta_{i2} SMB_t + \beta_{i3} HML_t + \beta_{i4} UMD_t + \epsilon_{it} \]  

(1)
Where $R_{it}$ is the return of stock $i$ on Day $t$, $\alpha_i$ is the intercept of the relationship for stock $i$, $R_{ft}$ is the risk-free return on Day $t$, $R_{mt}$ is the market return on Day $t$, $SMB_t$ is the small-minus-big size portfolio return on Day $t$, $HML_t$ is the high-minus-low book-to-market portfolio return on Day $t$, $UMD_t$ is the past-one-year winner-minus-loser stock portfolio return (the momentum factor) on Day $t$, and $\epsilon_{it}$ is the error term for stock $i$ on Day $t$. To compute the expected return for each announcing firm, we estimate $\hat{\alpha}_i$, $\hat{\beta}_{i1}$, $\hat{\beta}_{i2}$, $\hat{\beta}_{i3}$, $\hat{\beta}_{i4}$, and $\hat{S}^2_{\epsilon i}$ (the variance of the error term $\epsilon_{it}$) using ordinary least squares regression over the estimation period of 200 trading days; we begin the estimation period from Day $-210$ and end it on Day $-11$. We end the estimation period 10 trading days prior to the event day to shield the estimates from possible effects related to the announcement and to avoid non-stationarities in the estimates. Also, we require that a firm must have a minimum of 40 days of stock returns data during the 200-day estimation period. The abnormal return $A_{it}$ for firm $i$ on Day $t$ is computed as the difference between the actual and the expected return:

$$A_{it} = R_{it} - (\hat{\alpha}_i + R_{ft} + \hat{\beta}_{i1} [R_{mt} - R_{ft}] + \hat{\beta}_{i2} SMB_t + \hat{\beta}_{i3} HML_t + \hat{\beta}_{i4} UMD_t)$$

(2)

The mean abnormal return, $\bar{A}_t$, for Day $t$ is given by:

$$\bar{A}_t = \frac{\sum_{i=1}^{N} A_{it}}{N} ,$$

(3)

where $N$ is the number of announcements in the sample. To test the statistical significance of the mean abnormal return (given by Equation (3)), we use the standardized abnormal returns obtained by dividing each abnormal return $A_{it}$ by its standard deviation $\hat{S}_{\epsilon i}$. Under the null hypothesis (that the abnormal returns are not significantly different from zero) and the Central Limit Theorem, the mean abnormal return for Day $t$ ($\bar{A}_t$) is approximately Normal with mean 0 and variance $\hat{S}^2_{\epsilon i}$. The test statistic $TS_t$ for Day $t$ is calculated as follows:

$$TS_t = \frac{\sum_{i=1}^{N} \frac{A_{it}}{\hat{S}_{\epsilon i}/\sqrt{N}}}{\sqrt{N}}$$

(4)

We use the $t$-test to determine the statistical significance of the mean abnormal returns. To check for the influence of outliers, we supplement the $t$-test with the following two non-parametric tests: (i) Wilcoxon
signed-rank test, to test for the statistical significance of the median abnormal return, and (ii) Binomial sign test, to determine if the percent positive abnormal returns during the event period is significantly greater than the null of 50%. All reported p-values are two-tailed.

**4.2 Methodology for Testing Hypotheses**

To test our hypotheses, we regress the announcement day (Day 0) abnormal returns on the explanatory and control variables. We use the following explanatory variables to represent H1 through H4.

- **New** = 1 if the CSE is appointed to a newly-created position, 0 otherwise.
- **Outsider** = 1 if an outsider is appointed to the CSE position, 0 otherwise.
- **Prior_Event** = 1 if the announcing firm faced an adverse sustainability-related event within the year prior to announcement of CSE appointment, 0 otherwise. To identify prior adverse sustainability-related events, we searched the headlines and lead paragraphs of all articles in *WSJ, DJNS, PRN,* and *BW* that mention the announcing firm within a 365-day period prior to the announcement of CSE appointment. Some examples of prior adverse sustainability-related events include the following: “...violated federal law by failing to share and provide access to health and safety information to its workers...”, “...Nuclear Regulatory Commission imposes safety penalty due to violation of subject matter expert (SME) guidelines...” “...charged by the Federal government for Clean Air Act violation...” 35 out of the 106 announcing firms faced adverse sustainability-related event(s) within the year prior to announcement of CSE appointment. The mean (median) time between the most-recent adverse sustainability-related event for the announcing firm and CSE announcement is 88 (36) days.
- **Focused** = 1 if the firm specified focused responsibilities for the appointed CSE in the announcement, 0 otherwise. Based on content analysis of the announcements in our sample, we classified the stated responsibilities of the CSE appointee into the following five categories: (i) Ensuring regulatory compliance; (ii) Ensuring occupational and environmental safety and health; (iii) Communicating with key stakeholders; (iv) Developing corporate sustainability strategy; and (v) Building the firm’s
sustainability vision and goals. Table 2 presents the distribution of announcements based on these categories. Each announcement in our sample states at least one of these five categories of responsibilities for the CSE appointee. We consider the responsibilities for the CSE to be focused as opposed to broad if the firm only specified one or more of the first three categories (ensuring regulatory compliance, ensuring occupational and environmental safety and health, and communicating with key stakeholders) listed above. Accordingly, 42 (64) announcements in our sample specified focused (broad) responsibilities for the CSE appointee.

**Control Variables:** Both industry and firm size may influence the stock market reaction to announcements of CSE appointments. From an industry perspective, factors such as market and technological opportunities and risks associated with sustainability initiatives can lead to differences in stock market reactions to CSE appointments. To control for industry, we use the three broad industry groups discussed in Section 3. Specifically,

Industryal = 1 if the SIC code is between 0001 and 1999 (agriculture and resource extracting), 0 otherwise.

Industryle2 = 1 if the SIC code is between 2000 and 4999 (manufacturing), 0 otherwise.

Industryle3 = 1 if the SIC code is between 5000 and 9999 (wholesaling, retailing, and services), 0 otherwise.

Consistent with previous event studies that examine the relationship between appointments to TMTs and stock market reaction (Boyd et al. 2010, Hendricks et al. 2015), we control for the size of the announcing firm. We measure Firm_Size as the natural logarithm of the firm’s market value of equity in the most recent fiscal year that ended prior to the announcement date.

We use the following model specification to test our hypotheses:

\[ AR_i = \beta_0 + \beta_1 New_i + \beta_2 Outsider_i + \beta_3 Prior\_Event_i + \beta_4 Focused_i \]

\[ + \beta_5 Industry1_i + \beta_6 Industry2_i + \beta_7 Firm\_Size_i + \epsilon_i, \]

where \( \epsilon_i \) is the error term. The predicted signs of each of the coefficients \( \beta_1, \beta_2, \beta_3, \text{ and } \beta_4 \) are positive.
5. Results and Implications

In this section, we present our findings for the overall stock market reaction to our sample of CSE appointments, followed by results of our hypotheses tests. We discuss the implications of our findings and compare them to the findings in the literature for appointments of other types of senior executives.

5.1 Overall Stock Market Reaction to CSE Appointments

Table 3 presents the abnormal returns for the one-day event period (announcement day, or Day 0) for our sample of 106 announcements of CSE appointments. The results indicate that the mean abnormal return is not significantly different from zero. The mean (median) abnormal return is \(-0.04\% (-0.16\%)\), not significantly different from zero. 46.2\% of the announcements in our sample have positive stock market reactions, insignificantly different from 50\%. The results are similar if we use the Market Model\(^1\) and the Market-Adjusted Model\(^2\) (Brown and Warner 1985) instead of the Four-Factor Model to estimate abnormal returns. The results are also similar if we consider [Day 0, Day 1], [Day -1, Day 0], or [Day -1, Day 1] as the event period instead of Day 0, or if we estimate abnormal returns using 150 days or 250 days as the estimation period instead of 200 days.

While the results suggest mixed shareholder assessments of CSE appointments, it is encouraging to observe that the appointments do not hurt shareholder value. As a member of the TMT, the CSE can help develop strategies and programs that can improve the firm’s social and environmental performance, and is also in a position to influence other key decision-makers to align resources with these strategies and programs. Many stakeholders, including customers, regulatory agencies, NGOs and environmental and social activists are increasingly placing emphasis on the social and environmental performance of the firm. The appointment of a CSE can help a firm address the ongoing demands of these stakeholders, without economically penalizing its shareholders.

It is instructive to compare the stock market reaction to the CSE appointments in our study with the

\(^1\) Market Model: \(R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}\), such that abnormal return \(A_{it}\) for firm \(i\) on Day \(t\) is calculated as: \(A_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt})\).

\(^2\) Market-Adjusted Model: Abnormal return \(A_{it}\) for firm \(i\) on Day \(t\) is given by: \(A_{it} = R_{it} - R_{mt}\).
stock market reactions to appointments of other types of senior executives. While Hendricks et al. (2015) find that the mean abnormal return for SCOME appointments is 0.24%, significantly different from zero, Mian (2001) finds that the mean abnormal stock return for CFO appointments is –0.05%, not significantly different from zero. Also, Boyd et al. (2010) find that the mean abnormal stock return for announcements of CMO appointments is 0.003%, not significantly different from zero.

Our finding that the stock market reaction to CSE appointments is value-neutral, is in contrast to the finding in Wiengarten et al. (2015) that appointments of chief officers of corporate social responsibility are associated with improved return on assets in the fiscal year after the announcement of CSE appointment. However, as discussed next, the results of our hypotheses tests show that the stock market reacts more positively under certain firm-specific factors.

5.2 Results of Hypotheses Tests

We use multivariate regressions to test our hypotheses. Table 4 presents the regression coefficients with t-statistics in parentheses. Model 1 includes only the four explanatory variables – New (appointment to a newly-created as opposed to an existing CSE position), Outsider (appointment of an outsider as opposed to an insider to the CSE position), Prior_Event (whether an adverse sustainability-related event preceded the announcement of CSE appointment), and Focused (whether the responsibilities specified for the CSE appointee are focused as opposed to broad). Model 2 includes all explanatory and control variables.

From the results for Model 2, we observe the following: First, the estimated coefficient of New is positive but not significantly different from zero. This finding is similar to the finding for announcements of CMO appointments in Boyd et al. (2010) – that the stock market reaction to announcements of appointments to newly-created CMO positions is not significantly different from the reaction for appointments to existing CMO positions. Thus, we find evidence that the stock market does not consider appointments to newly-created CSE positions to be significantly more impactful to firm value when compared to appointments to existing positions.

Second, the estimated coefficient of Outsider is positive but not significantly different from zero. While Hendricks et al. (2015) find that the stock market reacts more positively when the SCOME
appointee is an outsider rather than an insider, our finding is similar to that in Mian (2001) wherein the stock market reactions are not significantly different between announcements of CFO hires from outside versus inside the firm.

Third, the estimated coefficient of Prior_Event is positive and significantly different from zero. Thus, we find evidence that the stock market reacts more positively (0.69% higher mean market reaction) if the announcing firm faced an adverse sustainability-related event in the year prior to the announcement of CSE appointment. This positive reaction suggests that the appointment of a CSE (either to an existing or a new position) may be perceived as a sign of the firm’s commitment to not only undertake remedial measures but also employ a proactive sustainability strategy that helps avoid future adverse events or noncompliance.

Fourth, the estimated coefficient of Focused is positive and significantly different from zero. Announcements specifying focused responsibilities for the CSE appointee have a 0.94% higher mean market reaction compared to appointments specifying broad responsibilities, suggesting a better fit among the sustainability objectives of the firm, the skills of the appointee, and the capabilities of the firm. Furthermore, focused responsibilities provide clarity to stakeholders as to the ways through which the appointed CSE would help implement the firm’s sustainability strategy.

Finally, with regard to the control variables, we do not find evidence of an association between industry type and the stock market reaction to announcements of CSE appointments. Also, although the estimated coefficient of Firm_Size is positive, it is statistically not significant. Other measures of firm size, such as sales and total assets are typically highly correlated with market value of equity. For instance, in our sample, the correlation between firms’ market value of equity and sales is 0.81. All results reported in Sections 5.2, 5.3, and 5.4 continue to hold if we instead measure Firm_Size as the natural logarithm of sales in the most recent fiscal year that ended prior to the announcement date.

5.3 Accounting for Self-Selection

Given that the firms in our sample have self-selected to announce CSE appointments, our sample is nonrandom, thereby raising endogeneity concerns due to self-selection bias, which could influence our
regression estimates. To account for potential self-selection bias, we employ the Heckman two-step procedure (Heckman 1979, Maddala 1983). In the first step, we use a selection model to predict the likelihood of a firm announcing the appointment of a CSE, and estimate the selection hazard or the inverse Mills ratio (IMR). In the second step, we use a regression model that includes the IMR as an additional explanatory variable.

We follow Hendricks et al. (2015) and Kalaignanam et al. (2013) to identify a set of firms that did not announce a CSE appointment (could be either because a CSE appointment did not occur or that a CSE appointment that did occur was not announced). For each firm in our sample, we find a matching firm outside of our sample with the same 4-digit SIC code and closest to the sample firm in terms of market value of equity at the end of the fiscal year prior to the announcement of CSE appointment by the sample firm. Thus, we have a total of 212 firms (106 sample and 106 matching firms).

As in Hendricks et al. (2015), we utilize the literature on CEO turnover to identify explanatory variables for the selection model. The two most commonly used variables are firm size and prior performance (e.g., Warner et al. 1988, Parrino et al. 2003). We therefore include the natural logarithm of market value of equity (\(\text{Firm}_\text{Size}\)) and return on assets (\(\text{ROA}\)) in the fiscal year that ended prior to the announcement of CSE appointment by the sample firm. We also include the industry variables introduced in Section 4.2.

Thus, our first-stage selection model is:

\[
\Pr(CSE\_Announcement_i = 1) = \Phi(\beta_0 + \beta_1\text{Firm}_\text{Size}_i + \beta_2\text{ROA}_i + \beta_3\text{Industry}_1_i + \beta_4\text{Industry}_2_i + \epsilon_i),
\]

The selection model is significant with a log likelihood of –140.5 (p-value < 0.025). The results for the selection model indicate that firms with a higher market value of equity (i.e., larger firm size) or lower return on assets (i.e., poorer prior performance) are significantly more likely to announce CSE appointments.

Our second-stage regression model is:

\[
AR_i = \beta_0 + \beta_1\text{New}_i + \beta_2\text{Outsider}_i + \beta_3\text{Prior\_Event}_i + \beta_4\text{Focused}_i
\]
Model 3 in Table 4 shows the regression results for the model specified in Equation (7). The coefficient for IMR is not significant, suggesting that our sample does not exhibit self-selection bias. The results of Model 3 are very similar to the results of Model 2.

5.4 Robustness Checks

We conduct the following additional analyses to establish the robustness of the results reported in Section 5.2. First, we examine the robustness of our findings to the method used to compute abnormal returns. Recall that the results reported in Section 5.2 are based on announcement-day abnormal returns estimated using the Four-Factor Model (Model 2 in Table 4). In Models 1 and 2 in Table 5, we estimate announcement-day abnormal returns using the Market Model and the Market-Adjusted Model, respectively and find similar results.

Second, we examine the robustness of our findings to the choice of time period used to determine the occurrence of a prior adverse sustainability-related event. The results in Table 4 are based on a time-period of 365 days prior to the announcement of CSE appointment. The results (Model 3 in Table 5) are qualitatively consistent if we instead use 180 days as the time-period.

Finally, 13 firms in our sample had more than one announcement of CSE appointment during the period of our study (our sample includes 106 announcements made by 87 unique firms during 2000-2015). To account for potential non-independence between error terms, we cluster standard errors by firm and find that our results continue to hold.

6. Summary

In this paper, we use event study methodology to estimate the stock market reactions to a sample of 106 announcements of CSE appointments made by publicly listed firms during the period 2000–2015. We investigate how the effect of announcements of CSE appointments on shareholder value depends on following firm-specific factors: appointments to newly-created versus existing CSE positions, outsider versus insider appointees, appointments announced subsequent to an adverse sustainability event, and
focused- versus broadly-specified responsibilities for the CSE appointee.

The evidence suggests that although, on average, the shareholder value effect of CSE appointments is not significantly different from zero, the stock market reacts more positively under certain firm-specific conditions. The stock market reacts more positively in instances where the announcing firms faced a prior adverse sustainability-related event. We also find that the stock market reaction is more positive when firms announce CSE appointments with focused as compared to broad responsibilities. However, we do not find evidence of a higher stock market reaction to announcements of appointments to newly-created as compared to existing CSE positions and to announcements of appointments of outsiders versus insiders to CSE positions. Our findings demonstrate nuances in the market reactions to CSE appointments depending on various firm-specific factors, thereby helping executives and stakeholders better understand the shareholder value effects of appointing CSEs to TMTs.

An interesting extension of our work would be to examine the sustainability practices implemented by the firms in our study subsequent to CSE appointment (e.g., adoption of environmental management systems, investments in green technologies, modifications in criteria for supplier evaluation, etc.). Future research could also delve further into the demographics of the CSE appointees and link them to firm performance; characteristics of interest may include number of years and diversity of experience, gender, and educational background.

References


Sarkis, J., P. Gonzalez-Torre, and B. Adenso-Diaz (2010). Stakeholder pressure and the adoption of


Table 1: Sample description (106 CSE appointments)

**Panel A:** Descriptive statistics based on the most recent fiscal year completed before the date of announcement of appointment

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Value of Equity (million $)</td>
<td>30,819.4</td>
<td>8,875.5</td>
<td>77,371.9</td>
</tr>
<tr>
<td>Total Assets (million $)</td>
<td>63,132.6</td>
<td>10,271.9</td>
<td>1,71,759.7</td>
</tr>
<tr>
<td>Sales (million $)</td>
<td>23,885.8</td>
<td>7,739.0</td>
<td>46,871.7</td>
</tr>
<tr>
<td>Net Income (million $)</td>
<td>1,703.3</td>
<td>330.5</td>
<td>5,248.9</td>
</tr>
<tr>
<td>Return on Assets (%)</td>
<td>2.3</td>
<td>4.0</td>
<td>17.7</td>
</tr>
</tbody>
</table>

**Panel B:** Distribution of appointments by year range

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Number</th>
<th>% of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000 – 2003</td>
<td>24</td>
<td>22.6</td>
</tr>
<tr>
<td>2004 – 2007</td>
<td>31</td>
<td>29.3</td>
</tr>
<tr>
<td>2008 – 2011</td>
<td>36</td>
<td>34.0</td>
</tr>
<tr>
<td>2012 – 2015</td>
<td>15</td>
<td>14.1</td>
</tr>
</tbody>
</table>

**Panel C:** Distribution of appointments by industry group

<table>
<thead>
<tr>
<th>Industry Group</th>
<th>SIC Codes</th>
<th>Number</th>
<th>% of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture and Resource Extracting</td>
<td>0001-1999</td>
<td>11</td>
<td>10.4</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>2000-4999</td>
<td>75</td>
<td>70.7</td>
</tr>
<tr>
<td>Wholesaling, Retailing, and Services</td>
<td>5000-9999</td>
<td>20</td>
<td>18.9</td>
</tr>
</tbody>
</table>

**Panel D:** Nature of CSE appointments and demographics of appointees

Nature of CSE appointment
- Appointed to Newly-created (Existing) position: 47.2% (52.8%)
- Outsider (Insider): 48.1% (51.9%)
- Reporting directly to CEO or COO: 28.3%
- Not reporting directly to CEO or COO: 25.5%
- No information on reporting: 46.2%

Demographics of CSE appointees
- Women (Men): 29.2% (70.8%)
- Bachelor’s degree as the highest degree: 30.2%
- Master’s degree as the highest degree: 56.6%
- Ph.D. degree as the highest degree: 13.2%
- Have an MBA degree: 30.2%
- Mean (median) years of work experience: 22 (21)
Table 2: **Distribution of announcements based on categories of specified CSE responsibilities**

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensuring regulatory compliance</td>
<td>39.6</td>
</tr>
<tr>
<td>Ensuring occupational and environmental safety and health</td>
<td>33.0</td>
</tr>
<tr>
<td>Communicating with key stakeholders</td>
<td>11.3</td>
</tr>
<tr>
<td>Developing corporate sustainability strategy</td>
<td>28.3</td>
</tr>
<tr>
<td>Building the firm’s sustainability vision and goals</td>
<td>40.6</td>
</tr>
</tbody>
</table>

*Note: The sum exceeds 100% because multiple categories may be specified within an announcement.*

Table 3: **Summary of Day 0 abnormal returns for announcements of CSE appointments**

<table>
<thead>
<tr>
<th></th>
<th>Four-Factor Model</th>
<th>Market Model</th>
<th>Market-Adjusted Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (%)</td>
<td>–0.04</td>
<td>–0.05</td>
<td>–0.16</td>
</tr>
<tr>
<td>t-statistic</td>
<td>–0.27</td>
<td>–0.31</td>
<td>–1.04</td>
</tr>
<tr>
<td>Median (%)</td>
<td>–0.16</td>
<td>–0.01</td>
<td>–0.08</td>
</tr>
<tr>
<td>Z-statistic</td>
<td>–0.62</td>
<td>–0.77</td>
<td>–1.17</td>
</tr>
<tr>
<td>Percent greater than zero</td>
<td>46.2</td>
<td>50.0</td>
<td>46.2</td>
</tr>
<tr>
<td>p-value</td>
<td>0.56</td>
<td>1.00</td>
<td>0.5</td>
</tr>
</tbody>
</table>
Table 4: Estimated coefficients (t-statistics in parentheses) from regression analyses

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1 (with explanatory variables only)</th>
<th>Model 2 (with explanatory and control variables)</th>
<th>Model 3 (with explanatory variables, control variables, and IMR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.0087 (-2.92)**</td>
<td>-0.0099 (-1.01)</td>
<td>-0.0302 (-1.65)*</td>
</tr>
<tr>
<td>New</td>
<td>+ (H1)</td>
<td>0.0037 (1.18)</td>
<td>0.0036 (1.15)</td>
</tr>
<tr>
<td>Outsider</td>
<td>+ (H2)</td>
<td>0.0014 (0.47)</td>
<td>0.0008 (0.28)</td>
</tr>
<tr>
<td>Prior_Event</td>
<td>+ (H3)</td>
<td>0.0074 (2.42)**</td>
<td>0.0069 (2.25)**</td>
</tr>
<tr>
<td>Focused</td>
<td>+ (H4)</td>
<td>0.0087 (2.71)**</td>
<td>0.0094 (2.84)**</td>
</tr>
<tr>
<td>Industry1a</td>
<td></td>
<td>-0.0016 (-0.27)</td>
<td>0.0017 (0.27)</td>
</tr>
<tr>
<td>Industry2b</td>
<td></td>
<td>-0.0059 (-1.57)</td>
<td>-0.0047 (-1.20)</td>
</tr>
<tr>
<td>Firm_Size</td>
<td></td>
<td>0.0006 (0.71)</td>
<td>0.0019 (1.45)</td>
</tr>
<tr>
<td>IMR</td>
<td></td>
<td></td>
<td>0.0094 (1.31)</td>
</tr>
</tbody>
</table>

N                   |
F-statistic         |
R^2                 |
Adjusted R^2        |

Notes: This table presents the results of regressions of announcement-day abnormal returns obtained using the Four-Factor Model, on the explanatory variables and controls. Significance levels (two-tailed tests): ’p < 0.1, ’p < 0.05, ’’p < 0.025, ’’’p < 0.01.

a Agriculture and Resource Extracting; b Manufacturing
c Inverse Mills Ratio (see Section 5.3)

Table 5: Estimated coefficients (t-statistics in parentheses) from robustness checks

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.0011</td>
<td>-0.0071</td>
<td>-0.0087</td>
</tr>
<tr>
<td>New</td>
<td>0.0038</td>
<td>0.0019</td>
<td>0.0004</td>
</tr>
<tr>
<td>Outsider</td>
<td>-0.0005</td>
<td>0.0015</td>
<td>0.0002</td>
</tr>
<tr>
<td>Prior_Event</td>
<td>0.0079</td>
<td>0.0089</td>
<td>0.0060</td>
</tr>
<tr>
<td>Focused</td>
<td>0.0086</td>
<td>0.0081</td>
<td>0.0098</td>
</tr>
<tr>
<td>Industry1a</td>
<td>-0.0044</td>
<td>-0.0013</td>
<td>-0.0018</td>
</tr>
<tr>
<td>Industry2b</td>
<td>-0.0063</td>
<td>-0.0042</td>
<td>-0.0063</td>
</tr>
<tr>
<td>Firm_Size</td>
<td>-0.0002</td>
<td>0.0001</td>
<td>0.0006</td>
</tr>
</tbody>
</table>

N                   |
F-statistic         |
R^2                 |
Adjusted R^2        |

Notes: This table presents the results of regressions of announcement-day abnormal returns on the explanatory variables and controls. In Models 1 and 2, we obtain the event-period (Day 0) abnormal returns using the Market Model and the Market-Adjusted Model, respectively. In Model 3, we use an alternate operationalization of the Prior_Event variable. The variable takes a value of 1 if the firm faced an adverse sustainability-related event within 180 days prior to announcement of CSE appointment, 0 otherwise. For Model 3, we use announcement-day abnormal returns obtained using the Four-Factor model.

Significance levels (two-tailed tests): ’p < 0.1, ’p < 0.05, ’’p < 0.025, ’’’p < 0.01

a Agriculture and Resource Extracting; b Manufacturing