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

June 14, 2018
When do Appointments of Corporate Sustainability Executives affect Shareholder Value?

Abstract

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 111 announcements of CSE appointments made by publicly listed firms during the period 2000–2016. The evidence suggests that although the stock market reaction to CSE appointments is overall value neutral, the stock market reacts more or less positively under certain firm- and industry-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. Further, the stock market reacts less positively when the announcing firms operate in industries that experience relatively greater levels of regulatory sanctions. However, the stock market reactions are not significantly different for announcements by firms with weaker, versus stronger, sustainability performance. Our findings demonstrate specific nuances in the market reactions to CSE appointments depending on various firm- and industry-specific factors, thereby enabling executives and stakeholders to 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. Forbes (2016) lists sustainability leadership that couples operational excellence with optimal resource use, as one of the top 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), and consider sustainable practices to be those that enable a firm to mitigate the negative impacts and enhance the positive impacts of its operations on the environment and on society (Kleindorfer et al. 2005, Chen and Delmas 2011).

There is an extensive body of literature investigating the shareholder value effects of 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 reductions in emissions of hazardous pollutants (Klassen and McLaughlin 1996, King and Lenox 2002); ISO 14000 certification (Corbett and Kirsch 2001); corporate environmental initiatives and environmental awards and certifications (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 such initiatives or pass CSR-related proposals in their annual board meetings. Godfrey et al. (2009) find that sustainability initiatives help develop goodwill and trust that insure the firm against socially and environmentally negative events. Research has also established a positive link between the 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 empirical link between CSE appointments and financial performance.
A related empirical study linking CSE appointments and financial performance is by Wiengarten et al. (2015), who examine the association between appointments of chief officers of corporate social responsibility and improvement in operating performance measured as change in return on assets. We add to the understanding of this link between CSE appointments and financial performance by examining the stock market reaction attributable to announcements of CSE appointments. Moreover, we also investigate how the stock market reaction depends on the following firm- and industry-specific factors: (1) appointments announced subsequent to an adverse sustainability-related event; (2) the sustainability-related performance of the announcing firm; (3) the level of regulatory sanctions experienced by the industry in which the announcing firm operates; and (4) 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 under what conditions do appointments to TMTs affect financial performance. The extant literature has examined 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.

Our empirical analyses are based on a sample of 111 announcements of CSE appointments made by publicly listed firms over the period 2000–2016. We find that the average 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. While the stock market reaction to CSE appointments is overall value neutral, we find that the stock market reacts
more positively under certain firm- and industry-specific conditions.

In particular, 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 0.74% higher mean market reaction relative to announcing firms that did not face such an event. We also find evidence of a less positive market reaction for announcing firms that operate in industries that face higher levels of regulatory sanctions. Firms operating in industries experiencing higher levels of regulatory sanctions have a 0.55% lower mean market reaction compared to announcing firms that operate in industries with lower levels of regulatory sanctions. However, the stock market reactions are not significantly different for announcements by firms with weaker, versus stronger, sustainability performance. Finally, we 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 0.92% higher mean market reaction compared to firms announcing CSE appointments with broad responsibilities. Our findings continue to hold when we account for potential self-selection bias, and are robust to alternative measures of our explanatory factors and alternative methods of estimating the stock market reaction.

The remainder of the paper is organized as follows. Section 2 develops our hypotheses. Section 3 describes our sample of announcements of CSE appointments. Section 4 outlines the methodology that we use to estimate the stock market reaction 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

In this section, we first briefly review the literature that discusses how a firm’s sustainability performance may be positively related with its financial performance. We then discuss how CSEs may enable the adoption of value-enhancing sustainability practices. Thereafter, we introduce our hypotheses of specific conditions under which we would expect the stock market reaction to CSE appointments to be more, or less
positive.

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 have challenged this view by arguing that corporate sustainability efforts enable the firm to: (i) decrease costs – by reducing waste, improving process efficiency, and helping retain employees, (ii) increase revenues – by improving brand image and loyalty, and opening up new markets, (iii) mitigate internal and external risks – by ensuring safe working conditions and reducing emissions of hazardous pollutants into the natural environment, and (iv) enhance competitiveness – by enabling product differentiation and improving consumer sentiment (Berry and Rondinelli 1998, Lee and Klassen 2008, Porter and van der Linde 1995, Sroufe 2003).

A steady increase in the introduction of environmental laws, scrutiny by the media and NGOs, push for human rights, demand for improved workplace diversity policies, and environmental and social initiatives implemented by other firms, has led to a concomitant increase in sustainability-related pressures on firms. However, a barrier to the adoption of sustainability initiatives is the lack of top management commitment (Epstein et al. 2010, Blass et al. 2014). In particular, Blass et al. (2014) suggest that a lack of top management commitment can impede the adoption of energy efficiency practices because non-TMT members typically do not have sufficient access to information across business units and are not in a position to reallocate resources. 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 the firm’s 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. Equipped with organizational power stemming from TMT membership, a CSE can also facilitate the diffusion of sustainability goals and practices from top management through middle management to ground-level employees. Additionally, an elevated
representation of sustainability can improve the firm’s ability to exploit synergies among its business units (Guadalupe et al. 2013). For instance, citing an experience related to the development of alternate fuels, David E. Kepler stated that, as Dow Chemical’s Chief Sustainability Officer, his opinion carried substantial weight among the technology, manufacturing, and finance teams involved in the firm’s strategic decision making (Deutsch 2007). Thus, by being actively involved in corporate decision-making, a CSE can enable the adoption of effective sustainability practices that decrease costs, increase revenues, lower risks, and enhance competitiveness.

Next, we introduce our hypotheses of the conditions under which the stock market reaction to CSE appointments would be more, or less positive. These conditions include: (1) Occurrence of a prior adverse sustainability-related event; (2) Prior sustainability performance of the announcing firm; (3) Regulatory sanctions imposed on the industry to which the announcing firm belongs; and (4) Specification of focused versus broad responsibilities of the CSE appointees.

2.1 Occurrence of a Prior Adverse Sustainability-Related Event

Adverse sustainability-related events faced by announcing firms may include eco-harmful incidents (such as chemical spills), violations of federal environmental laws, and occupational safety and health incidents resulting in death or significant property damage. The occurrence of such an event raises concerns about the firm’s willingness or ability to proactively manage its environmental and social impacts, requiring the firm to send a credible signal to stakeholders regarding its commitment toward sustainability (Hardcopf et al. 2016).

Announcing the appointment of a new CSE 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 that are typically 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, an adverse sustainability-related event attracts significant additional scrutiny and pressures from the firm’s stakeholders (The Guardian 2015, Wood and Schneider
In the wake of stricter monitoring by NGOs, the media, and environmental and social activists, appointing a new CSE demonstrates a strong intent to rebuild relationships with these stakeholders. Therefore, based on the above discussion, we hypothesize the following:

**HYPOTHESIS H1.** 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.

### 2.2 Prior Sustainability Performance

Our second hypothesis pertains to the stock market reaction to announcements of CSE appointments depending on the firm’s prior sustainability performance. A firm’s sustainability performance can be measured by its strengths along several dimensions such as the environment, diversity, and human rights (Chen and Delmas 2011). We posit that the announcement of a CSE appointment by a firm with weaker sustainability performance will be associated with a more positive stock market reaction.

The literature has established that a firm’s existing sustainability performance determines the incremental value that it can derive from implementing additional sustainable practices. Hart and Ahuja (1996) find evidence of diminishing returns to investments for improving environmental performance. Further, Flammer (2013) finds that firms with better environmental performance benefit less from the introduction of an additional green initiative. A CSE appointment by a firm with weaker sustainability performance conveys greater prospects for the firm to derive value from sustainability initiatives. Moreover, given the greater prospects for value gains, it may be less challenging for the newly-appointed CSE to convince other decision makers to direct resources for implementing additional sustainability initiatives. Accordingly, we propose the following hypothesis:

**HYPOTHESIS H2.** The stock market reacts more positively to announcements of CSE appointments by firms with weaker sustainability performance.

### 2.3 Industry-Level Regulatory Sanctions

It is plausible that a CSE appointment by a firm operating in a dirty industry may signal that the firm is...
seeking to be proactive in mitigating risks such as legal actions, cleanup costs, and reputation loss. On the other hand, the literature has argued that stakeholders’ expectations are a function of norms and standards originating from the firm’s affiliated networks (Romanelli and Khessina 2005), and that a firm’s practices are influenced by the industry in which it operates (Hawawini et al. 2003).

Stakeholders are more likely to view a firm’s appointment of a CSE with a higher degree of skepticism when it operates in an industry that faces higher levels of sustainability-related regulatory sanctions. Barnett and King (2008) suggest that, more often than not, stakeholders (including shareholders, customers, the government, the media, and activists) are unable to ascertain which firms in an industry meet regulatory standards and which do not, and therefore tend to paint all firms within an industry with the same brush. Similarly, Diestre and Rajagopalan (2011) argue that greater regulatory sanctions on an industry imply that firms in that industry are generally unable or unwilling to meet prevailing regulatory standards. In addition, Zavyalova et al. (2012) find that the extent of stakeholders’ scrutiny on individual firms is weaker when more firms from the same group are viewed as negligent in terms of their actions. Drawing from this discussion, we posit that an announcement of a CSE appointment by a firm operating in an industry with greater regulatory sanctions sends weaker information to the firm’s stakeholders about the firm’s enhanced commitment to undertake sustainability initiatives. Accordingly, we hypothesize the following:

HYPOTHESIS H3. The stock market reacts less positively to announcements of CSE appointments by firms operating in industries that face greater sustainability-related regulatory sanctions.

2.4 Focused versus Broad Responsibilities for the CSE Appointee

Our final hypothesis pertains to the specification of focused versus broad responsibilities for the CSE appointee. Longsworth et al. (2012) outline the typical responsibilities of sustainability-focused 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. We posit that the stock market reaction would be more positive when firms announce CSE appointments with
focused as compared to broad responsibilities, for three reasons.

First, the specification of focused responsibilities for the CSE position helps reduce ambiguity about the firm’s expectations for the appointee. Given the technical and managerial complexities associated with the sustainability function, there are challenges in integrating sustainability initiatives within organizational practices (Ansari et al. 2010, Corbett and Klassen 2006), leading to prevalent uncertainty about the ways by which a CSE appointee could help improve a firm’s sustainability and financial performance. Adequate role information, specific goal content, and clearly communicated expectations serve to reduce uncertainty about how the CSE appointee could create value for the firm (Latham and Locke 1995).

Second, 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. Bansal et al. (2014) state that the fit between a firm’s sustainability strategy and its competitive resources plays an important role in determining the environmental and social benefits that can be derived from sustainability initiatives. Additionally, amidst greenwashing concerns, a firm’s announcement of a CSE appointment may be seen as a way to influence public perception. However, the specification of focused as opposed to broad responsibilities for the CSE may more credibly signal to stakeholders the firm’s intent to pursue sustainability initiatives.

Third, studies on TMTs, 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, enables a more effective control over resources and, thus, greater organizational power. In turn, drawing from the political view of organizations (Cyert and March 1963, Pfeffer 1981), CSEs with greater organizational power can facilitate a better alignment of sustainability decisions with corporate strategy, resulting in a more positive impact on the firm’s financial performance. 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 our sample of announcements of CSE appointments, we used a preliminary set of search keywords to pull CSE announcements from different newswires and newspapers. 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 2000–2016 and obtained 303 announcements of CSE appointments. We followed the following steps to generate our final sample of announcements:

- 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 303 announcements, 189 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 confounding effects of simultaneous events on the stock market reaction. Of the 189 announcements, 59 reported two or more simultaneous personnel changes and were therefore excluded.

- We excluded CSE announcements for firms that had potentially confounding events around the announcement date – specifically, earnings announcements or announcements of CEO appointments. For this, we searched our sources for contemporaneous announcements within a five-day window (± 2 trading days) around the firm’s CSE announcement date (Boyd et al. 2010, Jacobs and Singhal 2017). Of the 130 announcements, 19 had contemporaneous announcements and were therefore...
Thus, our final sample comprises 111 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).

3.1 Responsibilities and Backgrounds of the CSE Appointees

Before presenting descriptive statistics for our sample of announcements, we briefly discuss the specific responsibilities, external activities, and backgrounds of the CSE appointees in our sample. To obtain this information, we searched the LinkedIn profiles of the appointees for descriptions of their responsibilities during their respective tenures as CSEs for the announcing firms. We also searched archived communications pertaining to the CSE appointees, on the respective company websites. Based on our analysis of the information (which was available in the needed detail for 69 out of the 111 CSE appointees in our sample), the responsibilities for the CSE appointees included: leading the development and achievement of corporate sustainability strategy and goals; leading the integration of sustainability innovations and practices across business functions and departments; leading environmental and social sustainability efforts along the dimensions of energy, water, emissions, safety, social initiatives, and transparency; overseeing compliance with local, state, and federal laws; and liaising with key global customers, investors, the media, academic organizations, environmental advocacy groups, and NGOs.

The backgrounds of these CSE appointees included: former professional positions of high seniority within or outside the company; former positions as environmental directors/administrators/advisors at the
city/state/federal/international levels (including reporting directly to former US Presidents, and advising the OECD, UN, USAID, and the British Prime Minister’s Office on matters of sustainable development and environmental policy); leadership/board membership at companies and flagship industry associations, non-profits, and NGOs (such as the National Mining Association, US Green Building Council, Oak Ridge Center for Advanced Studies, and Environmental Council of the States); and city/state/national awards for public service.

Thus, our investigation revealed significant responsibilities and noteworthy backgrounds of the CSE appointees and suggests that these senior executives are likely to have substantial influence in developing and executing corporate sustainability strategy.

### 3.2 Descriptive Statistics of our Sample

Panel A of Table 1 summarizes the demographics of the CSE appointees and the characteristics of the CSE appointments in our sample. Approximately 30% of the 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 73.0% of the sample, information about the educational backgrounds of the appointed CSEs was available within the announcements. For another 24.3% of the sample, we were able to collect information on educational backgrounds from the LinkedIn profiles of the CSE appointees. We were unable to obtain information on educational backgrounds for the remaining 2.7% of the sample. The highest educational degree for 30.6% of the CSEs is a bachelor’s degree, for 55.0% it is a master’s degree, and for 14.4% it is a Ph.D. 28.8% 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 is 22 (21) years.

In our sample, the percentage of appointments to newly-created CSE positions (45%) is lower than the percentage of appointments to existing CSE positions (55%). 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 (48.6%) and insiders (51.4%) 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 61 out of the 111 announcements in our sample (54.9%), information was provided on whom the CSE appointee would report to. Of these 61 CSE appointees, 34 reported directly to the firm’s CEO or COO.

Panel B of Table 1 provides descriptive statistics for our sample. The mean (median) market value of equity of the announcing firms in our sample is $30.9 (9.1) billion, with a standard deviation of $75.6 billion. The mean (median) net income is $1.6 (0.3) billion, and mean (median) return on assets is 2.3 (4.0). Panel C summarizes the number of appointments by year-range. A relatively higher proportion of announcements are in the middle year ranges (27.9% in 2004–2007 and 32.4% in 2008–2011) of the time period considered in our study. Panel D summarizes the distribution of our sample across three broad industry groups based on ranges of Standard Industrial Classification (SIC) codes. The majority of the announcements in our sample (72.1%) are from the manufacturing industries (SIC codes 2000 to 4999), including, food, paper, chemicals, rubber, metals, automobile, and aircraft; 18% are from wholesaling, retailing, and services (SIC codes 5000 to 9999); and 9.9% are from agriculture and resource-extracting industries (SIC codes 0001 to 1999).

4. Methodology

This section discusses the methodology and statistical tests for estimating the stock market reactions to the announcements of CSE appointments, and describes the methodology and empirical analyses for testing 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 (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 this 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, when investors can act on the information contained in the announcement. 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 (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:

\[
R_{it} - R_{ft} = \alpha_i + \beta_{t1} [R_{mt} - R_{ft}] + \beta_{t2} SMB_t + \beta_{t3} HML_t + \beta_{t4} UMD_t + \epsilon_{it}
\]

(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 \( \bar{\alpha}_i, \bar{\beta}_{i1}, \bar{\beta}_{i2}, \bar{\beta}_{i3}, \bar{\beta}_{i4} \), and \( \hat{\delta}^2_{e_i} \) (the variance of the error term \( e_{it} \)) 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:

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

(2)

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

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

(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 \( \hat{\delta}_{e_i} \). 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 \( \hat{\delta}^2_{e_i} \). The test statistic \( TS_t \) for Day \( t \) is calculated as follows:

\[
TS_t = \sum_{i=1}^{N} \frac{A_{it}/\hat{\delta}_{e_i}}{\sqrt{N}}
\]

(4)

We use the \( t \)-test to determine the statistical significance of the mean abnormal return. 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 pertaining to H1 through H4, respectively.

(H1) \( \text{Prior\_Event} = 1 \) if the announcing firm faced an adverse sustainability-related event within the year prior to the 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 guidelines...,” “…charged by the Federal government for Clean Air Act violation....” 36 out of the 111 announcing firms faced adverse sustainability-related event(s) within the year prior to their respective announcements of CSE appointment. The mean (median) number of days between the most recent adverse sustainability-related events for the announcing firms and their respective CSE announcements is 92 (36) days.

(H2) \( \text{Weak\_Sust\_Performance} = 1 \) if the firm has a relatively weaker sustainability performance, 0 otherwise. For this measure, we use data from Kinder, Lydenberg, and Domini, Inc. (KLD) Research & Analytics, which is a private entity that rates firms on a scale of 0 (no particular strength) to 7 (high strength) along various sustainability-related dimensions. Consistent with Flammer (2013), we construct a composite index by summing the firm’s strengths in the fiscal year prior to the announcement of CSE appointment, along the following six dimensions: employee relations, environment, product, community, diversity, and human rights. The KLD database does not have the required information for 19 firms in our sample. For the remaining 92 firms, we consider a firm to have a weaker sustainability performance, or \( \text{Weak\_Sust\_Performance} = 1 \), if the composite score is below our sample’s median of 3, and \( \text{Weak\_Sust\_Performance} = 0 \) if the composite score is at or above 3.

(H3) \( \text{Reg\_Sanctions} = 1 \) if the firm operates in an industry that experiences relatively higher levels of regulatory sanctions, 0 otherwise. For this measure, following the approach in Diestre and Rajagopalan (2011, 2014), we collected data from the US Environmental Protection Agency’s (EPA’s) Enforcement and
Compliance History Online (http://echo.epa.gov/) on the total value of fines imposed by the EPA in an announcing firm’s industry (4-digit SIC level) in the most recent fiscal year that ended prior to the firm’s announcement of CSE appointment. We normalize the monetary amount of fines imposed on an announcing firm’s industry by the number of firms in that industry (using US Census Bureau data) in the year prior to the firm’s announcement of CSE appointment. Thus, for each announcement, we calculate the following measure for the fiscal year prior to the firm’s announcement of CSE appointment:

$$\text{Industry-level Regulatory Sanctions} = \frac{\text{Industry-level Fines by the EPA}}{\text{Number of Firms in the Industry}}.$$  

We consider an announcing firm to be operating in an industry that experiences relatively greater levels of regulatory sanctions ($\text{Reg\_Sanctions} = 1$) if the measure given by Equation (5) for the firm’s industry is at or above the sample median of USD 189,678 per firm, 0 otherwise.

(H4) $\text{Focused} = 1$ if the firm specified focused responsibilities for the CSE appointee in the announcement, 0 otherwise. Based on a 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.

Of the five categories listed above, the first three categories (ensuring regulatory compliance, ensuring occupational and environmental safety and health, and communicating with key stakeholders) outline better-defined expectations for the CSE appointee. Some excerpts from announcements that fall within the aforementioned three categories include: “…direct a $6 billion environmental upgrade program scheduled for [the company’s] coal-fired power plants…,” “unify the standards including OHSAS 14001 and ISO 14000, and achieve world-class performance in Environment, Health and Safety areas across all business

---

1 The results are qualitatively similar if we instead use: (i) total number of industry fines in the numerator in Equation (5), or (ii) average of Industry-level Regulatory Sanctions over a three-year period prior to the announcement.
units,” and “enhance relationships with environmental stakeholders, and communicate, measure and minimize the company’s carbon footprint.” 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. This categorization is consistent with the literature on goal specificity, which suggests that “specific” responsibilities are characterized by well-defined outcomes and performance metrics (Larson and Schaumann 1993, Latham and Locke 1995). 45 (66) announcements in our sample specified focused (broad) responsibilities for the CSE appointee.

Control Variables: Consistent with previous event studies that examine the relationships between appointments to TMTs and stock market reactions (Mian 2001, Boyd et al. 2010, Hendricks et al. 2015), we control for a set of factors that may influence the stock market reactions. These include:

- $New = 1$ 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.
- $Firm\_Size$, to 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 Million USD) in the most recent fiscal year that ended prior to the announcement date.
- $CEO\_Turnover = 1$ if the firm changed its CEO within 12 months before the date of CSE appointment. We reviewed each announcing firm’s annual reports and press releases during the year of and the fiscal year prior to the date of CSE appointment in order to ascertain whether the firm changed its CEO. In 17 of the 111 CSE appointments in our sample (approximately 15%), a new CEO was appointed by the firm within a 12-month period prior to the announcement of CSE appointment.

We use the following model specification to test our hypotheses:

$$AR_i = \beta_0 + \beta_1 Prior\_Event_i + \beta_2 Weak\_Sust\_Performance_i + \beta_3 Reg\_Sanctions_i + \beta_4 Focused_i + \beta_5 New_i + \beta_6 Outsider_i + \beta_7 Firm\_Size_i + \beta_8 CEO\_Turnover_i + \epsilon_i,$$

(6)

where $\epsilon_i$ is the error term. The predicted signs of coefficients $\beta_1, \beta_2,$ and $\beta_4$ are positive, whereas the predicted sign of coefficient $\beta_3$ is negative.
5. Results and Implications

This section presents 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 111 announcements of CSE appointments. The mean (median) abnormal return is –0.053% (–0.180%), not significantly different from zero. Approximately 46% 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\(^2\) and the Market-Adjusted Model\(^3\) (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, overall, the appointments do not hurt shareholder value. It is instructive to compare the stock market reaction to the CSE appointments in our study with the 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 market return for CFO appointments is –0.05%, not significantly different from zero. Also, Boyd et al. (2010) find that the mean abnormal stock market return for announcements of CMO appointments is 0.003%, not significantly different from zero.

Our finding that the overall 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

\(^2\) Market Model: \(R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}\), where the abnormal return \(A_{it}\) for firm \(i\) on Day \(t\) is calculated as: \(A_{it} = R_{it} - (\bar{\alpha}_i + \bar{\beta}_i R_{mt}).\)

\(^3\) Market-Adjusted Model: Abnormal return \(A_{it}\) for firm \(i\) on Day \(t\) is calculated as: \(A_{it} = R_{it} - R_{mt}.\)
responsibility are associated with improved return on assets in the fiscal year after the announcement of CSE appointment. More importantly, as discussed next, the results of our hypotheses tests show that the stock market reacts more, or less positively under selected firm- and industry-specific factors.

5.2 Results of Hypotheses Tests

Table 4 presents the results of OLS regression of Equation (6) (regression coefficients with $t$-statistics in parentheses). Model 1 includes only the three explanatory variables for which we have data available for all 111 announcements – Prior_Event (whether an adverse sustainability-related event preceded the announcement of CSE appointment), Reg_Sanctions (whether the announcing firm operates in an industry with relatively greater levels of regulatory sanctions), and Focused (whether the responsibilities specified for the CSE appointee are focused as opposed to broad). When we include the fourth explanatory variable, Weak_Sust_Performance (whether the announcing firm has a relatively weaker sustainability performance), we lose 19 observations because the KLD database does not have the required information for all announcing firms. Model 2 includes all of the four explanatory variables, and Model 3 includes all explanatory and control variables.

From the results for Model 3, we observe the following: First, the estimated coefficient of Prior_Event is positive and significantly different from zero. Thus, we find evidence that the stock market reacts more positively (0.74% higher mean market reaction) if the announcing firm faced an adverse sustainability-related event in the year prior to the announcement of CSE appointment. To investigate this result further, we categorized the 36 adverse sustainability-related events into environment-related events (18) and socially-related events (18). We replaced Prior_Event with two indicator variables in our regression model to respectively indicate whether the event was environment-related or not, and socially-related or not. We find that the coefficients for both these indicator variables are positive and significantly different from zero. The mean market reaction is 0.75% (0.72%) higher in instances where the announcing firms faced an adverse environment-related (socially-related) event in the year prior to the announcement of CSE appointment.

It is plausible though that a positive stock market reaction to a CSE appointment subsequent to an
adverse event essentially offsets the negative reaction that may have resulted when the adverse event occurred. To examine this contention, we estimate the stock market reactions on the respective announcement dates of the adverse sustainability-related events faced by the 36 firms within our sample. We find that the mean stock market reaction on the day of the adverse event is –0.14%, which is substantially lower in magnitude compared to the mean stock market reaction (0.59%) to the announcements of CSE appointment by these 36 firms.

Second, the estimated coefficient of $\text{Weak\_Sust\_Performance}$ is positive but not significantly different from zero. Although Flammer (2015) finds that the stock market reaction to the passing of CSR-related proposals is more positive for firms with weaker sustainability performance, our finding suggests that stock market reactions are not significantly different for announcements of CSE appointments by firms with weaker, versus stronger, sustainability performance.

Third, the estimated coefficient of $\text{Reg\_Sanctions}$ is negative and significantly different from zero. Announcements made by firms operating in industries that experience relatively higher levels of regulatory sanctions have a 0.55% lower mean market reaction compared to appointments by firms in industries that face relatively lower regulatory sanctions. The results continue to hold if we use a tertile-split to define industries that experience low, moderate, or high regulatory sanctions, instead of the median-split.

Fourth, the estimated coefficient of $\text{Focused}$ is positive and significantly different from zero. Announcements specifying focused responsibilities for the CSE appointee have a 0.92% higher mean market reaction compared to appointments specifying broad responsibilities.

With respect to the control variables, the estimated coefficient of $\text{New}$ 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). Similarly, the estimated coefficient of $\text{Outsider}$ 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.
Although the estimated coefficient of Firm Size is negative, it is statistically not significant. The results are similar if we instead measure Firm Size as the natural logarithm of sales or total assets in the most recent fiscal year that ended prior to the announcement date. Further, we find that the stock market reaction is not significantly impacted by CEO turnover within the 12-month period prior to the announcement of CSE appointment.

Additionally, since CSE appointees who directly report to the CEO or the COO of the firm can be expected to have greater organizational power, we perform a two-sample t-test to investigate whether the mean stock market reaction to announcements of appointments of CSEs who directly report to the CEO or the COO of the firm, is significantly different from the mean stock market reaction to announcements of appointees who do not directly report to the CEO or the COO. As noted earlier, the information on whom the CSE appointee would report to was available within the announcement text for 54.9% of the announcements in our sample. Using this subset of announcements, we find that the difference in the mean stock market reactions is positive (0.61%) but not significantly different from zero.

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 concerns of endogeneity. 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 inverse Mills ratio (IMR). In the second step, we use a regression model that includes the IMR as an additional explanatory variable.

Matching Sample. For each announcing firm in our sample, we find a matching firm outside of our sample that has the same 4-digit SIC code and that is closest to the announcing firm in terms of market value of equity at the end of the fiscal year prior to the announcement of CSE appointment (Hendricks et al. 2015, Kalaignanam et al. 2013). For each matched firm, we reviewed 8-K filings (item 5.02 which contains information on “Departure of Directors or Principal Officers; Election of Directors; Appointment of Principal Officers.”) in the Securities and Exchange Commission EDGAR database to confirm that the...
matched firm did not report any CSE appointments in the fiscal year of the announcement by the sample firm.

**Selection Model.** The literature on discretionary disclosures by firms about their sustainability efforts (such as CSR communications) has shown that firm size and profitability, together with sustainability performance, influence the propensity of firms to disclose such information (Baumann-Pauly et al. 2013, Reverte 2009). Further, the literature on CEO turnover identifies firm size and prior financial performance as factors that explain a firm’s decision to appoint a new CEO (Warner et al. 1988, Parrino et al. 2003). Drawing on these literature streams, we include the natural logarithm of the 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, in our selection model.

In addition, a few practitioner survey studies, which document the backgrounds and roles of CSEs, suggest that as sustainability gains prominence within the firm and across the industry, the appointment of a CSE becomes strategically valuable for the firm (Denning 2011, Weinreb 2011). As an example, Scott Wicker, the first Chief Sustainability Officer of UPS, explained 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, for our selection model, we also use the firm’s performance on the six sustainability-related dimensions in the KLD database (\(\text{Weak}\_\text{Sust}\_\text{Performance}\)) and the level of regulatory sanctions experienced by the industry in which the firm operates (\(\text{Reg}\_\text{Sanctions}\)), as measures of the prominence of sustainability within the firm and across the industry, respectively. Thus, our selection model is:

\[
\text{Pr}(\text{CSE\_Announcement}_i = 1) = \\
\Phi(\beta_0 + \beta_1\text{Firm\_Size}_i + \beta_2\text{ROA}_i + \beta_3\text{Weak\_Sust\_Performance}_i + \beta_4\text{Reg\_Sanctions}_i + \epsilon_i) \quad (7)
\]

As noted earlier, the KLD database does not have the required information for 19 announcing firms in our sample. Therefore, the results of the selection model are based on 184 firms (92 sample and 92 matching firms). We find that the selection model is significant with a log likelihood of \(-121.8\) (\(p\)-value \(< 0.025\)). Also, we find that firms with a higher market value of equity (i.e., larger firm size) or lower return on assets
(i.e., poorer prior financial performance) are significantly more likely to announce CSE appointments.

**Regression Model with IMR.** Our second-stage regression model is:

\[
AR_i = \beta_0 + \beta_1 Prior\_Event_i + \beta_2 Weak\_Sust\_Performance_i + \beta_3 Reg\_Sanctions_i + \beta_4 Focused_i \\
+ \beta_5 New_i + \beta_6 Outsider_i + \beta_7 Firm\_Size_i + \beta_8 CEO\_Turnover_i + \beta_9 IMR_i + \epsilon_i, \tag{8}
\]

Model 4 in Table 4 shows the regression results for Equation (8). The coefficient for IMR is not significant, suggesting that our sample does not exhibit self-selection bias. Additionally, the results of Model 4 are very similar to the results of Model 3 (OLS regression of Equation (6)).

### 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 (Model 3 in Table 4) are based on announcement-day abnormal returns estimated using the Four-Factor Model. 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, with the only exception being the lack of significance of the coefficient for \textit{Reg\_Sanctions} in Model 1 in Table 5.

Second, we examine the robustness of our findings to the choice of the 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.

Third, we examine the robustness of our results to the choice of sustainability-related dimensions included in the composite measure \textit{Weak\_Sust\_Performance}. The results (Model 4 in Table 5) are qualitatively similar if we instead use the firm’s score on only the \textit{environment} dimension in the KLD database for the \textit{Weak\_Sust\_Performance} measure.

Fourth, we examine the robustness of our results to the inclusion of additional controls in our regression model (Equation (6)). The results are similar if we include indicator variables corresponding to the year
ranges in Panel C of Table 1 (Model 5 in Table 5), or gender of the CSE appointee (Model 6 in Table 5).

6. Summary

In this paper, we use event study methodology to estimate the stock market reactions to a sample of 111 announcements of CSE appointments made by publicly listed firms during the period 2000–2016. We investigate how the effect of announcements of CSE appointments on shareholder value depends on the following firm- and industry-specific factors: appointments announced subsequent to an adverse sustainability event, sustainability-related performance of the announcing firms, level of regulatory sanctions experienced by the industry in which the announcing firm operates, 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, or less positively under certain firm- and industry-specific conditions. We find that the stock market reaction is more positive in instances where the announcing firms faced a prior adverse sustainability-related event. We also find evidence of a less positive market reaction when announcing firms operate in industries that face relatively higher levels of regulatory sanctions. However, we find that the stock market reactions are not significantly different for announcements by firms with weaker, versus stronger, sustainability performance. Finally, we find that the stock market reacts more positively when firms announce CSE appointments with focused as compared to broad responsibilities. Our findings demonstrate specific nuances in the market reactions to CSE appointments depending on various firm- and industry-specific factors, thereby enabling executives and stakeholders to better understand the shareholder value effects of appointing CSEs to TMTs.

An interesting extension of our work would be to analyze the nature of sustainability practices implemented and the environmental and social performance realized by firms subsequent to CSE appointment. Future research could also delve further into the demographics of the CSE appointees and link them to firm performance: characteristics of interest may include educational background, and the duration or nature of prior work experience.
References


Table 1: Sample description (111 CSE appointments)

**Panel A:** Demographics of the CSE appointees and nature of the CSE appointments  
(Percentages below are for the subsets of the sample where information was available)

<table>
<thead>
<tr>
<th>Demographics of CSE appointees</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Women (Men)</td>
<td>29.7% (70.3%)</td>
<td></td>
</tr>
<tr>
<td>Bachelor’s degree as the highest degree</td>
<td>30.6%</td>
<td></td>
</tr>
<tr>
<td>Master’s degree as the highest degree</td>
<td>55.0%</td>
<td></td>
</tr>
<tr>
<td>Ph.D. degree as the highest degree</td>
<td>14.4%</td>
<td></td>
</tr>
<tr>
<td>Have an MBA degree</td>
<td>28.8%</td>
<td></td>
</tr>
<tr>
<td>Mean (median) years of work experience</td>
<td>22 (21)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nature of CSE appointment</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Appointed to Newly-created (Existing) position</td>
<td>45.0% (55.0%)</td>
<td></td>
</tr>
<tr>
<td>Outsider (Insider)</td>
<td>48.6% (51.4%)</td>
<td></td>
</tr>
<tr>
<td>Reporting directly to CEO or COO</td>
<td>30.6%</td>
<td></td>
</tr>
<tr>
<td>Not reporting directly to CEO or COO</td>
<td>24.3%</td>
<td></td>
</tr>
<tr>
<td>No information on reporting</td>
<td>45.1%</td>
<td></td>
</tr>
</tbody>
</table>

**Panel B:** Descriptive statistics for the announcing firms based on the most recent fiscal year completed before the date of announcement of CSE 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>30,887.7</td>
<td>9,118.0</td>
<td>75,581.8</td>
</tr>
<tr>
<td>Total Assets (million $)</td>
<td>61,386.3</td>
<td>10,372.0</td>
<td>1,67,282.1</td>
</tr>
<tr>
<td>Sales (million $)</td>
<td>23,730.1</td>
<td>7,867.0</td>
<td>45,808.1</td>
</tr>
<tr>
<td>Net Income (million $)</td>
<td>1,635.8</td>
<td>349.2</td>
<td>5,174.1</td>
</tr>
<tr>
<td>Return on Assets (%)</td>
<td>2.3</td>
<td>4.0</td>
<td>17.4</td>
</tr>
</tbody>
</table>

**Panel C:** Distribution of CSE 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>21.6</td>
</tr>
<tr>
<td>2004 – 2007</td>
<td>31</td>
<td>27.9</td>
</tr>
<tr>
<td>2008 – 2011</td>
<td>36</td>
<td>32.4</td>
</tr>
<tr>
<td>2012 – 2016</td>
<td>20</td>
<td>18.0</td>
</tr>
</tbody>
</table>

**Panel D:** Distribution of CSE 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>9.9</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>2000-4999</td>
<td>80</td>
<td>72.1</td>
</tr>
<tr>
<td>Wholesaling, Retailing, and Services</td>
<td>5000-9999</td>
<td>20</td>
<td>18.0</td>
</tr>
</tbody>
</table>
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>40.5</td>
</tr>
<tr>
<td>Ensuring occupational and environmental safety and health</td>
<td>32.4</td>
</tr>
<tr>
<td>Communicating with key stakeholders</td>
<td>10.8</td>
</tr>
<tr>
<td>Developing corporate sustainability strategy</td>
<td>29.7</td>
</tr>
<tr>
<td>Building the firm’s sustainability vision and goals</td>
<td>38.7</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 111 announcements of CSE appointments

<table>
<thead>
<tr>
<th>Based on announcement-day abnormal returns obtained using</th>
<th>Four-Factor Model</th>
<th>Market Model</th>
<th>Market-Adjusted Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (%)</td>
<td>-0.053</td>
<td>-0.052</td>
<td>-0.165</td>
</tr>
<tr>
<td>t-statistic</td>
<td>-0.361</td>
<td>-0.368</td>
<td>-1.099</td>
</tr>
<tr>
<td>Median (%)</td>
<td>-0.180</td>
<td>-0.002</td>
<td>-0.089</td>
</tr>
<tr>
<td>Z-statistic</td>
<td>-0.699</td>
<td>-0.856</td>
<td>-1.248</td>
</tr>
<tr>
<td>Percent greater than zero</td>
<td>45.94</td>
<td>50.0</td>
<td>45.94</td>
</tr>
<tr>
<td>p-value</td>
<td>0.505</td>
<td>1.00</td>
<td>0.448</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 three explanatory variables)</th>
<th>Model 2 (with all four explanatory variables)</th>
<th>Model 3 (with all explanatory and control variables)</th>
<th>Model 4 (with all explanatory and control variables, and IMR*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.0033 (−1.50)</td>
<td>0.0022 (−0.77)</td>
<td>0.0035 (−0.29)</td>
<td>0.0226 (−1.12)</td>
</tr>
<tr>
<td>Prior_Event</td>
<td>0.0095 (3.21)***</td>
<td>0.0076 (2.55)**</td>
<td>0.0074 (2.38)**</td>
<td>0.0079 (2.53)**</td>
</tr>
<tr>
<td>Weak_Sust_Performance</td>
<td>0.0018 (0.63)</td>
<td>0.0013 (0.35)</td>
<td>0.00074 (−0.18)</td>
<td></td>
</tr>
<tr>
<td>Reg_Sanctions</td>
<td>−0.0070 (−2.56)**</td>
<td>−0.0058 (−2.06)**</td>
<td>−0.0055 (−1.85)†</td>
<td>−0.0054 (−1.85)†</td>
</tr>
<tr>
<td>Focused</td>
<td>0.0080 (2.88)*****</td>
<td>0.0085 (2.95)*****</td>
<td>0.0092 (2.91)*****</td>
<td>0.0096 (3.03)*****</td>
</tr>
<tr>
<td>New</td>
<td>0.0019 (0.64)</td>
<td>0.0016 (0.53)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outsider</td>
<td>0.0007 (0.25)</td>
<td>0.0008 (0.30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm_Size</td>
<td>−0.0002 (−0.19)</td>
<td>0.0009 (0.63)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO_Turnover</td>
<td>0.0011 (0.28)</td>
<td>0.0016 (0.38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMR*</td>
<td></td>
<td></td>
<td></td>
<td>0.0103 (1.15)</td>
</tr>
</tbody>
</table>

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.

*IMR: Inverse Mills Ratio (see Section 5.3)*

N = 111
F-statistic = 8.22***
R² = 18.73%
Adjusted R² = 16.45%
Table 5: Estimated coefficients (t-statistics in parentheses) from robustness checks

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1 (Market Model)</th>
<th>Model 2 (Market-Adjusted Model)</th>
<th>Model 3 (Alternative measure of Prior_Event)</th>
<th>Model 4 (Alternative measure of Weak_Sust_Performance)</th>
<th>Model 5 (Year ranges as additional controls)</th>
<th>Model 6 (Gender as an additional control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.0023 (0.31)</td>
<td>-0.0001 (-0.01)</td>
<td>-0.0009 (-0.09)</td>
<td>-0.0005 (-0.06)</td>
<td>-0.0053 (-0.53)</td>
<td>-0.0023 (-0.24)</td>
</tr>
<tr>
<td>Prior_Event</td>
<td>0.0073 (2.46)**</td>
<td>0.0084 (2.62)**</td>
<td>0.0063 (1.87)**†</td>
<td>0.0074 (2.36)**</td>
<td>0.0071 (2.29)**</td>
<td>0.0075 (2.34)**</td>
</tr>
<tr>
<td>Weak_Sust_Performance</td>
<td>0.0014 (0.41)</td>
<td>0.0015 (0.39)</td>
<td>0.0009 (0.25)</td>
<td>-0.0001 (-0.03)</td>
<td>0.0023 (0.60)</td>
<td>0.0012 (0.30)</td>
</tr>
<tr>
<td>Reg_Sanctions</td>
<td>-0.0044 (-1.57)</td>
<td>-0.0057 (-1.88)†</td>
<td>-0.0048 (-1.72)†</td>
<td>-0.0053 (-1.82)†</td>
<td>-0.0052 (-1.74)†</td>
<td>-0.0055 (-1.85)†</td>
</tr>
<tr>
<td>Focused</td>
<td>0.0078 (2.58)**</td>
<td>0.0078 (2.40)**</td>
<td>0.0096 (2.99)***</td>
<td>0.0093 (2.92)***</td>
<td>0.0092 (2.92)***</td>
<td>0.0092 (2.85)***</td>
</tr>
<tr>
<td>New</td>
<td>0.0013 (0.46)</td>
<td>-0.0004 (-0.12)</td>
<td>0.0021 (0.67)</td>
<td>0.0019 (0.63)</td>
<td>0.0018 (0.58)</td>
<td>0.0019 (0.62)</td>
</tr>
<tr>
<td>Outsider</td>
<td>0.0005 (0.18)</td>
<td>0.0024 (0.81)</td>
<td>0.0005 (0.18)</td>
<td>0.0006 (0.21)</td>
<td>0.0003 (0.10)</td>
<td>0.0007 (0.26)</td>
</tr>
<tr>
<td>Firm_Size</td>
<td>-0.0007 (-0.68)</td>
<td>-0.0005 (-0.43)</td>
<td>-0.0003 (-0.29)</td>
<td>-0.0005 (-0.50)</td>
<td>-0.0001 (-0.13)</td>
<td>-0.0002 (-0.16)</td>
</tr>
<tr>
<td>CEO_Turnover</td>
<td>0.0005 (0.13)</td>
<td>0.0001 (0.04)</td>
<td>0.0019 (0.45)</td>
<td>0.0012 (0.29)</td>
<td>0.0017 (0.42)</td>
<td>0.0011 (0.26)</td>
</tr>
<tr>
<td>Year_Range1½</td>
<td>0.0043 (1.42)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year_Range2½</td>
<td>0.0010 (0.33)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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: Prior_Event = 1 if the firm faced an adverse sustainability-related event within 180 days prior to the announcement of CSE appointment, 0 otherwise. In Model 4, instead of using six sustainability-related dimensions in the KLD dataset, we use only the environment dimension to operationalize the Weak_Sust_Performance variable. For Models 3 to 6, 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.

The variables Year_Range1 and Year_Range2 assume values corresponding to the year ranges in Panel C of Table 1. Specifically, Year_Range1 = 0 and Year_Range2 = 0 if the year of the announcement of CSE appointment falls within 2000-2003, Year_Range1 = 0 and Year_Range2 = 1 for 2004-2007, Year_Range1 = 1 and Year_Range2 = 0 for 2008-2011, and Year_Range1 = 1 and Year_Range2 = 1 for 2012-2016.

Gender = 1 if the CSE appointee is a female, 0 otherwise.