When do Appointments of Corporate Sustainability Executives affect Shareholder Value?

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Abstract

This paper investigates the shareholder value effects of appointing corporate sustainability executives (CSEs) to be part of firms’ top management teams (TMTs). The empirical analyses are based on a sample of 106 announcements of CSE appointments made by publicly listed firms from 2000 to 2015. The evidence suggests that although, on average, the stock market reaction to CSE appointments is value neutral, the stock market reacts more positively under certain firm-specific factors. The stock market reacts more positively when announcing firms have faced an adverse prior sustainability-related event. Also, the stock market reaction is more positive when announcing firms specify focused, as opposed to broad, duties and responsibilities for the CSE appointee. However, there is no difference in the stock market reaction to announcements of appointments to newly-created versus existing CSE positions, and to announcements of an outsider versus an insider CSE appointee. Overall, these findings demonstrate nuances in the market reactions to various factors pertaining to the announcements of CSE appointments, and also inform practice in the form of helping the leadership and TMTs of firms better understand the shareholder-value effects of appointing CSEs to TMTs.

Keywords: corporate sustainability executives; stock market reaction; event study

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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 executive as one of the top four supply chain careers for 2025. The number of firms with sustainability executives in TMTs doubled between 1995 and 2003, and again between 2003 and 2008 (GreenBiz 2013). Titles for these 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 whether shareholders react to firms’ socially responsible actions such as philanthropy and equal employment opportunities (see Margolis and Walsh 2003 for review) and environmentally responsible actions, for example, environmental management (Klassen and McLaughlin 1996), ISO 9000 certification (Corbett et al. 2005), voluntary emissions reductions and environmental awards (Jacobs et al. 2010), and releasing standalone corporate social responsibility (CSR) reports (Yu et al. 2013). Flammer (2013, 2015) posit that engagement in eco-friendly corporate initiatives generates new and competitive resources for the firm, and find a positive stock market reaction when firms announce eco-friendly initiatives or when they 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 (see Kroes et al. 2012, Toffel and Short 2011). 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.

Recent studies have begun discussing the potential performance impact of CSEs such as functional improvements and acceleration of firms’ commitment to sustainability (see Miller and Serafeim 2015,
Strand 2013, and Weinreb 2011 for reviews of the related literature). However, there is limited empirical evidence that links CSE appointments to financial performance. Wiengarten et al. (2015) examines the association between appointments of chief officers of corporate social responsibility and operating performance measured as return on assets. We add to the understanding of the link between CSE appointments and financial performance by investigating the shareholder value effects of CSE appointees. Specifically, we examine the abnormal stock market reaction to announcements of CSE appointments. We also investigate how this reaction differs by the following firm-level factors: (i) appointments to newly-created as compared to existing positions; (ii) outsider or insider appointee; (iii) appointments announced subsequent to an adverse sustainability-related event; and (iv) whether the duties and responsibilities of the CSE appointee are focused versus broad.

The TMT of a firm comprises a group of executives who are usually only 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 such appointments affect financial performance. The extant literature has examined the stock market reactions to appointments of senior executive 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. 2014). We extend this literature by examining the stock market reaction to appointments of CSEs – a relatively recent phenomenon in TMTs. We also contrast the market reaction to appointments of CSEs with the reactions to appointments of senior executives in other 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 use event-study methodology to estimate the stock market reactions associated with these announcements. We find that the stock market reaction to CSE appointments is insignificantly different from zero, indicating that, on average, such appointments are
value-neutral. This is somewhat surprising, especially given the positive market reaction effects associated with announcements of eco-friendly corporate initiatives (Flammer 2013, 2015). However, our finding is encouraging as it suggests that such appointments can help develop strategies and programs that can improve firms’ social and environmental performance without hurting shareholder value. Many stakeholders, including environmental and social activists, NGOs, regulatory agencies, and customers are increasingly placing emphasis on not only economic performance but also social and environmental performance of the firm (Chava 2014, Sarkis et al. 2010). The appointment of a CSE can help address the demands of this important set of stakeholders, and our results indicate that there is no economic penalty in making such appointment.

Although the stock market reaction to CSE appointments is value-neutral, we find that the stock market returns are higher under certain firm-specific factors. We find evidence of a more positive market reaction when 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 on average, relative to firms that did not face such an event. We also find evidence of a higher positive market reaction when announcing firms specify focused as opposed to broad duties and responsibilities for the CSE appointee. On average, firms announcing CSE appointments with focused duties and responsibilities have a 0.94% higher mean market reaction as compared to firms announcing CSE appointments with broad duties and responsibilities. However, we do not find evidence of a higher stock market reaction to announcements of appointments to newly-created versus existing CSE positions. Further, we do not find evidence of a greater stock market reaction to CSE hires from outside versus inside the firm.

The remainder of the paper is organized as follows. Section 2 develops our hypotheses. Section 3 describes the sample. Section 4 outlines the methodology that we use to estimate the stock market reactions to the announcements of CSE appointments and to test our hypotheses. Section 5 presents our results both from the event study and multivariate regression. We also account for self-selection bias in our regression
analysis. Here we also discuss 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 decrease costs through waste reduction, gain efficiencies in processes, improve its evaluation by employees and consumers, and enhance its competitiveness (see Ambec and Lanoie 2008, Berry and Rondinelli 1998, Porter and van der Linde 1995). Several research studies link stronger environmental management in the form of process redesign, investment in new environmental technologies, and reduction in emissions of hazardous pollutants into the natural environment, to better stock market performance through both revenue enhancement and cost reduction (e.g., Klassen and McLaughlin 1996, King and Lenox 2002). The literature also highlights the financial benefits of more elaborate initiatives such as environment-friendly product design, closed-loop supply chains, philanthropic contributions, diversity in workplace, safe working conditions, and environmental management systems (see Kleindorfer et al. 2005, Lee and Klassen 2008, Peloza and Shang 2011, Sen and Bhattacharya 2001, Sroufe 2003).

However, one of the critical barriers that prevents successful adoption of such initiatives is lack of “top management commitment” (see Blass et al. 2014, Schroeder et al. 2008). The literature has established that strong support and conviction from a firm’s leadership and the creation of a CSE position in the TMT are crucial in providing initial stimulus to sustainability-related changes across the firm’s business units (e.g., Chinander 2001, Eccles et al. 2012). As the primary functional executive in the TMT with responsibility over sustainability strategy, a CSE can inform other members of the TMT about potential and opportunities associated the sustainability practices and strategies. A CSE can make stronger business case for investments and resource allocations that ensure integration and alignment of sustainability within
the firm’s corporate strategy. Consequently, a CSE can increase the effectiveness of the corporate sustainability efforts of the firm. Since the firm’s environmentally and socially responsible actions are likely to enhance employees’ and consumers’ evaluation of the firm (see Miles and Covin 2000, Sen and Bhattacharya 2001), a CSE can also enable the firm to improve its brand, reputation, and trust and tap into newer markets.

A growing literature has established that sustainable practices and strategies can add value to the firm but under certain conditions (Jacobs 2014, Servaes and Tamayo 2013). For example, research studies find that the impact of CSR on financial performance is stronger in firms with higher operational productivity (Jacobs et al. 2016) and lower innovation (Hull and Rothenberg 2008). Similarly, the literature on relationship between appointments of senior executives and firm performance has moved towards investigating the effects of various factors that may lead to considerable differences in the shareholder-value impact of appointments of such senior executives (see Boyd et al. 2010, Lee and James 2007). Consistent with views of these two literature streams, we focus on understanding how the shareholder value effects of announcements of CSE appointments differ by certain firm-level factors. We develop and state our hypothesis pertaining to each factor below.

Our first hypothesis pertains to the stock market reaction to announcements of appointments of CSEs to newly-created versus existing positions. Creating a new CSE position conveys new information to a firm’s stakeholders including investors, environmental activists, NGOs, regulatory agencies, and customers about the firm’s commitment to sustainability and the elevation of role of sustainability in its corporate strategy. Bansal and Clelland (2004) show that release of new information about a firm’s commitment to the environment, can help the firm lower its share price volatility (i.e., unsystematic risk). Therefore, creation of a new CSE position by a firm can signal its commitment to sustainability, which in turn can improve its financial performance. There are several reasons that suggest that creation of a new position will be associated with a better stock market performance.

First, creating a new CSE position signals to investors, a prompt and enhanced adoption of sustainability initiatives such as environmental management, green technologies, philanthropic
contributions, diversity in workplace, and safe working conditions. Through creation of a new CSE position, the firm can inform its investors about the presence of a formal channel to develop and communicate its sustainability strategy and efforts from higher management through middle management to ground-level employees. Thus, we argue that, when compared to an existing CSE position, creating a new CSE position increases the likelihood that aforementioned sustainability initiatives are undertaken, which in turn could lead to improved firm financial performance.

Second, the appointment to a newly-created CSE position, as compared to an existing position, can indicate that the firm is proactive in not only undertaking sustainable processes and products but also in reducing risks such as legal liabilities, cleanup costs, and reputation loss. 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 diversity programs and policies at workplaces, and the number of green initiatives implemented by other firms, has led to a significant increase in sustainability-related pressures on firms (Flammer 2013, Maurer et al. 2011). The appointment to a newly-created CSE position is likely to be viewed as a credible commitment to include the voice of these stakeholders (i.e., the government, media, and environmental and social activists) in firm’s TMT and, thus, in the firm’s strategic decisions. For instance, Scott Wicker, the first Chief Sustainability Officer of UPS, highlighted that creation of this new TMT position was in response to several internal and external pressures due to increased complexity of sustainability reporting and enhanced accountability for regulatory compliance (Weinreb 2011).

Finally, there is an extensive body of research on the importance of integration and alignment of various business functions for effectively developing and implementing corporate strategy (e.g., Joshi et al. 2003, Nath and Sudharshan 1994, Whipp et al. 1989). Using a theoretical framework, Guadalupe et al. (2013) state that the representation of various business functions in the TMT harmonizes information and allows the firm to exploit various synergies among its business units. David E. Kepler, Dow Chemical’s first Chief Sustainability Officer, giving the example of a critical environmental dispute related to the development of alternate fuels among Dow Chemical’s technology, manufacturing, and finance teams, stated that – as Chief
Sustainability Officer – his opinion carries substantial weight in the firm’s strategic decision making (Deutsch 2007). Drawing from the aforementioned studies and anecdotal evidence, we argue that creation of a new CSE position can help to swiftly resolve CSR-related conflicts and build stronger cooperation among various business functions and, and thus, can ensure that the firm obtains higher benefits due to an increased effectiveness of sustainability strategy and efforts.

We therefore 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 possess more specific knowledge about the firm’s markets, technologies, systems and internal employee networks (Harris and Helfat 1997, Puffer and Weintrop 1991). Thus, an insider CSE may have an advantage over an outsider in effectively integrating sustainability within the firm’s corporate strategy. 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 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 increasing number of stakeholders who are interested in sustainable practices and the appointee’s “ability to tweak existing Greif products and find new markets and new uses for them,” will help the firm in successfully reaching its sustainability goals (PR Newswire 2011). Additionally, firms have better information about the skills and potential performance of internal as compared to external appointees (Harris and Helfat 1997, Zajac 1990). Thus, by appointing an insider to a CSE position, a firm can reduce the risk of hiring an individual who may not be well-suited for the position.

However, 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 et al. 1997). For example, announcing the expansion of Office Depot’s TMT by appointing an outsider to the position of Director of Environmental Affairs, the Chairman and CEO of Office Depot, Bruce Nelson, highlighted how the addition would provide “exceptional new perspectives” to their 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. Further, outsiders can be expected to be more forthcoming with unbiased and objective assessments of sustainability-related issues, and 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. (2014) find evidence that the stock market reacts positively to appointments of outsider SCOMEs as compared to insider SCOMEs. 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 can include eco-harmful incidents (e.g., an oil spill incident), violations of federal environmental laws, occupational safety and health incidents resulting in death and/or significant property damage, and many others.

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 alleviate future risks by employing a proactive sustainability strategy that helps avoid future adverse events or noncompliance.

Further, anecdotal evidence (e.g., The Guardian 2015, Wood and Schneider 2006) suggests that an adverse sustainability-related event brings the firm under stricter monitoring by environmental and social activists, who demand an increased focus on sustainability. Digital revolution has given rise to “smart mobs,” which enable pools of such environmental and social activists to connect and effectively pursue their agendas, potentially with significant impacts (Rheingold 2000). In the wake of this increased scrutiny, appointing a new CSE demonstrates a strong intent to rebuild relationships with key stakeholders, including communities, NGOs, regulatory agencies, environmental and social activists, and the media.

In sum, a prior adverse sustainability-related event could have attracted significant additional pressure from the firm’s stakeholders. This pressure could be relieved upon the firm’s appointment of a new CSE. This suggests that the stock market reaction to announcements of CSE appointments could be greater if the announcing firms faced a prior adverse sustainability-related event as compared to announcements of CSE appointments by firms that did not face such an event. Therefore, our hypothesis is:

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 duties and responsibilities for the CSE positions. Longsworth et al. (2012) outline the 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 exist challenges of aligning sustainability practices with current organizational context (Ansari et al. 2010, Corbett and Klassen 2006, Stefan and Paul 2008). These challenges may lead investors to face significant ambiguity and uncertainty related to the ways through which the appointed CSE will help improve the firm’s sustainability and financial performance. We argue that specification of focused duties and responsibilities for the CSE position helps reduce ambiguity and uncertainty about the firm’s expectations for the appointee.

Further, 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 duties indicate that the firms is paying attention to fit among the sustainability objectives of the firm, the skills of the appointee, and the resources of the firm. Furthermore, amidst “greenwashing” concerns (for a review, see Lyon and Montgomery 2015), announcement of CSE appointment can be regarded as yet another communication to create an overly positive belief about the firm’s sustainability strategy, and thus, can be viewed with skepticism by investors. In such a scenario, specification of focused as opposed to broad duties and responsibilities for a CSE can help the firm credibly signal to investors its intent to follow through with the sustainability efforts.

Several research studies including Nath and Mahajan (2011) and Smith and Tushman (2005) have proposed that distinct and well-defined roles for a TMT member along with the alignment of responsibilities with clear goals and rewards, enable the TMT member to have more effective control over resources, which increases the member’s organizational power. In turn, drawing on the political view of organizations (Cyert and March 1963, Pfeffer 1981), CSEs with greater organizational power can ensure better alignment of sustainability decisions with corporate strategy. Thus, we posit that the specification of focused as opposed to broad duties and responsibilities for a CSE gives greater power to the CSE in the TMT, thereby enabling a more effective alignment of sustainability practices and efforts with the firm’s strategy, resulting in a positive impact on firm financial performance.
Moreover, the setting of clear and concise goals has been identified as a motivating factor for the achievement of those goals (Latham and Locke 1995). Thus, we argue that the specification of focused duties and responsibilities for the CSE appointee can be expected to facilitate a timely implementation of the firm’s sustainability strategy and initiatives. For instance, in an interview conducted by the authors of this paper, members of UPS’ Sustainability Steering Management Committee expressed the importance of identifying specific pathways for the Chief Sustainability Officer to help UPS achieve its sustainability-related goals in a timely fashion.

We therefore hypothesize the following:

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

3. Sample

As an initial step towards collecting announcements of CSE appointments, we used a preliminary set of search keywords to identify a small 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 appropriate variants. 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 the 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 simultaneous events on the stock market reaction. Out of the 187 announcements, 62 reported two or more simultaneous personnel changes and were excluded.

We checked for contemporaneous announcements to exclude any CSE appointments that involved confounding events around the announcement date, specifically, CEO appointments and earnings announcements by the announcing firm. We identified contemporaneous announcements by following the approach used in prior research (e.g., Boyd et al. 2010; Jacobs and Singhal 2015); i.e., we examined all the aforementioned news sources for contemporaneous announcements by the firm within a five-day window (± 2 trading days) around the CSE announcement date. Of the 125 remaining 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 descriptive statistics reveal large variations across the announcing firms in terms of size and financial performance. For example, the mean (median) market value of equity of the announcing firms in our sample is 30.8 (8.9) billion USD, with a standard deviation of 77.4. Panel B summarizes the number of
appointments by year. The distribution by announcement year reveals a relatively higher proportion of announcements in the middle 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 natural resources (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. (2014) 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. (2014) and 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 in the firm’s TMT. 28.3% of the CSEs in our sample reported directly to the CEO or COO.

Approximately 30% of CSE appointees are women. This is significantly higher than the percentage of women SCOMEs (7%) reported by Hendricks et al. (2014). For 73.6% of the sample, information about the educational background of the appointed CSE is available within the announcement. For 23.6% of the sample, we collect information about the educational background by accessing public profiles of the CSE
appointees on LinkedIn. We do not have 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.; and 30% have an MBA. Also, for 61.3% of the sample, information about the number of years of work experience for the appointed CSE is available within the announcement. The mean (median) prior work experience of the CSE appointees in our sample is 22 (21) years.

4. Methodology

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

4.1 Estimating the Stock Market Reaction: 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’s 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-wealth-effects of an event are immediately reflected in the stock price.

We use the announcement day (one-day) as the event period in order to measure abnormal returns. 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 one-day event period. 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 to account for the fact that investors cannot act until the next trading day 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

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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.

Consistent with recent event studies (e.g., Flammer 2015, Hendricks et al. 2014), 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:

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

(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 \( \hat{\sigma}_{\epsilon}^2 \) (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 ensure that any non-stationarities in the estimates are not an issue. 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:

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

(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 standardized abnormal returns obtained by dividing each abnormal return $A_{it}$ by its standard deviation $\hat{S}_{ei}^2$. 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 $\hat{S}_{ei}^2$. Thus, the test statistic $T_{S_t}$ for Day $t$ is calculated as follows:

$$T_{S_t} = \sum_{i=1}^{N} \frac{A_{it}/\hat{S}_{ei}}{\sqrt{N}}$$  

(4)

We use the $t$-test to determine the statistical significance of the mean abnormal returns. Additionally, 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 of the 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 explanatory variables that represent our hypotheses, and certain 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 a prior 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 that mention the announcing firm within a 365-day period prior to the announcement of CSE appointment in WSJ, DJNS, PRN, and BW. 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...,” “...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 prior adverse sustainability-related event for the announcing firm and CSE announcement is 88 (36) days.

- **Focused_Duties** = 1 if the firm specified focused duties and responsibilities for the appointed CSE in the announcement, 0 otherwise. Based on a content analysis of the announcements in our sample, we classified the specified duties and 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. All of our sample firms indicate at least one of the above-listed five categories when announcing the CSE appointment. We consider that the specified duties and responsibilities of the CSE are 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) of duties and responsibilities for the CSE. 42 (64) out of the 106 firms in our sample specified focused (broad) duties and responsibilities for the CSE.

**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,

- **Industry1** = 1 if the SIC code is between 0001 and 1999 (agriculture, natural resources), 0 otherwise.
- **Industry2** = 1 if the SIC code is between 2000 and 4999 (manufacturing), 0 otherwise.
- **Industry3** = 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 (e.g., Boyd et al. 2010, Hendricks et al. 2014), 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. The logarithmic transformation is commonly employed to address skewness in the distribution of firm size. 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 measure Firm_Size as the natural logarithm of sales in the most recent fiscal year that ended prior to the announcement date.

We use the following model specification to test our hypotheses:

\[
AR_i = \beta_0 + \beta_1 New_i + \beta_2 Outsider_i + \beta_3 Prior\_Event_i + \beta_4 Focused\_Duties_i \\
+ \beta_5 Industry1_i + \beta_6 Industry2_i + \beta_7 Firm\_Size_i + \epsilon_i, 
\]

where \(\epsilon_i\) is the error term. The predicted sign of each of the coefficients \(\beta_1, \beta_2, \beta_3,\) and \(\beta_4\) is positive.

5. Results and Implications

In this section, we present our findings for the 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 Stock Market Reaction to the Sample of CSE Appointments

Although we do not hypothesize a shareholder value effect for our overall sample of 106 announcements of CSE appointments, we review the results for completeness. Table 3 presents the abnormal returns for the one-day event period (announcement day). The results indicate that the mean abnormal return for the overall sample of CSE appointments is not significantly different from zero. The mean (median) abnormal return for our sample of CSE appointments 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\(^2\) 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 estimate abnormal returns using 150 days or 250 days as the estimation period instead of 200 days. Additionally, the results are similar if we use a two-day event window (Day \(-1\) and Day 0) to measure abnormal returns.

The results suggest mixed shareholder assessments to CSE appointments. This is somewhat surprising especially given the positive market reaction effects associated with announcements of eco-friendly corporate initiatives (Flammer 2013, 2015). However, our finding is interesting as it suggests that such appointments do not hurt shareholder value. As a member of the TMT, the CSE can help develop strategies and programs that can improve firms’ social and environmental performance, and he/she is in a position to influence other key decision-makers to align resources with these strategies and programs. For instance, Linda J. Fischer, Chief Sustainability Officer at DuPont, was credited with halting the acquisition of a firm that was not operating in an environmentally sustainable manner (Deutsch 2007). Many stakeholders, including environmental and social activists, NGOs, regulatory agencies, and customers are increasingly placing emphasis on not only economic performance but also social and environmental performance of the firm (Chava 2014, Sarkis et al. 2010). The appointment of a CSE can help address the demands of this important set of stakeholders, without incurring an economic penalty to shareholders.

Our finding that the stock market reaction to CSE appointments is, on average, 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. While their variable of interest is return on assets, which is a measure of the “level” of firm performance, we consider abnormal stock returns, which is a measure of the change in the level of firm performance. Further, using abnormal returns to estimate the effect of CSE appointments on financial

\[ R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}, \]

\[ A_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}). \]

\[ A_{it} = R_{it} - R_{mt}. \]
performance provides additional insights because the abnormal returns capture potential mechanisms through which CSE appointments of a CSE may benefit shareholders. Furthermore, the stock market reaction to an event is most likely attributable to the event itself. Thus, compared to accounting measures of performance, the measure of abnormal returns has a high “signal-to-noise ratio” (MacKinlay 1997).

It is instructive to compare the stock market reaction in our study to the stock market reactions to appointments of other types of senior executives. Mian (2001) finds that the mean abnormal stock return for CFO appointments is –0.05%, not significantly different from zero. Boyd et al. (2010) find that the mean abnormal stock return for announcements of CMO appointments is 0.003%, not significantly different from zero. The authors note that shareholders’ skepticism about the effect of a CMO on firm performance can be attributed to stock market’s “[i]mpatience and its [stock market] insistence on tangible proof of the effectiveness of marketing activities.” However, Hendricks et al. (2014) find that the mean abnormal return for SCOME appointments is 0.24%, significantly different from zero. To further the understanding of relationship between appointments of senior executives and firm performance, studies on the shareholder-value effects of appointments of senior executives go beyond the question of whether the appointments impact shareholder value to investigate the effects of various factors that may lead to considerable differences in the shareholder-value impact. Next, we examine how the stock market reaction to announcements of CSE appointments is associated with various firm-level factors.

5.2 Results of Hypotheses Tests

We use multivariate regressions to examine how the dependent variable (Day 0 abnormal returns) is influenced by the explanatory variables representing our hypotheses and various controls variables Table 4 presents the regression coefficients with the t-statistics in parentheses. Model 1 regresses Day 0 abnormal return on the four explanatory variables – New, Outsider, Prior_Event, and Focused_Duties. Model 2 includes all explanatory and control variables.

There are a number of main observations from regression results of Model 2. First, the estimated coefficient of appointments to newly-created positions 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), i.e.,
the stock market reaction to announcements of appointments to newly-created CMO positions is not significantly different from the reaction to announcements of appointments to existing CMO positions. This result indicates that the stock market does not consider appointments to newly-created TMT positions to be more informative about firms’ focus and commitment to functional (in our context, sustainability) strategy when compared to appointments to existing positions.

Second, we do not find evidence to support our hypothesis of a more positive stock market reaction to announcements of appointments of outsiders as opposed to insiders to CSE positions. The sign of the estimated coefficient for appointments of outsider CSEs is positive but not significantly different from zero. This finding is similar to the finding in Mian (2001) that the stock market reactions are not significantly different between announcements of CFO hires from outside versus inside the firm. However, Hendricks et al. (2014) find that the stock market reacts more positively when the SCOME appointee is an outsider rather than an insider.

Third, we find evidence to support our hypothesis that the stock market reacts more positively if the announcing firm 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. This positive reaction suggests that the appointment of a CSE (either to an existing or a new position) may serve as a lever for the CEO and the board to alleviate the negative consequences of a prior adverse sustainability-related event. The CSE appointment may also reflect the TMT’s commitment to not only undertake remedial measures but also alleviate future risks by employing a proactive sustainability strategy that helps avoid future adverse events or noncompliance.

Fourth, announcements of CSE appointments specifying focused duties and responsibilities have a significantly higher (0.94% higher) mean market reaction compared to appointments specifying broad duties and responsibilities, indicating support for hypothesis H4. Specifying focused versus broad duties and responsibilities for the CSE indicates fit among the sustainability objectives of the firm, the skills of the appointee, and the capabilities of the firm. Furthermore, focused duties provide clarity to stakeholders as to the ways through which the appointed CSE would help implement the firm’s sustainability strategy.
Finally, we note that the type of industry is not associated with a significant difference in the stock market reaction to announcements of CSE appointments. With regard to firm size, although the estimated coefficient is positive, it is statistically insignificant.

The evidence suggests that although, on average, the shareholder value effect of CSE appointments is not significantly different from zero, the stock market reaction is more positive for certain firm-specific factors. We find significant effects on shareholder value of two firm-specific variables: (i) whether or not the announcing firms faced a prior adverse sustainability-related event, and (ii) specification of focused versus broad duties and responsibilities for the CSE. These findings are consistent with the view that sustainable practices and strategies can add value to the firm but under certain conditions.

In addition to hypotheses tested above, we expect announcements of CSE appointments by firms that faced an adverse sustainability-related event in the year prior to the announcement of CSE appointment and specified focused duties and responsibilities for the appointee to be more informative for shareholders, on ways through which appointed CSEs will help integrate sustainability with firms’ corporate strategy and alleviate future risks of occurrence of adverse events. In case of a prior adverse sustainability-related, specification of focused, as opposed to broader, duties and responsibilities for CSE appointees can send a more credible signal to investors about firms’ commitment to sustainability practices and efforts. To gain insights into the interaction effect of these two variables, i.e., Prior_Event and Focused_Duties, we add the interaction term Prior_Event x Focused_Duties to Equation (5) (for brevity, we do not report the full results of this regression analysis).

We find that the stock market reaction is most positive for announcements of CSE appointments by firms that faced an adverse sustainability-related event in the year prior to the announcement of CSE appointment and specified focused duties and responsibilities for the appointee (mean abnormal return of 1.71%; p-value < 0.001). Announcements that specified focused duties and responsibilities for the CSE appointees in firms that did not face an adverse sustainability-related event in the year prior to the announcement of CSE appointment have a mean abnormal return of 0.81% (p-value < 0.05). The mean market reaction is insignificant for announcements of CSE appointments by firms that faced an adverse
sustainability-related event in the year prior to the announcement of CSE appointment but that specified broad duties and responsibilities for the appointees.

5.3 Accounting for Self-Selection

Given that the firms in our sample have self-selected to announce the CSE appointments, our sample is nonrandom. This raises endogeneity concerns due to self-selection bias, which could bias 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 estimate 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. (2014) and Kalaignanam et al. (2013) to identify a sample of firms that did not appoint or did not announce the appointment of a CSE. For each firm in our sample, we find a matching firm outside of our sample, with the same 4-digit SIC code as the sample firm, and closest to the sample firm in terms of market value of equity at the end of the fiscal year prior to the fiscal year during which the announcement was made. This results in a total of 212 sample and matching firms.

Consistent with Hendricks et al. (2014), 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 (Firm Size) and return on assets (ROA) in the fiscal year that ended prior to fiscal year during which the announcement was made. We also include the industry variables to represent the industry groups discussed in Section 4.2.

Thus, our first-stage selection model is:

\[ \text{Pr}(CSE\text{\_Announcement}_i = 1) = \Phi(\beta_0 + \beta_1Firm\_Size_i + \beta_2ROA_i + \beta_3Industry1_i + \beta_4Industry2_i + \epsilon_i), \] (6)

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 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:

\[ AR_i = \beta_0 + \beta_1 New_i + \beta_2 Outsider_i + \beta_3 Prior\_Event_i + \beta_4 Focused\_Duties_i \]
\[ + \beta_5 Industry1_i + \beta_6 Industry2_i + \beta_7 Firm\_Size_i + \beta_8 IMR_i + \epsilon_i \] (7)

Model 3 in Table 4 shows the regression results for the model specified in Equation (7). We continue to find support for H3 and H4, and lack of support for H1 and H2. The coefficient for IMR is not significant, suggesting that our sample does not exhibit self-selection bias.

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. In Models 1 and 2 (Table 5), announcement-day abnormal returns are estimated using the Market model and the Market-Adjusted model, respectively. The results for these models are similar to those for the Four-Factor model.

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. All results (Model 3 in Table 5) remain qualitatively consistent if we instead use six months (180 days) as the time-period.

Finally, 13 firms in our sample made multiple announcements of CSE appointments during the period of our study (our sample includes 106 announcements made by 87 unique firms). To account for potential non-independence between error terms in Equation (5), we test our hypotheses using clustered standard errors by firm. All results continue to hold.

6. Summary and Future Research

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 differs by the following firm-specific factors: appointments to newly-created versus existing CSE positions, outsider versus insider appointees, occurrence of a prior adverse sustainability event, and focused- versus broadly-specified duties and 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 factors. The stock market reacts more positively when announcing firms have 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 duties and 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. Similarly, we do not find evidence of a higher stock market reaction to announcements of appointments of outsider versus insider CSEs. Overall, our findings demonstrate nuances in the market reactions depending on various factors pertaining to announcements of CSE appointments, and also inform practice in the form of helping the TMTs of firms better understand the shareholder-value effects of appointing CSEs to TMTs.

For future research we suggest an interesting extension would be to track the firms that appointed new CSEs and identify the subsequent changes made by these firms to their sustainability strategies and practices (e.g., adoption of environmental management practices, investments in green technology, and modifications in criteria for supplier evaluation). Future research could also delve further into the demographics of the CSE appointees and link them to firm performance. Characteristics of interest may include factors such as number of years and diversity of experience, gender and education.

References


Ansari, S. M., P. C. Fiss, and E. J. Zajac (2010). Made to fit: How practices vary as they diffuse. *Academy*


# 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

<table>
<thead>
<tr>
<th>Years</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

<table>
<thead>
<tr>
<th>Industry</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 appointment 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 various categories of specified duties and responsibilities for the CSE**

<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 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>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>-0.04</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>

*Note: For the mean (median) abnormal returns, we report the Student *t*-test (Wilcoxon signed-rank test) statistic. For the percent greater than zero, the *p*-value is from the binomial sign test.*
Table 4: Estimated coefficients (t-statistics in parentheses) from regression analyses

<table>
<thead>
<tr>
<th>Variables</th>
<th>Predicted Sign</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></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>0.0038 (1.20)</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>
<td>0.0082 (0.28)</td>
</tr>
<tr>
<td>Prior_Event</td>
<td>+ (H3)</td>
<td>0.0074 (2.42)**</td>
<td>0.0069 (2.25)*</td>
<td>0.0073 (2.37)**</td>
</tr>
<tr>
<td>Focused_Duties</td>
<td>+ (H4)</td>
<td>0.0087 (2.71)**</td>
<td>0.0094 (2.84)**†</td>
<td>0.0095 (2.88)**</td>
</tr>
<tr>
<td>Industry1</td>
<td></td>
<td></td>
<td>-0.0016 (-0.27)</td>
<td>0.00017 (0.27)</td>
</tr>
<tr>
<td>Industry2</td>
<td></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>
<td>0.0094 (1.31)</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>106</td>
<td>106</td>
<td>106</td>
</tr>
<tr>
<td>F-statistic</td>
<td></td>
<td>4.11***</td>
<td>2.84***</td>
<td>2.72***</td>
</tr>
<tr>
<td>R²</td>
<td></td>
<td>14.00%</td>
<td>16.88%</td>
<td>18.32%</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td></td>
<td>10.59%</td>
<td>10.94%</td>
<td>11.58%</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.

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 (-0.11)</td>
<td>-0.0071 (-0.71)</td>
<td>-0.0087 (-0.88)</td>
</tr>
<tr>
<td>New</td>
<td>0.0038 (1.26)</td>
<td>0.0019 (0.58)</td>
<td>0.0004 (1.27)</td>
</tr>
<tr>
<td>Outsider</td>
<td>-0.0005 (-0.18)</td>
<td>0.0015 (0.51)</td>
<td>0.0002 (0.09)</td>
</tr>
<tr>
<td>Prior_Event</td>
<td>0.0079 (2.65)**</td>
<td>0.0089 (2.80)**</td>
<td>0.0060 (1.79)*</td>
</tr>
<tr>
<td>Focused_Duties</td>
<td>0.0086 (2.67)**</td>
<td>0.0081 (2.37)**</td>
<td>0.0098 (2.97)**</td>
</tr>
<tr>
<td>Industry1</td>
<td>-0.0044 (-0.76)</td>
<td>-0.0013 (-0.22)</td>
<td>-0.0018 (-0.30)</td>
</tr>
<tr>
<td>Industry2</td>
<td>-0.0063 (-1.74)*</td>
<td>-0.0042 (-1.09)</td>
<td>-0.0063 (-1.65)*</td>
</tr>
<tr>
<td>Firm_Size</td>
<td>-0.0002 (-0.26)</td>
<td>0.0001 (0.10)</td>
<td>0.0006 (0.68)</td>
</tr>
<tr>
<td>N</td>
<td>106</td>
<td>106</td>
<td>106</td>
</tr>
<tr>
<td>F-statistic</td>
<td>2.98***</td>
<td>2.73**</td>
<td>2.54**</td>
</tr>
<tr>
<td>R²</td>
<td>17.55%</td>
<td>16.32%</td>
<td>15.35%</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>11.66%</td>
<td>10.34%</td>
<td>9.31%</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. 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

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