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## HOW FIRMS RESPOND TO FINANCIAL RESTATEMENT: CEO SUCCESSORS AND EXTERNAL REACTIONS

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**Although past studies have paid considerable attention to firms' reputations, few have investigated the actions that firms take following a reputation-damaging event. We identify firms involved in financial earnings restatements and examine whether naming a successor CEO with specific qualities serves to signal the seriousness of a firm's efforts to restore its reputation. Using theories of market signaling, we argue that attributes of successor CEOs significantly influence the reactions of key external constituencies. In particular, firms with more severe restatement tend to name successors who have prior CEO or turnaround experience and a more elite education. The naming of such successors results in more positive reactions from the stock market, financial analysts, and mass media. We argue that these attributes send messages to stakeholders and the broader public about the CEO's credibility and the firm's efforts.**

A firm's reputation is critical to its success (Lange, Lee, & Dai, 2011; Rindova, Williamson, Petkova, & Sever, 2005) and helps it compete for resources and differentiate itself from competitors (Rhee & Valdez, 2009). Work on corporate reputation over the past two decades has demonstrated that a good reputation provides a number of advantages, including better access to capital (Stuart, Hoang, & Hybels, 1999), increased status (Podolny & Phillips, 1996), greater growth and survival (Rao, 1994), and superior financial performance (Rhee & Haunschild, 2006). Most research has argued that the reputation of a firm is a somewhat stable characteristic for it (Fombrun, 1996; Rindova et al., 2005), but recent scholarship has shown that a firm's reputation can change quickly when unfavorable information is revealed or if the firm becomes associated with illegitimate or fraudulent

acts (Cowen & Marcel, 2011; Mishina, Block, & Mannor, 2012; Pfarrer, Decelles, Smith, & Taylor, 2008). While numerous scholars have focused on the steps that firms can take to establish and maintain a favorable reputation (Lange et al., 2011; Fombrun & Shanley, 1990), past research has paid much less attention to how firms might recover from a loss in reputation (Rhee & Kim, 2012). To expand our understanding of this phenomenon, our study examines firms' actions in response to reputation-damaging events and how markets and the media react to the firms' actions.

We adopt the definition of reputation proposed by Lee, Pollock, and Jin (2011) and Rindova et al. (2005), which describes "firm reputation" as an intangible asset based on broad public recognition of the quality of that firm's activities and outputs. Past work has argued that the most common source of firm-level reputation damage comes from financial misconduct and misrepresentation (Karpoff, 2012; Pfarrer et al., 2008), and scandals at Enron and WorldCom are two of the more egregious examples of public companies engaging in fraudulent financial actions that destroyed billions of dollars of market value and damaged the firms' reputations. The aftermath of financial misconduct can have a direct impact on broader capital markets—for instance, the effects of the failure of Long-Term Capital Management and Bernard Madoff's Investment Securities LLC

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on broader market indices. Financial misconduct represents a visible, specific organizational event that has the clear potential to trigger a loss in firm reputation as well as to impose serious material repercussions for the organization (Desai, Hogan, & Wilkins, 2006; Devers, Dewett, Mishina, & Bel-sito, 2009; Flanagan, Muse, & O'Shaughnessy, 2008; Karpoff, Lee, & Martin, 2008).

Firms that are caught misrepresenting their financial position can be reasonably expected to take some action in response to this revelation, and studies have noted that the most common action is to replace the leader of the organization—i.e., the CEO (Farber, 2005; Arthaud-Day, Certo, Dalton, & Dalton, 2006). The Sarbanes-Oxley Act (SOX) of 2002 (Sarbanes & Oxley, 2002) specifically assigned greater responsibility to the CEO for financial oversight, further highlighting the chief executive's critical role in preventing the occurrence of financial misconduct. Nonetheless, there is no guarantee that firms will be able to influence the judgment of external constituencies by replacing their CEOs. Thus, it is important to determine whether new leadership affects external observers' judgment of a firm and the extent to which they react favorably to such changes.

Our central research objectives are to examine the types of successor leaders named following the admission of financial restatement and to determine whether particular successor characteristics are more or less likely to be positively perceived by key external observers. Financial restatement reflects a form of firm misconduct and misrepresentation that can result from both intentional acts to deceive and from managerial incompetence, both of which damage a firm's reputation by failing to provide stakeholders with credible and accurate financial information. Scholars have used signaling theory (Spence, 1973) to examine the role of executive characteristics in signaling firm quality to the financial markets, but most of this work has been done in the context of initial public offerings (IPOs) (e.g., Certo, 2003; Certo, Daily, & Dalton, 2001; Higgins & Gulati, 2003, 2006; Zhang & Wiersema, 2009). In this study, we employ signaling theory to examine how financial restatement prompts firms to replace incumbent CEOs with well-qualified successors who possess attributes that are observable to external observers and relatively hard to attain—prior CEO experience, prior turnaround experience, an elite education, and previous

functional experience in finance or accounting—in turn making them suitable signals (Spence, 1973) to communicate the seriousness of the firm's effort to respond to a reputation-damaging event.

Our study provides an appropriate setting for highlighting the three key components of signaling theory: the role of the signaler, the signal itself, and the receiver, all three of which have not been examined simultaneously in past studies (Connelly, Certo, Ireland, & Reutzel, 2011). In our study the severity of the firm's restatement represents a characteristic of the signaler, the choice of the successor (and their characteristics) represents variance in the signal itself, and variance in reaction across recipients represents the role of the receiver. We test these ideas in a sample of 352 pairs of restating and non-restating (matching) firms for a total of 704 firms involved in financial restatement.

We believe this study offers several contributions to the literature. First, we complement past studies that have tended to examine reputation restoration in a normative manner (i.e., what firms should do) rather than empirically (i.e., what actions they actually take) (Rhee & Kim, 2012). Drawing on signaling theories, we show how firms respond to reputation damage by appointing a successor CEO with specific characteristics that help signal the firm's commitment and responsiveness to restoring the reputation of the firm. Interestingly, our study also reveals non-obvious findings, such as how a signal that may be among the least informative regarding a CEO's ability to address the problem at hand (elite education) appears to have the strongest overall effect across the broadest range of audiences. Second, our research illustrates how the type of CEO successor named varies depending on the severity of the restatement, demonstrating that the reactions from the broader market, financial analysts, and the media vary depending on the severity of the restatement and the qualities of the successor. This complements past studies that have examined the effects of restatement more broadly but that have not differentiated among degrees of severity (e.g., Arthaud-Day et al., 2006). Our results provide insights into how severity influences the extent to which firms may be motivated to take remedial action and calibrate their responses.

Finally, our study further contributes to signaling theory by simultaneously demonstrating the importance of signal characteristics, examining the effect

of signals across different receivers, and focusing on negative qualities of the signalers. Specifically, our findings show that a similar signal, e.g., a CEO successor with a finance or accounting background, can generate different reactions across different recipients of the signal. This provides an interesting extension to past work that has assumed a signal will be interpreted in the same way by various audiences (Spence, 1973).

## THEORY

Research in firm reputation has focused primarily on building and managing reputations, with less attention paid to the potential consequences of reputation damage (Mishina et al., 2012; Pfarrer et al., 2008; Rhee & Kim, 2012). While many organizations take a good reputation for granted, a bad reputation can be difficult to correct (Zimmerman & Zeitz, 2002), and past research has demonstrated that a damaged reputation leads individuals and other organizations to disassociate themselves from a firm involved in illicit activities (Elsbach & Bhattacharya, 2001; Devers et al., 2009). For example, the defection of many of Arthur Andersen's clients following the failure of Enron was described in large part as an effort by client firms to distance themselves from Arthur Andersen's reputational damage (Jensen, 2006).

Reputation theorists have studied how negative events may damage a firm's reputation, but they have not examined how reputations can be positively influenced following the damage (Mishina & Devers, 2012). Although Rhee and colleagues (Rhee & Valdez, 2009; Rhee & Kim, 2012) have discussed the concept of reputation restoration, the success of different approaches to signal attempts at reputation restoration has yet to be examined in a large-scale empirical work. Past studies that have addressed reputation restoration efforts have instead mostly focused on cases involving a single firm or a small set of firms; examples include BP's handling and communications around the 2010 oil drilling accident in the Gulf of Mexico and Apple's response to critical antenna problems that led to dropped calls in the initial iPhone 4 release (Elsbach, 2012).

Elsbach (1994) has demonstrated how, in the interest of reestablishing a firm's reputation and legitimacy, acknowledging past mistakes is more effective than denying misconduct, although mere acknowledgement may not be sufficient (Pozner, 2008). Beyond acknowledgement of wrongdoing,

firms may need to take more decisive action to defend their legitimacy and maintain their reputations (Wiesenfeld, Wurthmann, & Hambrick, 2008). Pfarrer et al. (2008) theorize that, in order to recover their reputations, firms evolve through four specific stages: discovery, explanation, penance, and rehabilitation. During the final rehabilitation phase, external groups and stakeholders expect organizations that have engaged in reputation-damaging activities to serve punishment commensurate with the seriousness of their transgressions (Devers et al., 2009). Firms in such situations can attempt to pacify stakeholders by taking significant, demonstrable actions to publicly signal a determination to purge past illegitimate conduct and to focus on renewal (Pfarrer et al., 2008). Signaling theory (Spence, 1973; Noe, 2012) argues that such actions are critically important in cases where the desired outcome (in this case the firm's determination to restore its reputation) is hard to observe directly. In such cases, the actions that signal seriousness are those likely to help the firm restore its reputation (Pfarrer et al., 2008).

## Financial Restatements and Reputation Damage

Our study examines reputation damage as the result of financial earnings restatements. We focus on firm financial restatement due to accounting irregularities identified by the U.S. Government Accountability Office (GAO). These irregularities are caused by either the misreporting or the misuse of facts, and result in the firm publicly restating its earnings. Research shows that restatement can be severely damaging to a firm's reputation for several reasons. Most simply, underlying ill intent potentially involved with such restatement clearly violates normative expectations of ethical behavior (Arthaud-Day et al., 2006). Similarly, as such an illegitimate action violates institutional norms and societal values, financial restatement may cause stakeholders and observers to perceive the firm as flawed and discredited (Harris & Bromiley, 2007). Finally, financial restatement damages a firm's reputation because stakeholders perceive that top management has substantial control over the representation of the firm's financial position (Devers et al., 2009). This perception of controllability creates a belief that financial restatement may be the result of a conscious decision by the firm's top management to mislead shareholders and other external observers.

The publicity and importance of a restatement and its potential deleterious effect on firm reputation has been highlighted in past findings that firm restatements generate a substantial level of media coverage and scrutiny (Dyck, Morse, & Zingales, 2007; Gertsen, 2009). A number of studies in the accounting literature have also demonstrated a significant, negative market response to the announcement of financial restatements (Owers, Lin, & Rogers, 2002; Palmrose, Richardson, & Scholz, 2004; Karpoff et al., 2008). When restatements are announced, outsiders seeking to understand what happened and assign responsibility often transfer attributions of responsibility (and blame) from the organization to individuals associated with the organization (Rider, Negro, & Roberts, 2011). In response to these attributions, one of the first actions often taken by firms seeking to recover damaged reputations is to disassociate the organization from those seen to be responsible (Devers et al., 2009). A substantial body of research has demonstrated that the CEO is often held responsible for the actions of the organization (Finkelstein, Hambrick, & Canella, 2009). As Meindl, Ehrlich, and Dukerich (1985) note, observers tend to give CEOs a disproportionate amount of credit and blame for successes and failures, a phenomenon they refer to as “the romance of leadership.”

Removing leaders seen as responsible for financial restatement serves as a straightforward signal of the firm’s intent to deal seriously with the problem (Agrawal, Jaffe, & Karpoff, 1999; Devers et al., 2009; Wiesenfeld et al., 2008). As Noe (2012) notes, redeeming or recovering a firm’s reputation by “cleaning house” is a direct way to help distance the firm from past managerial culpability in illicit activity. Past empirical work also supports this argument: Desai et al. (2006) found that 59% of the firms that restated their earnings replaced the CEO or president within two years, and Arthaud-Day et al. (2006) found that CEOs, CFOs, outside directors, and audit committee members were all more likely to leave firms with financial restatements than firms that were not required to restate their earnings. As Gertsen observes, “managers are often discredited following a restatement—be it in a court of law, the court of public opinion, or as they suddenly find themselves in search of a job” (2009: 103). Through dissociation from former top managers perceived as responsible for the organization’s failing, a firm can signal to the public that it is serious about recovering from financial restate-

ment, and can start to reestablish its reputation and legitimacy.

### Successor CEO Characteristics

Although past work has examined the correlation between financial restatements and CEO replacement, it has not examined the effect of the severity of the restatement on the type of CEO successor who is chosen or the signal that such a successor sends to external observers about the seriousness of the firm’s response to the restatement. Given that the CEO is both a substantive and symbolic representative of the organization (Pfeffer, 1983), the appointment of a successor CEO signals the intention of the firm to restore its reputation (Zhang & Wiersema, 2009). As Rhee and Kim (2012) note, events that more significantly damage the firm’s reputation are likely to lead to more significant restoration efforts, and our study specifically examines how the severity of the reputation damage is associated with the extent to which the firm takes efforts to restore its reputation. A firm faced with a severe restatement may feel more urgency to hire a successor CEO who is seen as competent and qualified to signal the firm’s seriousness about restoring its reputation. The naming of such a successor is likely to produce a positive reaction to the succession announcement, in turn suggesting that the succession has been effective in helping to restore the reputation of the firm. We examine the signaling impact of four key characteristics of CEO successors on the reactions of outside observers: the successors’ prior experience as CEOs, their prior experience as turnaround managers, their educational backgrounds and prestige, and their functional experience.

**Chief executive experience.** A key characteristic that may influence external parties’ assessment of successor CEOs is past CEO experience. Given that the CEO position differs significantly from all others within a firm (Graffin, Boivie, & Carpenter, 2013; Kesner & Sebora, 1994), previous CEO experience may be seen as the most concrete evidence that a designated successor has the requisite background to help the firm restore its damaged reputation. As Finkelstein et al. (2009) note, prior experience as a chief executive is the most relevant background for an individual being chosen for that position. Experienced CEOs bring familiarity and credibility to the position and can point to task-specific expertise and knowledge that they can leverage to help reestablish the reputation and prom-

inence of the firm. According to Miller and Shamsie (2001), CEO experience may serve as a proxy for CEO candidates' task ability and influence and be seen as predictive of the quality of their decision-making and the resulting outcomes for the organization. For example, when James Kilts was hired as the chief executive of Gillette in 2001, Gillette was suffering from reputational problems that stemmed from poor performance and declining share price (Graffin et al., 2013). Because Kilts came into Gillette as a highly-regarded executive who had established a positive reputation as CEO of Nabisco, observers (the stock market, financial analysts, and media) reacted quite favorably to his appointment. Subsequent coverage of Gillette's turnaround attributed the improved performance to Kilts, further reinforcing his reputation as an experienced and successful CEO.

By hiring a successor with experience as a chief executive, a firm signals to outside constituencies that it is serious about responding to a reputation-damaging event through experienced, well-qualified new leadership. The hiring of a successor with prior chief executive experience may be especially critical when the restatement has been severe and the need to demonstrate responsiveness especially acute.

*Hypothesis 1a. The more severe the financial restatement, the greater the likelihood that the successor CEO will have prior CEO experience.*

**Turnaround experience.** Firms responding to reputational damage, particularly when it is more severe, may signal CEO credibility by appointing successors with prior turnaround experience (Chen & Hambrick, 2012). Successor CEOs' experience in turnaround situations can increase outside observers' confidence in their ability to manage the aftermath of a financial restatement and restore the past prominence of a firm. When restatements are more severe, outsiders may find prior experience in turnaround situations to be particularly salient or appropriate as a means of assessing the competence of the successor and the quality of the firm's response to a financial restatement.

*Hypothesis 1b. The more severe the financial restatement, the greater the likelihood that the successor CEO will have prior turnaround experience.*

**Elite educational background.** In relation to their "upper echelons" framework, Hambrick and Mason (1984) have argued that education is an important indicator of the skills and abilities of top

managers, especially CEOs. Past empirical work has typically equated education quality with attributes such as cognitive ability and capacity for information processing (Datta & Guthrie, 1994), and past research has also shown that a degree from an elite institution can be an indication of ability (Wiersema & Bantel, 1992). Even though education may only be loosely linked to an individual's competence, it is a straightforward and accessible characteristic that can easily be interpreted to signal differences in ability. In his original work on market signaling, Spence (1973) used the example of educational prestige as a labor market signal denoting the quality of the individual. The status and prestige associated with prior education helps outside observers in assessing CEO successors, increasing the likelihood that restating firms will select successors with more prestigious educational backgrounds (Jensen & Roy, 2008; Jensen, Kim, & Kim, 2012). Since employers cannot fully understand the overall quality of job candidates, given information asymmetry, an elite educational background provides a proxy signal of quality. Higher-status, more exclusive, educational institutions are viewed as more likely to select students based on attributes such as intelligence and success, characteristics that are likely to also be important to outsiders evaluating the quality of the successor (Podolny, 2001, 2005).

In cases where a firm's reputation has been damaged by a financial restatement, the educational background of the CEO successors may play an important role in signaling the quality and managerial ability of the successor. Firms facing a more severe restatement are likely to hire a replacement chief executive with an elite educational background, since holding a more elite degree may send a stronger and more positive signal to stakeholders of the firm's responsiveness to the financial restatement.

*Hypothesis 2. The more severe the financial restatement, the more elite the educational background of the replacement CEO.*

**Functional experience.** The reputational problems that result from financial restatement are likely to require a successor whose credentials and expertise suit the challenge confronting the organization, and outsiders may see a firm as most responsive to problems resulting in a financial restatement if it hires a new CEO with this background and expertise. Given that firms restating earnings need to improve the reporting of their financial positions, CEO successors who have ex-

expertise in financial reporting may present a valuable fit for the needs of the firm and the expectations of outside stakeholders (Chen & Hambrick, 2012). This may be especially important when the restatement is more severe.

Although top managers, especially CEOs, are presumed to have a generalist's perspective, their careers have usually advanced through a primary functional area. This means that they bring to the CEO position specialized knowledge, aptitudes, and skills (Finkelstein et al., 2009). Since firms that experience the reputation-damaging event of a financial restatement may want to emphasize a renewed focus on unbiased and accurate financial reporting, they may be more likely to select successors with qualifications and prior experience in the areas of accounting and finance. As Pfeffer and Salancik (1978) note, the choice of a successor may be influenced by functional experience in situations where a particular kind of expertise is considered critically important for resolving important challenges. In the case of a restatement, a CEO successor whose primary experience has been in finance and accounting may signal to outside constituencies that the firm is emphasizing the importance of accurate financial reporting and that every effort is being made to ensure that these types of problems will be avoided in the future. By hiring a successor with past experience in finance or accounting, the firm may reassure stakeholders that financial restatement will not occur again.

*Hypothesis 3. The more severe the financial restatement, the greater the likelihood that the successor CEO will have functional experience in the areas of finance or accounting.*

## External Reactions

If successors' characteristics function as signals of ability and competence, then the characteristics of a CEO successor named after a financial restatement should influence external reactions to the successor announcement. Since successful reputation restoration ultimately depends on outside perceptions, a firm's success in signaling its determination to restore its reputation can be most effectively assessed by observing informed outsiders' reactions to the successor announcement (Rhee & Kim, 2012; Schijven & Hitt, 2012). Successor CEOs who are perceived to be more qualified are likely to generate a more positive reception by outside observers, with this positive reaction likely to be con-

ditional on the severity of the restatement. A more positive reaction to a firm's succession announcement indicates that the firm's response to financial restatement has been viewed as more successful. We focus on the reactions of three constituencies who closely follow firms and can judge the likely impact of succession events: (1) reactions of the market, (2) reactions of analysts, and (3) reactions of the media.

**Market reactions.** Stock market reactions to the naming of a successor CEO represent an objective indication of the extent to which shareholders endorse or repudiate the successor's appointment (Zhang & Wiersema, 2009). As such, they offer a direct judgment by owners and potential owners of the quality of the appointment (Graffin et al., 2013). Thus, we would expect a firm's efforts that are perceived as more successful to result in a more positive market reaction.

**Analysts' reactions.** Investment analysts are usually employed by investment banks or brokerage firms, and their job is to assess the future prospects of a company by gathering information from published reports and quarterly earnings conference calls (Wiersema & Zhang, 2011). Analysts are viewed as knowledgeable information intermediaries in financial markets (Cowen & Marcel, 2011), and their reports can play an important role in investors' decisions and on the future share price of a firm (Jensen & Meckling, 1976). As Wiesenfeld et al. (2008: 234) note, investment analysts are legitimate arbiters qualified to assess a firm and its leadership, "possess[ing] prominent and legitimate platforms for rendering assessments of firms and the individuals associated with them." For these reasons, favorable investment analyst reactions to a succession announcement should provide an important measure of the perceived success of the firm's intention to restore its reputation.

**Media reactions.** Mass media plays an important role as an intermediary between firms and stakeholders by providing information about firm actions (Desai, 2011; Pollock & Rindova, 2003; Zavyalova, Pfarrer, Reger, & Shapiro, 2012). For example Rao (1994) discusses how media coverage helped competing firms obtain legitimacy and build a reputation in the early years of the U.S. auto industry. In the case of financial restatements, the media influences whether firms are perceived to be pursuing a proper course of reputation rebuilding by reporting on the firm's actions and by providing an independent outside perspective (Bednar, 2012). In reacting to a restating firm's successor selection, the media

play a role similar to that of shareholders and analysts: favorable media coverage at the succession announcement communicates a positive assessment of the firm's efforts to restore its reputation.

In summary, following a financial restatement we expect shareholder reactions, investment analyst reactions, and media reactions to be more favorable when appointed CEO successors exhibit characteristics that signal their ability to restore the reputation of the firm.

*Hypothesis 4a. Following a financial restatement, the more severe the restatement the more favorable the reactions of the market, analysts, and the media to a CEO successor with prior CEO experience.*

*Hypothesis 4b. Following a financial restatement, the more severe the restatement the more favorable the reactions of the market, analysts, and the media to a CEO successor with prior turnaround experience.*

*Hypothesis 4c. Following a financial restatement, the more severe the restatement the more favorable the reactions of the market, analysts, and the media to a CEO successor with an elite educational background.*

*Hypothesis 4d. Following a financial restatement, the more severe the restatement the more favorable the reactions of the market, analysts, and the media to a CEO successor with prior experience in accounting or finance.*

## METHODS

### Data

Following past literature that examines financial restatement, we focused on restatements that involved the disclosure of earnings revisions (Arthaud-Day et al., 2006; Harris & Bromiley, 2007; Hennes, Leone, & Miller, 2008). These restatements are reported by the U.S. Government Accountability Office (GAO, 2002, 2006), which includes restatements issued as a result of aggressive accounting practices, intentional and unintentional misuse of facts, misinterpretation or oversight of accounting rules, and misrepresentation; but not normal corporate activity, simple presentation issues, or accounting policy changes. Following past studies that single out downward revisions in earnings as a primary cause of damage to a firm's reputation (Collins, Masli, Reitanga, & Sanchez, 2009; Kinney

& McDaniel, 1989; Palmrose et al., 2004), we focused specifically on restatements that affected revenue recognition or expenses, and that resulted in a downward revision of earnings. We excluded non-U.S.-based firms to avoid any differences in cultural or financial reporting requirements (Pfarrer et al., 2008). The time frame during which we examined restatements is 2003–2006, which begins two years after the collapse of Enron and WorldCom and so minimizes top management team (TMT) personnel turnover resulting from the spillover effects of those cases (Arthaud-Day et al., 2006).<sup>1</sup> Firms with missing data (e.g., lack of Securities and Exchange Commission (SEC) filings) were excluded, leaving us with a final sample of 352 restating firms.

A matched-pair sampling design is particularly suitable for examining phenomena with a low base rate of occurrence, as in the case of restatements (Arthaud-Day et al., 2006; Harris & Bromiley, 2007). Similar to other studies of restatement events (e.g., Agrawal et al., 1999; Arthaud-Day et al., 2006; Kinney, Palmrose, & Scholz, 2004; Richardson, Tuna, & Wu, 2003), we matched each restating firm with a firm that did not issue a restatement. We identified matching firms in a stratified manner by first identifying potential matching firms from the same four-digit standard industrial classification (SIC) code as the restating firms and selecting matching firms from the same restatement year. To ensure equivalency in firm size, we selected matching firms with total asset size closest to that of the paired restating firm. To check the equivalency of the matched pairs, we tested the similarity of the two groups in terms of assets, revenue, stockholders' equity, net income, and return on assets, finding no statistically significant difference between the groups on any of these dimensions and providing confirmation that our procedure yielded appropriate matches. This matching process provided us with another 352 matching firms, yielding a total of 704 restating and matching firms. Appendix A provides a detailed explanation of how we arrived at the final sample.

### Measures

**Dependent variables: Successor CEO characteristics.** As outlined in our hypotheses, we tested four CEO characteristics. In hypothesis 1a, the de-

<sup>1</sup> The GAO ended the data collection in June 2006; accordingly, our data are available only until then.



pendent variable is *Successor CEO experience*, which takes the value of 1 if the successor CEO has been a chief executive prior to joining the restating firm, and 0 otherwise.

The dependent variable in Hypothesis 1b is *Successor turnaround CEO experience*, which takes the value of 1 if the successor CEO had an experience as a CEO of returning a company which had experienced a severe loss back to profitability, and 0 otherwise. To calculate this, we collected information on turnaround experience following the procedure used by Chen and Hambrick (2012) and defined an organization experiencing a severe loss as one that had operating returns on equity (ROE) greater than cost of equity (COE) for at least two consecutive years, immediately followed by at least a year of operating loss. This measure captures companies that abruptly swing from satisfactory performance to very poor performance and ensures that we sample genuinely troubled firms rather than simply stagnant or slowly deteriorating firms (Chen & Hambrick, 2012). Following these criteria, we identified all firms in the Compustat database from 1990 to 2006 that suffered a severe loss.

Having established a set of firms that have suffered a severe loss, we then identified those that turned their performance around and returned to profitability, which we labeled "turnaround" firms. To isolate successors with turnaround CEO experience for Hypothesis 1b, we identified in our database CEOs who had been put in charge as the CEO of a "severe loss" firm (as defined above) during the time it had experienced severe losses, and who had then returned the firm to profitability during the CEO's tenure. These criteria ensured that we both identified a successor CEO who had previously been put in charge of a firm when it was in trouble, and also that the successor CEO was in charge during the organization's return to profitability.<sup>2</sup>

For Hypothesis 2, the dependent variable is whether or not the successor CEO came from an elite educational institution at the undergraduate or graduate level. This binary variable, *Successor CEO elite education*, takes the value of 1 if the successor has an elite educational degree and 0 otherwise. Following past work in identifying elite schools, we categorized graduates from the follow-

ing institutions as having an elite degree: Ivy-League schools, public Ivy-League schools (e.g. University of California, Berkeley: see Moll (1985) and Long, Bowers, Barnett, & White (1998)), other elite private schools (e.g., Stanford, MIT), and elite service academies (e.g., the U.S. Naval Academy, Finkelstein, 1992). Appendix B provides a list of all the prominent schools used in creating our measure.

In order to collect data on the successor's educational background and prior experience as CEO, we relied on several data sources. Following Graffin et al. (2013) we used Zoominfo, LinkedIn, and Spoke.com to identify the educational backgrounds of business professionals and corporate leaders. Beyond these focused web searches, we checked several websites that list CEOs' information, including *Forbes*, *Business Week*, *Fortune* and others. For thoroughness, we also did a Google search by entering the name of the company along with the name of the CEO. We then checked the first five pages of Google results for information on CEO education and background. We undertook all of these efforts in addition to reviewing the executive biography in the proxy statement using SEC EDGAR. Altogether, we have a high degree of confidence in the reliability and comprehensiveness of the data.

For Hypothesis 3, we used a binary variable, *Successor CEO from Fin/Acct*, which takes the value of 1 if the successor CEO's functional background is in finance or accounting, and 0 otherwise. Typical examples of financial or accounting backgrounds include Controller, Vice President for Finance, Chief Financial Controller, or Chief Accounting Officer. This information is available in the proxy statement, but we triangulate the proxy statement with the data sources mentioned above.

**Dependent variables: External reactions.** Hypothesis 4 examines whether the characteristics of successor CEOs interact with the severity of the restatement to result in more favorable reactions by the stock market, investment analysts, and the mass media.

**Market reactions.** We measured market reaction as the cumulative abnormal return (CAR) surrounding the announcement of the successor CEO, from two days prior to two days after the announcement date of the successor CEO (Oler, Harrison, & Allen, 2008), and using financial event study analysis

<sup>2</sup> 20 CEOs were identified as "turnaround" CEOs (17 for restating firms and 3 for matching firms).

(McWilliams & Siegel, 1997).<sup>3</sup> We perused a firm's official SEC filings, usually mentioned in Form 8-K (current report), and any relevant news articles, to ensure that we were using the precise date in our analysis. The five-day window was employed because it allows researchers to capture any prior leakage, which can easily happen for successor announcements, as well as any reaction that is not immediately reflected on the day of restatement and the following day (e.g., Yermack, 1997).

**Analysts' reactions.** To gauge the reactions of investment analysts to the succession, we measured the change in annual mean forecast made by analysts following the focal firm. This measure was operationalized as the difference between the first earnings forecast made after the successor CEO was announced and the last forecast made prior to the announcement of the successor CEO (Palmrose et al., 2004) and the earnings forecast data was obtained from I/B/E/S. Using the successor CEO announcement date (and not the date the new CEO assumed office) we identified differences in earnings-per-share (EPS) forecast made by an analyst immediately prior to the successor announcement date, as compared with the forecast made immediately after the succession was announced. In each case, the forecasts were made for the same target forecast date (e.g., end of 2006). We dropped any observations in which the duration between these two consecutive forecasts is too great, settling on a duration span of up to two months (63 days) between the pre-succession forecast and the post-succession forecast. Given that most analysts following a firm tend to issue forecasts on a monthly basis, there were only five forecasts that needed to be dropped. The remaining forecasts have between-forecast durations ranging from 27 to 35 days, except for three instances that have between-forecast durations of 55, 61, and 63 days. Overall, the between-forecast duration has a mean of 31 days and a standard deviation of 6 days. Subsequent robustness checks demonstrated that this dura-

tion does not significantly influence analysts' reaction.

**Media reactions.** We measured both positive and negative media coverage. Past work has shown that positive and negative coverage represents distinct properties rather than two poles of a continuum (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). To measure coverage around the announcement of a successor CEO, we used the Lexis-Nexis academic database to collect both national and regional news articles from two days prior to the announcement to two days after the announcement. To identify relevant articles, we specified that the name of the firm must be included in the headline or title. Using these criteria, we downloaded a total of 2,305 articles. Following past studies (Bednar, 2012), we then focused on news articles that report on managerial issues. We removed irrelevant articles and articles that provided no narrative about the focal firm (typically these articles mentioned several other firms and only listed firms' stock prices). Because we are examining media coverage around CEO succession, we also ensured that the article contained news about the succession announcement.

The result was a total of 1,132 relevant articles for our firms, which we then processed using computer-aided text analysis software, namely the LIWC (Linguistic Inquiry and Word Count) program, to measure the favorability of media content (Bednar, 2012; Zavyalova et al., 2012).

LIWC text analysis software uses predefined dictionaries of words to determine the rate at which authors use words connoting positive or negative tenor in a given text (Pennebaker, Booth, & Francis, 2007).<sup>4</sup> The program then calculates the score or percentage of positive and negative content in each article. Since positive and negative tenors in coverage are distinct, we treated each positive and negative tenor in each article as a separate construct. The variable *positive coverage* was then equal to the mean LIWC score for the positive tenor category from all articles about a sample firm,

<sup>3</sup> As part of their study, Oler et al. (2008) completed a literature review of all event studies published in *Strategic Management Journal*, *Academy of Management Journal*, *Journal of Management*, *Management Science*, *Administrative Science Quarterly*, and *Journal of Management Studies* from 1994 to 2006. While there is variation across these studies, their Appendix lists a number of studies in these leading journals that have used the five-day windows (-2 to +2 days from the event) as we use here.

<sup>4</sup> The LIWC dictionary uses 408 words to denote positive tenor and 499 words to denote negative tenor. A few random examples of the positive words are: *accepta\**, *active\**, *admira\**, *giving*, *glad*, *gladly*, *good*, *gratef\**, *satisf\**, *secur\**. A few random examples of negative words are: *argu\**, *arrogan\**, *asham\**, *assault\**, *bad*, *bashful\**, *harm*, *protest*, *uneas\**. More information about the LIWC software can be found on its website: [www.liwc.net](http://www.liwc.net).

while *negative coverage* was measured in the same way but for negative tenor.

**Independent variables.** For Hypotheses 1–3, we operationalized the severity of the restatement as the total decrease in net income of the focal firm following restatement divided by the firm revenue for the year prior to the restatement announcement. For Hypothesis 4, we interacted the severity of restatement with the dependent variables used in Hypotheses 1–3 (i.e., prior CEO experience, turnaround experience, elite education, and functional background) to test their effects on stock market reactions, the change in the annual mean forecast made by analysts, and positive and negative media coverage. Since the matching firms have no restatement, they were assigned a value of zero for their severity measure, allowing us to fully capture the range of our severity measure.

**Control variables.** We included a number of control variables in our models. *Firm age* was measured in the restatement year, and *firm size* was measured using firm revenue for the year prior to the restatement announcement. We controlled for temporal variation by including year dummies (2003–2006). We controlled for firm performance as the most recent return on assets (ROA) for the firm prior to the incumbent CEO replacement, based on the restated earnings.

For certain hypotheses we used specific control variables. For Hypotheses 2 and 3, which examined the effect of restatement severity on the successor CEO's elite degree or experience in finance or accounting, we controlled for whether the incumbent CEO had an elite degree or a background in accounting or finance. In tests of Hypothesis 4, which examined the dependent variable of change in analysts' forecasts, we controlled for the *change in the number of forecasts* made by investment analysts, which may influence the change in the earnings forecast (Palmrose et al., 2004). Since stock market reaction might also influence the change in analysts' forecasts, we included our *cumulative abnormal return* measure as a control variable.

## Models and Estimation

To control for potential sample-selection bias that may arise by focusing only on successor CEOs, we estimated all our hypotheses using Heckman regression models (Heckman, 1979). The estimation process was separated into two stages, where the outcome variable in the first stage is whether

or not the incumbent CEO will be replaced, and the outcome variable in the second stage is either the characteristic of the successor CEO or the external reaction, depending on the hypothesis. In cases where the final outcome variable in the second stage is continuous (e.g., CAR), we used the standard Heckman model. In cases where the final outcome variable in the second stage is binary (e.g., whether or not the new CEO holds an elite degree), we used the Heckman Probit model.

We employed the Heckman model to address the potential issue of omitted variable bias that might arise due to the selection process. In our case, a biased selection process may arise because firms might self-select to replace their CEOs or certain individuals might self-select to step up and become a CEO of a restating firm. Since such firms or individuals might have certain characteristics that can influence their decisions that may be correlated with our variables of interest but not be included in our model, the Heckman model provides a technique to “estimate the variables which when omitted from a regression analysis give rise to the specification error and use the estimated values of the omitted variables as regressors so that it is possible to estimate the behavioral functions of interest” (Heckman, 1979: 153).

Using this method, the dependent variable in the first stage is *CEO replacement*, which was operationalized as a binary variable assigned a value of 1 when the incumbent CEO is replaced within two years after the restatement and 0 otherwise. Following past literature (Arthaud-Day et al., 2006), the two-year window was chosen because the replacement of a CEO may take more than one year to be successfully implemented, whereas examining a CEO replacement more than two years after the restatement event may introduce confounding factors unrelated to the restatement.

To focus on cases where the CEO was replaced and did not just retire or move to the board of directors, we examined reasons behind a CEO stepping down. We investigated SEC filings and media to see whether the CEO departure was due to retirement, movement to another position in the firm (e.g., as Chairman), movement to a similar position at another firm, or clear health issues. Following the convention of past CEO replacement studies (Finkelstein et al., 2009; Shen & Cannella, 2002),

**TABLE 1**  
**Descriptive Statistics<sup>a,b</sup>**

No	Covariates	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1	CEO replacement	0.26	0.44											
2	Change in annual mean forecast	-0.05	0.34	-0.07										
3	Cumulative Abnormal Return	1.35	9.55	-0.07	-0.02									
4	Positive media coverage	1.93	0.78	-0.12	0.00	-0.03								
5	Negative media coverage	0.55	0.49	-0.09	-0.17	-0.17	0.27							
6	Firm age	38.46	31.06	-0.11	0.07	-0.12	0.12	0.00						
7	Firm size (USD mil.)	2649.37	8993.42	-0.11	-0.05	-0.13	0.08	0.20	0.21					
8	Year 2004	0.25	0.43	-0.07	0.06	-0.12	-0.02	-0.16	-0.08	-0.04				
9	Year 2005	0.38	0.49	0.06	-0.13	0.00	0.08	0.27	0.11	0.21	-0.46			
10	Year 2006	0.12	0.32	-0.01	0.06	0.01	0.02	-0.03	-0.03	0.01	-0.21	-0.29		
11	ROA	-0.05	0.64	-0.19	-0.01	-0.02	0.10	0.09	0.07	0.37	0.04	0.10	0.04	

we excluded such cases since they do not reflect purposeful replacement.<sup>5</sup>

For the matching firms, we applied a similar method of identifying CEO replacement. However, as the matching firms had no restatement or restatement date, we measured CEO replacement by first assigning the restatement date of a restating firm as the focal date of its paired matching firm. For example, if a restating firm announced its restatement in February 15, 2003, then this date became the focal date of the paired matching firm. Consistent with our earlier method, we then assigned a value of 1 when the CEO of this matching firm was replaced within two years after this focal date and 0 otherwise.

For the first-stage estimation, we controlled for the board structure, since it can limit the likelihood of CEO replacement (Boeker, 1992). Specifically, we introduced the *proportion of inside board members* and the *proportion of board members appointed by the CEO*. Using the same approach as indicated above, we also controlled for *firm age*, *firm size*, *year dummies*, *ROA*, whether or not the focal firm would be merged or acquired within two years after the restatement (*merger*), *severity of restatement*, and the instrumental variables below.

**Instrumental variables.** To correct for potential sample-selection bias, we included two instrumental variables in the selection equation (first stage) that were correlated with the outcome in the first stage but not with the outcome in the second stage (Heckman, 1979). These instruments are *incumbent CEO equity* and *incumbent CEO-Chairman*

<sup>5</sup> As part of a robustness check, we also examined our hypotheses across both this sample and a full sample that included all CEO departures. The results are robust for both samples.

*duality* (1 when the CEO is the Chairman of the board of directors and 0 otherwise). While CEOs' equity or position as Chairman can influence their probability of being replaced as CEOs (the outcome in the first stage), these factors play no role in influencing characteristics of the replacement CEO (the outcome in the second stage). In cases where replacement occurs (the sample for the second stage), the incumbent CEOs were removed, and therefore their power should not influence characteristics of the successor CEO. We used robust standard error to minimize heteroscedasticity. We log-transformed variables to reduce skewness and kurtosis, as indicated in Table 2. All analyses are done using Stata 11 (Kohler & Kreuter, 2009).

**RESULTS**

In Table 1, we report the descriptive statistics for all the variables of interest. To test for multicollinearity, the variance inflation factor (VIF) was calculated for all of our models. In all cases the individual VIF for each covariate as well as the average VIF for the overall model indicated that multicollinearity was not present (Neter, Wasserman, & Kutner, 1990; Cohen, West, & Aiken, 2002). Tests using condition index (Belsley, 1991) also indicate that none of the condition numbers is greater than 30, which is the suggested threshold for multicollinearity.<sup>6</sup> For ease of exposition, all means and standard deviations are

<sup>6</sup> For CEO characteristics as the dependent variable, the largest VIF (condition index) value is 2.13 (4.85). For other dependent variables, the largest VIF value is 5.46 (8.90) for CAR, 4.17 (10.11) for analysts' forecast model, and 3.76 (6.48) for media coverage. Also, Stata automatically drops covariates when multicollinearity is a serious concern (Kohler & Kreuter, 2009), yet none of our covariates was dropped.

**TABLE 1**  
**(continued)**

No	Covariates	Mean	SD	12	13	14	15	16	17	18	19	20	21	22	23	24
12	Severity of restatement	6.57%	71.78%													
13	Change in number of forecast	-0.36	2.14	-0.13												
14	Duration from last forecast	30.48	4.98	0.21	-0.71											
15	Successor CEO experience	0.28	0.45	0.17	-0.15	0.09										
16	Successor CEO turnaround experience	0.17	0.38	0.18	0.04	0.30	0.14									
17	Incumbent CEO elite education	0.25	0.44	0.03	0.07	0.04	0.01	0.08								
18	Successor CEO elite education	0.29	0.45	0.04	0.06	0.02	-0.01	-0.01	-0.10							
19	Incumbent CEO Fin/Acct	0.05	0.21	-0.03	0.05	0.01	0.12	-0.11	-0.03	0.09						
20	Successor CEO Fin/Acct	0.13	0.25	-0.16	0.01	0.10	-0.10	-0.13	-0.06	0.09	0.10					
21	Incumbent CEO equity	7.39%	13.95%	-0.07	-0.04	0.04	-0.02	0.00	0.06	-0.03	-0.01	0.05				
22	Incumbent CEO-Chairman duality	0.64	0.48	-0.05	-0.05	0.17	-0.07	-0.06	-0.02	0.01	0.05	0.09	0.28			
23	Proportion of inside board	0.16	0.18	-0.12	0.04	0.03	-0.09	-0.12	0.04	-0.13	0.01	-0.13	0.16	-0.03		
24	Proportion of board appt. by CEO	0.25	0.40	-0.06	0.06	-0.01	-0.16	-0.10	0.03	0.06	-0.03	0.11	0.44	0.32	0.04	
25	Merger	0.15	0.35	0.13	-0.60	0.29	-0.01	-0.02	0.04	-0.18	-0.02	-0.03	0.03	0.04	-0.05	0.00

<sup>a</sup> Data are deleted listwise. Means and standard deviations are reported in the original metric; correlations whose absolute values are greater than 0.1 are significant at  $p < 0.05$ . The sample used in this correlation table also excludes cases where the CEO was not terminated or terminated before restatement, or where there were missing values. Given these exclusions, the maximum sample size among these variables is 604 cases. Sample size for variables that are only relevant in the second stage, such as successor CEO characteristics, is of course smaller. Some more samples are excluded in the actual regressions, as detailed in their respective tables. The mean and standard deviations of successor CEOs are calculated based on eligible samples in the second stage.

<sup>b</sup> To reduce skewness and kurtosis, variables are logged and mean-centered, except for all binary variables (when logging, the minimum necessary constant is added to avoid the logging of negative numbers).

shown in their original metrics, prior to any transformations.

All significance tests reported are two-tailed. Results from the first stage suggest that ROA, incumbent CEO equity, and incumbent CEO–Chairman duality significantly decrease the likelihood of CEO replacement, while merger and acquisition and severity of restatement increase the likelihood of replacement. The year dummies for 2004 and 2006 are also significant and negative. The effect of severity of restatement on CEO replacement is also reflected in descriptive statistics: 110 restating firms replaced their CEOs within two years while only 56 of the matching firms did so.

We report our results in Tables 2 to 4. Table 2 shows the effect of restatement severity on characteristics of the successor CEO for Hypotheses 1 to 3. Hypothesis 1a posited that more severe restatements would increase the likelihood that the successor CEO will have had prior experience as a chief executive. Results in Model 1b of Table 2 demonstrate support for this hypothesis ( $\beta = 0.14$ ,  $p < 0.05$ ). Hypothesis 1b proposed that the more severe the restatement, the more likely the successor CEO will have had prior turnaround experience as a CEO. Results in Model 2b show that this hypothesis was also supported ( $\beta = 0.17$ ,  $p < 0.05$ ). Hypothesis 2 argued that when a restatement is more severe, the restating firm may be more likely to name

a CEO successor with a more elite educational background, and results in model 3b indicate support for this hypothesis ( $\beta = 0.10$ ,  $p < 0.05$ ). Hypothesis 3 proposed that the more severe the restatement, the more likely the firm would be to pick a successor who has functional experience in the areas of finance or accounting. Interestingly, Model 4b of Table 2 indicates that this hypothesized effect is reversed ( $\beta = -0.23$ ,  $p < 0.001$ ). We discuss this opposite finding in the discussion section.

Our final Hypothesis 4 examined how external constituencies—the market, analysts, and the media—react to CEO successor announcements by restating firms. We argued that successors who were judged to be more qualified would elicit a more favorable reaction in cases where the firm restatement was more severe. We report the results separately for each set of external constituencies and for each characteristic of the successor CEO in Tables 3 and 4. Given the number of possible relationships (four independent variables and four measures of external reaction, yielding 16 potential relationships) we highlight below the 13 relationships that were significant in the Tables.

For *Successor CEO experience*, results in Tables 3 and 4 indicate that under conditions of greater restatement severity, the naming of a successor with prior experience as a CEO results in better market performance (Model 5c:  $\beta = 0.15$ ,  $p < 0.001$ ),

**TABLE 2**  
**Successor CEO Characteristics (Second-Stage Heckman)<sup>a,b</sup>**

Dependent Variable	DV = Successor CEO Experience (1 = Yes, 0 = No)		DV = Successor CEO Turnaround Experience (1 = Yes, 0 = No)		DV = Successor CEO Elite Education (1 = Yes, 0 = No)		DV = Successor CEO Fin/Acct (1 = Yes, 0 = No)	
	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b	Model 4a	Model 4b
Firm age	-0.10 (0.19)	-0.04 (0.12)	-0.32 (0.23)	-0.21 (0.18)	-0.23 (0.15)	-0.12 (0.16)	0.04*** (0.00)	0.08*** (0.00)
Firm size	0.04 (0.06)	0.03 (0.05)	-0.04 (0.08)	-0.02 (0.06)	0.06 (0.06)	0.03 (0.06)	-0.23*** (0.00)	-0.10*** (0.00)
Year 2004	0.28 (0.37)	0.05 (0.27)	-0.30 (0.40)	-0.37 (0.32)	-0.21 (0.37)	-0.27 (0.25)	0.17 (0.24)	0.69*** (0.18)
Year 2005	-0.19 (0.39)	-0.13 (0.29)	-0.43 (0.37)	-0.31 (0.37)	-0.59+ (0.35)	-0.38 (0.32)	0.06 (0.19)	0.32 (0.20)
Year 2006	0.47 (0.55)	-0.24 (0.39)	-0.30 (0.68)	-0.68 (0.54)	0.13 (0.59)	-0.25 (0.38)	-4.84*** (0.19)	-4.71*** (0.00)
ROA	-3.62 (2.25)	-8.97+ (5.04)	19.25* (7.84)	12.29 (10.01)	1.11 (1.05)	0.17 (0.61)	1.37*** (0.00)	3.73*** (0.58)
Incumbent CEO elite education					-0.18 (0.31)	-0.15 (0.21)		
Incumbent CEO Fin/Acct							-4.46*** (0.00)	-4.70*** (0.00)
Severity of restatement		0.14* (0.06)		0.17* (0.08)		0.10* (0.05)		-0.23*** (0.03)
Constant	-0.29 (1.17)	-1.72*** (0.21)	-0.54 (0.90)	-1.64*** (0.40)	-0.71 (0.80)	-1.31*** (0.26)	-2.06*** (0.00)	0.61*** (0.18)
Estimation model	Heckman Probit	Heckman Probit	Heckman Probit	Heckman Probit	Heckman Probit	Heckman Probit	Heckman Probit	Heckman Probit
N total	554	554	558	558	557	557	548	548.00
N uncensored	109	109	113	113	112	112	103	103.00
Log likelihood	-295.60	-293.32	-295.53	-293.30	-308.70	-306.74	-261.7	-259.02
LR test ( $\chi^2$ )		4.55*		4.46*		3.92*		5.40*
Lambda	0.98	2.24**	1.26	2.22	1.55	2.02	3.23***	1.09***
arrho	-0.41 (0.91)	3.45** (1.14)	-0.17 (0.67)	1.05 (1.09)	0.43 (0.81)	1.89 (4.65)	22.55*** (3.08)	-39.09*** (3.05)

<sup>a</sup> Regression model is as indicated; all tests are two-tailed; standard errors are in parentheses. LR tests are against controls-only models that do not include the *severity of restatement* variable.

<sup>b</sup> For conciseness, the output from the selection equation (1st stage) is not shown.

+  $p < 0.10$

\*  $p < 0.05$

\*\*  $p < 0.01$

\*\*\*  $p < 0.001$

increases analysts' earnings forecasts (Model 6c:  $\beta = 0.05, p < 0.001$ ), and decreases negative media coverage (Model 8c:  $\beta = -0.68, p < 0.001$ ).

For *Successor CEO turnaround experience*, results in Tables 3 and 4 demonstrate that, under conditions of greater restatement severity, naming a successor with prior turnaround experience as a CEO increases analysts' earnings forecasts (Model 6c:  $\beta = 0.01, p < 0.001$ ), increases positive media coverage (Model 7c:  $\beta = 0.21, p < 0.01$ ), and decreases negative media coverage (Model 8c:  $\beta = -0.01, p < 0.05$ ).

The effects of *Successor elite education* on external reactions are mostly supportive, as indicated in Tables 3 and 4. Results demonstrate that, under conditions of more severe financial restatements, the elite educational status of a successor results in better market performance (Model 5c:  $\beta = 0.09, p < 0.001$ ), decreases analysts' earnings forecasts (Model 6c:  $\beta = -0.01, p < 0.001$ ), increases positive media coverage (Model 7c:  $\beta = 0.18, p < 0.01$ ), and decreases negative media coverage (Model 8c:  $\beta = -0.16, p < 0.01$ ).

**TABLE 3**  
**External Reactions: CAR and Change in Analysts' Forecasts (Second-Stage Heckman)<sup>a,b</sup>**

Variables	DV = Cumulative Abnormal Return			DV = Change in Analysts' Forecasts		
	Model 5a	Model 5b	Model 5c	Model 6a	Model 6b	Model 6c
Firm age	0.03 (0.07)	0.01 (0.06)	0.02 (0.04)	0.04 (0.07)	0.10 (0.07)	0.10 (0.06)
Firm size	-0.04 (0.03)	-0.02 (0.04)	-0.02* (0.01)	-0.03 (0.03)	-0.04 (0.03)	-0.04 (0.03)
Year 2004	0.35 (0.24)	0.29** (0.09)	0.22* (0.09)	0.06 (0.17)	0.22 (0.15)	0.22+ (0.13)
Year 2005	0.26 (0.20)	0.19 (0.13)	0.15* (0.08)	-0.03 (0.10)	0.01 (0.09)	-0.00 (0.09)
Year 2006	0.18 (0.20)	0.01 (0.18)	-0.07 (0.17)	0.35 (0.29)	0.40+ (0.20)	0.30+ (0.17)
ROA	-3.71+ (2.08)	-2.22 (1.41)	-7.18*** (0.81)	1.85 (3.55)	2.39 (2.53)	1.64 (1.47)
Severity of restatement	0.08*** (0.02)	0.08*** (0.02)	0.04** (0.01)	-0.05 (0.03)	-0.06 (0.04)	-0.06+ (0.03)
Change in number of analysts				0.03 (0.04)	-0.03 (0.46)	-0.45*** (0.00)
CAR				0.01 (0.02)	-0.01 (0.05)	-0.03*** (0.00)
Successor CEO experience		0.06 (0.09)	-0.11+ (0.06)		0.04 (0.14)	0.01*** (0.00)
Successor CEO turnaround experience		0.33+ (0.19)	0.32*** (0.04)		-0.00 (0.04)	-0.05*** (0.00)
Incumbent CEO elite education		0.17+ (0.09)	0.33*** (0.02)			
Successor CEO elite education		-0.17 (0.15)	-0.28*** (0.02)		0.00 (0.03)	-0.03*** (0.00)
Incumbent CEO from Fin/Acctg					-0.04 (0.04)	-0.06*** (0.00)
Successor CEO from Fin/Acctg		0.03 (0.14)	-0.04 (0.06)		0.01 (0.11)	-0.01*** (0.00)
Severity of restatement × Successor CEO experience			0.15*** (0.02)			0.05*** (0.00)
Severity of restatement × Successor CEO turnaround experience			-0.00 (0.02)			0.01*** (0.00)
Severity of restatement × Successor CEO elite education			0.09*** (0.01)			-0.01*** (0.00)
Severity of restatement × Successor CEO from Fin/Acctg			0.04* (0.02)			-0.03*** (0.00)
Constant	2.71*** (0.18)	2.86*** (0.10)	3.02*** (0.07)	0.69* (0.30)	0.69*** (0.08)	0.71*** (0.17)
Estimation model	Heckman	Heckman	Heckman	Heckman	Heckman	Heckman
N total	463	463	463	493	488	488
N uncensored	36	36	36	48	43	43
Log likelihood	-90.91	-83.35	-73.71	-117.4	-107.5	-96.9
LR test ( $\chi^2$ )		15.12**	34.40***		19.80**	41.00***
Lambda	0.37***	0.31***	0.26***	-0.48*	-0.50***	-0.49***
artrho	17.27*** (0.11)	18.31*** (0.13)	17.57*** (0.09)	-18.44*** (0.50)	-17.67*** (0.17)	-18.01*** (0.13)
Insigma	-0.98*** (0.15)	-1.17*** (0.12)	-1.36*** (0.10)	-0.74 (0.46)	-0.69* (0.32)	-0.72* (0.30)

<sup>a</sup> Regression model is as indicated; all tests are two-tailed; standard errors are in parentheses. LR tests are against controls-only models. Whenever insignificant, incumbent CEO characteristics are not included in order to yield simpler models and conserve statistical power.

<sup>b</sup> For conciseness, the output from the selection equation (first stage) is not shown.

+  $p < 0.10$   
 \*  $p < 0.05$   
 \*\*  $p < 0.01$   
 \*\*\*  $p < 0.001$

**TABLE 4**  
**External Reactions: Positive and Negative Media Coverage (2<sup>nd</sup> Stage Heckman)<sup>a,b</sup>**

Variables	DV = Positive Media Coverage			DV = Negative Media Coverage		
	Model 7a	Model 7b	Model 7c	Model 8a	Model 8b	Model 8c
Firm age	0.08 (0.15)	0.17 (0.15)	0.07 (0.14)	0.12 (0.33)	0.05 (0.45)	-0.02 (0.23)
Firm size	-0.06 (0.06)	-0.06 (0.06)	-0.04 (0.06)	-0.06 (0.10)	-0.10 (0.13)	-0.14 (0.10)
Year 2004	0.58* (0.26)	0.65* (0.26)	0.59* (0.25)	1.29* (0.56)	1.58* (0.67)	1.40** (0.52)
Year 2005	0.32 (0.25)	0.44+ (0.25)	0.24 (0.25)	1.09+ (0.56)	1.45* (0.71)	1.25* (0.60)
Year 2006	0.41 (0.40)	0.46 (0.63)	0.29 (0.41)	1.84* (0.78)	1.86* (0.92)	1.87** (0.64)
ROA	12.44* (6.01)	9.17 (6.23)	12.20* (5.44)	24.90* (10.84)	15.14 (10.99)	17.26* (8.59)
Severity of restatement	-0.16* (0.07)	-0.11+ (0.06)	-0.18* (0.09)	-0.44*** (0.12)	-0.33* (0.14)	-0.13 (0.13)
Successor CEO experience		0.23*** (0.00)	0.26** (0.10)		0.32 (0.72)	-0.10 (0.33)
Successor CEO turnaround experience		0.03*** (0.00)	-0.32** (0.11)		0.50 (0.59)	0.15 (0.23)
Incumbent CEO elite education					0.72*** (0.16)	0.53*** (0.04)
Successor CEO elite education		0.15*** (0.00)	-0.04 (0.10)		0.44 (0.48)	0.80** (0.25)
Successor CEO from Fin/Acctg		0.12*** (0.00)	0.23+ (0.14)		-0.44 (0.96)	-0.85*** (0.00)
Severity of restatement × Successor CEO experience			-0.08 (0.05)			-0.68*** (0.11)
Severity of restatement × Successor CEO turnaround experience			0.21** (0.07)			-0.01* (0.00)
Severity of restatement × Successor CEO elite education			0.18** (0.06)			-0.16** (0.06)
Severity of restatement × Successor CEO from Fin/Acctg			0.02 (0.17)			0.27*** (0.04)
Constant	2.28*** (0.37)	2.00*** (0.25)	2.08*** (0.34)	2.12*** (0.46)	1.21 (0.88)	0.83 (0.57)
Estimation model	Heckman	Heckman	Heckman	Heckman	Heckman	Heckman
N total	530	529	529	530	529	529
N uncensored	85	84	84	85	84	84
Log likelihood	-286.2	-279.2	-270.0	-345.1	-336.7	-321.1
LR test ( $\chi^2$ )		14.00***	32.40***		16.80**	48.00***
Lambda	-1.63***	-1.57***	-1.53***	-3.11***	-2.96***	-2.53***
artho	-18.50*** (0.20)	-17.92*** (0.09)	-18.37*** (0.00)	-18.43*** (0.44)	-17.98*** (0.10)	-18.49*** (0.20)
lnsigma	0.49** (0.19)	0.45** (0.15)	0.42* (0.19)	1.14*** (0.09)	1.09*** (0.09)	0.93*** (0.10)

<sup>a</sup> Regression model is as indicated; all tests are two-tailed; standard errors are in parentheses. LR tests are against controls-only models. Whenever insignificant, incumbent CEO characteristics are not included in order to yield simpler models and conserve statistical power.

<sup>b</sup> For conciseness the output from the selection equation (first stage) is not shown.

+  $p < 0.10$   
 \*  $p < 0.05$   
 \*\*  $p < 0.01$   
 \*\*\*  $p < 0.001$

Finally, when examining the effect of naming a successor CEO with a background in finance or accounting, under conditions of greater restatement se-

verity the results mostly contradicted our hypotheses. Naming a successor with a background in finance or accounting increases stock market performance



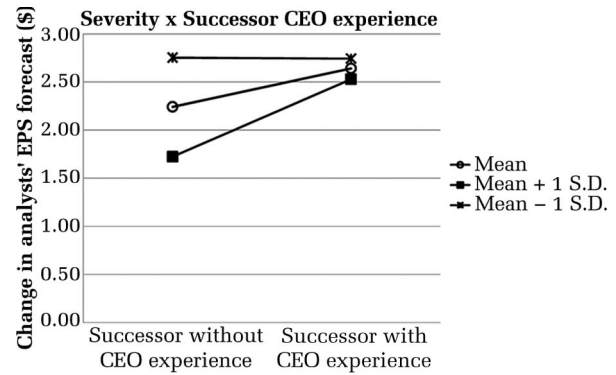
(Model 5c:  $\beta = 0.04, p < 0.05$ ), yet decreases analysts' earnings forecasts (Model 6c:  $\beta = -0.03, p < 0.001$ ) and increases negative media coverage (Model 8c:  $\beta = 0.27, p < 0.001$ ).

To further examine Hypothesis 4, we plotted all the interactions between restatement severity and successor CEO characteristics that were found to be statistically significant. For each interaction, we plotted how restatement severity moderates the influence of restating firms' successor CEO characteristics at three different levels of restatement severity: the mean, one standard deviation above the mean, and one standard deviation below the mean. We then examined how the slope of the line changes across these levels. We grouped the plots based on the successor characteristics hypothesized in Hypotheses 4a to 4d.

For *Successor CEO experience*, Figure 1a shows how, at the mean level of severity, appointing a successor with CEO experience increases CAR (3.97%). The increase is more pronounced when severity increases but less so when severity decreases. Figure 1b shows how, at the mean level of restatement severity, such an appointment increases analysts' forecasts (\$0.40 increase in earnings per share (EPS)). This increase is more (less) pronounced when the severity is at one standard deviation higher (lower). Figure 1c illustrates how experienced successors reduce negative media coverage by 4.17% at mean restatement severity, but not at one standard deviation below. Altogether, these findings suggest a more positive reaction by outside observers to the naming of a successor with CEO experience when severity is greater.

For *Successor CEO turnaround experience*, Figure 2a, illustrating the reaction of analysts, shows

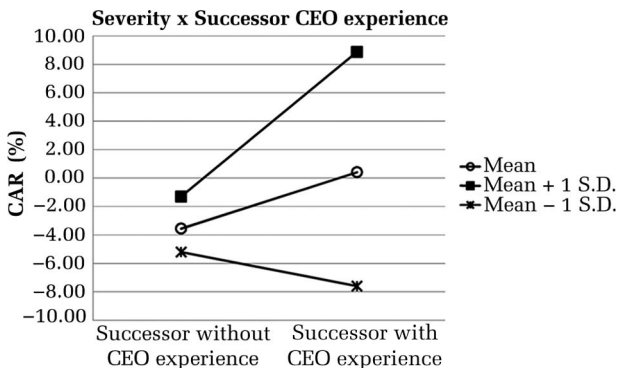
**FIGURE 1b**  
Severity × Successor CEO Experience: Change in Analysts' Forecasts



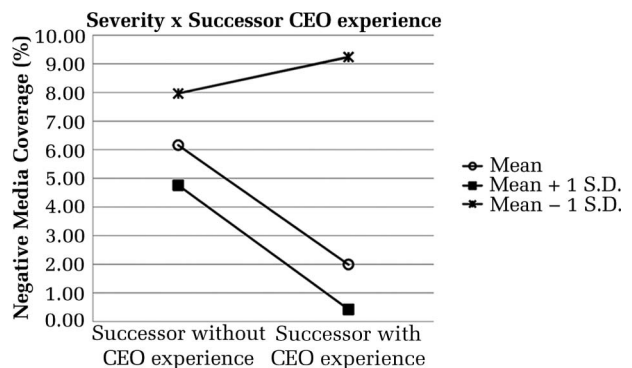
how the slopes across the different levels of severity are quite homogeneous. This suggests that the interaction between such an appointment and restatement severity has a relatively minimal effect in influencing analysts' opinions. Similarly, Figure 2c shows how the interaction effect is also relatively minimal in influencing negative media reporting. In contrast, this interaction is more pronounced when it comes to influencing positive media coverage, as shown in Figure 2b. For this, such an appointment increases positive media reporting by 3.26% when severity is at one standard deviation above the mean, but decreases coverage by 1.55% at one standard deviation below. This range shows a more substantial interaction effect. We further discuss this variation in effect size below.

For *Successor elite education*, the interaction effect is quite pronounced across all the dependent variables, except for the analysts' forecasts in Figure 3b. Figure 3a indicates that such an appoint-

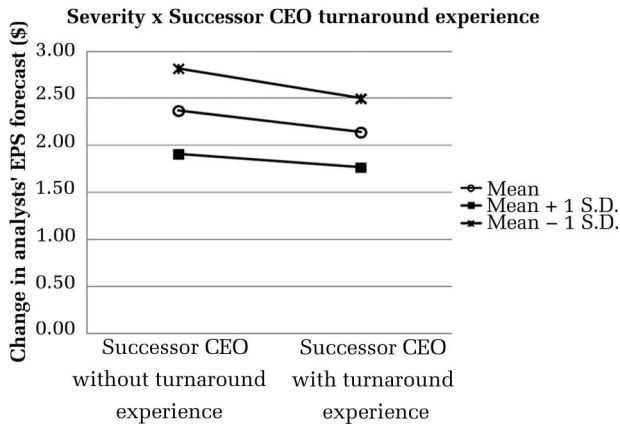
**FIGURE 1a**  
Severity × Successor CEO Experience: Cumulative Abnormal Return



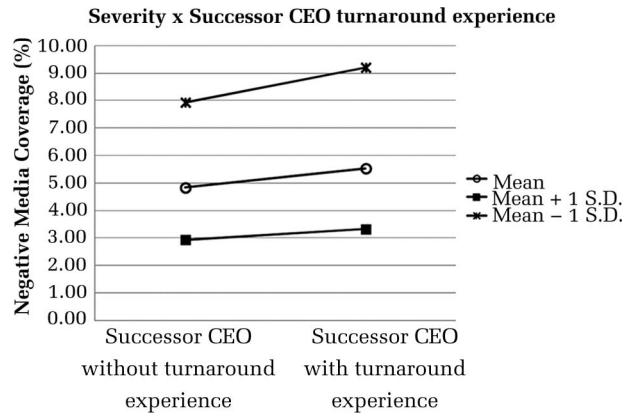
**FIGURE 1c**  
Severity × Successor CEO Experience: Negative Media Coverage



**FIGURE 2a**  
**Severity × Successor CEO Turnaround Experience: Change in Analysts' Forecasts**



**FIGURE 2c**  
**Successor CEO Turnaround Experience × Severity: Negative Media Coverage**

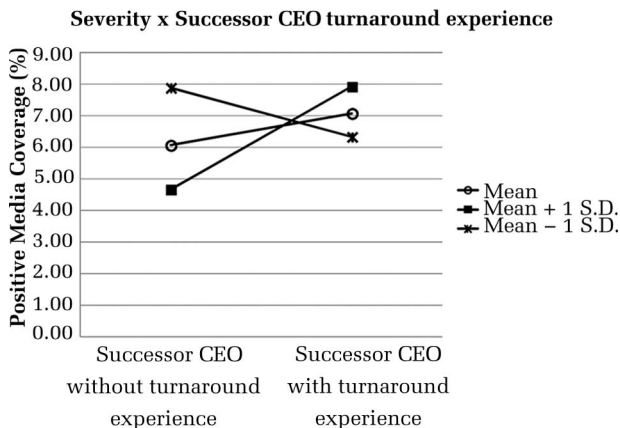


ment maintains market reaction (CAR) better when severity is at one standard deviation above the mean. Figure 3c shows how such an appointment increases positive media coverage by 2.49% at the mean level but by 5.29% when severity is at one standard deviation higher. Figure 3d shows how such successors better moderate any increase in negative media coverage when severity is higher. Together, these figures point to a favorable moderating effect of elite educational background when severity is higher, as hypothesized.

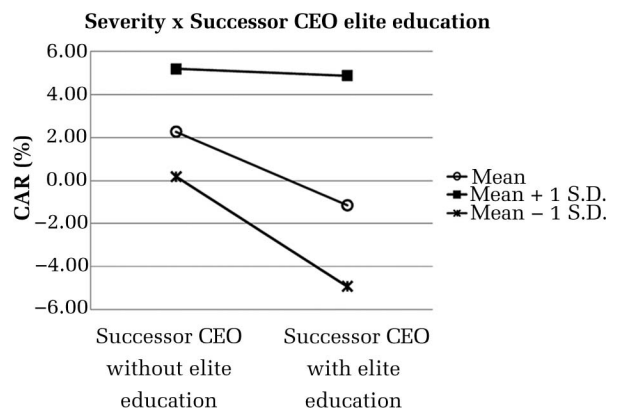
For the effects of *Successor CEO from finance or accounting*, the plots show how such an appointment seems to be met with rather mixed reactions. Figure 4b shows how this functional background reduces analysts' forecasts more when severity is at

one standard deviation above the mean (\$0.49) than when severity is one standard deviation below (\$0.02). Figure 4c shows how the appointment reduces negative media coverage more when severity is lower, not higher. Altogether, Figure 4b and 4c suggest that such a successor is less welcome when severity is higher. Yet Figure 4a shows how CAR increases more when a restating firm appoints successors with this background, especially when severity is higher (3.11% increase at one standard deviation above the mean versus 1.10% at the mean). We discuss below some possible arguments as to why a successor with prior experience in accounting or finance may experience a less positive reaction from outside observers.

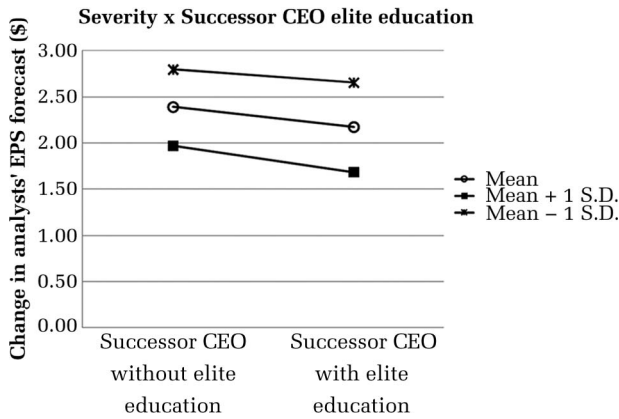
**FIGURE 2b**  
**Successor CEO Turnaround Experience × Severity: Positive Media Coverage**



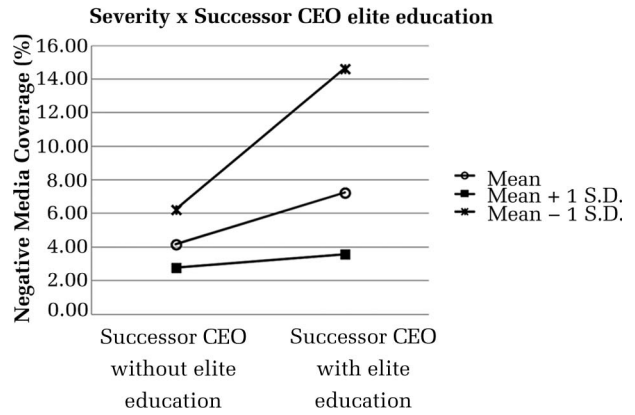
**FIGURE 3a**  
**Successor CEO Elite Education × Severity: Cumulative Abnormal Return**



**FIGURE 3b**  
**Successor CEO Elite Education × Severity:**  
**Change in Analysts' Forecasts**



**FIGURE 3d**  
**Successor CEO Elite Education × Severity:**  
**Negative Media Coverage**



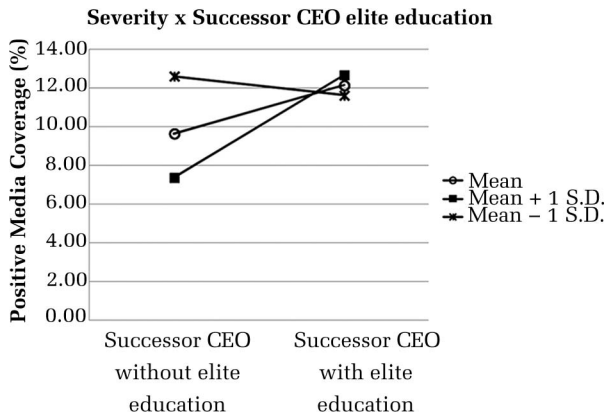
**Additional Analyses**

We ran several additional analyses to further examine these phenomena. First, we created a single categorical variable that takes the value of 0 if a successor CEO has no previous experience of being a CEO, 1 if a successor CEO has prior CEO experience, and 2 if a successor CEO has both prior CEO and turnaround experience. While this coding may raise questions as to whether a score of two actually indicates a doubling of the effect that a score of one represents, the results using this measurement are similar to those mentioned above. That is, the severity of restatement increases the likelihood of selecting a successor who has both prior CEO and turnaround experience ( $p < 0.001$ ) and that such an experience increases CAR ( $p < 0.001$ ). Second and

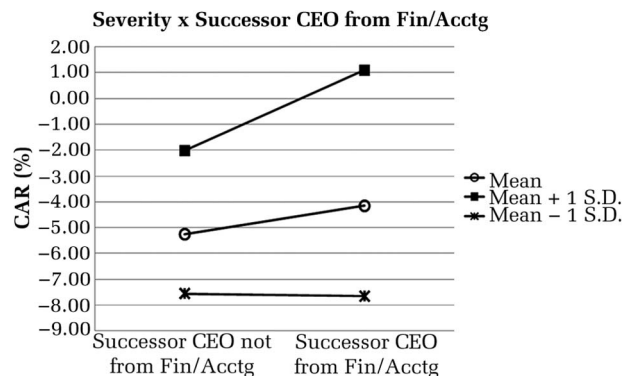
relatedly, we have expanded our data to investigate whether any of our successors had any turnaround experience as a TMT member although not as a CEO. Careful examination of our data indicated that we had 12 such cases. Running similar analyses using this expanded definition of turnaround CEO, we found that when severity increases, a firm is more likely to choose such individuals as successor CEOs, which is similar to our earlier findings. However, with the expanded definition of turnaround CEO, the increase in CAR and positive media coverage as severity increases indicates a weaker significance ( $p < 0.10$ ) than before. This suggests that prior experience as a CEO, rather than just as a TMT member, in a turnaround company sends a stronger signal to the market and media.

Third, we also checked whether there were any cases in which a successor CEO came from a firm

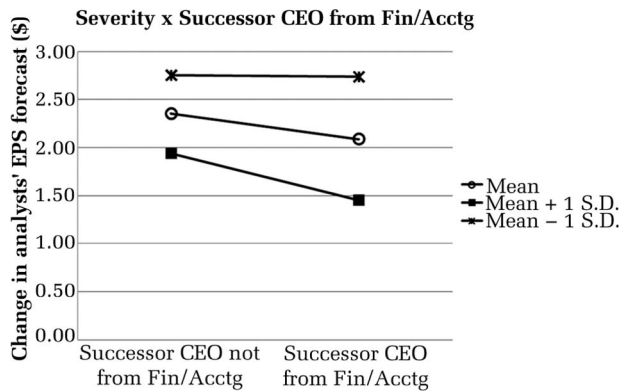
**FIGURE 3c**  
**Successor CEO Elite Education × Severity:**  
**Positive Media Coverage**



**FIGURE 4a**  
**Successor CEO from Fin/Acctg × Severity:**  
**Cumulative Abnormal Return**



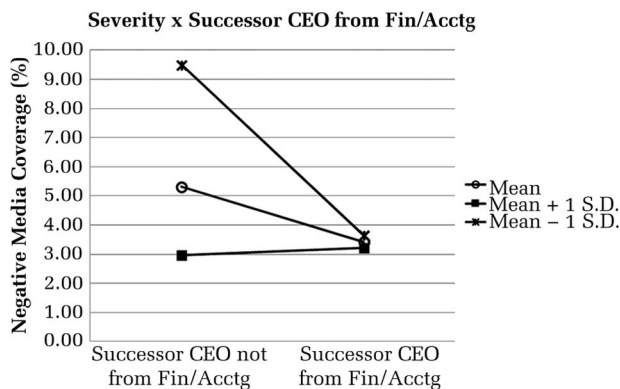
**FIGURE 4b**  
**Successor CEO from Fin/Acctg × Severity:**  
**Change in Analysts' Forecasts**



that had restated before. We found no case where a successor had earlier been a CEO at another restating firm, but found nine cases where a successor had earlier been in the top management team (as COO, CFO, EVP, SVP, or President, but not as CEO) of another restating firm. We analyzed these cases but found no significant effect—i.e., severity does not increase the likelihood of selecting a restating firm successor, nor the likelihood that such a successor generates significant market or media reaction. We believe, however, that the small number of observations is likely to contribute to this lack of significance.

Fourth, in addition to our severity of restatement variable, we included a *restatement* dummy variable that takes the value of 1 for the restating firm and 0 for the matching firm. None of our conclusions changed, although the significance of sever-

**FIGURE 4c**  
**Successor CEO from Fin/Acctg × Severity:**  
**Negative Media Coverage**



ity of restatement weakened in some models, which is likely to have been caused by the pairwise correlation between the dichotomous measure and the severity measure ( $r = 0.75, p < 0.001$ ). Finally, depending on the dependent variable being estimated, there are differences in sample size across Tables 2, 3, and 4, which we explain in the Appendix A.

**DISCUSSION**

How does the naming of a new CEO help to signal a firm's seriousness in responding to a reputation-damaging event? How do characteristics of the new CEO influence the reaction to this announcement by the market, analysts, and the media? These are the primary questions this research attempts to address. Although past work has demonstrated that firms tend to replace their top management following the revelation of financial restatement, a source of reputational damage (Arthaud-Day et al., 2006; Cowen & Marcel, 2011), these studies have not examined the types of successors who are recruited and whether these successors are effective in helping firms signal their determination to restore their reputations (Rhee & Kim, 2012). In this study, we examined how the attributes of CEO successors help to signal their competence and ability to help the firm recover from reputational damage following financial earnings restatements. Our results show that more severe restatements have led to successors who were more likely to have previously served as CEOs, more likely to have had turnaround experience, more likely to have gone to an elite school, and more likely to have had prior functional experience in areas other than finance or accounting. We then examined how these characteristics influenced reactions to the announcement of the successor from the stock market, investment analysts, and the media, demonstrating that these constituencies reacted favorably to these successor characteristics, especially when the restatement was more severe. These overall findings are accompanied by some less obvious insights that we highlight below.

The results of our empirical tests support the notion that certain characteristics of a CEO successor are likely to signal a commitment to recovery from reputation damage following financial restatement. Our findings are consistent with past work in signaling theory that has argued that the observability and cost of signals have an im-

portant influence on their effectiveness (Connelly et al., 2011). The announcement of a well-qualified successor constitutes a signal that is observable to external observers and relatively costly, since an experienced and educated CEO may be difficult to recruit.

Differences in the characteristics of a signal to observers help to explain why some signals are more influential than others. Signals that are more salient or a better match for the task at hand may generate more consistent reactions across different constituencies. In our study, audiences seemed to react more consistently to prior CEO experience, a specific signal that is highly salient and fitting, than to functional background, a relatively weaker or less salient signal that received a more mixed reaction in our results. Signals that are relatively less observable may also be less influential. In our study, a successor's experience as a turnaround manager may have been less observable or less prominently promoted as part of the succession event, and external reactions to turnaround background were less pronounced in our results. Further, to the extent that prior CEO experience is already a sufficiently salient signal, the additional knowledge that the successor also had experience as a turnaround manager might have been less consequential.

Signaler characteristics can also have an important influence on the reactions of external observers. As Connelly et al. (2011) suggest, these characteristics can influence how a signal is interpreted and calibrated. In our study, the severity of restatement was a central characteristic of firms (signalers) and had a significant influence on how external constituencies calibrated their response to characteristics of successor CEOs. Receiver characteristics may also result in differences in how a signal is interpreted and reacted to. For example, a successor characteristic like elite education may seem more interesting to the media (because it may be germane to their readership) than to analysts, who, given their acquaintances and social network, may be less likely to view elite education as a distinguishing feature.

Interestingly, and counter to our original hypothesis, we found that firms having to make a more severe restatement were less likely to recruit successors with finance or accounting backgrounds, and that successors with these backgrounds showed much more mixed results across the external constituencies we examined than those with other backgrounds. Restating firms may face the

dilemma of trying to choose successors who will ensure that such a reputation-damaging event does not recur in the future while at the same time distancing themselves from the financial and accounting taint that a financial restatement represents. A restating firm may want to direct public attention away from the concerns that originally led to its reputation damage, which might be best accomplished by hiring a successor CEO with a background in an area other than accounting or finance.

### Contributions to Theory

We believe that this study offers several contributions to the literature. The recent review of firm reputation and its restoration by Rhee and Kim (2012) notes that past studies examining reputation restoration following a reputation-damaging event tend to be normative or suggestive rather than empirical. As such, these studies tend to advise what firms should do but not to examine what firms actually do to restore their damaged reputations or whether their actions generate favorable reactions. We draw on signaling theories to empirically demonstrate how firms respond to reputation damage by appointing a successor CEO with specific characteristics, signaling the firm's commitment and responsiveness to restoring the reputation of the firm. By providing a finer-grained examination and analysis of these efforts that clearly underscores how firms may work to restore their reputation and credibility by selecting CEO successors who stakeholders are likely to perceive as competent, we extend past theoretical work that has argued that firms should take specific actions in response to their damaged reputations but has not offered specific remedies nor the means to test them (Pfarrer et al., 2008). This focus on the prominence of CEO succession events and the public nature of the information is also particularly relevant to signal efforts to restore reputation, given that theory suggests that restoration efforts need to show consistency between external and internal actions (Pfarrer et al., 2008; Westphal & Zajac, 2001). An empirical investigation also allows us to observe non-obvious findings, such as how a signal that is arguably one of the least informative about a CEO's ability to address the problem at hand (i.e., elite education) appears to have the overall strongest effects across the broadest range of audiences.

Past theoretical work has recommended that firms take stronger actions to restore their damaged

reputations (Mishina et al., 2012; Pfarrer et al., 2008). Rhee and Kim (2012) provide a preliminary framework for grouping these efforts on a continuum from more substantial to more superficial, based on the salience of the actions; our findings offer empirical support for their arguments. While the appointment of a new CEO may often reflect an overall effort to redirect the firm, some successor characteristics may be viewed as more relevant than others and thus yield a more substantive influence in helping a firm restore its reputation. To the extent that prior experience as a CEO is viewed as more valuable than elite education or functional experience, that first attribute may reflect a more substantive signal than either of the second or third attributes named. In addition, although some studies have theorized that reactions to illegitimate practices may vary based on their severity (Devers et al., 2009), past work has not empirically examined whether firms react differently or more strongly to more severe reputation-damaging events (Pfarrer et al., 2008). Our study is the first to do so, as we examine how the degree of financial restatement influences responses to it. This complements past studies that have examined the effects of restatement more broadly but that have not differentiated among degrees of severity (e.g., Arthaud-Day et al., 2006). Understanding how firms calibrate their responses depending on the severity of financial earnings restatement allows us to better understand the extent to which they may be motivated to take remedial action.

Finally, in our attempt to understand signals for reputation restoration, our empirical findings also contribute to signaling theory by simultaneously demonstrating the importance of signal characteristics, examining the effect of signals across different receivers, and focusing on negative qualities of the signalers, which is in contrast to past studies which have focused almost exclusively on positive qualities of the signalers (Connelly et al., 2011). By providing empirical examination of these aspects, we can better understand whether and how they work to reinforce and complement each other. Specifically, our finding shows that a similar signal—e.g., a finance and accounting background—can generate different reactions across different receivers. This is rather surprising as signaling theory generally assumes that a signal will be interpreted in the same way regardless of receiver (Spence, 1973).

## Limitations and Future Research

A key limitation of this study is that the reputation-damaging events we have observed all take place within the context of U.S. firms and a U.S. legal and governance framework. Due to differences in culture and financial reporting systems across countries, similar reputation-damaging events may vary idiosyncratically depending on how oversight of financial reporting occurs within any given nation. Future researchers can identify other opportunities for the study of reputation damage and how it might be restored in other countries and cultures, perhaps in the context of different types of financial and non-financial events. Also, while we examine external reactions, we do not determine whether reputations are actually repaired by hiring a successor CEO with these characteristics. Further, it is possible that some of the restatements are caused by unintentional error, and so are perhaps rooted in incompetence rather than misconduct. This study does not make this distinction, which could have important implications for reputation repair and should be investigated further (Elsbach & Currell, 2012).

We believe there are several interesting and significant opportunities for future research, building on this work. Given the focus of past research on the role of the CEO as a substantive and symbolic representative of the firm, we have focused on chief executive replacement as the locus of reputation recovery efforts. Interesting future work could examine other actions that a firm might take to signal its seriousness at responding to instances of reputation-damaging events and observe how these actions might influence stakeholders' reactions. Further, while this study focused on objective CEO characteristics such as prior CEO and turnaround experience, future studies may consider more socially-constructed attributes of successor CEOs, such as perceived celebrity or charisma (Hayward, Rindova, & Pollock, 2004; Wade, Porac, Pollock, & Graffin, 2006). Such studies could examine how the status and reputations of both the incumbent and successor CEOs play a role in this process.

Future studies could also examine an organization's internal processes following similar events—for example, whether and how a firm recognizes reputational damage, searches for solutions, and attempts to restore reputation, and how these efforts might vary according to the severity of the reputational damage (Rhee & Kim, 2012). In a related vein, recent work attempting to differentiate

between concepts of negative reputation and stigma could also be developed further (Mishina & Devers, 2012). Although not focused on stigma, our study offers some indication of how reputation and stigma differ: while removing stigma has been argued to be very challenging (Hudson & Okhuysen, 2009), influencing external reactions following a damaged reputation may be less difficult.

Disappointing outcomes around firm performance and loss of shareholder wealth following financial scandals have already led to severe restructuring of firm governance and oversight. The current and protracted economic crisis has only heightened the concern that oversight may need to be tightened even further to prevent illegitimate actions by firms in the future. We hope that this research will help to crystallize some of the key issues around financial restatement, reputation loss, and reputation restoration that managers and policymakers need to focus on both now and into the future, while also providing a useful foundation for future studies.

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## APPENDIX A

### Variations in Sample Size across Models

The following factors influenced differences in sample sizes across our models:

1. We dropped observations where the incumbent CEO departed as a result of non-dismissal reasons, e.g., retirement or taking up another position (Shen & Cannella, 2002). This reduced our total sample by 8% of the original sample.
2. The use of a two-stage model further decreased our sample since some of the variables in the second stage were not available and the Heckman model drops such cases. The Heckman model is very conservative, treating any missing data as non-random (if they are indeed random, it should not affect the analyses besides of course the loss of observations; [www.stata.com/support/faqs/statistics/sample-and-heckman-model/](http://www.stata.com/support/faqs/statistics/sample-and-heckman-model/).)

Given the automatic exclusion that occurs with using Stata, our sample size experienced the following reduction:

Around 7.7% when the final dependent variable (DV) is successors' characteristics; 9.4% when the final DV is cumulative abnormal returns (CAR); 11.4% when the final DV is positive or negative media coverage; and 16.3% when the final DV is change in analysts' forecast (a larger decline because analysts' ratings are not as commonly available as CAR or media coverage). The main reason why these data were not available was because the firm was merged or acquired, or no longer followed by analysts. When the final DV was CAR, we also needed to

drop firms that release "strategic noise," which are news announcements during the five-day window around the announcement of the successor CEO but which do not pertain to the successor CEO appointment (Graffin et al., 2011). This reduced the relevant sample by 11.8%.

3. Finally, some observations were dropped because of missing values for some of the control or independent variables (ranging from 2.1 to 3.4%). Ultimately, we had from 463 to 558 cases that were without any loss of observations and eligible for further analyses.

To give an example, in the case of predicting successor CEO characteristics in Table 2 Model 1a (and 1b) that has  $N_{total} = 554$  and  $N_{uncensored} = 109$ , the following is the breakdown. We started with 704 firms and then dropped these firms: 5 firms where the duration between analysts' forecasts is too long, 77 firms where the CEO cannot be considered as being terminated for various reasons, 56 firms where data of successor CEO experience in the second stage are not available, and 12 firms that are deleted listwise due to missing variables. After dropping these 150 firms, our initial 704 firms reduced to 554 firms. From here only 109 firms, or 20%, experienced a CEO replacement, which is close to the overall average where 26% of all firms experienced a CEO replacement. Of course, the actual breakdown varies across models.

However and importantly, we did compare the firms that were dropped for the reasons mentioned above with the remaining firms in terms of size, profitability, and year dummies. We found no significant difference.

## APPENDIX B

### Ivy League schools

Brown University  
Columbia University\*  
Cornell University\*  
Dartmouth College  
Harvard University\*  
Princeton University  
University of Pennsylvania\*  
Yale University\*

### Public Ivy League schools

*Listed as public Ivy League in Moll (1985)*

College of William & Mary (Williamsburg, Virginia)  
Miami University (Oxford, Ohio)  
University of California (campuses as of 1985)\*,+  
University of Michigan (Ann Arbor)\*  
University of North Carolina at Chapel Hill\*  
University of Texas at Austin\*  
University of Vermont (Burlington)  
University of Virginia (Charlottesville)

*Listed as runners up of Ivy League in Moll (1985) <sup>a</sup>*

Georgia Institute of Technology\*  
New College of the U. of South Florida

### Elite private schools (Long et al., 1998)<sup>c</sup>

Carnegie Mellon University\*  
Duke University\*  
Emory University\*  
Imperial College of Science (UK)\*, ++  
Massachusetts Institute of Technology\*  
New York University\*  
Northwestern University\*  
Stanford University\*

Tufts University\*, ++  
University of Chicago\*  
University of Southern California\*  
Vanderbilt University  
Washington University in St. Louis\*, ++

### U.S. Service Academies

U.S. Military Academy  
U.S. Naval Academy  
U.S. Coast Guard Academy  
U.S. Merchant Marine Academy  
U.S. Air Force Academy

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Pennsylvania State University at University Park\*  
State University of New York at Binghamton  
University of Colorado Boulder\*  
University of Illinois at Urbana-Champaign  
University of Pittsburgh  
University of Washington\*  
University of Wisconsin Madison\*  
*Not listed in Moll (1985) but appeared in our  
sample and are generally considered as highly  
reputable public schools<sup>b</sup>*  
Indiana University\*  
University of Maryland\*  
University of Minnesota\*

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*Note:*\* Schools that appear in our own sample.

+ Specifically, the successor CEOs in our sample graduated from University of California, Berkeley and UCLA.

++ These schools are not listed in Long et al. (1998) but are generally considered as elite private schools.

<sup>a</sup> Although originally listed as runners up, we believe the schools that appeared in our sample are generally considered as highly reputable public schools: Georgia Tech, Penn State, U. Colorado, U. Washington, U. Wisconsin-Madison.

<sup>b</sup> We do not claim that these are the only other highly reputable public schools. Rather, we focus on large, research intensive, flagship public universities that appear in our sample.

<sup>c</sup> Long et al. (1998) did not set out to purposely list elite private schools. However, their list expectedly includes schools widely considered as elite private schools—although the list may not be exhaustive.