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# SHE'-E-OS: GENDER EFFECTS AND INVESTOR REACTIONS TO THE ANNOUNCEMENTS OF TOP EXECUTIVE APPOINTMENTS

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*This study uses Kanter's token status theory to link announcements of top executives to shareholder reactions, highlighting possible gender effects. Using a sample of top executive announcements from 1990 to 2000, our results show that investor reactions to the announcements of female CEOs are significantly more negative than those of their male counterparts. Furthermore, women who have been promoted from within a firm are viewed more positively than women who come from outside. To supplement our analysis of investor reactions, we also analyze the text of popular press articles surrounding the announcements of male and female CEOs. These results show that articles about the appointment of a female CEO tend to emphasize gender, gender-related and other job or organizational considerations.* 

> The fate of Carleton S. Fiorina, chief executive of Hewlett-Packard and the highest-ranked female chief executive in the *Fortune* 500, could be a test. She is waging a highly public battle to complete a merger with Compaq Computer against the wishes of the heirs of Hewlett-Packard's founders. If she is thwarted, it is almost inevitable that she will leave the company. That failure could, paradoxically, spawn a different kind of victory—or defeat. The key would be whether she is then viewed as simply another risk-embracing chief executive who was driven out when shareholders balked at the company's stock price, or as a poignant symbol of how women still can't quite make it in the cut-throat, male-dominated corporate world.
> (Alessandra Stanley, *New York Times*, Money and Business, 13 January 2002)

There is considerable research exploring the relationship between management succession events and reactions by the stock market (e.g., Lubatkin and Shrieves, 1986). Announcements of CEO changes, poorly managed successions, and sudden leadership changes (e.g., death of the CEO) adversely affect the value of a firm (Beatty and Zajac, 1987; Worrell and Davidson, 1987; Worrell *et al*., 1986). The consideration of contextual factors, including pre-succession firm performance, firm size, and successor origin, makes the relationship between CEO announcements and firm performance indicators less direct. For example, Furtado and Rozeff (1987) found that successors appointed from outside the firm (outsiders) yield lower abnormal returns than those generated by inside appointments (insiders). Interestingly others show no relationship between successor origin and firm performance indicators (Beatty and Zajac, 1987).

While much of the CEO succession literature has focused on the firm or industry insider/outsider distinction (Boeker and Goodstein, 1993; Cannella and Lubatkin, 1993; Reinganum, 1985), there may be a number of other important factors when predicting the success of a CEO, including age

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and past experience. By concentrating on the insider/outsider characteristic, prior research has not adequately explored more fundamental demographic characteristics that may be equally relevant (Zajac and Westphal, 1996). The status differences accorded to men and women, coupled with the infrequency with which women are named to executive positions, make gender a salient characteristic that deserves empirical attention.

In the last decade, we have seen prominent appointments of women CEOs such as Patricia Russo of Lucent Technologies, Carly Fiorina of Hewlett-Packard, Andrea Jung of Avon Products, and Meg Whitman of eBay. The quotation above suggests that female executives are being watched carefully by important stakeholders. Yet how stakeholders perceive these women remains unclear. Our goal is to understand whether investors, in particular, perceive female executives differently from male executives and, if so, explore how and why those differences manifest. Moreover, in examining the perceptions and behaviors of investors we seek to clarify the relationship between investor revisions in their expectations of the new leader and future performance of the firm. To the extent that investors are satisfied with a firm's leadership, they are more likely to continue investing and thereby positively influence stock prices. On the contrary, when investors are dissatisfied with firm leadership, they are more likely to discontinue or lower future investment, adversely affecting market prices.

Below, we present several theoretical perspectives that lead to inferences about how shareholders might respond to male vs. female executive announcements. In particular, we highlight Kanter's (1977) token status theory, as well as theories that explore the intricacies of sex roles, sex role stereotyping, and job schemas. Lastly, we acknowledge that social demographic characteristics such as gender will not fully account for any marketplace reaction to a change in leadership. Therefore, we also examine whether the insider/outsider status distinction affects market reactions to female appointments. In short, this paper examines whether a specific stakeholder group (i.e., investors) perceives female executives differently from male executives, and, more importantly, begins to explore how those differences come to be. We do so, in part, by examining investor reactions to the announcement of newly appointed male and female executives from 1990 to 2000.[1] Furthermore, we collect articles from the popular press about CEO appointments and examine the text using centering resonance analysis to understand how investors may come to perceive male and female executives differently.

## THEORETICAL DEVELOPMENT

### Women in management

There have been significant changes in the number of women assuming leadership positions in the United States in the past 30 years. The number of women managers increased from 18 percent in 1972 (U.S. Bureau of Labor Statistics, 1982) to 45 percent in 2000 (U.S. Bureau of Labor Statistics, 2001). Moreover, in a study of federal government employees, Powell and Butterfield (1994) found that any significant bias in promotion decisions favored women over men. This type of evidence has led some to conclude that barriers to women's advancement in corporate America are no longer apparent (e.g., Powell and Butterfield, 1994).

Despite a pipeline of women managers that is nearly on a par with that of their male counterparts, the distribution of women in senior management and executive positions is severely skewed in favor of men. In *Fortune* 500 companies women represent 4 percent of top officers, and less than half of 1 percent of CEOs (*Catalyst*, 2000). Daily, Certo, and Dalton (1999) showed that in the 10-year span from 1987 to 1996 the number of women CEOs remained at two. The authors concluded that the progression of women moving into the executive suite has been virtually nonexistent. Thus, contrary to Powell and Butterfield's (1994) conclusion, the number of women in the executive ranks remains dramatically small in both absolute and relative terms (*Catalyst*, 2000; Daily *et al*., 1999), suggesting that the 'glass ceiling,' a transparent barrier that allows women to advance only to certain levels in the corporation, is still an impediment to high-achieving women, especially with respect to entrée to the most senior levels of the corporation (*Catalyst*, 2000; Daily *et al*., 1999).

Prior gender and diversity-based management research highlights the glass ceiling that exists in

[1] We have chosen these years for two reasons. First, recent years were chosen because women CEOs are a fairly recent phenomenon. Second, 10 years gives us a reasonable sample of women CEOs to examine.



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corporate America (Byrne, 1971; Morrison and Von Glinow, 1990; Thomas and Gabarro, 1999), and serve as a necessary precondition for learning how to eliminate such barriers. Although these and other studies offer interpersonal and structural explanations for the glass ceiling phenomenon, they do not empirically demonstrate how gender influences the perceptions of one's leadership potential or ability. Assuming that investors' reactions following an announcement of an executive appointment signal their beliefs about a leader's potential and subsequent firm performance, we can, then, begin to draw some preliminary conclusions about the extent to which a leader's gender and relationship to the firm influence those reactions, and more broadly, the relationship between a leader's characteristics and firm performance.

## Gender role stereotyping

Stereotypes are social judgments of individual group members that lead people to judge group members consistently, and in an exaggerated way, with group expectations (Biernat and Kobrynowicz, 1997). Stereotypes are most prevalent when considering surface-level demographic characteristics such as race or gender. In fact, streams of literature have developed that examine gender-role stereotypes and how they play out in organizational settings. Kanter's (1977) theory of token status is one of the first theoretical attempts to examine gender and gender-role stereotypes in a work context.

### *Token and solo status*

The naming of a female executive prompts a great deal of attention primarily because it is a novel or rare occurrence. Consequently, organizational stakeholders, including investors, may be more aware of and more skeptical about the appointment of female executives than that of male executives. The logic behind this skepticism and concern is relatively straightforward. Female CEOs are new and different, and they therefore represent a proportional rarity relative to the number of male CEOs in American society. Kanter (1977) initially coined the term 'token status' in reference to the experience of women managers at a time when they were underrepresented relative to their male counterparts. Even more extreme are solos, or people who are the sole representative of a particular social category (e.g., gender) within a defined workgroup or organization.[2]

The arguments behind token and solo status are primarily structural and suggest that an organization's demographic composition can have severe and generally negative consequences on both the token members of the organization and the organization as a whole (Pfeffer, 1983; Reskin, McBrier, and Kmec, 1999). For example, research has demonstrated that some employers are reluctant to hire candidates that are demographically different from the broad population of employees (Neckerman and Kirchenman, 1991), reasoning that majority group members will be uncomfortable or that the dissimilarity will hinder trust (Tolbert and Oberfield, 1991). Other research shows that firms adopt affirmative-action hiring strategies (Konrad and Linnehan, 1995), which can lead to the perception by organizational members that the candidate is less competent than a non-affirmative action hire (Heilman, Block, and Stathatos, 1997). In either case, a firm's hiring practices contribute to its demographic composition which, in turn, produces a set of consequences that affect minority group members.

To summarize, conceptual and empirical research on solo and token status suggests that those holding such a position are adversely affected in terms of both the amount of attention they draw and how they are perceived by others, independent of any other discriminatory treatment (Sekaquaptewa and Thompson, 2002). Today, women are still tokens (Daily *et al.*, 1999; *Catalyst*, 2000), if not solos, at the upper echelons of most companies, and are thus susceptible to unfavorable consequences, including perceptual biases and detrimental stereotypes (Hitt and Barr, 1989; Stroh, Brett, and Reilly, 1992). Particularly relevant to the current study is an argument initially provided by Kanter (1977), who suggests that observers tend to distort the image of female token managers in a way that fits generalizations associated with femininity rather than the qualities associated with managers and leadership. This notion has spawned considerable

[2] Due to the small number of female CEOs in the population, we are unable to test the influence of solo status as a potential moderator of the relationship between CEO gender and stock market reactions. As the number of female CEOs increases, however, we encourage future research to examine this relationship.



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research examining sex-role stereotypes and job schemas.

### *Sex-role stereotypes and job schemas*

Building on token status theory, observers have virtually no frame of reference with which to evaluate women in top management. Thus, they rely on stereotypes of women—stereotypes that are inconsistent with a leadership role. Indeed, for roles that are defined in masculine terms and occupied mainly by men, the men in those positions are evaluated slightly, but consistently, more favorably than women (Eagly, Makhijani, and Klonsky, 1992; Eagly, Karau, and Makhijani, 1995). Thus, the bias against women is exacerbated in situations where women are perceived as violating gender-role expectations (Fiske and Taylor, 1991; Powell and Butterfield, 2002).

Similarly, the literature on schemas suggests that individuals develop mental models (Fiske and Taylor, 1991) of the attributes of jobholders. Jobs that tend to be occupied by one gender become associated with that gender. Because men occupy the majority of senior management positions and dominate the applicant pool for those jobs, people tend to envision men as having the appropriate attributes for leadership success (Powell and Butterfield, 2002)—and those attributes are much more consistent with what it means to be male or masculine. The low representation of women in top management positions also likely reinforces the stereotype that women are less qualified for such positions than men. Thus, men are presumed to be more competent than women and are believed to possess more of the characteristics conducive to effective leadership (Shenhav, 1992). Linking this back to Kanter's supposition regarding female token managers, the feminine qualities of women are recognized and heightened when women hold jobs that are inconsistent with their sex role. In light of the dynamics associated with token or solo status, sex-role stereotypes, and job schemas, female leadership should be associated with a more negative expected change in the firm's future performance than male leadership, should receive more attention by relevant stakeholders than male leadership, and will be described in ways that highlight gender.

*Hypothesis 1: Stock market reactions to the announcements of female CEO appointments will be more negative than stock market reactions to the announcements of male CEO appointments.*

*Hypothesis 2: On average there will be more articles written in the popular press about female CEOs than about male CEOs during their initial year in office.*

*Hypothesis 3: Reports about the appointment of a female CEO will depict information that highlights gender, gender-related, job and organizational considerations, whereas reports announcing the appointment of a male CEO will be neutral toward gender, and more job and organization focused.*

## Contextual influences

### *Representation of women*

According to token status theory, as the proportion of men to women becomes equal, women leaders should be less interesting, unique, and noteworthy (Kanter, 1977). While the number of women CEOs remains relatively rare, the number of women in top management positions (e.g., Executive Vice Presidents, CFOs, and COOs) is slowly increasing (*Catalyst*, 2000). Therefore, we might expect women at these levels to be somewhat less susceptible to the scrutiny, performance pressures, and perceived risk that ostensibly characterize the woman CEO. In other words, as the number of women in top management positions increases, these women should be viewed no differently from their male counterparts. Concomitantly, we might further expect that the announcement of a woman to a firm's top management team will generate a less negative stock market reaction than an announcement of a woman to the CEO position.[3] Thus:

*Hypothesis 4: Stock market reactions to the announcements of female top management appointments will be less negative than stock market reactions to the announcements of female CEO appointments.*

[3] Appointments of senior executives do not carry the weight that CEO appointments do. Nonetheless, research has shown that investors do react to announcements of senior officers (Mian, 2001).

*Hypothesis 5: Stock market reactions to the announcements of female top management appointments will not differ significantly from stock market reactions to the announcements of male top management appointments.*

*Insider/outsider status*

The uncertainties associated with any newly appointed CEO are limitless (Zajac and Westphal, 1996) and are likely to cause a great deal of anxiety for those who have a financial stake in the firm. Not surprisingly, studies have shown that sudden or unexpected changes, such as poorly managed successions and sudden leadership changes (e.g., death of the CEO), adversely affect the value of a firm (Beatty and Zajac, 1987; Worrell and Davidson, 1987; Worrell *et al*., 1986). In light of the diversity arguments presented above, we posit that this anxiety will be exacerbated when the successor is a woman. However, the effects of tokenism and job schemas may be attenuated in certain contexts. According to decision theorists, people prefer certainty to ambiguity when making decisions (Dawes, 1988; Kahneman and Tversky, 1973, 1982). For example, if the information received about the female appointee is consistent with the desired expectations of decision-makers, then perceived ambiguity may be reduced.

Previous research has singled out the insider/outsider distinction as an important variable in executive succession. While research has reported mixed investor reactions to this characteristic, Shen and Cannella (2002) recently found that outside appointments were negatively associated with post-succession organizational performance. They reasoned that insiders have more firm-specific knowledge, and that compared to outsiders they are more likely to face a supportive executive team. Both factors put the insider at a considerable advantage. Based upon these arguments, and the burden of perceptual biases against female leaders, we argue that the insider/outsider distinction will be especially pertinent for female appointments. Specifically, insider status provides additional information upon which to assess the incumbents' competence and qualifications. Moreover, it presumes the incumbent's familiarity and expertise in the organization or industry. Thus, for female appointees, we believe that insiders will be at an advantage relative to outsiders.

*Hypothesis 6: Stock market reactions to announcements of female CEOs will be more positive for women who are promoted from within the firm than for female outsiders.*

## DATA AND METHODOLOGY

### Sample construction

We obtained a sample of announcements of top executive appointments (including CEO, CFO, COO, President, and Executive Vice President) from Factiva searches that include the *Wall Street Journal*, newswires, newspapers, and press releases from January 1, 1990 to December 31, 2000. This sampling procedure resulted in 3,072 announcements for firms. Since we examine investor reactions to these announcements, private companies and companies that were not public prior to the new executive appointment were deleted from the sample, resulting in 2,555 events. An additional 302 were deleted because they had IPOs within 1 year (prior to) the announcement date; as a result, there were not enough returns to estimate the market model (event study) parameters (shares need to be traded on each of the days in the −240 to −20-day window to calculate a beta). Another 471 observations were announcements of appointments in 'pink sheet' Nasdaq firms that are typically very small. Four observations were deleted because of confounding events and 154 observations represent appointments of executives to leadership positions in divisions or subsidiaries (rather than the parent firm) or foreign firms. This procedure resulted in 1,624 unique announcements, of which 529 were announcements of CEO appointments.

### Data sources and variable construction

Stock returns data for U.S. firms come from the tapes provided by the Center for Research in Securities Prices (CRSP) of the University of Chicago. Industries are identified by four-digit SIC codes reported in the CRSP tapes. Firm measures, such as assets, come from Compustat. Stock ownership data come from 13F filings reported in the Spectrum Database. Finally, information about the executive and the reason for the appointment comes from the Factiva searches used to build the sample, supplemental newspaper articles and



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press releases (about the executive but not the appointment), proxy statements, 10Qs and 10Ks, and the Execucomp database.

### *Independent variables*

Our independent variables include *gender* and *firm insider*. *Gender* is coded as 1 for female and 0 for male. Similarly, *firm insider* is coded as 1 if the executive is promoted from within the firm and 0 if the executive comes from another firm.[4] To test Hypothesis 4, we created an interaction variable, *female insider*, which is coded 1 if the individual is a female insider and 0 otherwise.

### *Control variables*

Controlling for the context of the appointment and firm size is also important. The reason for the appointment is important since it can affect the stock market's reaction to the announcement. Reasons include natural succession, poor performance, forced CEO resignation, restructuring, and acquisitions. Investors react differently to CEO successions under poor circumstances and natural succession (Friedman and Singh, 1989). As such, *reason for appointment* has been coded as 1 if there are unusual circumstances (previous CEO being ousted or being forced to resign, poor performance, management restructuring, an external threat, or if the firm was acquired), and 0 if there were no unusual circumstances (natural succession and vacant position). Similarly, the firm's performance in the year prior to the announcement may influence the context for the entrance of a new CEO. Consequently, we control for *previous performance*, measured as net income divided by sales in the year before the announcement.[5] We control for *firm size* using the logarithm of total assets. Finally, we control for the presence of institutional investors because some prominent institutions, such as CalPERS and TIAA-CREF, pressure firms toward diversity. The variable, *institutional holdings*, is measured as the percent of shares that are owned by institutions.

Finally, other background characteristics of the appointed executive may influence investor reactions; these include *industry insider* and *previous experience. Industry insider* is coded as 1 if the executive comes from within the industry and as 0 if the executive comes from another industry. Similarly, *previous experience* is coded as 1 if the individual has had prior CEO experience and 0 otherwise.

## Event study methodology

Standard event study methodology (Fama *et al*., 1969) is employed to measure abnormal returns. The subsample of female CEOs is extremely small (17 observations). Standard techniques for assessing statistical significance may not be valid because distribution assumptions are likely to be violated in small samples. In such cases, McWilliams and Siegel (1997) recommend bootstrapping standard errors to produce more robust standard errors. The basic idea is as follows. The dataset contains $N$ number of firms. Each firm has $T$ returns, where $T = -240$ to $+1$ returns ($N \times T$ observations). Each draw involves taking $N$ observations (from the $N$ firms) with replacement. In each iteration, some of the observations appear once, some appear more than once, and some do not appear at all. CARs are calculated as before and standard errors are produced from the distribution across 500 iterations. Details of bootstrapping can be found in Efron (1979).

## Text analysis

### *Sample*

Using the sample of top executive appointments in the event study, we searched for *Wall Street Journal* articles on each specific CEO within the year of appointment using the ABI-Inform database. We then systematically expanded the search to include the *New York Times, Fortune, Forbes, Business Week, The Economist*, and *Financial Times.* If we were still unable to find any articles, we entered the company name into the search within a year before and after the announcement. To be sure we were using relevant data, we scanned the titles and abstracts to find only the ones that

[4] We also examine the role of experience on the board of directors by tabulating female executives who are appointed CEOs after having served on the board of the same firm. There is a one-to-one correspondence between board experience and the firm insider definition described above. Consequently, the effect cannot be independently estimated.

[5] Other measures of previous performances have also been used, including operating income before depreciation divided by sales, operating income after depreciation divided by sales, and long-run holding period returns in the year before the announcement. There are no significant differences in our results in any of these cases.




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announced the CEO appointment. The media outlets chosen all have high impact (i.e., Thompson citation index), large circulations, and a reputation for integrity. Thus, the portrayal of CEOs in the media should be a reasonable reflection of broader societal perceptions of the phenomenon. It is certainly possible that any given CEO might have his or her reputation tarnished by an unfair stigmatization. However, the likelihood is that even if he or she does not deserve such a reputation, the media's portrayal will be congruous with the beliefs of the public at large or the credibility of the media outlet will be questioned. Accordingly, it makes sense to omit smaller or fringe journals that may be able to print selective portrayals of CEOs that do not accurately reflect the broader public or investor perceptions. While it is impossible to know for sure what kind of impact a particularly candid article in another publication might have (either positively or negatively) on how a new CEO is perceived, our chosen sample of publications should be sufficient to cover anything pertinent to CEO performance, even if another medium might be the original source for that belief.

### Centering resonance analysis (CRA)

A number of approaches to text analysis have been adopted over the years. Among the most recent is centering resonance analysis (CRA) (Corman *et al.*, 2002), a combination of theory and methodology that builds upon inference (Eizirik, Barbosa, and Mendes, 1993), positioning (Landauer, Foltz, and Laham, 1998), and representation (Danowski, 1993). CRA posits that words and noun-phrases are strung together in meaningful ways, which can then be analyzed as networks or relationships between words. The influence and importance of any given textual unit (word) is determined by its betweenness centrality in the network of words (McPhee, Corman, and Dooley, 2002). This approach is superior to earlier text analysis tools because it enables better information retrieval, better secondary analyses, visualization, and has domain-independent representation, which means that there is no need for ontology, complex rules, or training sets (Williamson, 2004). Furthermore, this approach has been used and validated in several research studies (e.g., Dooley and Corman, 2002; Shropshire and White, 2005). To accomplish this task we use a Crawdad Version 1.1 text analysis system; this is a software designed specifically for CRA. In fact, Corman *et al.* (2002) validated that Crawdad was an effective tool for utilizing CRA and could compute a quantitative level of influence that certain words have within text junkets.

Following Shropshire and White (2005), we analyzed the data using a joint analysis method. Relevant articles are grouped together into a single document to be jointly analyzed. This was the approach deemed most appropriate for this study since we were concerned with how women and men are treated in general and were not looking at why certain companies or CEOs might prove exceptions to the rule. Accordingly, once we had all of the relevant articles, we separated the articles into two groups: ones about male CEO appointments and the ones about female CEO appointments. After grouping the articles, it was necessary to 'clean' the data by deleting this extraneous information. Failure to do so might have shown higher influence of words such as *new*, which could have referred to the newness of a certain CEO or simply been a function of having multiple articles from the *New York Times*.

Crawdad computes the influence that particular words can have within the selected documents. However, there is a need to subjectively interpret what those influences mean. Dooley, who pioneered the Crawdad technology, selected 0.015 as the ideal influence cut-off for the graphical visualization because it groups, on average, 12–15 of the most influential words. This decision for default values was the result of thousands of sample studies, as up to a dozen words at a time are readily comprehensible by most people without going into too much detail. A more restrictive model would limit the number of network connections and would not supply the viewer with much information.

## RESULTS

### Abnormal returns

Hypothesis 1 predicts that the announcements of female CEO appointments will generate more negative stock market reactions than the announcements of male CEOs. Table 1 presents descriptive statistics for control variables and cumulative



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Table 1. Descriptive statistics and cumulative abnormal returns (−1, +1) of CEO and TMT appointments by gender: 1990–2000

| Variables | Female CEOs $N = 17$ | Male CEOs $N = 512$ | Female TMTs $N = 69$ | Male TMTs $N = 1026$ |
|---|---|---|---|---|
| | *Mean (S.D.)* | | | |
| Age | 47.25 (5.49) | 49.06 (7.81) | 41.64(5.22) | 45.65 (7.30) |
| Firm insider | 0.71 (0.46) | 0.69 (0.57) | 0.54(0.50) | 0.60 (1.42) |
| Industry insider | 0.88 (0.34) | 0.83 (0.38) | 0.72(0.45) | 0.74 (0.69) |
| Previous experience | 0.08 (0.28) | 0.13 (0.34) | 0.06(0.24) | 0.06 (0.24) |
| Reason for appointment | 0.17 (0.38) | 0.16 (0.36) | 0.14(0.35) | 0.13 (0.34) |
| Log (Assets) | 6.29 (1.69) | 5.52 (2.24) | 5.94(2.18) | 5.72 (2.12) |
| Previous performance | 0.01 (0.14) | −1.40 (20.19) | −0.98(6.57) | −0.14 (2.07) |
| Institutional holdings | 49.33 (23.70) | 35.73 (22.72) | 38.02(24.07) | 39.69 (24.59) |
| | *Mean (t-stat)* | | | |
| CARS (−1, +1) | −2.47%* (−2.65) | −0.50%* (2.08) | 0.68% (0.39) | −0.04% (−0.03) |
| Positive/negative | 0.53 | 0.76 | 0.97 | 0.85 |
| *t-statistics* | | | | |
| Comparing male and female CEO appointments | | | 2.43** | |
| Comparing female CEO and TMT appointments | | | 2.91** | |
| Comparing male and female TMT appointments | | | −1.09 | |

* $p < 0.05$; ** $p < 0.01$

abnormal returns (CARs) over the −1, +1 window for both female and male CEO appointments.

Interestingly, there are no large differences between the types of women and men that are appointed to these positions. For example, the mean age of female CEOs is 47.25, while the mean age of male CEOs is 49.06. Likewise, the mean age for female TMT appointments is 41.64, compared to 45.65 for male TMT appointments. Also, for both male and female appointments, more than half of the appointments are promotions from within the same firm, and about three-quarters of the appointments are from within the same industry.

Table 1 also shows that the 3-day cumulative returns are significant for both male CEO appointments (−0.50%) and female CEO appointments (−2.47%). The *t*-statistic comparing the two subsamples is statistically significant ($t = 2.43$), thus providing support for Hypothesis 1.

Hypothesis 2 predicted that newly appointed female CEOs would receive more attention in the popular press than male CEOs. Table 2 shows the mean number of articles of female and male CEOs as well as the rank of influential words in the articles.

Using the sample of articles published following the announcement of a new executive, we found that the mean number of articles announcing new women CEOs was 2.77, compared to 2.41 for the mean number of articles announcing new men CEOs. An independent-sample *t*-test did not achieve statistical significance and so this hypothesis was not supported.

Hypothesis 3 compares the text of news reports following the announcement of newly appointed male and female CEOs. Using the centering resonance tool, Crawdad, to identify and rank the most influential words in a document, the data show that there were more descriptors associated with gender for reports announcing female CEOs than for those reports announcing male CEOs. Table 2 lists the top 15 most influential and least influential words. In these reports associated with a newly appointed woman, two of the 10 most influential words referenced factors that highlight gender or that are typically strongly associated with femininity. Those words were *woman* and *family*. Of the top 10 most influential words for male CEOs announcements, there were no references to gender. In contrast, the words *man* and *family* rank 64 and 52 in articles about male CEOs. Moreover, all of the top influential words for men were strongly associated with the nature of the role of CEO (e.g., company, business, market, chairman). Although these words also appeared among the most influential in the reports depicting women CEOs, women's reports did allude to



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Table 2. Most influential words in manifest text analysis of articles announcing newly appointed CEOs

| Rank | Male CEOs | | Female CEOs | |
|---|---|---|---|---|
| | Top 15 influential words | Influence | Top 15 influential words | Influence |
| 1 | Company | 0.20770 | Company | 0.21556 |
| 2 | Mr. | 0.08567 | President | 0.10132 |
| 3 | President | 0.05834 | Woman | 0.08742 |
| 4 | Year | 0.05480 | Executive | 0.06783 |
| 5 | Business | 0.05257 | New | 0.05482 |
| 6 | Inc. | 0.04782 | Year | 0.05155 |
| 7 | New | 0.04669 | Inc. | 0.04732 |
| 8 | Chairman | 0.03342 | Corp. | 0.04352 |
| 9 | Market | 0.03113 | Family | 0.03854 |
| 10 | Analyst | 0.02833 | Chairman | 0.03761 |
| 11 | Product | 0.02764 | Industry | 0.03645 |
| 12 | Board | 0.02587 | Time | 0.03522 |
| 13 | CEO | 0.02543 | Business | 0.03239 |
| 14 | Time | 0.02251 | Springs | 0.03080 |
| 15 | Share | 0.02182 | Sale | 0.02540 |
| | Last 15 influential words | | Last 15 influential words | |
| 50 | People | 0.00672 | Large | 0.00802 |
| 51 | Financial | 0.00664 | Job | 0.00698 |
| 52 | Family | 0.00658 | Manager | 0.00693 |
| 53 | Manager | 0.00657 | Photo | 0.00682 |
| 54 | Top | 0.00653 | Financial | 0.00669 |
| 55 | Headquarters | 0.00611 | Chief Executive Officer | 0.00662 |
| 56 | Job | 0.00498 | Change | 0.00599 |
| 57 | Large | 0.00466 | Co. | 0.00508 |
| 58 | Position | 0.00431 | Software | 0.00460 |
| 59 | Division | 0.00416 | Investment | 0.00457 |
| 60 | Thing | 0.00331 | Employee | 0.00422 |
| 61 | Way | 0.00297 | Market | 0.00335 |
| 62 | Career | 0.00287 | Share | 0.00333 |
| 63 | Book | 0.00264 | U.S. | 0.00282 |
| 64 | Man | 0.00195 | Price | 0.00182 |
| 65 | Work | 0.00012 | Analyst | 0.00106 |
| Female announcements | | Mean number of articles 2.77 | | S.D. 2.17 |
| Male announcements | | Mean number of articles 2.41 | | S.D. 1.38 |
| Independent *t*-test | | 0.300 | | |

aspects of gender, as we predicted in Hypothesis 3.[6]

Hypothesis 4 compares the stock market reactions to announcements of female top management appointments to that of female CEO appointments, and Hypothesis 5 compares the stock market reactions of female TMT appointments to that of male TMT appointments. Table 1 shows that the 3-day CARs for female TMT appointments are an insignificant 0.68 percent (compared with −2.47% for female CEOs). The *t*-statistic comparing female CEO to female TMT appointments is significant ($t = 2.91$), providing support for Hypothesis 4. Table 1 also shows that, like female TMT appointments, the CARs for male TMT appointments are an insignificant −0.04 percent. The *t*-statistic comparing these two subsamples is also not significant, providing support for Hypothesis 5.

## Multivariate regression and correlations

Since the characteristics of the appointed CEO and of the firm may also influence investor reactions,

[6] There are no statistical measures or precedence for measuring word influence metrics, particularly across subgroups. Nonetheless, the magnitude of the differences in influence and ranking of the words are revealing and apparent in Table 2.




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they have been further examined in a multivariate setting. Multivariate regressions have been estimated with the cumulative abnormal returns as the dependent variable and characteristics of both the firm and the CEO as independent variables. CEO characteristics include gender, age, whether he or she is a company insider, whether he or she is an industry insider, and whether he or she has had previous CEO experience. Firm characteristics include the reason for the appointment (i.e., natural succession vs. financial distress), firm size (log of assets), previous performance (net income divided by sales in the year prior to the appointment), and percent of institutional holdings. Because the percent of institutional holdings is missing for many of the observations, two models have been estimated and reported: one with institutional holdings and the other without. To ensure that collinearity among the independent variables does not result in econometric problems in the cross-sectional regression, we compute variance inflation factors (VIFs) in our regression models. With nearly all of the explanatory variables, the VIFs are around 1 and 2, suggesting that multicollinearity is not an issue. These results are shown in Table 3.

The coefficients for gender ($-3.82$ and $-3.90$) are significant in both regression models, providing further support for Hypothesis 1. In addition, the variable *previous performance* (0.04) is significant.

Hypothesis 6 predicts that the announcements of female CEOs will be more positive for firm insiders. To test this, we estimated regression models with an interaction variable for female insider. The models show that gender is statistically significant. This suggests that stock market reactions to women CEO appointments are more negative than those of their male counterparts. The interaction term is positive, so that the reaction to female insiders in Models 2 and 4 is the sum of the gender and firm insider coefficients ($-13.54 + 13.03 = -0.51$ in Model 2, $-13.73 + 12.65 = -1.08$ in Model 4). Thus, although investor reactions to female insiders are still negative they are less negative than for female outsiders (a joint $F$-test rejects the null hypothesis of equality). In other words, women who are promoted from within the company are more positively viewed than women who are company outsiders, providing support for Hypothesis 6.

### *Robustness*

Several robustness checks have been performed on the reported regression to ensure the validity of the results. Specifically, collinearity among the independent variables may result in econometric problems in the cross-sectional regression. Consequently, we compute Pearson correlation coefficients between the independent variables. Table 3 presents a correlation matrix for the subsamples of CEO appointments and of TMT appointments.

Table 3. Multivariate regression models on the impact of gender and gender interaction effects on cumulative abnormal returns of CEO appointments 1990–2000

| Variables | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Intercept | 2.37 | 2.50 | 1.86 | 2.00 |
| Age | −0.06 | −0.05 | −0.05 | −0.05 |
| Industry insider | −1.10 | −1.08 | −0.52 | −0.48 |
| Previous experience | −0.38 | −0.63 | −0.80 | −0.99 |
| Reason for appointment | 0.27 | 0.20 | −0.21 | −0.28 |
| Log (Assets) | 0.05 | 0.07 | 0.05 | 0.06 |
| Previous performance | 0.04*** | 0.01*** | 0.04*** | 0.04*** |
| Institutional holdings | 0.01 | −0.02 | | |
| Gender | −3.82* | −13.54*** | −3.90* | −13.73*** |
| Firm insider | 1.73† | 1.35 | 0.98 | 0.65 |
| Female insider (interaction of gender and firm insider) | | 13.03** | | 12.65** |
| *N* | 299 | 299 | 408 | 408 |
| *F* | 2.61** | 3.41*** | 3.10** | 3.89*** |
| $R^2$ | 0.08 | 0.11 | 0.06 | 0.08 |

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$




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Table 4. Correlation matrices of independent variables for subsamples of CEO and TMT appointments[a]

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Gender | | *−0.13*$^{***}$ | *−0.01* | *−0.01* | *−0.01* | *0.00* | *−0.02* | *0.01* | *0.73*$^{***}$ |
| 2. Age | −0.04 | | *−0.03* | *−0.01* | *0.18*$^{***}$ | *−0.01* | *0.16*$^{***}$ | *−0.02* | *−0.11*$^{***}$ |
| 3. Firm insider/outsider | 0.01 | −0.03 | | *0.16*$^{***}$ | *−0.04* | *0.03* | *−0.00* | *0.01* | *0.05*$^{*}$ |
| 4. Industry insider/outsider | 0.04 | −0.08$^{*}$ | 0.43$^{***}$ | | *−0.01* | *−0.05*$^{*}$ | *0.05* | *0.02* | *0.06*$^{**}$ |
| 5. Previous CEO experience | −0.02 | 0.13$^{**}$ | −0.30$^{***}$ | −0.15$^{***}$ | | *0.06*$^{**}$ | *−0.03* | *−0.08*$^{*}$ | *−0.02* |
| 6. Reason for appointment | −0.01 | 0.03 | −0.07† | −0.09$^{*}$ | 0.14$^{***}$ | | *−0.03* | *0.03* | *−0.01* |
| 7. Log (Assets) | 0.05 | 0.07 | 0.20$^{***}$ | 0.18$^{***}$ | −0.13$^{**}$ | −0.02 | | 0.13$^{***}$ | *0.05* |
| 8. Previous performance | 0.01 | 0.05 | 0.07 | −0.01 | 0.00 | 0.03 | 0.16$^{**}$ | | *0.01* |
| 9. Interaction of gender and firm insider | 0.86$^{***}$ | −0.03 | 0.08$^{*}$ | 0.07† | −0.03 | −0.02 | 0.05 | 0.01 | |

[a] Since CEO appointments and TMT appointments are analyzed as separate events, the subsamples are shown separately here. The correlation matrix for CEO appointments ($N = 536$) is shown in the lower left, while the matrix for TMT appointments ($N = 1105$) is shown in the upper right in italics.
† $p < 0.10$; $^{*}$ $p < 0.05$; $^{**}$ $p < 0.01$; $^{***}$ $p < 0.001$

Table 4 shows that, with two exceptions, the correlations between the independent variables are small. In fact, the largest correlations are a mere −0.20 (between company insider and age for the CEO subsample) and −0.22 (between industry and age for the CEO subsample). Not surprisingly, the one exception is the interaction variable of gender and firm insider. This variable is coded 1 if the individual is a female insider and 0 otherwise. Thus, collinearity does not seem to bias the regression estimates.

We also test whether previous CEO experience adds credibility to a CEO appointment (like being a firm or industry insider). There was no significant impact. Finally, in the span of a decade (1990–2000), it is possible that a firm announces multiple CEO appointments. We check the data and find that less than 0.5% of the firms appear more than once in the data. Thus, it is unlikely that the standard errors will be affected by independence issues. Nonetheless, we also estimated a fixed-effects model (where firms appear more than once), and found no difference in the results.

## DISCUSSION

Overall, the results provide support for the assertion that shareholders are sensitive to information regarding changes in organizational leadership. More specifically, we found that gender is a relevant variable in the managerial succession and firm performance relationship. We reasoned that the naming of female executives would result in a more negative market reaction than that generated by announcements of male executives, but that this response would be offset by contextual factors such as appointments into positions where gender is less salient (e.g., top management vs. CEO) and firm insider status. The findings indicate that shareholders respond: (1) more negatively to the announcement of female CEO appointments than to male CEO appointments; (2) more negatively to female CEO appointments than to female appointments in top management appointments other than CEO; and (3) less negatively to women who are promoted to the CEO position from within the firm than to those who are promoted externally.

While some may interpret the findings described above as disturbing, there may be reason for optimism regarding the perception of female leadership. In keeping with our theoretical rationale, as the proportion of female to male managers becomes less skewed, women in top management will no longer be seen as anomalies. Rather, they will begin to blend into the background with their male counterparts and the mental model (Fiske and Taylor, 1991) of manager, even senior-level manager or CEO, should become more androgynous. Thus, over time, as an increasing number of women are named to CEO appointments, the token status theory suggests that female CEOs should no



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longer garner the negative reaction that we found in the current study.

Our results also show that the negative reaction to female CEO appointments is moderated by company experience. Specifically, women who were promoted to CEO from within the company were more positively viewed than women who were company outsiders. Being a firm insider provides additional information about the appointment and signals to shareholders that the newly appointed CEO has the firm-specific knowledge and experience to lead the organization. As a result, the performance ambiguity associated with the change in leadership is reduced, as evidenced by the more favorable stock market reactions for firm insiders than outsiders.

This paper contributes to theory in a number of ways. For example, we have brought to the forefront of the succession literature the possibility that a demographic variable as fundamental as gender can play a role in investor reactions in much the same way that the insider/outsider distinction has been shown to do. The significance of this finding will likely be important to both diversity and strategy scholars. Moreover, this research bridges what, to date, have been disparate bodies of research by linking theoretical assumptions from the strategic management and social psychological literatures. For example, until recently, there has been very little need to consider the influence of CEO gender given that so few women have assumed this role. However, as the number of women leaders grows, the need to understand the organizational implications and to develop a corresponding theory of this demographic also increases. This study is a first step in that direction.

In addition, organizationally relevant diversity-based research has, to date, focused primarily on individual and group effects (e.g., Dwyer, Richard, and Shepherd, 1998; O'Reilly, Caldwell, and Barnett, 1989; Pelled, 1996). Attempts to establish a relationship between demographic diversity and consequences at the firm level of analysis are virtually non-existent (Richard, 2000, is a notable exception). This study contributes to the diversity literature by theoretically and empirically establishing a link between gender in the executive ranks and the stock price of a firm. In so doing, we respond to Zajac and Westphal's (1996) call for research that examines the consequences of changes in CEO characteristics.

This study also provides an opportunity for strategic scholarship to incorporate public image data as it pertains to newly appointed chief executives. It is becoming increasingly apparent that the media are a central authority in shaping expectations for the market and those communiqués merit further evaluation. In doing so, we can provide additional insight into the gender gap that exists at the CEO level, especially within *Fortune* 500 firms.

Perhaps, most interesting, is the importance of gender and gender stereotypes when describing the appointments of female CEOs. Our text analysis reveals that the word *woman* is substantially more important in the announcement of female CEOs than the word *man* is for male CEOs (a ranking of #3 for female CEOs vs. #64 for male CEOs). Furthermore, articles on female CEO appointments tend to incorporate extraneous information on family (the word *family* is substantially more important for the subsample of female CEOs, with a ranking of #9 vs. #53) and to require more legitimization in the form of job experience. The results of our analysis support the notion that, for women, token status produces a number of unfavorable consequences, including enhanced scrutiny and skepticism of their performance (Izraeli, 1983; Kanter, 1977). Even when controlling for human capital variables such as education and work experience, perceptual biases against women operate to their detriment (Hitt and Barr, 1989; Stroh *et al*., 1992). Moreover, the tendency to favor men over women has been shown to be most noticeable when examining perceptions of leaders' competence (Eagly *et al*., 1992). As such, articles on the appointments of male CEOs do not require the justification and legitimization that female CEOs require.

In short, observers have virtually no frame of reference with which to evaluate women in top management. Consequently, they may rely on stereotypes of women that are inconsistent with a leadership role. Indeed, for roles that are defined in masculine terms and occupied mainly by men (e.g., managers), men in those positions are evaluated slightly but consistently more favorably than women (Eagly *et al*., 1992, 1995). In other words, the bias against women is exacerbated in situations where women are perceived as violating gender-role expectations (Fiske and Taylor, 1991; Powell and Butterfield, 2002).



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Similarly, according to the literature on schemas, individuals develop mental models of the attributes of jobholders (Fiske and Taylor, 1991). Jobs that tend to be occupied by one gender over another become associated with that gender. Because men occupy the majority of senior management positions and dominate the applicant pool for those jobs, people tend to envision men as having the appropriate attributes for leader success (Powell and Butterfield, 2002). In short, the low representation of women in top management positions likely reinforces the stereotype that women are less qualified for such positions than men. Thus, people tend to prefer to see men in executive positions since they ostensibly possess more of the characteristics conducive to effective management (Shenhav, 1992). As we see more women in CEO positions, these stereotypes should also change.

Beyond our theoretical contribution, this study extends the diversity and gender-based management research that has traditionally been conducted in a controlled manner using experimental or survey methodology. Much of our understanding about perceptions of female leadership has been based on generalizing from a manipulated context. This study, by contrast, examines stock market reactions following actual announcements of newly appointed female executives. By using both the market reactions and text analysis as a behavioral proxy for shareholder perceptions, we no longer need to speculate about investor perceptions of and behavior toward female executives.

This study has a number of important strategic management implications. Chief among them is that succession planning will likely begin to take on a whole new significance for organizational decision-makers as women and other nontraditional candidates move up into the executive ranks. Firms will need to carefully consider how to position female, and perhaps other minority candidates, in a way that they and the organization will be perceived favorably. This is especially true in light of the performance pressures and related performance ambiguities that often serve to undermine the credibility of this relatively novice group of leaders. Decision-makers will need to be aware of the potential risks, however misguided, associated with female executive appointments and be prepared to develop appropriate succession planning and communication strategies to offset the anticipated reaction by the market. Rather than allow shareholders to presume competence of the female incumbent, as the status characteristic theory would suggest, it may be best to take a more proactive strategy and explicitly communicate why the female candidate was the appropriate choice.

### Limitations and future research

Ironically, one of the primary contributions of this study is also its greatest limitation. Specifically, by using the event study methodology, we enrich the body of research that has understandably relied on experimental manipulations for examining perceptions of and reactions to female leaders. This methodology requires investigating actual CEO and other top management appointments. Nonetheless, our sample represents the full population of female CEOs who assumed office during our time frame. As of the end of 2005, there are only seven female CEOs in the *Fortune* 500. On the one hand, our tests may suffer from low statistical power. On the other hand, to the extent that we work with the 'population,' statistical power is irrelevant. In order to counter this problem of low statistical power, we expanded our search beyond the *Fortune* 500, and we looked at multiple sources for multiple articles on each CEO.

In addition, the cross-sectional design at least partially limits our ability to interpret causality for the findings. Future research would benefit from a longitudinal design that tracks stock market reactions or other firm performance indicators, as the number of women in senior leadership positions increases. Again, if the proportional rarity argument holds, we would expect that as women executives becomes less unique, there will be less difference in outcome variables between the announcement of male appointments and female appointments. Furthermore, our definition of diversity could be broadened beyond gender to include racial and ethnic diversity as well. For example, as the population of Black, Hispanic, and Asian executives increases, the proportional rarity argument can also be tested on those populations, and perhaps an examination of the interaction effects of gender and race/ethnicity may also be possible.

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