

BRIDGING THE GENDER GAP: FACTORS ENABLING FEMALE DIRECTORS TO  
AFFECT THE APPOINTMENT OF FEMALE CEOs

BY

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DISSERTATION

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## **ABSTRACT**

This dissertation examines the effect of female board representation on the probability that a firm will appoint a woman to the CEO position. To study the relationship, I first draw on social identity theory to explain female directors' preference for a female CEO candidate. Then, considering that female directors' minority status may constrain their ability to affect group decisions, I supplement social identity theory with critical mass theory to argue that increasing the number of female directors beyond a certain point will empower them to become more influential in CEO appointment decisions, and this empowerment, in turn, will increase the likelihood that firms will appoint a female CEO. Furthermore, I argue that the positive effect of female board representation on the probability of women being appointed to the CEO position is stronger under two organizational conditions: (1) when directors have an opportunity to observe or work with women in the upper echelons of other firms through board interlock ties and (2) when the organization or industry has a higher-level of female-friendliness. I test this argument by analyzing 1,096 CEO succession events in large United States firms from 1998 to 2012. I found that the likelihood of appointing a female CEO significantly rises once the board has three female directors. The results also demonstrate that the relationship between the proportion of female directors and the likelihood of appointing a female CEO is stronger when directors have interlock ties with firms having women in the upper echelons and when the firm and the industry the firm belongs to have a high proportion of female executive managers.

*To Dongwoo*

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## **CHAPTER 1**

### **INTRODUCTION**

Around the world, the call for gender diversity in corporate boards is louder than ever before. Starting with Norway, many European countries, such as Germany, France, Spain, and the Netherlands, have been introducing mandatory quotas to enhance female representation on corporate boards (Terjesen, Aguilera, & Lorenz, 2014). In the United States, while quotas are not being considered to resolve the issue of the lack of women on boards, shareholder resolutions and the media play a primary role in promoting the value of gender diversity on boards in organizations. With this increased attention, many studies have examined the effect of board gender diversity on various organizational outcomes such as firm performance (Campbell & Minguez-Vera, 2010; Dezsö & Ross, 2012; Srinidhi, Gul & Tsui, 2011), corporate strategy and innovation (Triana, Miller, & Trzebiatowski, 2013; Nielsen & Huse, 2010; Torchia, Calabro, & Huse, 2011), and corporate social responsibility (Boulouta, 2013; Fernandez-Feijoo, Romero, & Ruiz, 2012; Marquis & Lee, 2013; Post, Rahman, & Rubow, 2011; Walls, Berrone, & Phan, 2012; Zhang, Zhu, & Ding, 2013).

The empirical evidence, however, has been surprisingly inconsistent. For example, while some demonstrated positive effect of board gender diversity on accounting and market reactions (e.g., Campbell & Minguez-Vera, 2010; Dezsö & Ross, 2012; Srinidhi, Gul & Tsui, 2011), other studies uncovered negative relationships (e.g., Adams & Ferreira, 2009; Ahern & Dittmar, 2012; Böhren & Strøm, 2010), or no relationship (e.g., Carter, D'Souza, Simkins, & Simpson, 2010;

Chapple & Humphrey, 2013). A big part of these mixed findings can be attributed to an important fact which has been overlooked in those studies: with diversity comes inequality. Groups in the upper echelons of the corporate pyramid, such as boards of directors and top management teams, are heavily dominated by white men. Women and racial minorities are often a demographic and numeric minority. The disparities in demographic status and number between a majority group and a minority group likely impede the extent to which minorities can contribute to firm outcomes. Therefore, the research on diversity in upper echelon groups should also include an examination of inequality.

To close this gap in the literature, this dissertation examines organizational factors that strengthen or weaken the effect of female directors, a minority on boards, on an important organizational outcome: CEO succession. The basic assumption is that female board representation is positively associated with the likelihood that a firm will appoint a woman to the CEO position. I establish female board representation as a primary driver behind the appointment of a female CEO for two reasons. First, CEO appointment is largely determined by the board of directors. Because of the direct linkage between boards and CEO appointment, corporate boards provide an excellent context to study the relationship between female board representation and female CEO appointment. Second, social identity theory, which argues the existence of in-group favoritism among people from the same demographic groups, offers a solid theoretical explanation for female directors' preference for a female CEO candidate.

Female directors' preference, however, may not necessarily affect the likelihood of a female CEO appointment because CEO hiring decisions are made by the board at the group level and female directors' demographic and numeric minority status is likely to limit their ability to

influence appointment decisions made by the group. According to status-related theories, such as expectation states, role congruity, and social dominance theory, status differences between men and women constrain female members' behaviors in group decisions (Correll & Ridgeway, 2006; Ely & Thomas, 2001; Kulich, Ryan, & Haslam, 2007; Sidanius & Pratto, 1999). A fundamental tenet of these theories is that status differences are related to stereotypes such that positive stereotypes are typically associated with high-status group members while negative stereotypes are often related to low status members. For example, while white men are typically associated with leadership positions or a prestige education, women or people of color are often associated with menial jobs and inferior education. These stereotypes reinforce status differences between the two groups by empowering majorities to exert more power while simultaneously pressuring minorities to remain quiet in group decisions. In addition to the status inferiority, female directors are a numeric minority on most U.S. boards. Due to their status as a demographic and numeric minority, their desire to support a female CEO candidate may fail to affect an actual CEO appointment.

Considering this unfavorable reality faced by female directors, I examine conditions under which the effect of female board representation on the likelihood that a firm will appoint a woman to the CEO position can be maximized. Specifically, I first argue that the positive effect of female directors on appointing a female CEO is realized when their numeric inferiority is overcome by reaching a certain point, which is a critical mass. Furthermore, I argue that female directors can exert stronger influence on CEO succession when negative gender stereotypes, which is associated with their demographic group, is mitigated by some contextual factors: directors' network with other firms having women at the top, upper echelon culture, and industry gender norm.



The present study extends the research on the upper echelons, CEO succession, and board of directors in several ways. First, the unique contribution of this dissertation is to extend the research on diversity in upper echelon groups, such as boards of directors and top management teams, by integrating the literature on diversity and inequality. This study further contributes to the research on group diversity in the upper echelons by suggesting effective ways to empower minorities in group decisions: increasing the number of minority members beyond a critical mass and decreasing negative gender stereotypes about female directors. According to DiTomaso, Post, and Parks-Yancy (2007), the negative effects of group inequality in the upper echelons create the need for a deeper understanding of the circumstances under which social minorities become more influential in group decisions. Given that female directors' minority status often limit their influence on boards, I first draw on critical mass theory and argue that increasing the number of female directors to a critical mass of three will help them transfer their desire to support a female CEO candidate into an ability to affect actual CEO appointment decisions, which in turn will increase the likelihood of appointing a female CEO. The results demonstrate that the effect of female board representation on the likelihood of appointing a female CEO becomes positive and statistically significant only when there are three or more female directors on boards. Then, I also argue that mitigating negative gender stereotypes will help female directors become more influential in group decisions. The results show that the positive effect of female board representation on female CEO appointment is stronger when directors have more experience working with women in the upper echelons through interlocking directorates, and when the firm and industry have more female-friendly culture and norms. Understanding these effects will clarify organizational conditions under which the constraint created by women's minority status can be overcome and the effect of board gender diversity can be maximized.

Second, this study extends the literature on women in the upper echelons by examining how women can help other women in hiring decisions in the upper echelons. It is a popular tendency that people prefer to work with demographically similar others and evaluate them more favorably in hiring and promotion decisions. The assumption of in-group favoritism, which is a core argument of theories in social identity (Tajfel & Turner, 1979) and similarity-attraction (Byrne, 1971; O'Reilly, Caldwell, & Barnett, 1989; Tsui & O'Reilly, 1989), has been supported by a substantial body of empirical research (i.e., Graves & Powell, 1996; Kaczmarek, Kimino, & Pye, 2012; O'Reilly & Main, 2010; Westphal & Zajac, 1995; Young & Buchholtz, 2002; Zajac & Westphal, 1996; Zhang, Ji, Tao, & Wang, 2011). In a similar vein, a variety of scholars and practitioners have suggested that women and racial minorities in the upper echelons will support demographically similar others as potential work group peers (Ely, 1994; Ibarra, 1995; Ragins & Scandura, 1999; Terjesen, Sealy, & Singh, 2009). However, there have been relatively few attempts to empirically test the assumption that women will advocate for similar others in high-prestige work groups (Duguid, Loyd, & Tolbert., 2012). Duguid and her colleagues (2012) point out that “whether women and minorities can serve as active change agents (to expand diversity) in the upper echelons of organizations, and under what conditions, have remained underexplored issues.” (p.396) This dissertation addresses the gap by demonstrating that female directors can have a positive influence on female CEO appointment when they reach a critical mass of three.

Third, this study extends the research about CEO succession by exploring female board representation as an important organizational predictor of female CEO appointment. As noted above, the question of under what organization-level conditions a firm is likely to appoint a female CEO has remained underexplored. While a small body of research has examined when women are more likely to be promoted to the upper level (Cohen, Broschak, & Haveman, 1998;

Gorman, 2006), little is known about determinants of a female CEO appointment. One exception is Cook and Glass (2013) who draw on glass cliff theory and demonstrate that weakly performing firms are more likely than firms with strong performance to hire women or racial minorities as the CEO. The present study further contributes to this stream of research by focusing on female board representation as another organizational factor affecting female CEO appointment.

Fourth, this study contributes to the research on boards of directors. As noted earlier, the findings of the studies on the effect of board gender diversity on firm outcomes are inconsistent. Beyond overlooking status differences between male and female directors, this inconsistency can also be partially attributed to the use of somewhat distal outcomes (i.e., firm performance, firm innovation, firm strategy, corporate social responsibility). These firm outcomes are affected by other numerous predictors, besides the board of directors, and these confounding factors could make the relationships spurious. The present study mitigates this issue by studying CEO appointment as the dependent variable. Unlike other firm outcomes used in previous studies, CEO appointment is largely determined by boards of directors and thus less noise exists in the relationship.

Lastly, this study offers a practical implication to firms interested in increasing female representation in the upper echelons by demonstrating that the critical mass of female directors can contribute to increasing the likelihood of appointing a female CEO, which in turn will increase the inclusion of other women in high-level positions. Given that many firms hire female directors as tokens, the finding of this study—the effect of board gender diversity can be realized only when there are three or more female directors—shows the need to increase female board

representation beyond the critical mass. Furthermore, this study demonstrates that female directors can exert greater influence on board decisions when negative gender stereotypes about women are lower and gender diversity is more valued.

## **CHAPTER 2**

### **LITERATURE REVIEW AND HYPOTHESES**

#### **2.1 APPOINTING MINORITIES TO LEADERSHIP POSITIONS**

It is well known that women and racial minorities are much less likely to hold leadership positions compared to white men, even after controlling for education, experience, and occupation (McGuire & Reskin, 1993; Smith, 1999, 2001). The underrepresentation of minorities in leadership positions can be attributed to several cultural and structural barriers, including bias and discrimination (Bielby, 2000; Jacobs, 1992; Reskin, 2002, 2005), exclusion from professional and informal networks (Ibarra 1993, 1995, McGuire, 2002), and the lack of mentoring (Blake-Beard, 2001; Martin, 1994).

Among these barriers, bias and discrimination are the most fundamental factors that prevent minorities from achieving leadership positions, which leads to other hurdles for the minorities. Minorities often face bias and discrimination in hiring and promotion decisions, mostly due to negative stereotypes associated with their demographic groups (i.e., gender, ethnicity). Bias and discrimination become a bigger roadblock for minorities when the hiring and promotion decisions are related to leadership positions. According to theories about expectation states (Berger, Conner, & Fisek, 1982; Correll & Ridgeway, 2006) and role congruity (Eagly, Makhijani, & Klonsky, 1992; Ely & Thomas, 2001), men are often assumed to possess positive qualities required for leadership positions while women and racial minorities are considered to be inferior to men and not suitable for such high-level positions. Also, typical characteristics of

leadership positions, such as vague job responsibilities and uncertain skill requirements, allow decision-makers (i.e., the board of directors) considerable latitude in the appointment process (Cook & Glass, 2013; Gorman, 2006; Smith, 2002; Ridgeway, 1997). The discretion naturally leads them to utilize candidates' demographic characteristics, highly visible and salient aspects, as a primary evaluation criterion, which gives more advantages to majority candidates (i.e., white men) while depriving minority candidates (i.e., women, racial minorities) of opportunities to climb to the top of the corporate ladder. As a result, majorities' chances of being promoted to leadership positions are significantly higher than those of minorities.

The dominance of white men in leadership positions, which is caused by bias and discrimination toward women and racial minorities, creates other disadvantages for the minorities such as exclusion from professional and informal networks and the lack of quality mentoring. According to social network theory, networks play a crucial role in recruiting and hiring decisions (Granovetter, 2005; Ibarra, 1995). Due to the limited pool of minorities in high-level positions of organizations, however, minorities have fewer social and professional network relationships, compared to white men. The network deficits further restrict minorities' access to resources and information related to job opportunities in the upper echelons. Similarly, the limited networks also mean smaller chances to experience formal and informal mentoring, which has been suggested as one way of helping minorities break glass ceiling and achieve high-level positions (Ragins, 1997; Ragins & Cotton, 1999; Ragins, Townsend, & Mattis, 1998).

While previous studies have focused on the barriers to mobility of minorities, organizational factors that increase the probability of minorities being appointed to leadership positions remain underexplored (Cook & Glass 2014). A small but growing body of scholarship

has examined organizational factors that help minorities overcome the barriers (Cohen, Broschak, & Haveman, 1998; Cook & Glass, 2014; Ely, 1994; Gorman, 2006; Matsa & Miller, 2011; Ryan & Haslam, 2007). However, most studies in this stream of research examine the odds of minorities being promoted or appointed to managerial positions and little attempt has been made to study the probability of minorities being tabbed for the CEO position. As a few exceptions, Ryan and Haslam (2007) and Cook and Glass (2014) draw on glass cliff theory and demonstrate that firms facing precarious situations are likely to appoint female CEOs over male CEOs, compared to firms in good shape. This dissertation contributes to this relatively inchoate scholarship by examining female board representation as an important organizational predictor of appointing a woman to the CEO position. Female board composition is an excellent organizational predictor of female CEO appointment due to the characteristics of boards and gender. Corporate boards play a crucial role in CEO appointment. The clear and direct relationship between boards and CEO appointment makes the board of directors a stable organizational predictor of female CEO appointment. Furthermore, when the role of gender is laid over the basic framework of boards and CEO appointment, social identity theory provides a solid theoretical foundation for female directors' preference for a female CEO candidate.

## 2.2. UNDERLYING MECHANISMS OF IN-GROUP FAVORITISM IN THE RELATIONSHIP BETWEEN DIRECTORS AND A CEO CANDIDATE

A substantial body of research on performance evaluation and hiring practices has shown that demographic similarity increases interpersonal interaction (Byrne, Clore, & Worchel, 1966; Judge & Ferris, 1993; Tsui & O'Reilly, 1989) and produce bias in hiring and evaluation

decisions (e.g., Latham, Wexley, & Pursell, 1975; Rand & Wexley, 1975; Zajac & Westphal, 1996), mostly drawing on theories in social identity (Tajfel & Turner, 1979), social categorization (Tajfel, 1981; Turner, 1987), and similarity-attraction (Bryne, 1971; O'Reilly, Caldwell, & Barnett, 1989). Social identity theorists suggest that individuals derive self-esteem and self-identity from perceived group membership, and thus often seek to construct or maintain homogeneous groups in order to increase the salience of in-group membership (Tajfel & Turner, 1986; Tsui, Egan, & O'Reilly, 1992). Social identity theory is further built on social categorization theory, which argues that in-group favoritism also mitigates uncertainty about oneself (Hogg & Abrams, 1988; Turner, 1987). Since demographic similarity is often utilized as a salient basis for group membership, individuals may prefer to work with demographically similar individuals and favor them in promotions and hiring decisions (Useem & Karabel, 1986).

The same logic may apply to the relationship between directors and a CEO successor. Given the unavoidable ambiguities and uncertainties of a CEO successor's potential performance, directors may utilize demographic similarity as an important evaluation criterion to minimize social uncertainty (Zajac & Westphal, 1996). Zajac and Westphal (1996) argue that boards may favor demographically similar CEO successors in order to ensure efficient and frequent communication with the CEO and, more generally, to enhance social integration. As a minority in the male-dominated world, female directors have a stronger motivation to support a female CEO candidate. Furthermore, hiring a female CEO may facilitate the increase of the number of women in the upper echelons including female directors, which could help those women build their presence and access more resources and information (Ibarra, 1992; Rogers & Kincaid, 1981). Thus, I predict that the greater the number of female directors on board, the higher the probability that the firm will choose a female CEO.



*Hypothesis 1. The proportion of female directors is positively associated with the likelihood that a firm will appoint a female CEO.*

## 2.3 THE EFFECT OF MINORITY STATUS ON GROUP PARTICIPATION

Theories about social identity, social categorization, similarity-attraction, and homophily provide reasonable support for female directors' preference for a female CEO candidate, as predicted in Hypothesis 1. Considering that female directors' numeric and demographic minority status may limit their behavior and influence on board decisions, however, it is important to take a closer look at the relationship between female board representation and the likelihood of appointing a female CEO. The literature on organizational demography and social conformity questions the extent to which demographic minorities can affect group decisions (Westphal & Milton, 2000). A core argument of this literature is that status differences in a group reduce social cohesion between the majority and minorities, which decrease the possibility that minorities' thoughts and opinions will be incorporated into group decisions (Hambrick, Cho, & Chen, 1996; Nemeth, 1986; O'Reilly, Caldwell, & Barnett, 1989).

This literature partially draws on intergroup theories explaining that intergroup inequality results in stigmatization, prejudice, discrimination, and pressures on less powerful groups to assimilate to the norms of the powerful group (Linnehan & Konrad, 1999). In a similar vein, research on team diversity suggests that diverse teams may include hierarchical stratification among different subgroups where members of one subgroup possess extreme power and those of another subgroup have little power (Carton & Cummings, 2012). In this case, members of the

subordinate subgroup may experience some degree of identity threat from members of the dominant subgroups (Carton & Cummings, 2012; Duguid et al., 2012). They also may feel that their ability to comfortably express their viewpoints is undermined by the prominence of the dominant subgroup (Branscombe, Ellemers, Spears, & Doosje, 1999; Hornsey & Hogg, 2000).

Specifically, in the context of gender, expectation states theory argues that gender stereotypes contain status beliefs that associate greater social significance and competence with men than women (Berger, Conner, & Fisek, 1982; Correll & Ridgeway, 2006). Similarly, role congruity theory, which has been frequently used to explain gender difference in leadership roles, posits that women are perceived to lack abilities and attributes required for managerial positions compared to men (Eagly, Makhijani, & Klonsky, 1992; Ely & Thomas, 2001; Kulich, Ryan, & Haslam, 2007). For these reasons, women often face stricter standards and are evaluated less positively by men (Correll & Ridgeway, 2006). For the board of directors, therefore, if a board has both male and female directors, female directors are likely to face barriers to exert influence in group decisions due to their minority status.

The reality of inequality becomes more salient when the demographic minority members are also a numeric minority. According to Kanter (1977a), minorities who constitute less than 15 percent of a group are a “skewed group” and the minority members are “tokens.” Generally, tokenism is highly associated with limited opportunities and low power because of the rarity and low status of tokens. On most U.S. boards, which are traditionally dominated by white males (Hillman, Cannella, & Harris, 2002), female directors are not only a demographic minority but also a numeric minority, namely tokens. In 2013, women held only 16.9 percent of the corporate board seats (Catalyst, 2013). Also, about 90 percent of Fortune 1000 firms have fewer than three

female directors on boards (Post et al., 2011). Because of their rarity, male directors tend to view them as representations of all women rather than as individuals. Thus, they easily project their idea about women's low status and inferiority to the female directors, and stereotype them as less competent and unsuitable for such positions (Kanter, 1977a). Besides, external pressures from institutional investors, shareholders, or policy makers to appoint female directors on boards make male directors to suspect the possibility of preferential selection and treatment of female directors.

Taken together, a combination of the two factors—status difference and numeric inequality—is likely to give male directors greater power while constraining female directors' behavior. For this reason, female directors often feel invisible, ignored, dismissed, or otherwise excluded by male directors (Konrad, Kramer, & Erkut, 2008). These experiences make them feel estranged in the process of assimilation and not be able to voice or make tangible changes (Konrad et al., 2008). Especially, this male-dominated group setting limits female directors' ability to exhibit explicit display of in-group favoritism because advocating for in-group members (i.e., female CEO candidates) may jeopardize female directors' career and reputation in the boardroom. As a result, female directors' actions and choices in favor of other women (i.e., female CEO candidates) are likely to be constrained regardless of their desire to support in-group members (Duguid et al., 2012).

Considering the differences of status and number between majorities and minorities, therefore, I suggest how to overcome the disadvantages caused by the differences. I first draw on critical mass theory and argue that a critical mass of female directors may empower them to exert greater influence in CEO succession process, which likely increases the probability that a woman

will be appointed as the CEO. Also, I argue that the positive effect of female board representation on female CEO succession is stronger when negative gender stereotypes are mitigated and positive value of gender diversity is emphasized by (1) board interlock ties that allow directors observe or work with women at the top of other firms and (2) female-friendliness in the upper echelons and in the industry.

## 2.4 OVERCOMING NUMERIC INFERIORITY: THE IMPACT OF A CRITICAL MASS OF FEMALE DIRECTORS

The unfavorable situation for female directors, a minority on boards, might change when their number increases beyond a certain point, which is the critical mass. Classic work within sociology suggests that the degree of inequality among members in diverse groups is affected by three dimensions: power, status, and numbers (Bendix & Lipset, 1954; Blalock, 1967; DiTomaso et al., 2007). In this dissertation, following DiTomaso and her colleagues (2007: 475), I define power as “the access to and control over scarce and valuable resources,” status as “the relationships of deference or honor between and among groups,” and numbers as “the compositional characteristics of a group or work unit.” The three dimensions exist as separate characteristics, but they are indeed all intertwined. In organizations, for example, power and status are often aligned although not perfectly the same (DiTomaso et al., 2007). Also, number is associated with power such that numeric inferiority of a subgroup usually means low power of the group (Kanter, 1977a).

Under the assumption that the three dimensions of power, status, and number are closely related and collectively affect the degree of inequality among group members, I propose that the inequality caused by minority members' deficit in one or more dimensions can be reduced by strengthening the other dimensions. For the board of directors, female directors are an inherently demographic and situationally numeric minority on boards. The lower demographic status and smaller number, compared to their male counterparts, limits the degree of power they can exert in group decisions. The inferiorities in status, number, and power, in turn, contribute to widening the degree of inequality between male and female directors. This inequality, however, can be somewhat reduced with an increase in the number of female directors, which is, in turn, likely to increase the degree of power they can exert in group decisions. Although modifying any dimension will have ripple effects on the other dimensions, I argue that changing number is the easiest and most direct point of augmentation. First, unlike status, especially demographic status which is tied with inherent traits like sex and race, number is more malleable. Second, altering the degree of individual power requires individualized effort over an extensive period of time. Further still, such an increase in power cannot be guaranteed. In contrast, number is decided at the organizational level and can be adjusted within shorter timeframes. Thus, an attempt to increase the number of women on a board can be relatively easily achieved.

Critical mass theory (Kanter, 1977a, b, 1987; Granovetter, 1978) can explain how increasing representation plays a crucial role in reducing inequality between minorities and majorities in a group. The basic argument of critical mass theory is that increasing the size of a subgroup to a certain threshold substantially increases the degree of the subgroup power (Torchia et al., 2011). The critical mass can also be explained with the notion of the "tipping point." Although there is no academically agreed definition, the tipping point, which was first used by

Grodzins (1957) and expanded by Schelling (1971), generally refers to a critical moment in an evolving situation, process, or system that leads to rapid and dramatic changes. In his book, Gladwell (2006, p.12) defines the tipping point as “the magic moment when an idea, trend, or social behavior crosses a threshold, tips, and spreads like wildfire.” In diverse work groups where status differences create inequality among members, minority members have little chance to exert influence on the group. However, when their number reaches a certain threshold, they become an influential body that can shift group culture and the relationships of the team members, and affect group decisions. Based on these arguments, I predict that the positive effect of the presence of female directors on the likelihood of women being appointed to the CEO position is realized only when the number of female directors reaches a certain threshold, which is a critical mass.

*Hypothesis 2.* There will be an inflection point where the effect of the number of female directors on the likelihood of women being appointed to the CEO position will change from null to significant.

## 2.5 OVERCOMING STATUS INFERIORITY: THE IMPACT OF CONTEXTUAL FACTORS

In addition to increasing the number of female directors beyond a certain point, a critical mass, boardroom dynamics unfavorable to female directors can also be modified by other organizational factors that decrease negative perceptions about women or emphasize the value of gender diversity. The literature in social psychology and sociology recognizes that minority status can vary across situations and over time, depending on the immediate social context

(Westphal & Milton, 2000). Drawing on this argument, I explore factors that can empower female directors to become more influential in the CEO succession process. Specifically, I argue that female directors have a greater influence on the likelihood of appointing a female CEO when 1) directors have an opportunity to observe or work with women in the upper echelons of other firms through board interlock ties, which likely mitigates negative perceptions about women; and 2) when the organization or industry has a higher level of female-friendliness, which provides a more equal playing field for both male and female directors.

#### 2.5.1 Board Interlock Ties with Firms Having Women in the Upper Echelons

The literature on interlocking directorates—a practice of members of a corporate board of directors serving on the boards of multiple corporations—argues that new information, innovations, organizational structures and strategic practices are diffused to other organizations through ties with directors sitting on their boards (Beckman & Haunschild, 2002; Davis, 1991; Haunschild, 1993; Mizruchi, 1992; O'Reilly III, Main, & Crystal, 1988; Palmer, Jennings, & Zhou, 1993). Despite its relative dearth, the representation of women in high-level positions has significantly increased in the past 20 years (Haslam & Ryan, 2008; Ryan & Haslam, 2007). The success of these women can signal that women may be equally competent and qualified for leadership positions, just as their male competitors. This signal can be diffused to other firms through board interlock ties. If directors observe or work with women in the upper echelons of other firms through board interlock ties, that experience will affect their view about women in a positive way. This learning will likely change their attitude about female members on the same board, which in turn will help the female directors become more influential in board decisions.

The reason for the effect of board interlocks may be different for men and women. For male directors, the experience through board interlocks may change their view about women. According to contact hypothesis theory, interpersonal contact is one of the most effective ways to reduce prejudice between majority and minority group members (Allport, 1954). If male directors reduce negative gender stereotypes about women, it will help them respect female directors' opinions. For female directors, the same experience will enhance positive feelings about their group membership. This can increase their level of confidence and self-esteem, and will help them speak up and be more active in group decisions. The power of board interlock ties becomes even stronger when the directors share their learning with other directors on the same boards. Based on these arguments, I predict that directors become aware of the existence of competent women in the high-level positions of other firms through interlocking board membership and that could contribute to men's casting aside gender-role stereotypes and generalizations. This same interaction may also lead to a more positive evaluation from women toward other females in high-level positions.

While the present dissertation views organizational learning and information diffusion through interlocking directorates as an underlying mechanism between female representation on a board and a firm's appointment of a female CEO, one can also posit that female-friendly firms may appoint directors who explicitly signal the same perspective, and thus those firms and directors are interconnected through board interlock ties. In this case, the black box between board interlock ties and firms' appointment of a female CEO can be explained by the firm and directors' preference for females in managerial positions rather than by information diffusion and organizational learning through board interlock ties. Either explanation will lead to the same hypothesis. Synthesizing the above:



*Hypothesis 3a. The positive effect of the proportion of female directors on the likelihood that a firm will appoint a female CEO is greater as more male directors have more board interlocks with other firms having female directors, executives, or CEOs increases.*

*Hypothesis 3b. The positive effect of the proportion of female directors on the likelihood that a firm will appoint a female CEO is greater as more female directors have more board interlocks with other firms having female directors, executives, or CEOs increases.*

### 2.5.2 Female Representation in Top Managerial Positions

In addition to the board interlock ties with other firms having women at the top, which may decrease male directors' negative viewpoints about women and enhance female directors' positive perception about their own demographic group (i.e., gender), female friendliness in the upper echelons is another important contextual mechanism that can play a significant role in empowering female directors to exert more influence in group decision making. As noted earlier, the upper echelons of most US firms are dominated by white males, and thus the organizational culture, especially upper echelon culture of these firms tends to reflect their masculine characteristics and acts in their favor. This predominantly male culture often prevents women from voicing and exerting influence in organizations, which in turn limits various opportunities available to them. According to Ragins, Townsend, and Mattis (1998), female executives consider inhospitable and exclusionary corporate cultures for women as one of the biggest obstacles to their advancement in organizations. However, if organizational culture is more female-friendly, female directors may be less afraid of speaking up and their opinions and thoughts are more likely to be respected by male members. Based on these arguments, I predict that female-friendliness in the upper echelons will reduce gender stereotypes and provide women

with greater power in group decision making by creating a relatively equal playing field for both male and female directors.

Specifically, I use the proportion of women at the top management positions as a proxy to measure female-friendliness in the upper echelons. Considering that a majority of directors on US boards are outsiders, it is possible to assume that boardroom culture is different from management culture. However, I assume that the two cultures are related for two reasons. First, according to Bednar (2012), although most boards maintain formal independence, they may lack social independence. Boards have formal independence if directors do not have employment, family, or business relationships with the firm where they serve as directors (Anderson & Reeb, 2004). In contrast, boards have social independence if the directors are not related to the firm or its CEO either through demographic characteristics (e.g., age, functional background, industry experience) or through board interlocks or educational ties. Most firms care only about formal independence and ignore social independence because formal independence is what external parties, such as the media and shareholder, pay close attention to. Thus, it is difficult to say that US boards are completely independent from management. Accordingly, it is also difficult to assume that boardroom and top management cultures are independent. Second, director nomination is often influenced by 1) CEOs and 2) incumbent directors who were appointed by the CEOs or are a part of top management teams. Thus, it is highly likely that boardroom culture is affected by management. Based on these arguments, I use female-friendliness in top management as a proxy for female-friendliness in boardrooms.

Female representation in top management can be “a proxy for the organization’s unobserved cultural and institutional characteristics, such as female-friendliness or an egalitarian

culture” (Shin, 2012: 262). There are two possible explanations. First, firms with a female-friendly or egalitarian culture are likely to have more women in top management positions. These firms are more active in hiring women, and at the same time appear more attractive to women in external labor markets. Second, women in top management can contribute to creating and maintaining female-friendly corporate culture by serving as role models for other women in the organization and by helping to reduce unfavorable stereotypes about their demographic category (Duguid, Loyd, & Tolbert, 2012). Although it is hard to argue the causal direction between top management gender composition and female-friendliness in the upper echelons, either argument explains the correlation between the two.

Based on these arguments, therefore, I propose that the proportion of women in top executive positions can be a proxy for a firm’s preference for hiring women in the upper echelons and it will positively moderate the relationship between female board representation and the likelihood of appointing a female CEO.

*Hypothesis 4a. The proportion of female directors is more positively related to the likelihood that a firm will appoint a female CEO when there are more women in top executive positions.*

### 2.5.3 Female Executive Representation in the Industry

Similar to female representation in the upper echelons of firms, female representation in top management of the industry which the firm belongs to can also be a proxy for female friendliness of the upper echelons or that of the entire firm. Each industry has different gender norms depending on its characteristics (i.e., customer base, nature of business), and organizations

in the same industry often follow the same gender norms. Scholars argue that firms within the same industry are likely to adopt similar organizational practices or structures in order to meet societal expectation and ensure organizational stability (Adams, Gupta, & Leeth, 2010; Knippen & Shen, 2009). For example, Knippen and Shen (2009) found that the firm-level board gender composition is positively associated with the industry-level board gender composition.

These studies primarily draw on institutional theory, which argues that organizations conform to prevailing institutional norms and belief systems in order to enhance legitimacy and avoid uncertainty (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Scott (1995) suggests three different mechanisms—labeled as “three pillars”—that explain the individuals and organizations’ conformity to institutional norms and rules: regulative, normative, and cultural-cognitive. Among these mechanisms, cultural-cognitive perspective, which is an important contribution and a major distinguishing feature of neoinstitutionalism, provides a theoretical explanation for organizations’ conformity to the gender norms of the industry in which they are located. Institutionalists in the fields of sociology and organizational theory view the centrality of cultural-cognitive elements of institutions as “the shared conceptions that constitute the nature of social reality and the frames through which meaning is made” (Scott 1995, p. 57). This cultural-cognitive perspective argues that actors—both individual and collective—follow common beliefs or shared logic of action that they perceive as culturally supported, in order to enhance legitimacy and avoid uncertainty, which in turn helps them feel competent and connected. This logic implies that firms in industries that emphasize the value of female-friendliness or gender diversity are likely to follow or pretend to follow the same value within their organizations to feel connected and secure.

Industry characteristics shared by firms in the same industry expose the firms to similar cultural expectations about gender norms and to the same kinds of and pressure from various constituencies, including shareholders, customers, and the media, to hire more women in their organizations. The degree of female-friendliness varies across industries, which can be explained by specific industry characteristics, such as customer base and nature of business. Some industries, such as consumer, media, entertainment, and information industries, are more female-friendly. Firms in these industries tend to have more women in the upper echelons for several reasons. Firms whose majority customers are women have more women in the upper echelons (Bilimoria, 1995; Daily, Certo, & Dalton, 1999: 94; Natividad, 2005; Sweetman, 1996:13) for practical and symbolic reasons. Female executives, compared to their male counterparts, have deeper understanding and insight on female customers' nature and needs, so they can better link their organizations to their customers, which often leads to better firm performance (Hillman, Shropshire, & Cannella, 2007; Daily, Certo, & Dalton, 1999). Also, firms whose workforce gender composition does not reflect their customer gender composition may face external pressure from various stakeholders, such as shareholders, customers, and the media, to hire more women in their organizations. Since the gender composition of top management is more visible to public, compared to that of rank-and-file employees, firms having a significant proportion of female customers may try to hire and maintain a certain level of women in the upper echelons to avoid such pressure and attention. Second, firms in female-friendly industries are likely to appear more attractive to women than to men in external labor markets. Third, a large pool of female executives (at the industry level) in female-friendly industries helps firms in those industries recruit capable and qualified women in high-level positions more easily than firms in male-dominated industries.

Whatever the reason is, firms in female-friendly industries likely have more women in the upper echelons, and those women may contribute to creating and maintaining a more female-friendly culture. In these firms, masculine stereotypes may less prevail and have less impact on hiring, promoting, and development decisions. Instead, women in the upper echelons should be able to enjoy greater influence in firm-level decisions compared to firms in more male-dominated industries. In contrast, many U.S. industries are dominated by male (i.e., energy, infrastructure), and the male predominance tends to be more intense in the upper echelons of firms in those industries. In these firms, men, a majority group, often set the tone for organizational norms, and thus masculine stereotypes have a significant influence on various decisions including promotion and development opportunities. Accordingly, women are less likely to hold top executive positions. Even if they achieve the prestigious positions, they are highly likely to face an unfavorable environment. Based on these arguments, I predict that the proportion of females who are top five executives in the industry which the firm belongs to positively moderates the relationship between female board representation and the likelihood of appointing a female CEO.

*Hypothesis 4b. The proportion of female directors is more positively related to the likelihood that a firm will appoint a female CEO when the proportion of females who are top five executives in the industry which the firm is located is higher.*

## **CHAPTER 3**

### **DATA AND METHODOLOGY**

#### **3.1 SAMPLE**

The primary data for CEO succession comes from Standard and Poor's (S&P) ExecuComp database from 1998 to 2012. The initial sample included S&P 1500 firms (18,110 firm-years). After 80 firms that lack longitudinal continuation are excluded, the sample reduced to 1,420 firms (17,085 firm-years). Since this study tests the effects of female board representation on CEO succession, the analysis is based on the firms that experienced at least one succession event between 1998 and 2012. There were 1,798 succession cases (10.52% of 17,085 firm-years) of 669 firms. About 27 percent of ExecuComp data was dropped when it was merged with RiskMetrics board data, leaving 12,472 firm-years and 1,273 succession cases (10.21% of 12,472 firm-years). Because of missing values on some variables and the one-year lag structure, the final sample includes 1,096 succession cases of 691 firms. Female CEO succession constitutes 67 cases, which is 6.11 percent of 1,096 succession cases.

Information about boards of directors comes from the RiskMetrics Directors Database, and any missing values are supplemented by information collected from the manual coding of proxy statements filed at the Securities and Exchange Commission (SEC). Data on firm performance, firm size, and industry characteristics come from ExecuComp.

### 3.2 VARIABLES

The dependent variable is the gender of the CEO successor, which is coded as a binary variable with a value equal to 1 for female CEOs and 0 for male CEOs. The main independent variable is the proportion of female directors on the board a year before CEO succession. Also, to test the hypotheses about the effect of the critical mass on the CEO successor's gender, I created three dummy variables: *one female director*, *two female directors*, and *three or more female directors*. Each variable was coded as 1 if the number of female directors is one, two, and three or more female directors, respectively, otherwise 0. *The board interlock ties with firms having women in the upper echelons* were coded as 1 if there is any woman who holds a position of CEO, top-five executive manager, or director in the firm where a director holds a board seat, otherwise 0. This variable was created separately for male and female directors. To refine the analyses, I also used three other variables: *board interlock ties with firms having a female CEO only*, *board interlock ties with firms having female non-CEO executives*, and *board interlock ties with firms having female directors*. The results are substantively similar. Female-friendliness of firms and industries are measured by *the proportion of women in top five executive positions at the focal firm excluding the CEO* and *the proportion of females who are top five executives in the industry which the firm is located*, respectively. The latter was calculated as the average proportion of female executives within the top-five executive team of firms in an industry using 2-digit SIC.

To control for other factors that may influence female CEO appointment, the following control variables were included in each equation. I controlled for four variables related to the degree to which female directors exert influence on a group decision. First, *female and male*



*directors' relative board tenure*, which is measured as the average tenure of female directors relative to that of male directors, was controlled for under the assumption that long-tenured female directors are likely to enjoy more power and confidence, and thus be more active in sharing their view with male directors. Several studies have argued that tenure as CEO or director is positively correlated with the degree of power because long tenure generally means better insight and understanding of the firm's culture, resources, and operation, which confers expert power on them (Finkelstein, 1992; Johnson, Hoskisson, & Hitt, 1993; Singh & Harianto, 1989; Zald, 1969).

Second, I also controlled for *female and male directors' relative number of external directorship*, which is measured as the average number of external directorships held by female directors relative to that of male directors. Board memberships often signal the respect and recognition that each director receives from the general corporate community (Davis, 1991; Mizruchi, 1996). Therefore, holding seats in the boards of multiple companies can act as a proxy of the female members' capability and reputation which are closely related to their power and influence on boards.

Third, *the number of women on board committees* is measured as the number of female directors served on the focal board's major committees (i.e., the compensation, audit, nomination, and corporate governance committee) as a member or a chair. Corporate governance literature suggests that members and chairs of major board committees—the corporate governance, nomination, compensation, and audit committees—tend to be perceived as holding prestigious positions and having prestige power (Finkelstein, 1992). A number of studies have shown that appointments as major board committee members and chairs allow directors to have

greater influence on major board decisions than other directors (i.e., Conyon & Peck, 1998; Daily, Johnson, Ellstrand, & Dalton, 1998). Also, there is considerable evidence that members or chairs of major board committees tend to exert more power both by offering professional advice and counsel to the CEO compared to other directors (Ahmed & Duellman, 2007; Engel, Hayes, & Wang, 2010; Faleye, Hoitash, & Hoitash, 2011; Lorsch & MacIver, 1989). Thus, if a female director serves as a member or chair of a major board committee, that position may provide prestige power that will help her exert greater influence in the CEO succession process.

Lastly, *female and male directors' relative ownership* is measured by a firm's shares owned by a female director relative to that of male directors. Corporate governance scholars view stock ownership as an important source of upper echelon power (Bigley & Wiersema, 2002; Daily & Johnson, 1997; Finkelstein, 1992; Westphal & Zajac, 1995; Zajac & Westphal, 1995). In the principal-agent relationship, stock ownership means "a right to a certain proportionate share of voting power on various issues" (Zald, 1969: 100). Voting rights provide additional power to directors holding stock ownership and this power increases with the proportion of a firm's shares owned by an executive (Zald, 1969; Finkelstein, 1992; Westphal & Zajac, 1995). Accordingly, an executive with significant ownership in an organization will be perceived to be more powerful compared to an executive without it (Zald, 1969).

I also included the duration of male and female directors' overlapping tenure as a factor that mitigates negative gender stereotypes about women which likely empower female directors to exert greater influence on board decisions. The variable was calculated as the average shared tenure (in years) between male and female directors per board in a given year. Research in sociology (Allport, 1954; Amir, 1969; Berger, Rosenholtz, & Zelditch, 1980) and social

psychology (Byrne, 1971; Byrne & Wong, 1962; Newcomb, 1961) suggests that people tend to categorize others as in- and out-group members based on salient and observable characteristics which often accompany stereotypes, but continued social interactions over time may alter the initial perceptions. For example, Harrison, Price, and Bell (1998) argue the length of time group members work together attenuate the effects of surface-level diversity (e.g., gender, race) and intensifies the effects of deep-level diversity (e.g., knowledge, skills, attitudes, beliefs), which reduce prejudice and conflicts that may come from stereotypes and enhances group cohesiveness that could arise from attitudinal, belief, and value similarity. Other scholars argue that individuals spending time or working together for a sustained period will develop mutual acceptance (Kilduff, Crossland, Tsai, & Krackhardt, 2008). Applying this logic to the board-CEO succession framework, gender difference on a board might initially cause conflicts between female directors and male directors. However, as members of the same board engage in more interactions over time, stereotypes prompted by gender can be replaced by more accurate knowledge of each other as individuals; this generally leads to reduced prejudice and conflict as well as greater group cohesiveness (Amir, 1976).

To mitigate the issue of potential endogeneity, I controlled for two variables that can affect both the nomination of female directors and appointment of a female CEO: the gender of the nomination committee chair and the gender of the predecessor CEO. Both variables were coded as 1 if the chair or predecessor CEO was female, 0 otherwise.

Three variables measuring board characteristics are included in all models. *The average age of directors per board* is controlled for under the assumption that younger directors are more aware of gender equality and thus tend to favor female CEOs more than older directors. *Board*

*size* is measured as the number of total directors on each board. *Board average tenure* is measured as the average tenure of directors per board.

Also, two variables measuring board independence are included in all models. While boards of directors are known to be officially responsible for selecting a new CEO, previous literature shows that predecessor CEOs may also exercise significant influence over the board's selection of the new CEO (Shen & Cannella, 2002). Zajac and Westphal (1996), for example, examined how relative CEO/board power can predict whose preferences are realized and found that more powerful boards are more likely to change CEO characteristics in the direction of their own demographic profile. Because my hypotheses are more likely to be supported when boards are independent and more powerful than the predecessor CEOs, I use the following variables to control for board independence. The first measure is *the proportion of outside directors* who are not a current or former employee of the company, who do not provide any professional services to the company, and who are not a major customer, a recipient of charitable funds, and interlocking director, or a family member of a director or executive of the company. The second measure is *the CEO/chair duality*, which is a binary variable coded 1 if a CEO was also the board chair and 0 otherwise. In a similar vein, to control for CEO power, I included three CEO-related variables: CEO age, CEO ownership, and CEO tenure. CEO ownership was multiplied by 100 to rescale the value for an easier interpretation.

Other firm-level determinants of the likelihood of appointing a female CEO include firm size and performance. *Firm size* is measured as the natural logarithm of the firm's total sales. *Firm performance* was measured in both accounting and market terms: ROA and 1-year total shareholder returns.

### 3.3 ANALYTICAL PROCEDURES

Since the dependent variable—the gender of the CEOs—is binary, I use logistic regression to predict the likelihood that a firm will appoint a woman into the CEO position. For an additional check of robustness, I estimated probit model and complementary log log model. As shown in the Appendix Tables A.1-A.3 and B.1-B.3, the results are substantively similar across the various techniques. In all models, I lagged the independent variables and control variables by one year. Also, all models except Model 3 of Table 4.1 include dummy variables for 2-digit SIC industries. The coefficient estimates for the industry dummies are not shown in the tables.

## **CHAPTER 4**

### **RESULTS**

#### **4.1 RESULTS**

Table 1.1 reports the means, standard deviations, and correlation coefficients of variables used in the analysis. As can be seen from this table, about 18 percent of the sample firms had no female directors, and 44 percent, 27 percent, and 11 percent of the sample firms had one, two, three or more female directors, respectively. The number of female CEO succession cases, the outcome variable, is 67, which is 6.11 percent of 1,096 succession cases. A mean score of variance inflation factor (VIF) score is 1.59, with a maximum score of 2.74, a value well below the threshold of 10 that signals a potential for a multicollinearity issue (Chatterjee & Price, 1991).

Table 2.1 reports the results from logit models predicting the effect of female board representation on the likelihood that a woman will be appointed to the CEO position. Model 1 is a baseline model with control variables only. To test Hypothesis 1, Model 2 includes the proportion of female directors. Hypothesis 1 predicts a positive relationship between the proportion of female directors and the likelihood that a woman will be appointed to the CEO position. As shown in Model 2, the results provide support for the prediction. Model 2 suggests that a one-unit increase in the proportion of female directors will produce a 0.08 increase in the

probability of appointing female directors, when all of the variables included in the model are fixed at their means. Using a Stata command “margins,” I calculated the change in the probability of appointing a female CEO when the proportion of female directors increases from the mean to one standard deviation greater than the mean. The result shows that the probability of appointing a female CEO increases by 0.01 when the proportion of female directors increases from the mean (0.13) to one standard deviation above ( $0.13+0.09=0.22$ ). I also calculated the change in the probability of appointing a female CEO when the proportion of female directors increases from the mean (0.13) to 0.3. The result shows that the probability of appointing a female CEO increases by 0.02 when the proportion of female directors increases from 0.13 to 0.3.

Hypothesis 2 predicts that the positive effect of female board representation on the likelihood of appointing a female CEO is realized only when the number of female directors reaches a certain threshold. Model 3 of Table 2.1 shows that the coefficient of firms with one female director and that of two female directors are statistically not significant. The coefficient of three or more female directors, however, is positive and significant. The predicted probability of selecting a female CEO depending on the number of female directors per board from Model 3 is described in Figure 1.1. As the graph shows, the probability of appointing a female director increases by about 0.02 when the number of female directors increases from two to three or more. The findings show that the magic number that empowers female directors is three. More discussion about the critical mass of three will be provided in the conclusions and discussion section.

Table 3.1 reports the results from logit models predicting the interaction effect between board interlock ties with other firms having women in the upper echelons and the proportion of female directors on the likelihood that a woman will be appointed to the CEO position.

Hypothesis 3a predicts that male directors' board interlocks with other firms having women in the upper echelons (the position of CEO, executive, and director) will positively moderate the relationship between the proportion of female directors and the likelihood that a firm will appoint a female CEO. Model 1 is a baseline model without the interaction terms. As shown in Model 2 of Table 3.1, the moderating effect of having board interlock ties with firms having woman in a position of CEO, top-five executive manager, or director is significant. Thus, Hypothesis 3a receives empirical support.

Since logit model is not linear in the probability metric, I calculated the marginal effects at different levels of the proportion of female directors. Specifically, I estimated the probabilities of appointing a female CEO when the proportion of female directors is 0.1, 0.2, and 0.3.

Considering the average board size is about 10, these proportions are about 1, 2, and 3 female directors. Using a Stata command "margins," I estimated the effect of the proportion of female directors on the probability of appointing a female CEO when male directors have board interlock ties with other firms having women at the top and when they do not have such ties, at the three points of the proportion of female directors, which are 0.1, 0.2, and 0.3. In Figure 2.1, the solid line shows the marginal effects of the proportion of female directors on the probability of appointing a female CEO when there is the effect of board interlocks. As the graph shows, the marginal effects increase from 0.013 to 0.024 to 0.045 when the proportion of female directors is 0.1, 0.2, and 0.3, respectively. All three of the coefficients are significant. The dotted line shows the marginal effects of the proportion of female directors on the probability of appointing a



female CEO when there is no board interlock effect. As shown in the figure, the marginal effects decrease from 0.006 to 0.001 to 0.000 when the proportion of female directors is 0.1, 0.2, and 0.3, respectively, and none of the coefficients are significant.

Figure 2.2 shows the probability difference between the two groups. Overall, the differences increase from 0.007 to 0.023 to 0.045 when the proportion of female directors is 0.1, 0.2, and 0.3, respectively. While the first coefficient is not significant, the latter two are significant at  $p=0.05$  level. These results imply that the effect of female board representation on the likelihood of appointing a female CEO is stronger when directors have an opportunity to observe or work with women in the upper echelons of other firms through board interlock ties, compared to when they do not have such an opportunity, which is consistent with Hypothesis 3a. Furthermore, the results show that even the moderating effect of board interlock ties, as a way of mitigating negative gender stereotypes, becomes effective only when there is a certain proportion of female directors, which is 0.2.

I also separated this moderating variable by position—board interlocks with other firms having women in the CEO position (“network2”), board interlocks with other firms having women in non-CEO executive positions (“network3”), and board interlocks with other firms having women in director positions (“network4”)—and included each in Model 3, 4, and 5, respectively. The results are substantially similar: all of the three variables positively moderate the relationship between the proportion of female directors and the likelihood that a firm will appoint a female CEO. Interestingly, as shown in Model 3, the moderating effect is strongest when the variable is about women whom directors interact with through board interlock ties are in the CEO position, compared to the variable about the executive position or director positions.

The results imply that directors may realize the value of gender diversity more when the women they work with or observe through board interlock ties are in higher positions.

Hypothesis 3b predicts that female directors' board interlocks with other firms having women in the upper echelons (the position of CEO, executive, and director) will positively moderate the relationship between the proportion of female directors and the likelihood that a firm will appoint a female CEO. Hypothesis 3b did not receive empirical support, as shown in Table 4.1. Although the coefficients of the interaction terms are positive, none of them is statistically significant. The insignificant results may be at least partially attributed to two factors that may decrease statistical power: first, the proportion of female director is significantly low, compared to male directors. Also, female directors have less external board seats compared to those of male directors, which means less opportunities to work or observe women in the upper echelons of other firms through interlock ties.

Table 5.1 reports the results from logit models predicting the interaction effect between female-friendliness-related measures (the proportion of female executives at the firm level and the proportion of women who are top five executives in the industry where the firm is located) and the proportion of female directors on the likelihood that a woman will be appointed to the CEO position. Model 1 is a baseline model with control variables only. Hypothesis 4a predicts that the proportion of female executives positively moderate the relationship between the proportion of female directors and the likelihood that a firm will appoint a female CEO. As Model 2 shows, the coefficient of the interaction term of the proportion of female executives and the proportion of female directors is positive and significant, supporting Hypothesis 4a.

Using a Stata command “margins,” I estimated the effect of the proportion of female directors on the probability of appointing a female CEO when firms have one or more female executives and when they have none, at the three points of the proportion of female directors, which are 0.1, 0.2, and 0.3. In Figure 3.1, the solid line shows the marginal effects of the proportion of female directors on the probability of appointing a female CEO when firms have one or more female executives. As the graph shows, the marginal effects increase from 0.092 to 0.172 to 0.299 when the proportion of female directors is 0.1, 0.2, and 0.3, respectively. All of the coefficients are significant. The dotted line shows the marginal effects of the proportion of female directors on the probability of appointing a female CEO when there is no female executive, and the marginal effects decrease from 0.006 to 0.005 to 0.004 when the proportion of female directors is 0.1, 0.2, and 0.3. Figure 3.2 shows the probability difference between the two groups. The differences increase from 0.086 to 0.167 to 0.295 when the proportion of female directors is 0.1, 0.2, and 0.3, respectively, and all of the coefficients are significant. Overall, the results imply that the effect of female board representation on the likelihood of appointing a female CEO is stronger when there are one or more female executives compared to when there is none, which is consistent with Hypothesis 4a.

Lastly, Hypothesis 4b predicts that the proportion of women who are top five executives in the industry in which the firm is located positively moderates the relationship between the proportion of female directors and the likelihood that the firm will appoint a female CEO. As shown in Model 3 of Table 5.1, Hypothesis 4b also receives support. Using a Stata command “margins,” I estimated the effect of the proportion of female directors on the probability of appointing a female CEO when the proportion of women who are top five executives in the industry which the firm is located is above the median (0.06) and when the proportion is below

the median, at the three points of the proportion of female directors, which are 0.1, 0.2, and 0.3. In Figure 4.1, the solid line describes the marginal effects of the proportion of female directors on the probability of appointing a female CEO when the proportion of women who are top five executives in the industry which the firm is located is above the median. As shown in the graph, the marginal effects increase from 0.012 to 0.025 to 0.054 when the proportion of female directors is 0.1, 0.2, and 0.3, respectively. All three of the coefficients are significant. The dotted line shows the marginal effects of the proportion of female directors on the probability of appointing a female CEO when the proportion of women who are top five executives in the industry which the firm is located is below the median. The marginal effects also increase from 0.018 to 0.021 when the proportion of female directors increases from 0.1 to 0.3, but the slope is much flatter than that of solid line. The results imply that the effect of female board representation on the likelihood of appointing a female CEO is stronger when the proportion of women who are top five executives in the industry which the firm is located is above the median, compared to when the proportion is below the median, which is consistent with Hypothesis 4b. Figure 4.2 shows the probability difference between the two groups. In this graph, while none of them are statistically significant, the marginal effects increase from -0.007 to 0.033 when the proportion of female directors increases from 0.1 to 0.3.

Because three has been identified in this study as the critical mass that helps female directors become more influential on boards, I also ran logit models predicting the interaction effect between the moderating variables for Hypotheses 3 and 4 and the indicator variable of three or more female directors (1 if three or more female directors, 0 if less than three female directors) on the likelihood that a woman will be appointed to the CEO position. The results are shown in Table 6.1. When I replace the proportion of female directors with the indicator variable

of three or more female directors, most interaction effects, which were positive and significant in previous analyses (Table 2.1-4.1), disappear except the one predicted in Hypothesis 4a, which is the interaction between the proportion of female directors and that of female executives. One possible explanation is the low proportion of firm-years with three or more female directors (about 11 percent) which may weaken statistical power.

## 4.2 ENDOGENEITY

The core argument of this dissertation is that female board representation is positively associated with the likelihood of appointing a female CEO. However, there is a possibility that various unobservable factors may make the relationship between female board representation and female CEO appointment less causal and more spurious. One may argue that firms that are open to having more female directors may also be more open to female CEOs. Also, a recent increase in external pressures to appoint women in top management can be another omitted variable that may increase both the number of female directors on boards and the likelihood that a firm will appoint a female CEO. Lastly, the nature of the work, corporate culture, and industry characteristics could be factors that play a significant role in attracting both female directors and female CEOs (Matsa & Miller, 2011). The endogeneity issue is not only limited to the main effect of female directors but also applies to the interaction effects. For the effect of having board interlock ties with firms having women at the top, firms that share directors through board interlock ties may also share other traits such as female-friendliness in the first place even before directors diffuse what they learn or observe through the networks. For the moderating effect of the proportion of female executives in the firm, firms that are open to having more female executives

may also be more open to appointing a woman to the CEO position. For the moderating effect of the proportion of women who are top five executives in the industry where the firm operates, a large pool of female executives in female-friendly industries can be another factor that increases the odds of minorities being appointed to the CEO position because more female executives in an industry can mean more potential female CEO candidates in the industry.

I attempted to address this endogeneity issue by controlling for four potential omitted variables which may affect both female board representation and female CEO appointment: the proportion of female executives, the proportion of females who are top five executives in the industry which the firm is located, the gender of the nomination committee chair, and the gender of the predecessor CEO. First, the proportion of female executives is used as a proxy for the organization's unobserved cultural and institutional characteristics, such as female-friendliness or a gender egalitarian culture (Shin, 2012), which may affect both female board representation and the likelihood that women will be appointed as the CEO. Second, I also controlled for the proportion of females who are top five executives in the industry which the firm is located. Firms often hire a new director or a new CEO among top executives of other firms in the same industry. Thus, a high proportion of women in top executive positions in a certain industry may have a positive effect on both the proportion of female directors and the likelihood of appointing a female CEO in firms in the industry. Lastly, I controlled for having a female chair of the nomination committee and the gender of the past CEO because both positions have a substantial influence in both director nomination and CEO appointment. If the nomination committee chair is a woman, she is likely to support women in both director nomination and CEO appointment decisions. Similarly, if the past CEO is woman, she is likely to have a positive effect on both female board representation and the likelihood of appointment a female CEO.

To further mitigate the endogeneity issue, I included year fixed-effects and industry fixed-effects for the following reasons. Year fixed-effects reduce the possibility of reverse causality and control for unobserved heterogeneities such as macro-economic shocks, media coverage, and policy debates on female representation that may affect all firms in the same year. Also, industry fixed-effects control for the time-invariant unobservable industry characteristics that may be correlated with the number of female board members and the appointment of a female CEO. After controlling for the control variables and the year and industry dummies, the coefficients for the three or more female directors and other interaction terms were still positive and significant. I believe this approach at least partially contributes to addressing the issue of endogeneity.

## **CHAPTER 5**

### **DISCUSSION AND CONCLUSIONS**

In this study, I examined how female board representation affects the likelihood that firms will appoint a female CEO. The theoretically established relationship between the board of directors and CEO appointment provides an excellent empirical setting to examine the relationship between female board representation and female CEO appointment. Also, in-group favoritism, the central tenet of social identity theory, provides a solid theoretical explanation for female directors' preference for a female CEO candidate. This dissertation supplements social identity theory with critical mass theory and argues that the positive effect of female board representation can be maximized when the number of female directors reaches a certain threshold, namely a critical mass. While critical mass theory suggests that the group size can change the nature of group interactions, it does not identify a specific number (Torchia et al., 2011). Using a sample of large U.S. firms, my study provides an empirical evidence that the critical mass may be three. This finding is consistent with previous arguments based on some theories, experiments, and surveys.

Justifying a critical mass of three can start from evidence demonstrating that both one and two minority members are pigeonholed as tokens. Research on group diversity and small group dynamics argue that not only one individual but also two individuals of a minority group are treated as tokens in groups. Kanter (1977a) argues that "if the absolute size of the skewed group



is small, tokens can also be solos, the only one of their kind present; but even if there are two tokens in a skewed group, it is difficult for them to generate an alliance that can become powerful in the group” (Kanter, 1977a: 382). Loyd, White, Kern, and Phillips (2008) provide a theoretical explanation on why not only a minority solo but also a minority duo still are tokens and cannot be a critical mass. Drawing on theories in token status (Kanter, 1977a) and small group dynamics (e.g., Phillips & Loyd, 2006), the authors argue that duo status may be even more stressful and isolating than solo status for minorities because members of a minority duo not only face negative inter-group (between a majority and minority group) pressure from members of a majority group, but also experience in-group (within a minority group) pressure to provide social support to one another. A minority group faces greater inter-group pressure from a majority group when its group size is smaller. This is because numerical inferiority, in combination with their minority status, further undermines the minority group members’ position relative to that of the majority group members. Also, a minority group faces greater in-group pressure to support each other when its group size is smaller. This is because as the number of members of a minority group decreases, the amount of support required to each member increases, which causes more pressure to them (for reviews see Hewstone, Rubin & Willis, 2002; Mullen, Brown, & Smith, 1992). Since two is the smallest number of individuals for a group, it is possible to assume that the total amount of pressure on minority members peaks when the number of members of a minority group is exactly two, but the pressure begins to decrease after that point. In other words, minority members’ influence in a group is likely to increase when their number exceeds two.

Empirical evidence supports the value of increasing the number of minorities from two to three. Research on influence and conformity in groups views three as a “magic number” in group

dynamic. Asch's conformity experiments (Asch, 1951) demonstrated that three people exert substantial influence in changing group dynamics, as compared to two people (for a more detailed explanation of the Asch's studies, see Konrad et al., 2008). This finding is mirrored in reality. In the interviews of women directors in Fortune 1000 firms conducted by Konrad and her colleagues (2008), one woman director said, "If you're the only woman, you can be dismissed with, 'That person is here just so we can say there's a woman on the board.'" (p.148). Also, another woman director described a board where she is the only woman as "a group that views her as a different person than they are, is not collegial, does not have a lot of conversation or interaction between male directors and herself." (p.150) They show that when there are two female directors, the situation often changes more favorably for women, compared to when there is only one female director, but tokenism is highly likely to remain in the group. In this case, although the female directors may feel more included and comfortable, they still may not act collectively in order to avoid being seen as conspirators (Konrad et al., 2008). When the number increases to three or more, however, female directors said that they became more vocal, assertive, and relaxed. The authors emphasize the value of moving beyond two, arguing that three or more women in the boardroom make a definite shift in the quality of women's experiences (p.154). According to the authors, three female directors are beneficial for creating change, such as breaking the stereotypes about women or shifting an "all-male communication dynamic." (p.146)

These theoretical arguments and empirical evidence from the experiments and survey provide support to the findings of my study. The findings of my study is somewhat consistent to Kanter's (1977a) argument. She argues that minorities who constitute less than 15 percent of a group are "tokens", but if the percentage of minorities reaches 35 percent, they become potential

allies with each other, form coalitions, and affect the general culture of the group. The mean board size of the sample used in this dissertation is about 10.09. Thus, the arguments about the absolute numbers of female directors—one, two, and three—also roughly corresponds with Kanter's 15 percent and 35 percent argument. However, regardless of the board size, the critical mass of three as an absolute number would still be significant because of the power it confers to the minority members.

Furthermore, this dissertation shows how various factors strengthen the effect of female board representation on the likelihood that a firm will appoint a female CEO. By analyzing 1,096 succession cases of U.S. firms, I demonstrated that a firm is more likely to appoint a female CEO when the board has three or more female directors. This supports my argument that the critical mass enables female directors to voice and become more influential in group decisions and it will be shown as the increased likelihood of appointing a female CEO. The results also show that the effect of female board representation on the likelihood that a firm will appoint a female CEO is stronger under two conditions: (1) when directors have an opportunity to observe or work with women in the upper echelons of other firms through board interlock ties, which likely mitigate negative gender stereotypes, and (2) when the organization or upper echelon culture is more female-friendly.

This study makes several important contributions to research on upper echelon groups, CEO succession, and the board of directors. First, this study extends the literature on the upper echelons by demonstrating any consideration of diversity in upper echelon groups should also include an examination of inequality. Previous studies have argued that gender diversity on boards or that of top management teams have positive effects on firm outcomes such as firm

performance, firm strategy, or firm innovation. These arguments, however, overlook an important fact that women are a demographic and numeric minority, and their minority status may prevent them from contributing to group decisions and firm outcomes. The present study considers female directors' minority status and demonstrates that the positive effect of female board representation is realized only when there are three or more women on boards.

Furthermore, I showed that the positive effect of female board representation on the likelihood of women being appointed to the CEO position is stronger when negative gender stereotypes are mitigated and positive value of gender diversity is emphasized. The results demonstrate that having more board interlock ties with other firms having women at the top and having more female executives within organizations or industries positively moderate the relationship between female board representation and female CEO appointment. Although this study specifically focuses on women, the implication could also be expanded to other types of minorities, such as racial and ethnic minorities. Future studies examining positive effects of demographically diverse groups, therefore, should note that advantages of diversity can be maximized when demographic minorities are allowed to voice and affect group decisions.

Second, this study further extends the literature on the upper echelons by providing an answer to the question of whether women in the upper echelons help other women in hiring and evaluation decisions. It has been widely believed and proven that people are attracted to people who are demographically similar to them and evaluate the similar others more positively and favorably in hiring, promotion, and evaluation decisions. While the assumption may be applied to various demographic groups in different settings in theory, minorities in prestige work groups could be an exception due to certain characteristics of both minorities and prestige work groups. More exactly, while women and people of color in prestige work groups may also be affected by

in-group favoritism, the combination of numeric and status-related disadvantages are likely to constrain their behavior in the groups (Duguid, Loyd, & Tolbert, 2012). Despite this possibility, the assumption of in-group favoritism about minorities, specifically women, in prestige work groups has not been tested enough to advance our understanding on this specific relationship. The present study contributes to the literature on social identity theory and the upper echelons by elucidating the in-group favoritism behavior of minorities on boards of directors. The findings of this study show that female directors' preference for a female CEO candidate, an assumption drawing on social identity theory, may be realized under certain organizational conditions: when the female directors' number is big enough to affect the appointment decision or when organizational conditions are favorable to them. The findings could also be generalized to different types of minorities (i.e, ethnic minorities) in other prestige work groups besides women on boards.

Third, this study contributes to the literature on leadership succession by shedding light on a research question that remained underexplored for a long time: under what conditions an organization is more likely to appoint a female leader? While there is a large body of literature on barriers to mobility for minorities, not much is known about organizational conditions that increase the likelihood of minorities being promoted or appointed to leadership positions (Cook & Glass, 2013). The present study contributes to closing this gap by studying female board representation as an important organizational predictor of female CEO appointment. Compared to other organizational factors that accompany various noises which cannot be easily controlled for, such as firm performance, female board composition is a better organizational predictor of female CEO appointment because of the clear link between the board of directors and CEO appointment. Also, social identity theory provides a solid theoretical foundation to female

directors' preference for a female CEO candidate. The findings of this study suggest that female board composition can be a good predictor of the likelihood that firms will select a female CEO when their numeric and status-related disadvantages are reduced. The findings imply that the odds of any type of minorities (i.e., women, people of color) being promoted or appointed to the leadership positions may depend on the proportion of that specific type of minorities of a hiring group. Furthermore, this study demonstrates that it is important to consider disadvantages associated with minorities' demographic group when examining their effect on organizational outcomes. Considering that female directors' behaviors on boards are constrained by their numeric inferiority and relatively low social status, the present study demonstrates that overcoming the numeric and status-related disadvantages can help minority climb to the top of corporate ladder.

Lastly, this study contributes to the research on boards of directors, specifically the literature on the effect of board diversity. As the value of board gender diversity has gained popularity in recent years, many scholars have examined the effect of board gender diversity on various firm outcomes, including firm performance, firm innovation, firm strategy, and corporate social responsibility. In spite of the importance of studying each organizational outcome, the surprisingly mixed findings of these studies make their contribution less significant and less meaningful. While the oversight of the effect of inequality provides a theoretical explanation for the inconsistency, the use of distal outcomes may be another problem that makes the relationship between board gender composition and each outcome less causal and more spurious.

Organizational outcomes like firm performance, innovation, strategy, and corporate social responsibility can be affected by various observable and unobservable factors besides boards and board gender composition. Statistically, it is almost impossible to identify and control for every

confounding variable that affects the relationship. The failure to account for more confounding factors leads to greater omitted variable bias. The present study attempts to minimize this issue by using CEO appointment as an organizational outcome. The direct and clear linkage between the board of director and CEO appointment decreases any potential noises that may affect the relationship between female board representation and female CEO appointment. Scholars who study the effect of board gender diversity should also use more proximal firm outcomes or include as many as control variables in order to capture a clearer picture.

## **CHAPTER 6**

### **LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH**

Several limitations of this study should be noted. One limitation of this study is the issue of potential endogeneity. There is a possibility that various unobservable factors may make the relationship between female board representation and female CEO appointment less causal and more spurious. As I mentioned in the separate section, this study mitigates the endogeneity issue by using an extensive set of control variables. Nonetheless, I am aware that this effort does not fully address the issue.

Second, the effects of female board representation on female CEO appointment were inferred instead of being measured through direct observation in this study. Although I used a straightforward framework—the board of directors and CEO appointment—and a well established and widely accepted theoretical explanation—social identity theory and critical mass theory—to explain the underlying mechanism of the relationship between female directors and a female CEO candidate, the findings do not fully represent actual behavior. A survey of directors is one way to address this issue, but it involves some barriers such as very low response rates and high cost to conduct a repeated longitudinal study with a set panel of respondents (Chattopadhyay, Glick, Miller, & Huber, 1999). Using a qualitative approach can be another way to address the issue. This approach would provide a richer description of actual boardroom dynamics that is usually unavailable in quantitative research (Shin, 2012).



This study provides some potential avenues for future research. First, this dissertation focuses on gender, primarily due to its popularity in both academia and industry, and its salience which facilitates empirical tests. However, diversity can be defined by various factors beyond gender and thus future studies should consider examining different aspects of diversity such as race and ethnicity. Similar to women, racial and ethnic minorities are rare in the ranks of top corporate executives (Cook & Glass, 2013). Although women and ethnic minorities are both numeric minorities, the underlying mechanisms that shape the probability of the racial and ethnic minorities being appointed to leadership positions may be different from those for women, due to different characteristics and career paths of women and the other types of minorities. Thus, examining dimensions of diversity other than gender will be a meaningful addition to this stream of research.

Future studies can also capture a clearer picture of the effect of female directors on firm outcomes by controlling for additional variables. First, the type of CEO succession—whether it is inside or outside—has different impacts on power dynamics within the top management team and boards. Inside CEO successors often have the approval of directors—both inside and outside—and also have support within the top management team while outside CEO successor tend to struggle due to the lack of internal social networks and coalitions (Shen & Cannella, 2002; Boeker & Goodstein, 1993; Dalton & Kesner, 1985). The type of CEO successor may affect the probability of women being appointed to the CEO position such that inside succession may be positively associated with female CEO appointment while outside succession could be negatively associated with the same outcome. Thus, it is important to control for the type of CEO succession, whether the successor was promoted from within in the organization or hired from outside. In a similar vein, it is important to control if a female CEO successor was a board

member prior to the appointment as CEO because such experience is also likely to increase the probability of being appointed to the CEO position. Also, given that the board chair often has a significant influence over board decisions, I propose that future studies control for the gender of the board chair.

To further mitigate the issue of endogeneity, I suggest that future research control for more variables that are related to female friendliness in addition to what I included in the present study. The proportion of female managers at the industry level not only represents female-friendliness of the industry but is also related to availability of female job candidate in the labor market. Thus, it is important to control for this variable, which can be obtained from Census data, to capture a clearer picture. Gender composition of consumers is another important variable that implies female-friendliness of the firm and the industry.

Another avenue for future research is to examine the effect of ownership structure. Corporate governance scholars have argued firm outcomes such as CEO pay (Shin & Seo, 2011) or strategic actions (Connelly, Tihanyi, Certo, & Hitt, 2010) can be affected by whether firms' largest investors have business relationships with their portfolio firms or not (pressure-sensitive or pressure-resistant institutional investors: Brickly, Lease, & Smith, 1988; Bushee, Carter, & Gerako, 2014) or whether the largest investors acquire concentrated equity positions and have extended investment horizons or acquire less concentrated equity stakes and have a shorter investment horizon (dedicated or transient institutional investors: Bushee, 2004; Porter, 1992). CEO succession is another outcome that may be affected by the type of institutional investors. For example, one can assume that transient institutional investors may prefer a male CEO candidate to a female CEO candidate because the transient investors' primary interest is in

earning more profit in a shorter period of time rather than in gender equality or value of gender diversity, which is more remotely and unclearly related to immediate profit realization. Given its potential impact on CEO appointment, thus, future studies should take the type of institutional ownership into consideration.

## **CHAPTER 7**

### **MANAGERIAL IMPLICATIONS**

This study shows that the boardroom may hold the key to increasing the likelihood the firms will appoint a female CEO. Given that boards of directors play essential roles in CEO appointment, and female directors are highly likely to support a female CEO candidate, the presence of more women on corporate boards could be a solution for the underrepresentation of women in leadership positions. Therefore, firms interested in hiring a female CEO should monitor gender composition of boards to ensure enough female representation. This study also demonstrates that the positive effect of female board representation on appointing a woman into the CEO position can be stronger by mitigating negative gender stereotypes and increasing female-friendliness.

The findings of this study also provide a solution for the dearth of women in the upper echelons. Although some studies show the negative effect of the appointment of female CEOs (i.e., Lee & James, 1997), hiring a female CEO can be one of the most effective ways to boost female representation in high-level positions. The paucity of women in high-level positions has drawn substantial attention from the media and academia in recent years, resulting in calls for firms to actively increase their representation at the top of organizations. Firms have answered these calls with various efforts, such as mentoring system, diversity training programs, and urging women to “lean in,” but the fact that women still remain underrepresented in the upper echelons makes clear that such efforts have been insufficient. This is because these efforts

mostly focus on changing individual perceptions of gender stereotypes or advancing an understanding of the value of gender diversity, which is often hard to achieve and requires long periods of time to fulfill the full effect. Also, exhorting women to “lean in” may actually backfire as such behaviors, often male-typed, may be viewed as threatening to the status-quo and lead to negative evaluation of women (Fiske, Bersoff, Bordiga, Deaux, & Heilman, 1991; Rudman, Moss-Racusin, Phelan, & Nauts, 2012).

Wolf and Fligstein argue that “the behaviors and policies of employers are much more important causes of sexual differences in authority in the workplace than are the attitudes and behaviors of the women themselves (1979: 235),” and it appears to remain the same over the last 30 years. To truly address the need for more equitable representation in the upper echelons, firms must make more structural changes that allow women to overcome the historical stereotypes currently preventing them from climbing the corporate ladder. Increasing the number of female CEOs can be the most efficient way to achieve it because female CEOs can contribute to enhance female representation in the upper echelons by supporting women in various ways including being mentors and role models, and supporting them in hiring and promotion decisions. As my study shows, all of these positive changes can start from increasing the number of female directors and promoting the value of gender diversity. The Chief Operating Officer (COO) of Facebook, Sheryl Sandberg said in her recent book *Lean In* that women in organizations should lean in—her metaphor for speaking up—to achieve their full potential. To make their efforts more effective and efficient, however, it is also time for firms to ‘lean in’ too.

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## TABLES AND FIGURES

**Table 1.1. Means, Standard Deviations, and Correlations**

Variable	Mean	SD	1	2	3	4	5	6
1 Female CEO succession	.06	.24						
2 The proportion female directors	.13	.09	.21 *					
3 One female director	.44	.50	-.07 *	-.21 *				
4 Two female directors	.27	.45	-.01	.37 *	-.55 *			
5 Three or more female directors	.11	.31	.17 *	.61 *	-.31 *	-.21 *		
6 Log of total firm sales	7.76	1.54	-.05	.20 *	-.17 *	.26 *	.20 *	
7 Return on assets	2.50	14.47	-.04	.06 *	.01	.01	.05	.19 *
8 Total shareholder returns (1 year)	.06	.48	.03	-.02	.01	-.05	.03	.03
9 CEO-chair duality	.59	.49	.02	-.01	.01	.01	.00	.12 *
10 CEO age	58.75	7.19	-.04	-.04	-.02	.06 *	-.01	.09 *
11 CEO ownership	.13	.38	-.03	-.09 *	-.02	-.04	-.08 *	-.11 *
12 CEO tenure	8.95	7.50	-.03	-.11 *	-.01	-.06	-.04	-.06 *
13 Proportion of independent directors	.72	.16	.01	.25 *	.00	.14 *	.13 *	.15 *
14 Board size	10.09	2.80	-.06 *	.09 *	-.13 *	.23 *	.26 *	.46 *
15 Directors' average age	60.26	3.72	-.03	-.06 *	-.03	.06	-.01	.12 *
16 Board average tenure	11.03	3.45	-.02	-.11 *	.02	.01	-.10 *	-.05
17 Proportion of female executives	.07	.13	.43 *	.30 *	-.13 *	.08 *	.20 *	-.05
18 Number of women on board committees	.21	.41	.06	.36 *	-.10 *	.17 *	.21 *	.12 *
19 Female-male directors' relative board tenure	.79	.47	-.01	.21 *	.09 *	.12 *	.07 *	.19 *
20 Female-male directors' relative # of external directorship	.56	.75	.02	.32 *	-.02	.20 *	.16 *	.28 *
21 Female-male directors' relative director ownership	.64	3.55	.15 *	.26 *	-.06 *	.00	.17 *	.00
22 Network to other boards whose firm has female CEO, executives, or directors (for male directors)	.88	.33	.05	.28 *	.09 *	.16 *	.08 *	.30 *
23 Proportion of females who are top 5 executives in the industry which the firm is located	.07	.04	.14 *	.28 *	-.07 *	.09 *	.16 *	.05
24 Female-male directors' overlapping tenure	.59	.34	.06	.65 *	.13 *	.33 *	.27 *	.29 *
25 Gender of the nomination committee chair (1=female, 0=male)	.04	.23	.18 *	.25 *	-.11 *	.03	.19 *	-.03
26 Gender of the predecessor CEO (1=female, 0=male)	.02	.14	.01	.18 *	-.08 *	.11 *	.11 *	.07 *
27 Network to other boards whose firm has female CEO (for male directors)	.19	.39	.45 *	.26 *	-.10 *	.09 *	.19 *	.17 *
28 Network to other boards whose firm has female executives (for male directors)	.56	.28	.05	.28 *	.09 *	.16 *	.08 *	.30 *
29 Network to other boards whose firm has female directors (for male directors)	.86	.35	.06 *	.35 *	.15 *	.19 *	.10 *	.31 *
30 Network to other boards whose firm has female CEO, executives, or directors (for female directors)	.20	.16	.02	.21 *	.17 *	.20 *	.06 *	.31 *
31 Network to other boards whose firm has female CEO (for female directors)	.04	.22	.15 *	.07 *	.43 *	.21 *	.04	.13 *
32 Network to other boards whose firm has female executives (for female directors)	.16	.15	.05	.16 *	.14 *	.07 *	.07 *	.38 *
33 Network to other boards whose firm has female directors (for female directors)	.19	.16	.14 *	.17 *	.32 *	.16 *	.07 *	.07 *

Table 1.1 (cont.)

Variable	7	8	9	10	11	12	13	14	15	16	17	18	19	20
8 Total shareholder returns (1 year)	.22 *													
9 CEO-chair duality	.05	.10 *												
10 CEO age	.13 *	.06 *	.22 *											
11 CEO ownership	.05	.05	.13 *	.18 *										
12 CEO tenure	.06	.02	.19 *	.39 *	.33 *									
13 Proportion of independent directors	-.01	.00	-.11 *	-.04	-.29 *	-.18 *								
14 Board size	.07 *	.03	.07 *	.17 *	-.13 *	.01	.08 *							
15 Directors' average age	.06 *	-.04	-.05	.43 *	-.03	.08 *	.21 *	.17 *						
16 Board average tenure	.06 *	-.03	.03	.26 *	.22 *	.32 *	-.21 *	.05	.37 *					
17 Proportion of female executives	.05	-.01	-.06	-.06 *	-.02	-.07 *	.07 *	-.06	-.07 *	-.09 *				
18 Number of women on board committees	.06 *	-.04	-.09 *	-.05	-.10 *	-.08 *	.14 *	.08 *	-.02	-.06 *	.11 *			
19 Female-male directors' relative board tenure	.04	.00	.00	-.03	-.18 *	-.13 *	.27 *	.15 *	.06	-.20 *	.06	.21 *		
20 Female-male directors' relative # of external directorship	.07 *	.02	.01	.03	-.08 *	-.05	.07 *	.17 *	.06 *	.00	.01	.18 *	.15 *	
21 Female-male directors' relative director ownership	.07 *	.02	.03	-.06	.03	-.01	-.03	-.06 *	-.10 *	.00	.28 *	.07 *	.05	.00
22 Network to other boards whose firm has female CEO, executives, or directors (for male directors)	.08 *	.02	.11 *	.07 *	-.08 *	-.06 *	.22 *	.21 *	.06	-.02	.07 *	.14 *	.14 *	.23 *
23 Proportion of females who are top 5 executives in the industry which the firm is located	.04	-.04	-.11 *	-.02	-.01	-.04	.09 *	-.02	.02	.00	.31 *	.14 *	.13 *	.05
24 Female-male directors' overlapping tenure	.05	-.02	.01	-.01	-.22 *	-.16 *	.36 *	.31 *	.03	-.20	.13 *	.32 *	.67 *	.34 *
25 Gender of the nomination committee chair (1=female, 0=male)	.03	-.03	-.05	-.12 *	-.02	-.07 *	.00	-.04	-.08 *	-.05	.38 *	.04	.01	.03
26 Gender of the predecessor CEO (1=female, 0=male)	.01	-.01	-.09 *	-.01	-.05	-.02	.13 *	.05	.05 *	-.06 *	.07 *	.46 *	.10 *	.05 *
27 Network to other boards whose firm has female CEO (for male directors)	.05	.03	.06	.01	-.06	-.08 *	.05	.07 *	.01	-.04	.36 *	.09 *	.06 *	.06
28 Network to other boards whose firm has female executives (for male directors)	.08 *	.02	.11 *	.07 *	-.08 *	-.06 *	.22 *	.21 *	.06	-.02	.07 *	.14 *	.14 *	.23 *
29 Network to other boards whose firm has female directors (for male directors)	.09 *	.03	.11 *	.08 *	-.11 *	-.07 *	.22 *	.24 *	.06 *	-.02	.02	.16 *	.19 *	.26 *
30 Network to other boards whose firm has female CEO, executives, or directors (for female directors)	.07 *	.02	.00	.00	-.08 *	-.05	.07 *	.16 *	.25 *	-.04	.07 *	.11 *	.12 *	.06 *
31 Network to other boards whose firm has female CEO (for female directors)	.07 *	.02	.01	.02	.03	-.01	.03	.27 *	.09 *	-.06	.16 *	.09 *	.19 *	.04
32 Network to other boards whose firm has female executives (for female directors)	.08 *	.02	.03	.02	-.08 *	-.06 *	.22 *	.19 *	.14 *	.14 *	.17 *	.16 *	.28 *	.07 *
33 Network to other boards whose firm has female directors (for female directors)	.04	-.04	.11 *	.02	-.01	-.04	.09 *	.11 *	.06	.23 *	.08 *	.19 *	.00	.07 *

**Table 1.1 (cont.)**

Variable	21	22	23	24	25	26	27	28	29	30	31	32	33
22 Network to other boards whose firm has female CEO, executives, or directors (for male directors)	.04												
23 Proportion of females who are top 5 executives in the industry which the firm is located	.15 *	.07 *											
24 Female-male directors' overlapping tenure	.09 *	.31 *	.16 *										
25 Gender of the nomination committee chair (1=female, 0=male)	.45 *	.01	.18 *	.06 *									
26 Gender of the predecessor CEO (1=female, 0=male)	.02	.05	.12 *	.16 *	.01								
27 Network to other boards whose firm has female CEO (for male directors)	.15 *	.20 *	.16 *	.14 *	.26 *	.76 *							
28 Network to other boards whose firm has female executives (for male directors)	.04	.90 *	.07 *	.31 *	.11 *	.20 *	.30 *						
29 Network to other boards whose firm has female directors (for male directors)	.04	.91 *	.08 *	.66 *	.40 *	.15 *	.28 *	.42 *					
30 Network to other boards whose firm has female CEO, executives, or directors (for female directors)	.06 *	.08 *	.20 *	.18 *	.15 *	.46 *	.16 *	.12 *	.07 *	.19 *			
31 Network to other boards whose firm has female CEO (for female directors)	-.10 *	.17 *	.28 *	.07 *	.05	.09 *	.17 *	.17 *	.11 *	.07 *	.09 *		
32 Network to other boards whose firm has female executives (for female directors)	.06	.12 *	.07 *	.14 *	.14 *	.14 *	.21 *	.12 *	.11 *	.08 *	.14 *	.14 *	
33 Network to other boards whose firm has female directors (for female directors)	.02	.20 *	.31 *	.14 *	.13 *	.14 *	.07 *	.20 *	.16 *	.36 *	.14 *	.14 *	.14 *

**Table 2.1. Logistic Regression Results Predicting the Probability of Appointing a Female CEO**

<b>Variable</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Log of total firm sales	-.13 (.14)	-.11 (.14)	-.11 (.14)
Return on assets	-.02 * (.01)	-.02 * (.01)	-.02 * (.01)
Total shareholder returns (1 year)	.36 (.31)	.39 (.32)	.36 (.32)
CEO-chair duality	.93 * (.40)	.84 * (.40)	.88 * (.40)
CEO age	-.01 (.03)	-.01 (.03)	-.01 (.03)
CEO ownership	-.78 (.86)	-1.04 (.92)	-.89 (.90)
CEO tenure	-.01 (.03)	.00 (.03)	.00 (.03)
Proportion of independent directors	-2.13 (1.52)	-1.96 (1.54)	-2.09 (1.52)
Board size	-.12 (.11)	-.08 (.10)	-.16 (.10)
Directors' average age	.00 (.06)	.03 (.06)	.02 (.06)
Board average tenure	.05 (.06)	.04 (.06)	.05 (.06)
Gender of nomination committee chair (1=female, 0=male)	-1.11 (.79)	-1.18 (.81)	-1.20 (.81)
Gender of the predecessor CEO (1=female, 0=male)	-.25 (.74)	-.67 (.76)	-.63 (.78)
Number of women on major board committees	-.14 (.41)	-.38 (.43)	-.30 (.43)
Female-male directors' relative board tenure	.20 (.82)	.33 (.81)	.04 (.53)
Female-male directors' relative # of external directorship	.27 (.21)	.25 (.21)	.30 (.21)
Female-male directors' relative director ownership	-.04 (.03)	-.07 * (.03)	-.06 * (.03)
Proportion top 5 female executives in the industry	-10.88 (9.39)	-8.80 (9.62)	-9.04 (9.61)
Female-male directors overlapping tenure	.30 (1.04)	-.85 (1.14)	-.62 (-.98)

**Table 2.1 (cont.)**

<b>Variable</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Network to other boards whose firm has female CEO, executives, and directors at the top	.48 (.68)	.27 (.69)	.47 (.70)
Proportion of female executives	10.11 ** (1.16)	9.75 ** (1.17)	9.93 ** (1.20)
Proportion of female directors (H1)		6.06 ** (2.23)	
(marginal effect)		.08 ** (.03)	
One female director			.39 (.61)
(marginal effect)			.01 (.01)
Two female directors			.36 (.73)
(marginal effect)			.01 (.01)
Three or more female directors (H2)			1.71 * (.84)
(marginal effect)			.03 * (.01)
Constant	-2.64 (3.95)	-5.59 (3.93)	-4.79 (3.94)
Number of observations	1,096	1,096	1,096
Log likelihood	-164.27	-161.04	-160.82

Note: Robust standard errors are in parentheses. All models include year dummies and 2-digit industry dummies.

+ p<0.10

\* p<0.01

\*\* p<0.001; two-tailed tests.

**Table 3.1. Logistic Regression Results Predicting the Probability of Appointing a Female CEO**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Log of total firm sales	-.11 (.14)	-.12 (.11)	-.24 (.20)	-.16 (.14)	-.10 (.14)
Return on assets	-.02 * (.01)	-.01 (.01)	-.02 (.02)	-.02 * (.01)	-.02 * (.01)
Total shareholder returns (1 year)	.39 (.32)	.21 (.23)	.25 (.50)	.32 (.34)	.36 (.33)
CEO-chair duality	.84 * (.40)	.43 * (.21)	.46 (.62)	.84 * (.40)	.74 + (.40)
CEO age	-.01 (.03)	-.01 (.03)	.04 (.04)	-.01 (.03)	-.01 (.03)
CEO ownership	-1.04 (.92)	-.96 (.92)	-.86 (1.79)	-1.01 (.96)	-1.08 (.98)
CEO tenure	.00 (.03)	-.01 (.03)	-.02 (.06)	-.01 (.03)	.01 (.03)
Proportion of independent directors	-1.96 (1.54)	-1.21 (1.47)	-4.22 (2.70)	-1.73 (1.54)	-2.05 (1.57)
Board size	-.08 (.10)	-.05 (.08)	-.19 (.15)	-.07 (.10)	-.10 (.10)
Directors' average age	.03 (.06)	.01 (.03)	-.05 (.10)	.01 (.06)	.03 (.06)
Board average tenure	.04 (.06)	.58 (.06)	.06 (.10)	.05 (.06)	.04 (.06)
Gender of nomination committee chair (1=female, 0=male)	-1.18 (.81)	-.88 (.64)	-.21 (1.43)	-.98 (.82)	-.98 (.82)
Gender of the predecessor CEO (1=female, 0=male)	-.67 (.76)	.25 (.46)	-.74 (.82)	-.56 (.79)	-.54 (.73)
Number of women on major board committees	-.38 (.43)	.21 (.23)	-.64 (.66)	-.41 (.43)	-.36 (.43)
Female-male directors' relative board tenure	.33 (.81)	.02 (.65)	-.15 (1.57)	.02 (.85)	.42 (.82)
Female-male directors' relative # of external directorship	.25 (.21)	.27 (.21)	-.04 (.47)	.28 (.21)	.22 (.21)
Female-male directors' relative director ownership	-.07 * (.03)	-.07 * (.03)	-.07 + (.03)	-.07 * (.03)	-.07 * (.03)
Proportion top 5 female executives in the industry	-8.80 (9.62)	-7.54 (5.32)	-10.08 (16.74)	-11.64 (9.88)	-7.76 (9.93)
Female-male directors overlapping tenure	-.85 (1.14)	-.10 (.98)	2.55 (2.22)	-.10 (1.22)	-1.09 (1.18)



**Table 3.1 (cont.)**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Proportion of female executives	9.75 ** (1.17)	10.01 ** (1.20)	6.60 ** (1.10)	9.81 ** (.89)	10.16 ** (1.21)
Proportion of female directors	6.06 ** (2.23)	-15.24 (11.66)	-26.58 ** (12.70)	-12.13 (9.74)	10.60 (6.47)
Network to other boards whose firm has female CEO, executives, and directors ("network1"- for male directors)	.27 (.69)	-1.29 (.80)			
Network to other boards whose firm has female CEO ("network2"-for male directors)			2.20 * (.96)		
Network to other boards whose firm has female executives ("network3"- for male directors)				.00 (.72)	
Network to other boards whose firm has female directors ("network4"-for male directors)					.17 (.18)
Network1 (for male directors) x Proportion of female directors (marginal effect)		21.08 * (10.70) .37 + (.18)			
Network2 (for male directors) x Proportion of female directors (marginal effect)			30.49 * (12.38) .03 + (.02)		
Network3 (for male directors) x Proportion of female directors (marginal effect)				7.64 + (4.51) .13 + (.07)	
Network4 (for male directors) x Proportion of female directors (marginal effect)					13.13 + (6.90) .23 + (.12)
Constant	-5.59 (3.93)	-3.63 (4.04)	-4.06 (5.31)	-3.48 (3.07)	-6.69 (4.19)
Number of observations	1,096	1,096	1,096	1,096	1,096
Log likelihood	-161.04	-157.47	-102.14	-157.47	-158.27

Note: Robust standard errors are in parentheses. All models include year dummies and 2-digit industry dummies.

+ p<0.10

\* p<0.01

\*\* p<0.001; two-tailed tests.

**Table 4.1. Logistic Regression Results Predicting the Probability of Appointing a Female CEO**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Log of total firm sales	-.11 (.14)	-.12 (.11)	-.24 (.20)	-.16 (.14)	-.10 (.14)
Return on assets	-.02 * (.01)	-.01 (.01)	-.02 (.02)	-.02 * (.01)	-.02 * (.01)
Total shareholder returns (1 year)	.39 (.32)	.21 (.23)	.25 (.50)	.32 (.34)	.36 (.33)
CEO-chair duality	.84 * (.40)	.43 * (.21)	.46 (.62)	.84 * (.40)	.74 + (.40)
CEO age	-.01 (.03)	-.01 (.03)	.04 (.04)	-.01 (.03)	-.01 (.03)
CEO ownership	-1.04 (.92)	-.96 (.92)	-.86 (1.79)	-1.01 (.96)	-1.08 (.98)
CEO tenure	.00 (.03)	-.01 (.03)	-.02 (.06)	-.01 (.03)	.01 (.03)
Proportion of independent directors	-1.96 (1.54)	-1.21 (1.47)	-4.22 (2.70)	-1.73 (1.54)	-2.05 (1.57)
Board size	-.08 (.10)	-.05 (.08)	-.19 (.15)	-.07 (.10)	-.10 (.10)
Directors' average age	.03 (.06)	.01 (.03)	-.05 (.10)	.01 (.06)	.03 (.06)
Board average tenure	.04 (.06)	.58 (.06)	.06 (.10)	.05 (.06)	.04 (.06)
Gender of nomination committee chair (1=female, 0=male)	-1.18 (.81)	-.88 (.64)	-.21 (1.43)	-.98 (.82)	-.98 (.82)
Gender of the predecessor CEO (1=female, 0=male)	-.67 (.76)	.25 (.46)	-.74 (.82)	-.56 (.79)	-.54 (.73)
Number of women on major board committees	-.38 (.43)	.21 (.23)	-.64 (.66)	-.41 (.43)	-.36 (.43)
Female-male directors' relative board tenure	.33 (.81)	.02 (.65)	-.15 (1.57)	.02 (.85)	.42 (.82)
Female-male directors' relative # of external directorship	.25 (.21)	.27 (.21)	-.04 (.47)	.28 (.21)	.22 (.21)
Female-male directors' relative director ownership	-.07 * (.03)	-.07 * (.03)	-.07 + (.03)	-.07 * (.03)	-.07 * (.03)
Proportion top 5 female executives in the industry	-8.80 (9.62)	-7.54 (5.32)	-10.08 (16.74)	-11.64 (9.88)	-7.76 (9.93)
Female-male directors overlapping tenure	-.85 (1.14)	-.10 (.98)	2.55 (2.22)	-.10 (1.22)	-1.09 (1.18)

**Table 4.1 (cont.)**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Proportion of female executives	9.75 ** (1.17)	9.81 ** (.89)	6.09 ** (1.70)	10.01 ** (1.20)	9.16 ** (.98)
Proportion of female directors	6.06 ** (2.23)	12.13 (9.74)	-18.67 ** (6.73)	-15.24 (11.66)	11.60 (9.47)
Network to other boards whose firm has female CEO, executives, and ("network1"- for female directors)		-.25 (.21)			
Network to other boards whose firm has female CEOs ("network2"-for female directors)			.48 (.37)		
Network to other boards whose firm has female executives ("network3"-for female directors)				-.23 (.19)	
Network to other boards whose firm has female directors ("network4"-for female directors)					.87 (.50)
Network1 (for female directors) x Proportion of female directors (marginal effect)		4.82 (3.21) .07 (.06)			
Network2 (for female directors) x Proportion of female directors (marginal effect)			6.88 (4.98) .00 (.00)		
Network3 (for female directors) x Proportion of female directors (marginal effect)				3.75 (3.02) .00 (.00)	
Network4 (for female directors) x Proportion of female directors (marginal effect)					5.14 (3.91) .04 (.03)
Constant	-5.59 (3.93)	-3.22 (4.59)	-3.14 (4.11)	-3.49 (4.11)	-3.78 (4.69)
Number of observations	1,096	1,096	1,096	1,096	1,096
Log likelihood	-161.04	-123.05	-125.77	-119.52	-127.86

Note: Robust standard errors are in parentheses. All models include year dummies and 2-digit industry dummies.

+ p<0.10

\* p<0.01

\*\* p<0.001; two-tailed tests.

**Table 5.1. Logistic Regression Results Predicting the Probability of Appointing a Female CEO**

<b>Variable</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Log of total firm sales	-.11 (.14)	-.07 (.14)	-.12 (.12)
Return on assets	-.02 * (.01)	-.02 * (.01)	-.02 * (.01)
Total shareholder returns (1 year)	.39 (.32)	.33 (.33)	.41 (.30)
CEO-chair duality	.84 * (.40)	.82 * (.40)	.77 * (.36)
CEO age	-.01 (.03)	-.01 (.03)	-.01 (.03)
CEO ownership	-1.04 (.92)	-1.15 (.98)	-.96 (.77)
CEO tenure	.00 (.03)	.00 (.03)	-.02 (.03)
Proportion of independent directors	-1.96 (1.54)	-1.95 (1.53)	-1.34 (1.33)
Board size	-.08 (.10)	-.10 (.10)	-.03 (.08)
Directors' average age	.03 (.06)	.04 (.06)	.04 (.05)
Board average tenure	.04 (.06)	.04 (.06)	.03 (.06)
Gender of nomination committee chair (1=female, 0=male)	-1.18 (.81)	-1.26 (.83)	-.89 (.72)
Gender of the predecessor CEO (1=female, 0=male)	-.67 (.76)	-.56 (.77)	-.36 (.71)
Number of women on major board committees	-.38 (.43)	-.41 (.44)	-.42 (.39)
Female-male directors' relative board tenure	.33 (.81)	.29 (.82)	.48 (.74)
Female-male directors' relative # of external directorship	.25 (.21)	.27 (.21)	.19 (.18)
Female-male directors' relative director ownership	-.07 * (.03)	-.10 * (.04)	-.08 ** (.03)
Proportion top 5 female executives in the industry	-8.80 (9.62)	-8.27 (9.67)	-7.99 (6.22)
Female-male directors overlapping tenure	-.85 (1.14)	-.77 (1.15)	-1.23 (1.06)

**Table 5.1 (cont.)**

<b>Variable</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Proportion of female executives	9.75 ** (1.17)	7.91 ** (1.78)	9.20 ** (1.01)
Proportion of female directors	6.06 ** (2.23)	3.20 (3.15)	.46 (3.14)
Network to other boards whose firm has female CEO, executives, and directors ("network1")	.27 (.69)	.34 (.68)	.54 (.63)
Proportion of female executives x Proportion of female directors (H4a) (marginal effect)		9.06 * (4.99) .13 * (.07)	
Proportion of top 5 female executives in the industry x Proportion of female directors (H4b) (marginal effect)			7.86 * (3.27) .12 + (.07)
Constant	-5.59 (3.93)	-6.08 (3.98)	-6.30 * (3.17)
Number of observations	1,096	1,096	1,432
Log likelihood	-161.04	-160.13	-177.04

Note: Robust standard errors are in parentheses. All models include year dummies and Models 1 and 2 include 2 industry dummies.

+ p<0.10

\* p<0.01

\*\* p<0.001; two-tailed tests.

**Table 6.1. Logistic Regression Results Predicting the Probability of Appointing a Female CEO**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Proportion of female directors	6.37 ** (2.06)							
Log of total firm sales	-.14 (.14)	-.14 (.14)	-.22 (.14)	-.45 (.16)	-.14 (.15)	-.17 (.16)	-.12 (.14)	-.12 (.14)
Return on assets	-.02 * (.01)	-.02 * (.01)	-.02 + (.01)	-.01 (.01)	-.019+ (.01)	-.02 * (.01)	-.02 * (.01)	-.02 * (.01)
Total shareholder returns (1 year)	.36 (.42)	.35 (.41)	.25 (.43)	.28 (.52)	.45 (.51)	.39 (.51)	.34 (.41)	.36 (.42)
CEO-chair duality	.818* * (.38)	.86 * (.38)	.73 + (.39)	.63 (.44)	1.03 * (.43)	1.03 * (.42)	.85 * (.39)	.88 * (.39)
CEO age	-.02 (.03)	-.02 (.03)	-.02 (.03)	-.01 (.04)	-.03 (.03)	-.03 (.03)	-.02 (.03)	-.02 (.03)
CEO ownership	-1.02 (.94)	-.92 (.92)	-.83 (.90)	-.83 (1.33)	-.79 (.93)	-.71 (.87)	-.88 (.89)	-.94 (.93)
CEO tenure	-.01 (.03)	-.01 (.03)	-.02 (.03)	.00 (.04)	-.01 (.04)	-.01 (.04)	-.01 (.03)	-.01 (.03)
Proportion of independent directors	-1.51 (1.51)	-1.62 (1.48)	-1.54 (1.50)	-1.33 (1.87)	-.63 (1.73)	-.84 (1.70)	-1.69 (1.50)	-1.90 (1.49)
Board size	-.03 (.09)	-.11 (.09)	-.15 (.10)	-.22 (.11)	-.15 (.11)	-.18 + (.11)	-.13 (.10)	-.12 (.10)
Directors' average age	.04 (.06)	.02 (.06)	.02 (.06)	-.01 (.07)	.01 (.07)	.01 (.07)	.04 (.06)	.04 (.06)
Board average tenure	.03 (.06)	.05 (.06)	.05 (.06)	.06 (.08)	.10 (.07)	.10 (.07)	.05 (.06)	.04 (.06)

**Table 6.1 (cont.)**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Proportion of female executives	6.99 ** (.87)	7.06 ** (.88)	5.73 ** (.98)	6.53 ** (1.00)	3.99 * (1.73)	7.51 ** (.99)	6.46 ** (.93)	7.42 ** (.93)
Number of women on major board committees	-.33 (.42)	-.22 (.41)	-.17 (.43)	-.28 (.49)	-.19 (.46)	-.38 (.46)	-.25 (.43)	-.26 (.42)
Female-male directors' relative board tenure	-.22 (.83)	-.28 (.48)	-.80 (.90)	-1.76 (1.15)	-1.32 (1.00)	-1.13 (.96)	-.63 (.87)	-.64 (.87)
Female-male directors' relative # of external directorship	.24 (.22)	.32 (.23)	.28 (.23)	.39 (.29)	.39 (.25)	.38 (.24)	.34 (.23)	.35 (.23)
Female-male directors' relative director ownership	.01 (.03)	.01 (.03)	-.01 (.04)	-.01 (.04)	-.03 (.04)	.00 (.04)	.02 (.04)	.01 (.03)
Proportion top 5 female executives in the industry	-6.12 (8.48)	-6.21 (8.47)	-5.22 (8.62)	.50 (10.55)	-5.71 (9.20)	-6.29 (9.32)	-5.63 (8.42)	-8.07 (8.65)
Female-male directors overlapping tenure	-.76 (1.12)	.46 (1.09)	.46 (1.09)	2.07 (1.41)	1.49 (1.25)	1.05 (1.22)	.57 (1.05)	.58 (1.05)
Three or more female directors		1.53 ** (.45)	.03 (1.31)	1.46 (.91)	.63 (.96)	.89 (1.43)	.43 (.83)	.21 (.98)
Network to other boards whose firm has female CEO, executives, and directors ("network1"- for male directors)	.34 (.67)	.59 (.66)	.26 * (.12)				.58 (.66)	.49 (.66)
Network to other boards whose firm has female CEO ("network2"-for male directors)				2.44 ** (.34)				

**Table 6.1 (cont.)**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Network to other boards whose firm has female executives ("network3"- for male directors)					.85 *			
					(.39)			
Network to other boards whose firm has female directors ("network4"-for male directors)						.26		
						(.17)		
Network1 (for male directors) x Three or more female directors			.16 (.21)					
Network2 (for male directors) x Three or more female directors				-.46 (.57)				
Network3 (for male directors) x Three or more female directors					.65 (.56)			
Network4 (for male directors) x Three or more female directors						.06 (.30)		
Proportion of female executives x Three or more female directors							4.33 + (2.63)	
Proportion of top 5 female executives in the industry x Three or more female directors								12.29 (7.95)
Constant	-6.31 (3.96)	-4.89 (3.86)	-4.21 (3.85)	-4.09 (5.66)	-4.74 (4.33)	-4.71 (4.38)	-6.00 (3.97)	-5.24 (3.91)
Number of observations	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096
Log likelihood	-165.07	-164.38	-159.57	-120.21	-135.73	-138.51	-162.59	-162.98

Note: Robust standard errors are in parentheses. All models include year dummies and Models 1-7 include 2-digit industry dummies.

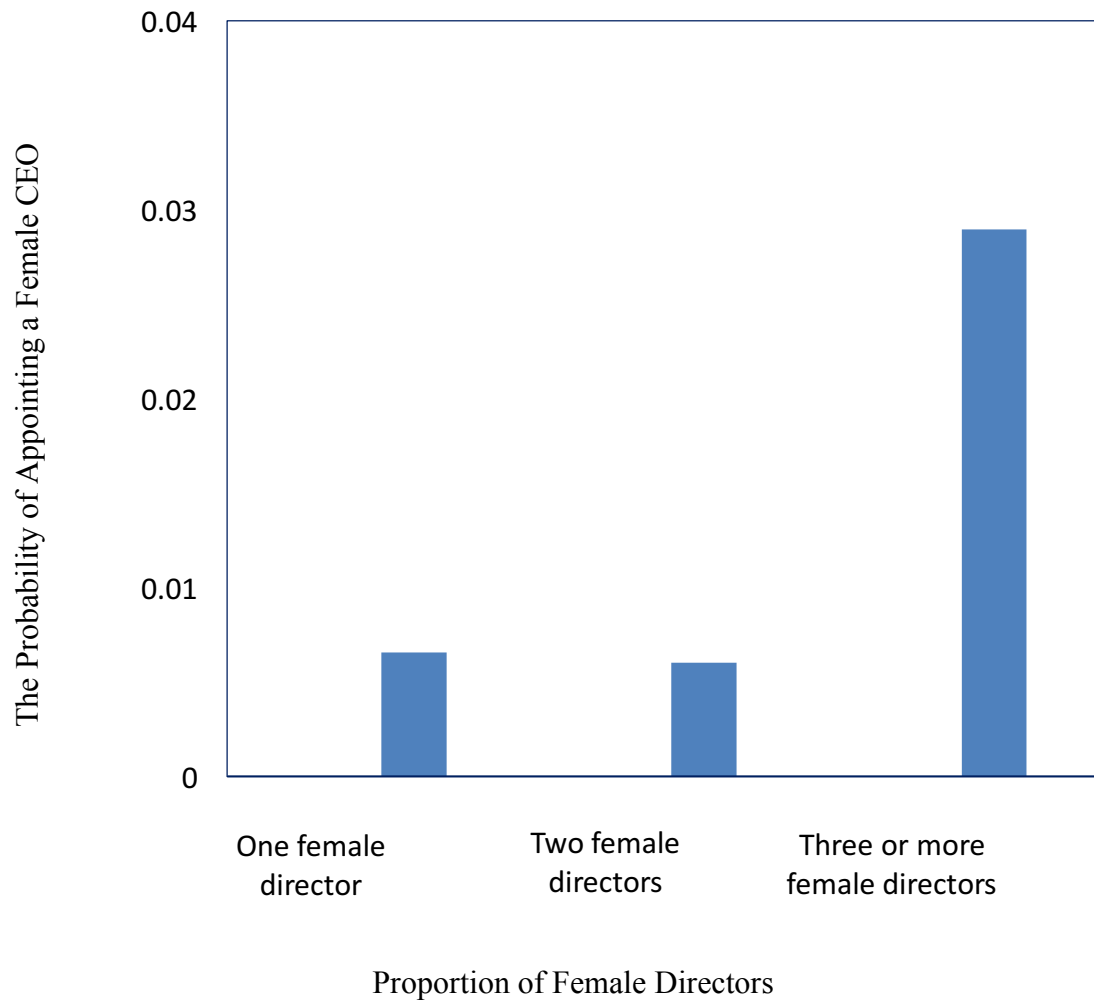
+ p<0.10

\* p<0.01

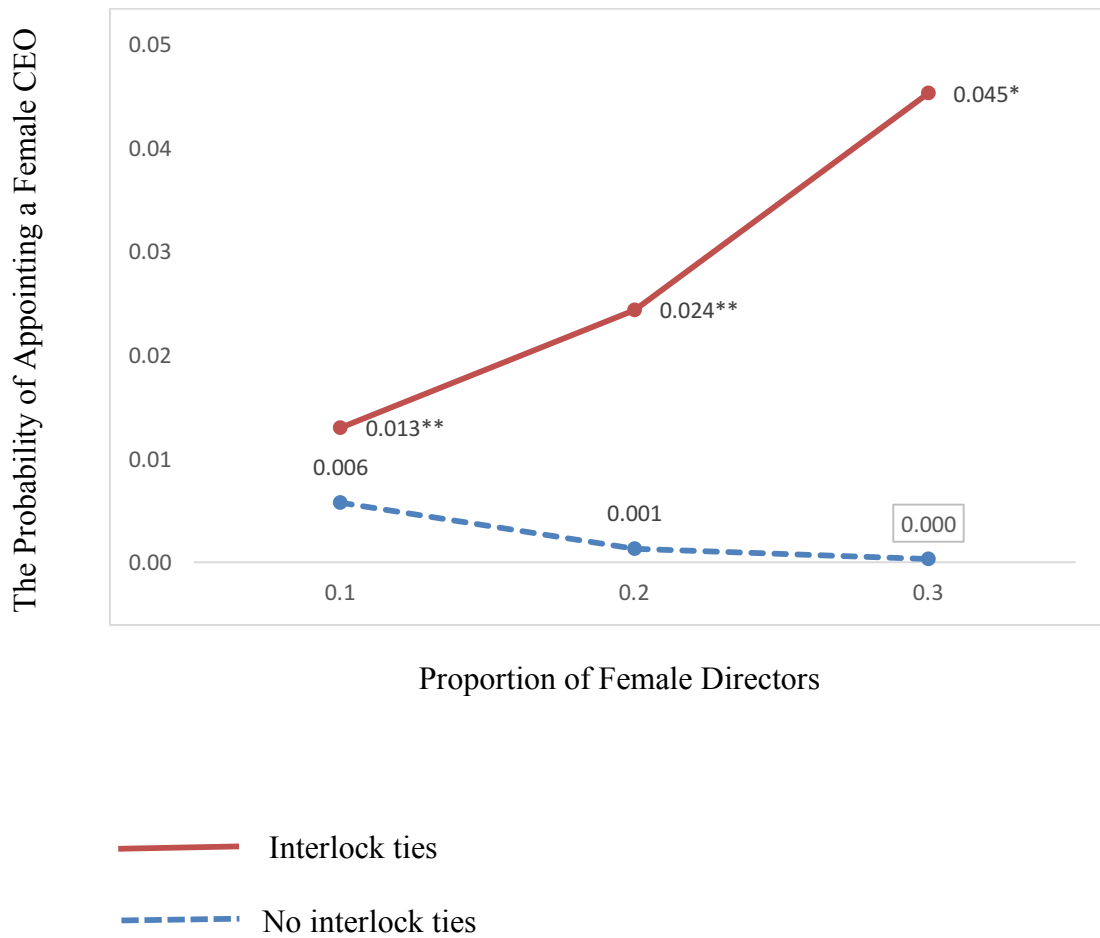
\*\* p<0.001; two-tailed tests.



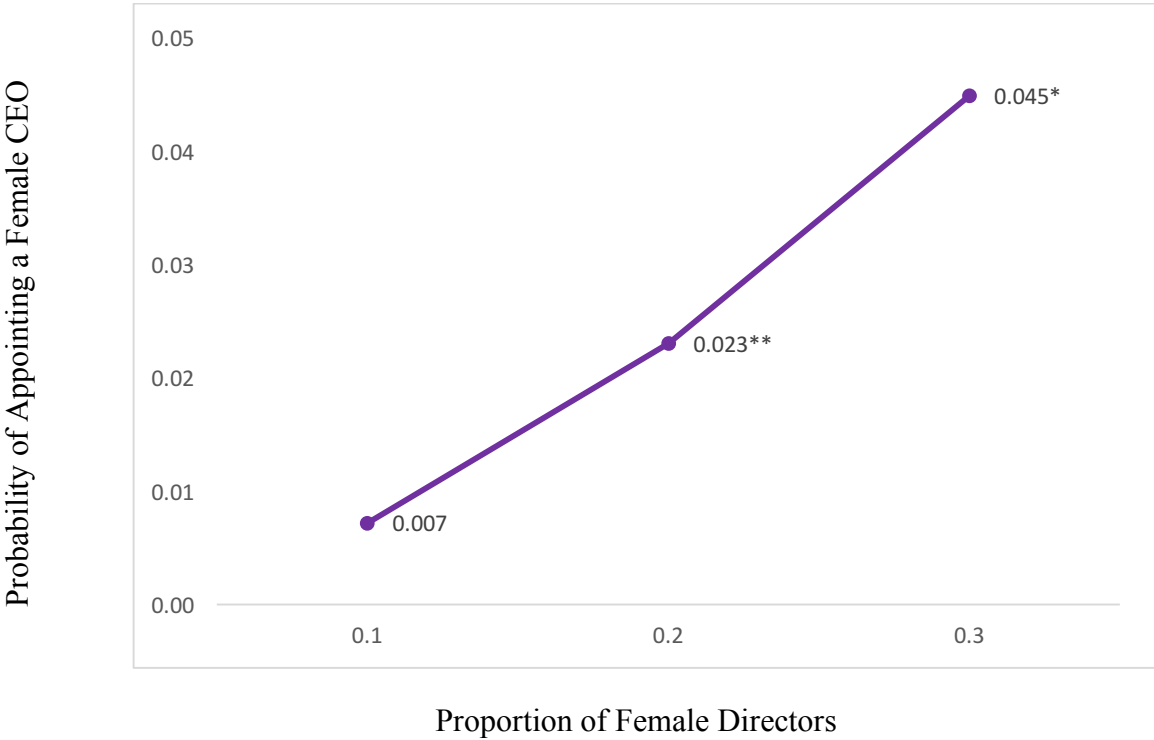
**Figure 1.1. The Predicted Probability of a Women Appointed as the CEO Depending on the Number of Female Directors per Board**



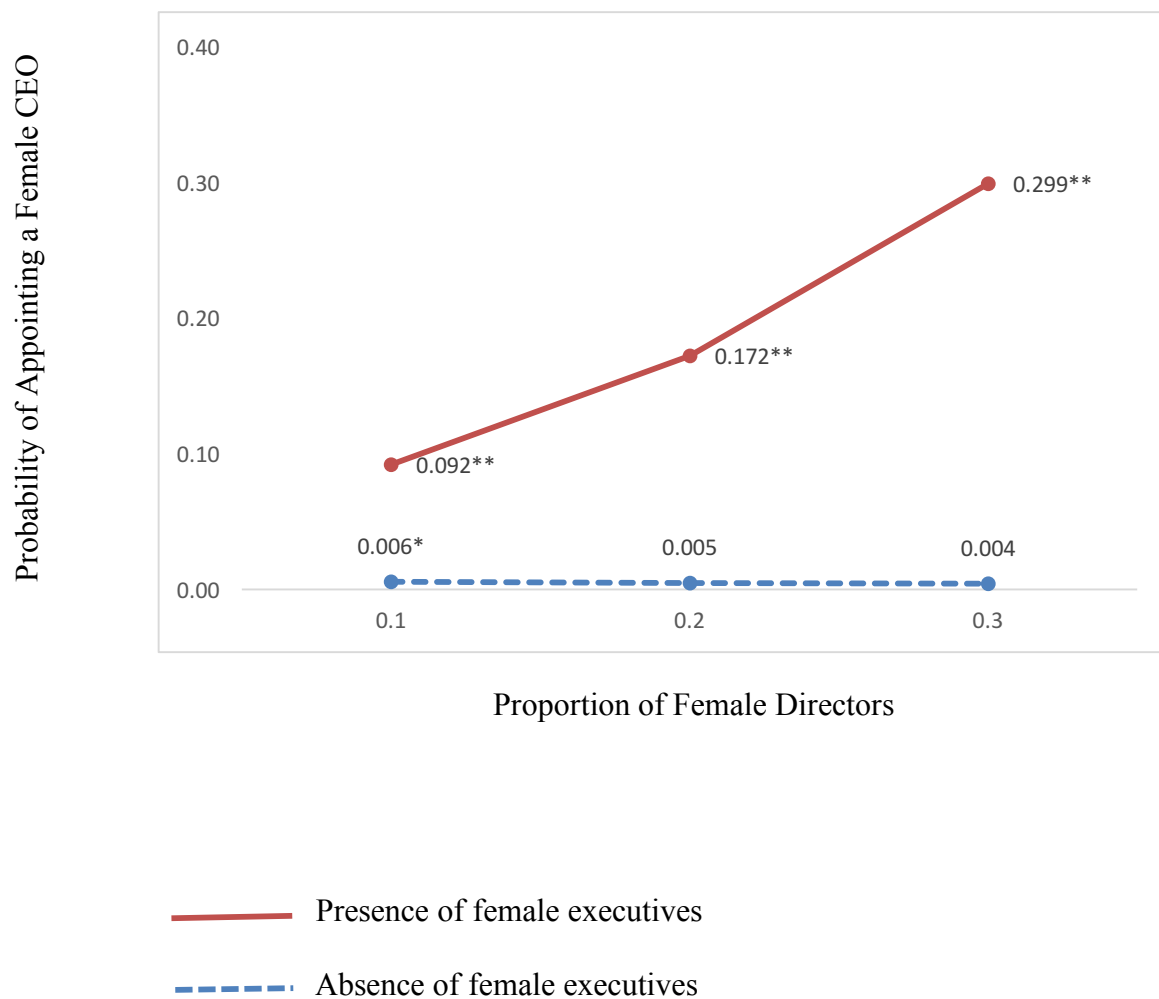
**Figure 2.1. Interaction Effect between the Proportion of Female Directors and Male directors' Board Interlock Ties to Firms Having Women at the Top (CEO, Executive, Director positions) on the Likelihood that a Firm Will Appoint a Woman to the CEO Position**



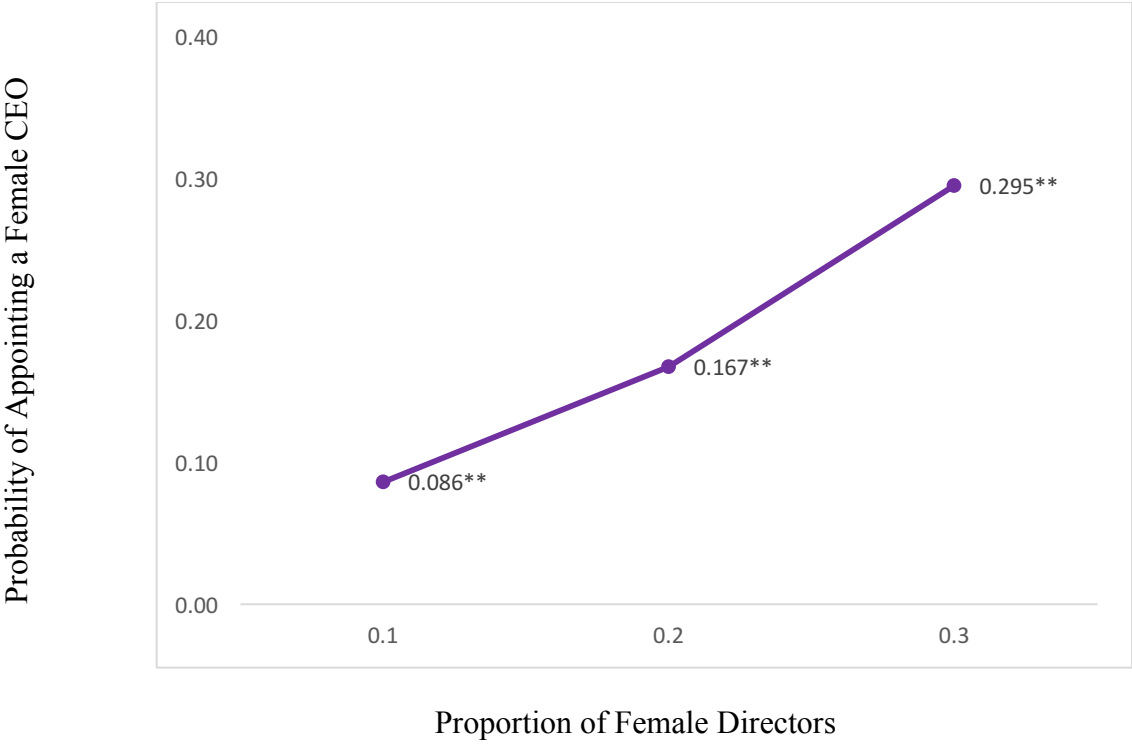
**Figure 2.2. The Difference in Probability of Appointing a Female CEO for the Interaction Effect of Board Interlock Ties to Firms Having Women at the Top**



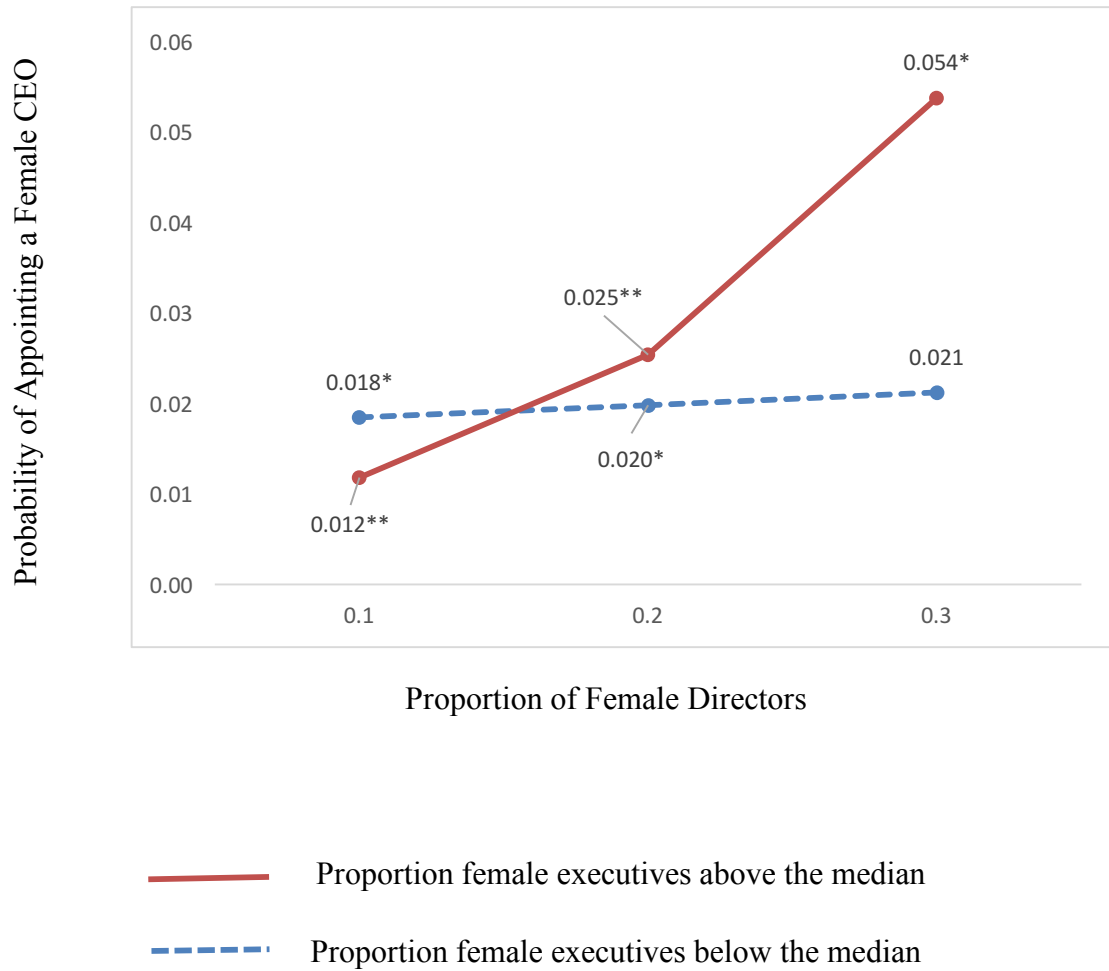
**Figure 3.1. Interaction Effect between the Proportion of Female Directors and the Proportion of Female Executives on the Likelihood that a Firm Will Appoint a Woman to the CEO Position**



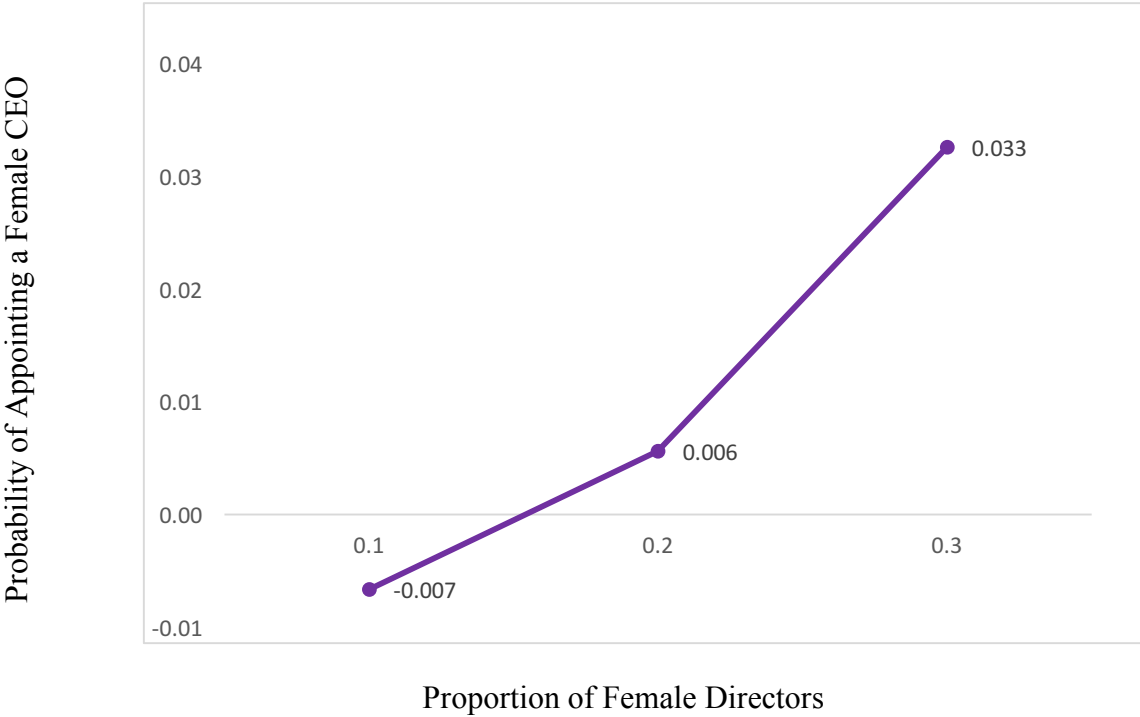
**Figure 3.2. The Difference in Probability of Appointing a Female CEO for the Interaction Effect of the Proportion of Female Executives**



**Figure 4.1. Interaction Effect between the Proportion of Female Directors and the Proportion of Females who are Top 5 Executives in the Industry which the Firm is Located on the Likelihood that a Firm Will Appoint a Woman to the CEO Position**



**Figure 4.2. The Difference in Probability of Appointing a Female CEO for the Interaction Effect of the Proportion of Females who are Top 5 Executives in the Industry which the Firm is Located**



## APPENDIX A: PROBIT REGRESSION RESULTS

**Appendix Table A.1. Probit Regression Results Predicting the Probability of Appointing a Female CEO**

Variable	Model 1	Model 2	Model 3
Log of total firm sales	-.05 (.06)	-.06 (.07)	-.05 (.07)
Return on assets	-.01 * (.01)	-.01 * (.01)	-.01 * (.01)
Total shareholder returns (1 year)	.16 (.18)	.15 (.18)	.15 (.18)
CEO-chair duality	.52 * (.26)	.42 * (.20)	.44 * (.20)
CEO age	.00 (.01)	.00 (.01)	.00 (.01)
CEO ownership	-.62 (.46)	-.64 (.50)	-.57 (.48)
CEO tenure	-.01 (.02)	-.01 (.02)	-.01 (.02)
Proportion of independent directors	-1.50 + (.81)	-1.30 + (.76)	-1.33 + (.75)
Board size	-.07 (.06)	-.06 (.06)	-.08 + (.05)
Directors' average age	.02 (.01)	.02 (.03)	.01 (.03)
Board average tenure	.02 (.03)	.02 (.03)	.02 (.03)
Gender of nomination committee chair (1=female, 0=male)	-1.01 (.73)	-1.11 (.79)	-1.18 (.81)
Gender of the predecessor CEO (1=female, 0=male)	-.25 (.74)	-.25 (.74)	-.67 (.76)
Number of women on major board committees	-.12 (.14)	-.16 (.21)	-.10 (.21)
Female-male directors' relative board tenure	.12 (.33)	.13 (.43)	.03 (.28)
directorship	.12 (.11)	.11 (.11)	.13 (.11)



**Appendix Table A.1 (cont.)**

<b>Variable</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Female-male directors' relative director ownership	-.04 *	-.04 *	-.03 +
	(.02)	(.02)	(.02)
Proportion top 5 female executives in the industry	-5.28	-4.37	-4.08
	(5.48)	(5.07)	(5.01)
Female-male directors overlapping tenure	.10	-.55	-.32
	(.77)	(.87)	-(.47)
Network to other boards whose firm has female CEO, executives, and directors ("network1")	.00	.00	.08 **
	(.31)	(.31)	(.32)
Proportion of female executives		5.02 **	5.13
		(.58)	(.59)
Proportion of female directors		2.98 **	
		(1.14)	
One female director			.13
			(.30)
Two female directors			.12
			(.37)
Three or more female directors			.79 +
			(.43)
Constant	-2.32	-2.36	-2.37
	(2.01)	(2.02)	(1.90)
Number of observations	1,096	1,096	1,096
Log likelihood	-159.39	-159.43	-159.82

Note: Robust standard errors are in parentheses. All models include year dummies and 2-digit industry dummies.

+ p<0.10

\* p<0.01

\*\* p<0.001; two-tailed tests.

**Appendix Table A.2. Probit Regression Results Predicting the Probability of Appointing a Female CEO**

Variable	Model1	Model 2	Model 3	Model 4	Model 5
Log of total firm sales	-.07 (.06)	-.09 (.07)	-.17 (.11)	-.09 (.07)	-.10 (.07)
Return on assets	-.01 * (.01)	-.01 * (.01)	-.01 (.01)	-.01 * (.01)	-.01 * (.01)
Total shareholder returns (1 year)	.12 (.16)	.14 (.18)	.10 (.27)	.14 (.18)	.19 (.18)
CEO-chair duality	.43 * (.20)	.43 * (.20)	.14 (.33)	.43 * (.20)	.43 * (.20)
CEO age	.00 (.02)	.00 (.02)	.03 (.02)	.00 (.02)	.00 (.02)
CEO ownership	-.57 (.49)	-.59 (.52)	-.40 (.93)	-.54 (.50)	-.59 (.52)
CEO tenure	-.01 (.02)	-.01 (.02)	-.01 (.03)	-.01 (.02)	-.01 (.02)
Proportion of independent directors	-1.24 (.83)	-1.11 (.77)	-2.52 + (1.40)	-1.11 (.77)	-2.01 (.87)
Board size	-.05 (.05)	-.04 (.05)	-.11 (.08)	-.04 (.05)	-.02 (.05)
Directors' average age	.02 (.03)	.01 (.03)	-.03 (.05)	.01 (.03)	.02 (.03)
Board average tenure	.02 (.03)	.02 (.03)	.03 (.05)	.02 (.03)	.01 (.03)
Gender of nomination committee chair (1=female, 0=male)	-1.08 (.85)	-.98 (.82)	-.21 (1.43)	-.97 (.62)	-.98 (.82)
Gender of the predecessor CEO (1=female, 0=male)	-.63 (.72)	-.56 (.79)	-3.53 (1.01)	-.56 (.79)	-.55 (.79)
Number of women on major board committees	-.14 (.21)	-.16 (.22)	-.30 (.37)	-.16 (.22)	-.15 (.22)
Female-male directors' relative board tenure	-.02 (.26)	-.07 (.46)	.01 (.91)	-.09 (.46)	-.07 (.46)
Female-male directors' relative # of external directorship	.14 (.12)	.12 (.11)	-.03 (.25)	.15 (.11)	.12 (.11)
Female-male directors' relative director ownership	-.04 * (.02)	-.04 * (.02)	-.04 * (.02)	-.04 * (.02)	-.04 * (.02)

**Appendix Table A.2 (cont.)**

Variable	Model1	Model 2	Model 3	Model 4	Model 5
Proportion top 5 female executives in the industry	-3.89 (4.14)	-5.49 (5.16)	-7.61 (9.49)	-7.33 (4.25)	-5.49 (5.16)
Female-male directors overlapping tenure	.05 (.44)	.05 (.63)	1.29 (1.26)	.05 (.62)	.05 (.63)
Proportion of female executives	4.81 ** (.59)	5.21 ** (.59)	3.42 ** (.92)	4.90 ** (.48)	5.21 ** (.59)
Proportion of female directors	-12.52 (7.45)	-8.39 (5.69)	-19.560* (8.84)	-12.39 (9.69)	8.39 (5.69)
Network to other boards whose firm has female CEO, executives, and directors ("network1")	.38 (.42)	.75 + (.39)			
Network to other boards whose firm has female CEO ("network2")			2.15 ** (.61)		
Network to other boards whose firm has female executives ("network3")				-0.528 (.39)	
Network to other boards whose firm has female directors ("network4")					.75 + (.39)
Network1 x Proportion of female directors		11.50 * (5.59)			
Network2 x Proportion of female directors			19.53 * (8.38)		
Network3 x Proportion of female directors				11.49 * (5.56)	
Network4 x Proportion of female directors					9.49 * (4.59)
Constant	-3.01 (2.48)	-2.01 (1.98)	.63 (3.23)	-2.01 (1.98)	-3.78 (2.12)
Number of observations	1,096	1,096	1,096	1,096	1,096
Log likelihood	-162.02	-155.78	-75.45	-155.78	-152.54

Note: Robust standard errors are in parentheses. All models include year dummies and 2-digit industry dummies.

+ p<0.10

\* p<0.01

\*\* p<0.001; two-tailed tests.

**Appendix Table A.3. Probit Regression Results Predicting the Probability of Appointing a Female CEO**

Variable	Model 1	Model 2	Model 3
Log of total firm sales	-.06 (.07)	-.04 (.07)	-.05 (.07)
Return on assets	-.01 * (.01)	-.01 * (.01)	-.01 * (.01)
Total shareholder returns (1 year)	.15 (.18)	.13 (.18)	.19 (.17)
CEO-chair duality	.42 * (.20)	.41 * (.20)	.41 * (.20)
CEO age	.00 (.01)	-.01 (.01)	-.01 (.01)
CEO ownership	-63.83 (49.70)	-69.10 (52.32)	-66.55 (51.98)
CEO tenure	-.01 (.02)	.00 (.02)	-.01 (.02)
Proportion of independent directors	-1.30 + (.76)	-1.28 + (.75)	-1.25 (.76)
Board size	-.06 (.06)	-.05 (.05)	-.05 (.05)
Directors' average age	.02 (.03)	.03 (.03)	.03 (.03)
Board average tenure	.02 (.03)	.01 (.03)	.02 (.03)
Gender of nomination committee chair (1=female, 0=male)	-1.11 (.79)	-1.26 (.83)	-.89 (.72)
Gender of the predecessor CEO (1=female, 0=male)	-.25 (.74)	-.56 (.77)	-.36 (.71)
Number of women on major board committees	-.16 (.21)	-.16 (.22)	-.14 (.22)
Female-male directors' relative board tenure	.13 (.43)	.08 (.44)	.05 (.44)
Female-male directors' relative # of external directorship	.11 (.11)	.12 (.11)	.11 (.11)
Female-male directors' relative director ownership	-.04 * (.02)	-.06 * (.02)	-.04 * (.02)

**Appendix Table A.3 (cont.)**

Variable	Model 1	Model 2	Model 3
Proportion top 5 female executives in the industry	-4.37 (5.07)	-3.77 (5.08)	-6.89 + (3.92)
Female-male directors overlapping tenure	-.41 (.58)	-.28 (.59)	-.25 (.59)
Proportion of female executives	5.02 ** (.58)	3.93 ** (.90)	5.20 ** (.59)
Proportion of female directors	2.98 ** (1.14)	1.27 (1.59)	-.05 (1.82)
Network to other boards whose firm has female CEO, executives, and directors ("network1")	.00 (.31)	.06 (.31)	.07 (.32)
Proportion of female executives x Proportion of female directors		18.76 * (8.02)	
Proportion of top 5 female executives in the industry x Proportion of female directors			3.91 * (1.82)
Constant	-2.36 (2.02)	-3.14 (1.95)	-2.88 (1.85)
Number of observations	1,096	1,096	1,432
Log likelihood	-159.43	-158.77	-157.99

Note: Robust standard errors are in parentheses. All models include year dummies and Models 1 and 2 include 2-digit industry dummies.

+ p<0.10

\* p<0.01

\*\* p<0.001; two-tailed tests.

## APPENDIX B: COMPLEMENTARY LOG-LOG REGRESSION RESULTS

**Appendix Table B.1. Complementary log-log Results Predicting the Probability of Appointing a Female CEO**

Variable	Model 1	Model 2	Model 3
Log of total firm sales	-.12 (.13)	-.13 (.13)	-.12 (.13)
Return on assets	-.02 ** (.01)	-.02 ** (.01)	-.02 ** (.01)
Total shareholder returns (1 year)	.37 (.28)	.36 (.28)	.37 (.28)
CEO-chair duality	.83 * (.37)	.75 * (.36)	.79 * (.36)
CEO age	.00 (.03)	.00 (.03)	-.01 (.03)
CEO ownership	-.83 (.79)	-.84 (.79)	-.72 (.77)
CEO tenure	.00 (.03)	.00 (.03)	.00 (.03)
Proportion of independent directors	-1.18 (1.38)	-1.29 (1.40)	-1.52 (1.37)
Board size	-.10 (.11)	-.10 (.11)	-.14 (.09)
Directors' average age	.00 (.05)	.01 (.05)	.02 (.05)
Board average tenure	.07 (.06)	.06 (.06)	.07 (.06)
Gender of nomination committee chair (1=female, 0=male)	-.96 (.67)	-.98 (.68)	-.86 (.68)
Gender of the predecessor CEO (1=female, 0=male)	-.35 (.55)	-.56 (.65)	-.55 (.63)
Number of women on major board committees	-.32 (.35)	-.40 (.37)	-.34 (.38)
Female-male directors' relative board tenure	.54 (.69)	.55 (.70)	.22 (.47)
Female-male directors' relative # of external directorship	.27 (.19)	.25 (.18)	.28 (.19)

**Appendix Table B.1 (cont.)**

Variable	Model 1	Model 2	Model 3
Female-male directors' relative director ownership	-.06 ** (.02)	-.06 ** (.02)	-.05 (.02)
Proportion top 5 female executives in the industry	-8.36 (8.26)	-7.28 (8.55)	-7.57 (8.57)
Female-male directors overlapping tenure	-.87 (1.01)	-.88 (1.02)	-.03 (1.28)
Network to other boards whose firm has female CEO, executives, and directors ("network1")	.39 (.57)	.43 (.62)	.62 (.62)
Proportion of female executives	9.52 ** (.99)	8.55 ** (.98)	8.65 ** (.99)
Proportion of female directors		5.65 ** (1.99)	
One female director			.45 (.56)
Two female directors			.47 (.65)
Three or more female directors			1.67 * (.75)
Constant	-2.72 (3.75)	-4.67 (3.75)	-5.18 (3.48)
Number of observations	1,096	1,096	1,096
Log likelihood	-160.36	-160.48	-160.81

Note: Robust standard errors are in parentheses. All models include year dummies and 2-digit industry dummies.

+ p<0.10

\* p<0.01

\*\* p<0.001; two-tailed tests.

**Appendix Table B.2. Complementary log-log Results Predicting the Probability of  
Appointing a Female CEO**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Log of total firm sales	-.13 (.13)	-.16 (.13)	-.17 (.17)	-.16 (.13)	-.12 (.13)
Return on assets	-.02 ** (.01)	-.02 ** (.01)	-.02 (.02)	-.02 ** (.01)	-.02 ** (.01)
Total shareholder returns (1 year)	.36 (.28)	.36 (.29)	.29 (.42)	.36 (.29)	.37 (.28)
CEO-chair duality	.75 * (.36)	.76 * (.36)	.39 (.47)	.76 * (.36)	.79 * (.36)
CEO age	.00 (.03)	.00 (.03)	.03 (.04)	.00 (.03)	-.01 (.03)
CEO ownership	-.84 (.79)	-.77 (.80)	-.87 (1.50)	-.77 (.80)	-.72 (.77)
CEO tenure	.00 (.03)	-.01 (.03)	-.02 (.04)	-.01 (.03)	.00 (.03)
Proportion of independent directors	-1.29 (1.40)	-1.23 (1.39)	-2.41 (2.17)	-1.23 (1.39)	-1.52 (1.37)
Board size	-.10 (.11)	-.06 (.08)	-.21 + (.13)	-.06 (.08)	-.14 (.09)
Directors' average age	.01 (.05)	-.01 (.05)	-.06 (.08)	-.01 (.05)	.02 (.05)
Board average tenure	.06 (.06)	.07 (.06)	.11 (.08)	.07 (.06)	.07 (.06)
Gender of nomination committee chair (1=female, 0=male)	-.98 (.68)	-.68 (.69)	-.31 (1.13)	-.68 (.69)	-.86 (.68)
Gender of the predecessor CEO (1=female, 0=male)	-.56 (.65)	-.59 (.65)	-2.30 ** (.71)	-.59 (.65)	-.55 (.63)
Number of women on major board committees	-.40 (.37)	-.37 (.37)	-.50 (.51)	-.37 (.37)	-.34 (.38)
Female-male directors' relative board tenure	.55 (.70)	.28 (.74)	.00 (1.15)	.28 (.74)	.22 (.47)
Female-male directors' relative # of external directorship	.25 (.18)	.27 (.18)	.00 (.35)	.27 (.18)	.28 (.19)
Female-male directors' relative director ownership	-.06 ** (.02)	-.06 ** (.02)	-.05 + (.03)	-.06 ** (.02)	-.05 (.02)



**Appendix Table B.2. (cont.)**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Proportion top 5 female executives in the industry	-7.28 (8.55)	-9.49 (8.86)	-3.71 (12.58)	-9.49 (8.86)	-7.57 (8.57)
Female-male directors overlapping tenure	-.88 (1.02)	-.16 (1.08)	2.09 (1.71)	-.16 (1.08)	-.03 (1.28)
Proportion of female executives	8.55 ** (.98)	8.77 ** (1.00)	5.19 ** (1.29)	8.77 (1.00)	8.65 ** (.99)
Proportion of female directors	5.65 ** (1.99)	-13.19 (11.04)	-35.32 * (15.65)	-12.19 (11.77)	-12.14 (11.20)
Network to other boards whose firm has female CEO, executives, and directors ("network1")	.43 (.62)	-1.02 (.78)			
Network to other boards whose firm has female CEO ("network2")			3.42 ** (.95)		
Network to other boards whose firm has female executives ("network3")				-1.05 (.79)	
Network to other boards whose firm has female directors ("network4")					2.87 + (1.73)
Network1 x Proportion of female directors		18.90 + (10.91)			
Network2 x Proportion of female directors			34.35 * (15.24)		
Network3 x Proportion of female directors				18.72 + (10.64)	
Network4 x Proportion of female directors					17.54 + (10.23)
Constant	-4.67 (3.75)	-3.28 (3.58)	-.29 (5.30)	-3.28 (3.58)	-5.18 (3.48)
Number of observations	1,096	1,096	1,096	1,096	1,096
Log likelihood	-160.48	-158.01	-157.79	-158.01	-160.81

Note: Robust standard errors are in parentheses. All models include year dummies and 2-digit industry dummies.

+ p<0.10

\* p<0.01

\*\* p<0.001; two-tailed tests.

**Appendix Table B.3. Complementary log-log Results Predicting the Probability of Appointing a Female CEO**

Variable	Model 1	Model 2	Model 3
Log of total firm sales	-.13 (.13)	-.08 (.13)	-.25 (.18)
Return on assets	-.02 ** (.01)	-.02 ** (.01)	-.02 (.02)
Total shareholder returns (1 year)	.36 (.28)	.35 (.28)	.56 (.48)
CEO-chair duality	.75 * (.36)	.71 + (.36)	.34 (.48)
CEO age	.00 (.03)	-.01 (.03)	.00 (.04)
CEO ownership	-.84 (.79)	-.98 (.84)	-1.12 (1.76)
CEO tenure	.00 (.03)	.00 (.03)	-.01 (.04)
Proportion of independent directors	-1.29 (1.40)	-1.46 (1.38)	-1.81 (2.16)
Board size	-.10 (.11)	-.08 (.08)	-.23 (.13)
Directors' average age	.01 (.05)	.02 (.05)	.00 (.08)
Board average tenure	.06 (.06)	.06 (.06)	.08 (.08)
Gender of nomination committee chair (1=female, 0=male)	-.98 (.68)	-.83 (.69)	-.89 (.72)
Gender of the predecessor CEO (1=female, 0=male)	-.56 (.65)	-.67 (.65)	-.36 + (.71)
Number of women on major board committees	-.40 (.37)	-.43 (.38)	-.24 (.51)
Female-male directors' relative board tenure	.55 (.70)	.58 (.70)	-.03 (1.11)
Female-male directors' relative # of external directorship	.25 (.18)	.26 (.18)	-.02 (.36)
Female-male directors' relative director ownership	-.06 ** (.02)	-.08 ** (.03)	-.06 * (.03)

**Appendix Table B.3 (cont.)**

Variable	Model 1	Model 2	Model 3
Proportion top 5 female executives in the industry	-7.28 (8.55)	-7.02 (8.59)	-2.00 + (1.04)
Female-male directors overlapping tenure	-.88 (1.02)	-.87 (1.02)	.97 (1.58)
Proportion of female executives	8.55 ** (.98)	7.40 ** (1.45)	6.56 ** (1.45)
Proportion of female directors	5.65 ** (1.99)	3.49 (2.77)	-9.13 * (4.48)
Network to other boards whose firm has female CEO, executives, and directors ("network1")	.43 (.62)	.46 (.62)	.60 ** (.08)
Proportion of female executives x Proportion of female directors		21.77 + (12.59)	
Proportion of top 5 female executives in the industry x Proportion of female directors			10.16 * (4.40)
Constant	-4.67 (3.75)	-5.85 + (3.47)	-3.37 (5.28)
Number of observations	1,096	1,096	1,432
Log likelihood	-160.48	-160.44	-156.28

Note: Robust standard errors are in parentheses. All models include year dummies and Models 1 and 2 include 2-digit industry dummies.

+ p<0.10

\* p<0.01

\*\* p<0.001; two-tailed tests.