

# CEO Gender and Corporate Board Structures

Melissa B. Frye  
[melissa.frye@bus.ucf.edu](mailto:melissa.frye@bus.ucf.edu)  
University of Central Florida

Duong T. Pham  
[duong.pham@ucf.edu](mailto:duong.pham@ucf.edu)  
University of Central Florida

September 23, 2015

## Abstract

Using behavioral differences in negotiation between men and women and the underlying board bargaining framework by Hermalin and Weisbach (1998), we investigate whether female CEO's weaker bargaining power leads to increased board monitoring. We find consistent results that new female CEOs have more gender diversified board and are associated with an increase in overall board monitoring intensity. In contrast, new male CEOs are more likely to increase board size, decrease board independence, reduce board gender diversification, have worse director attendance and have lower overall board monitoring. We also find supporting evidence in terms of CEO compensation, where new male CEOs gain more control and are compensated more post transition, consistent with what we expect from a weaker board.

*Keywords:* Gender; Corporate Governance; Board Structure; Board Monitoring

# 1. Introduction

In recent years, women have made strides in cracking the glass ceiling in leadership positions in corporate America. Female CEOs have been appointed not only in female-friendly industries such as healthcare and consumer products but also in fields that have been dominated by male CEOs. Some examples of women rising to top executive positions in U.S. corporations include Phebe Novakovic of General Dynamics, Meg Whitman of Hewlett-Packard, Ginni Rometty of IBM, Marissa Mayer of Yahoo, Marillyn Hewson of Lockheed Martin, and Mary Barra of General Motors. However, women only hold about 4.6% of CEO positions at S&P 500 companies.<sup>1</sup>

Gender differences have been studied extensively in psychology, management and many other fields. Nevertheless, in finance, the basic question of whether gender matters in terms of decision making remains open for debate among researchers. Huang and Kisgen (2013) document that female executives undertake fewer acquisitions and issue debt less often than male executives and have higher announcement returns. Krishnan and Parsons (2008) and Khan and Vieto (2013) suggest female firms have better performance in terms of earnings quality and return on assets. Martin, Nishikawa, and Williams (2009) and Faccio, Marchica, and Mura (2015) report that firms experience significant reductions in idiosyncratic risk after a female CEO is appointed. However, studies such as Atkinson, Baird, and Frye (2003) do not find any significant differences between male and female fund managers. Johnson and Powell (1994) contend that male and female managers display similar risk propensity and make decisions of equal quality.

---

<sup>1</sup> Catalyst. *Women CEOs of the S&P 500*. New York: Catalyst, April 3, 2015.

Our paper extends the literature by examining the gender question in corporate governance decisions. Prior corporate governance research has focused mostly on gender diversity in the boardroom (Adams and Ferreira 2009; Levi, Li and Zhang 2008; Ahern and Dittmar 2012; and Matsa and Miller 2013) rather than on the role CEO gender plays in shaping monitoring systems.

Hermalin and Weisbach (1998) propose a model of endogenously determined corporate governance, in which they conjecture that the CEO and the board of directors negotiate with respect to the CEO compensation and the intensity of board monitoring. The outcome of such negotiations depends on the balance of power between the CEO and the board. The more powerful the CEO, the higher his or her compensation and the less intense the board monitoring. We hypothesize that behavioral differences and systematic barriers to career advancement will lead to female CEOs' lower bargaining power when facing the board than their male counterparts'. As a result, boards of directors at companies with a female CEO will be structured with higher monitoring intensity.

Studies in psychology document that women underperform men in negotiations. Women have a lower probability relative to men to select into a negotiation (Neiderle and Vesterlund 2007; Vandergrift and Yavas 2009). They tend to be more cooperative and ask for less (Eckel, Oliviera, and Grossman 2008). Kray and Thompson (2004) highlight that prior literature in psychology and management support their conclusions that men outperform women in mixed-gender negotiations. They stress that stereotypical masculine traits, such as assertiveness, independence, and rationality, are valued at the bargaining table. Females tend to act emotionally, with concern for others, and passively, making them more accommodating and less competitive in a bargaining situation. In addition, female's relative higher risk aversion might

explain why females perform worse in ambiguous negotiations (Riley and Babcock 2002). While female executives experience a rigorous selection process to become corporate leaders, there is evidence supporting female executives' relatively higher risk aversion (Martin, Nishikawa, and Williams 2009; Faccio, Marchica and Mura 2015). Furthermore, female CEOs may face more constraints when negotiating with the board due to such barriers as a lack of mentoring, exclusion from informal network, and commitment to family and personal responsibilities (Catalyst 2004).

The corporate governance literature provides various aspects to measure board monitoring intensity. Boards with fewer directors (Jensen 1993; Raheja 2005), a higher fraction of independent directors (Weisbach 1988; Hermalin and Weisbach 1998), a higher fraction of female directors (Adam and Ferreira 2009), a lower proportion of interlocked directors (Hallock 1997), better director attendance (Adam and Ferreira 2012), and a chairman different from the firm CEO (Jensen 1993) are believed to monitor the CEO's activities more intensely. Given women are likely to perform worse in a negotiation with the board, we expect increased board monitoring for firms led by females.

Following other work on the determinants of corporate board composition (Hermalin and Weisbach 1988; Denis and Sarin 1999), we rely on CEO replacement as a shock to examine subsequent changes in board structures. Our results are consistent with female CEOs setting up their board differently from male CEOs. Broadly, female CEOs tend to use structures that are consistent with increased board monitoring. Specifically, we find that a male-to-female CEO transition results in a significantly smaller board with higher gender diversification. While female-to-male CEO transitions are associated with an increase in board size, lower board independence, lower board gender diversification and lower director attendance. Since many of

the monitoring mechanisms we consider may serve as substitutes, we also construct a board index. Essentially, we add one point to the board index if the CEO uses a small board (lower number of directors than industry median), a more independent board (higher percentage of independent directors than industry median), a highly diversified board (higher percentage of women directors than industry median), and have no interlocked directorships. We also add a point for CEO/Chairman separation and director attendance. Thus, the higher the index, the higher the board monitoring intensity, which we expect to be associated with firms that change to a female CEO. Consistent with this, we find that male-to-female transitions are associated with a higher board index while a female-to-male transition significantly deteriorates board monitoring. Overall, a male-to-female CEO transition is associated with a significant increase in board monitoring while the opposite is true for a female-to-male CEO transition.

In view of our findings that newly appointed female CEOs yield and let the board impose stricter monitoring structures, we explore whether female CEO compensation is consistent with our hypothesis that female CEOs' relative bargaining power is lower than their male counterparts'. We found supporting evidence in that new female CEOs are paid significantly less than new male CEOs in total compensation. Structures also differ in that women receive more in cash compensation and less in equity incentives. This holds even in our industry and firms size match sample where the gender pay gap has been reported to be non-existent (Bugeja, Matolcsy, and Spiropoulos 2012). Furthermore, we find that the pay gap persists and even widens post transition, indicating that male CEOs gain persist.

Our paper extends the current literature regarding gender behavior and corporate decisions by showing that female CEOs with relatively weaker bargaining power have to cope with stricter monitoring boards. Our results highlight that in addition to popular explanations of

gender differences in finance such as overconfidence and risk preferences, the CEO's bargaining power and negotiation skills should also be taken into account. The results contribute to the larger behavioral corporate finance literature, where management behaviors and biases affect firm outcomes. We also provide an additional determinant for the structure of the board.

## **2. Literature review and hypothesis**

### **2.1 The on-going negotiation between the CEO and the board of directors**

Hermalin and Weisbach (1998) proposed a model where the structure of the board of directors is endogenously determined and is dependent on the power balance between the board and the CEO in a dynamic timeframe. According to the model the board of directors is trusted with one of the most important tasks that is hiring/firing of management. While firm performance provides a signal of the CEO's ability, the monitoring intensity of the board also leads to better decision making by allowing the board to obtain high quality information with regards to the CEO's performance. Hence, there is a periodic negotiation between the board and the CEO. If the CEO has high bargaining power, the board's monitoring intensity would decline and the CEO's compensation increases. Alternatively, if the CEO performs poorly, the board increases monitoring, slashes compensation and may decide to fire the CEO.

Strong empirical evidence has been found in support of Hermalin and Weisbach's (1998) bargaining framework. Weisbach (1988) found that after a firm performs poorly, inside board members are more likely to be replaced by outside board members. Hallock (1997) found that interlocking directorships seem to help the CEO increase his control over the board and thus increase his compensation. Baker and Gompers (2000) argue that CEO tenure and CEO voting stakes are positive indicators of CEO bargaining power when a board is formed in the IPO

process. The study found that the longer the CEO's tenure and the greater the CEO's voting stake, the higher the number of insiders sitting on the board of the IPO. More recently, Coles, Daniel and Naveen (2014) investigates whether board monitoring is negatively related to the number of directors appointed by the CEO and found that as *co-option* (i.e. the fraction of directors appointed by the CEO on the board) increases, board monitoring decreases.

In summary, Hermalin and Weisbach's (1998) bargaining framework and its supporting empirical evidence show that the higher the CEO bargaining power, the lower board monitoring intensity.

## **2.2 Female CEO's bargaining power**

Given the on-going bargaining process between the CEO and the board of directors, we consider potential explanations for why a female CEO's board would be structured with higher monitoring intensity than her male counterpart's. In general, we posit that female CEOs have lower bargaining power compared to otherwise similar male CEOs.

First, females have weaker bargaining skills relative to males. Examining the gender differences in a competitive environment, researchers have found that men and women behave differently in negotiations. A majority find that women tend to underperform men in negotiations of different settings. Niederle and Vesterlund (2007) and Vandergrift and Yavas (2009) report from experiments that women tend to shy away from competition, although there is no difference in task performance between the two sexes. Eckel, Oliveira, and Grossman (2008) report that women tend to be more egalitarian than men and often ask for less in negotiation. They also find that women are more sensitive to the context of the negotiation and are less likely to fail to reach an agreement than men. Babcock and Laschever (2003) report that women are also less likely to

initiate negotiation and ask for things than men. Some empirical evidence in the finance literature is consistent with women's hesitancy to initiate a negotiation. Huang and Kisgen (2013) report that female CEOs have lower probability to acquire other firms. Similarly, Levi, Li and Zhang (2014) found that firms with more female directors initiate fewer acquisition bids.<sup>2</sup> Kray and Thompson (2004) highlight that prior literature in psychology and management support their conclusions that men outperform women in mixed-gender negotiations. They stress that stereotypical masculine traits, such as assertiveness, independence, and rationality, are valued at the bargaining table. Females tend to act emotionally, with concern for others, and passively, making them more accommodating and less competitive in a bargaining situation. This stream of literature suggests that female CEOs will be more cooperative and capitulate to shareholder desires to protect their own interests.

Second, a female's relatively higher risk aversion may explain her weaker bargaining power. Croson and Gneezy (2009) and Eckman and Grossman (2008) both report various experimental evidence that women are more risk averse than men. Since negotiation is a risky environment, personal risk preferences will affect the negotiator's tactic and outcomes. Riley and Babcock (2002) documents that female MBA students perform much worse than male students in negotiations with high uncertainty but perform equally in situations with no ambiguity. Among top executives, the gender gap in risk preferences is supported with strong empirical evidence. Martin, Nishikawa, and Williams (2009) find changes in both firm total risk and idiosyncratic risk following a female CEO appointment are significantly lower than a male CEO appointment. Faccio, Marchica and Mura (2015) find that firms run by female CEOs have lower leverage, less volatile earnings, and a higher chance of survival than firms with male

---

<sup>2</sup> However, most of the finance literature relies on women's risk preferences to explain the relatively lower level of acquisitions.

counterparts. The paper also finds that after a transition from a male to a female CEO (or vice-versa), the firm experiences a significant reduction (increase) in risk-taking.

Lastly, women CEOs may face more constraints in negotiation than their male counterparts. Surveys of top executives by Catalyst (2004) show that female executives face greater barriers to career development than otherwise similar male colleagues. These barriers include a lack of mentoring, a lack of role models, exclusion from informal networks, gender-based stereotyping, inhospitable corporate culture, and commitment to personal/family. Exclusion from informal networks causes a disadvantage to a female CEO at the negotiation table due to her relatively lower possession of unofficial information. Gender-based stereotyping and inhospitable corporate culture might lead to unfavorable treatment towards a female candidate. And commitment to personal or family responsibilities may force women CEOs to give up more benefits in negotiation.

The available evidence in psychology and management provides support to our conjecture that women CEOs have weaker bargaining power than their male counterparts. However, we must acknowledge that CEOs undergo a stringent process of selection to become leaders in corporate America, thus any differences in gender might be much smaller or nonexistent in this group.<sup>3</sup> Nonetheless, the combination of several behavioral differences and systematic discrimination against women may influence firm decisions in equilibrium as shown in previous studies (Levi, Li and Zhang 2008; Martin, Nishikawa, and Williams 2009; Huang and Kisgen 2013; and Faccio, Marchica and Mura 2015).

---

<sup>3</sup> Atkinson, Baird, and Frye (2003) do not find any significant differences between male and female fund managers, suggesting gender differences may disappear when using a sample of professional women.

## 2.3 Main hypothesis

The bargaining framework by Hermalin and Weisbach (1998) and various supporting empirical evidence suggest that the higher the CEO bargaining power, the lower the board's monitoring intensity. We posit that female CEOs have lower bargaining power than their male counterparts. Combined the above mentioned arguments, our main hypothesis predicts that a *female CEO is associated with great board monitoring intensity.*

Our analysis utilizes several measures of board monitoring intensity. Jensen (1993) argues that large boards do not function effectively and lend themselves to easier control by the CEO. Raheja's (2005) model also shows that a larger corporate board would become less effective in monitoring due to free-riding problems. Hence, the fewer the number of board members the more intense board monitoring. Since independent directors are tougher monitors (Weisbach 1988), we expect that boards with a higher fraction of outside directors will monitor the CEO more intensively. Adams and Ferreira (2009) report that female directors are more likely to be monitors on the board, so the proportion of female directors would positively influence board monitoring. We also look at board interlocking directorships as a proxy for the CEO's control over the board. Hallock (1997) suggests that boards with more interlocked directors are weaker monitors of the CEO's activities, so a board with fewer or no interlocked directors would be one with stronger monitoring. Adams and Ferreira (2012) suggest that director attendance is positively associated with board monitoring, thus board attendance also affects the board's monitoring intensity. Having a separate chairman helps board enhance monitoring function (Jensen 1993). Therefore, a board with separate chairman is associated with higher monitoring.

Given the various measurements of board monitoring intensity and our main hypothesis, we expect female CEO boards will have fewer directors, higher independence, higher gender diversification, lower board interlocks, better director attendance, and less duality relative to male CEO boards.

### **3. Empirical Analyses**

#### **3.1 Sample selection and determination of match sample**

Our sample spans from 1996 to 2013. Governance variables are collected from Risk Metrics. CEO compensation and human capital characteristics are collected from ExecuComp. Firm specific financial information is collected from COMPUSTAT. Stock returns are collected from CRSP. We follow Huang and Kisgen (2013) and require that CEOs be in power for at least three years. This ensures that CEOs have significant time to affect corporate governance structures.

Our final sample includes 13,121 firm-year observations. Although the panel data allow us to examine a comprehensive association between the CEO gender and the board structures, it faces a joint-endogeneity and self-selection problem. The joint-endogeneity problem roots from the fact that board structures, firm performance, and CEO actions are determined in a simultaneous setting. The self-selection problem is caused by the possibility that the board that selects a female CEO may already be a board with higher monitoring intensity. Alternatively, some unobservable firm characteristics may be associated with a board having stricter monitoring and a female being the CEO of the firm. Hence, to investigate the determinants of board structures and mitigate these concerns, we rely on CEO transitions as a shock to examine subsequent changes in board structures. Relying on a change in the firm's characteristics, the firm's performances or regulation to investigate subsequent changes in board composition is

widely used in the literature examining the determinants of board composition (Hermalin and Weisbach 1988; Denis and Sarin 1999; Gilson 1990; Kaplan and Minton 1994; Morck and Nakamura 1999; Dah, Frye and Hurst 2014).

From the panel data, we identify the year when a new CEO appears for the first time in the firm proxy and consider it the transition year. Panel A of Table 1 presents the distribution of CEO turnovers by transition year. We were able to identify 2,082 CEO transitions. Approximately, 3% of firms in the CEO transition sample have a new female CEO. The table strongly highlights the general lack of female CEOs. Panel B of Table 1 presents the distribution of CEO gender by industry as defined by Fama and French 12-industry classification. Consistent with other research, female CEOs in our sample are more highly represented in Consumer-Nondurables and Wholesale, Retail, and Services. We also construct a variable to capture the transition type: gender-switching (male-to-female or female-to-male) or a non-gender-switching transition (male-to-male or female-to-female).<sup>4</sup> Panel C of Table 1 presents the distribution of transition type. For the sample as a whole only 75 firms (3.6%) in our transition sample experience a gender-switching CEO transition. The majority of the sample experience male-to-male or female-to-female CEO transition.

The very small number of firms with gender-switching-CEO transitions prompts us to utilize a matching procedure to obtain a more balanced sample. We use a propensity score matching method to match each gender-switching-firm to five non-gender-switching firms in the nearest neighborhood without replacements. The matching criteria are firm size (total assets) and

---

<sup>4</sup> We did not restrict our sample based on forced versus voluntary turnovers since our focus is on changes made post-transition based on gender regardless of the reason for the turnover. We do control for performance and age in our analyses. Coles, Daniel, and Naveen (2014) highlight the difficulty in correctly identifying forced turnovers and suggest age is a reasonable approximation.

industry.<sup>5</sup> As a result, the matched sample consists of 72 gender-switching firms matched with 286 non-gender-switching firms. The number of matched firms are lower than the expected number of 360 due to the fact that some gender-switching-firms are matched with the same non-gender-switching firms. There are 3 gender-switching firms that were not matched due to missing data or no match was found. Table 1 also presents descriptive statistics of the matched sample. The percentage of female CEOs in the match sample is about 10%, including new female CEOs from both male-to-female and female-to-female transitions. The reason the number of new CEOs is higher than the total number of firms is because some firms experienced more than one CEO transition during the sample period. Our match sample does not contain any CEO transitions for the year 2008 and 2013 since there were no gender-switching transitions in these years. Similar to the whole sample, female CEOs are more represented in Consumer Nondurables and Wholesale, Retail, Service industry. For the match sample, however, female CEOs are found to be highly present in Telephone and Television industry. The number of non-gender-switching transitions in the match sample is much higher than the 286 firms matched with gender-switching firms due to the fact that firms experience more than one non-gender-switching CEO transition in the sample period.

### **3.2 Variable selection and univariate analyses**

To capture changes in board's monitoring intensity, we consider several dimensions of board structures. Specifically, board characteristics include the number of directors on the board (board size), the percentage of independent directors (board independence), the percentage of interlocked directors (board interlock), the percentage of female directors (board diversification), whether all directors attend 75% of board meetings (attendance), and whether the CEO also

---

<sup>5</sup> We do not match based on performance since all transition firms are likely poor performers (Warner, Watts, and Wruck 1988).

serves as chair of the board (duality). Since we want to capture any industry benchmark the firm might use when determining its board structures we calculated the industry adjusted values of all numeric variables by taking the differences between the firm's board characteristics and the industry median.

Table 2 presents mean statistics of board structure variables around CEO transition. The board structure value presented for each transition type for *Pre-transition* and *Post-transition* is the average of each board variable 3 years before and after CEO transition. Comparing the changes in board structures for the two gender switching types of transition (male-to-female and female-to-male) highlights that gender changing transitions affect board characteristics.

In particular, in the whole sample, the average number of directors drops from 10.22 to 9.90, a 3% decline when a new female CEO follows a male CEO. In contrast, the average number of directors rises from 9.85 to 11 (an 11.5% increase) if there is a female-to-male CEO transition. Board independence is improved for all types of CEO transition. Board gender diversification improves on average when there is a new female CEO (29% increase for M-F versus 4% increase for F-M). The percentage of interlocked directors remains low in all transition types but in general the mean statistics indicate that before the CEO replacement the percentage of interlocked directors are high then it drops when there is a new CEO. This may be consistent with the notion that the former CEO's affiliated board members are replaced at the same time as the CEO transition. Director attendance seems to be significantly improved when a new female CEO replaces a male CEO compared with a drop in director attendance when a male CEO replaces a female CEO. New female CEOs on average seem to have a higher likelihood of holding the chair position.

In order to consolidate the overall monitoring power the board, we construct a board index which is the sum of six monitoring indicators. Small board equals 1 if the number of directors sitting on board is less than or equal to the industry median. High independence equals 1 if the percentage of independent directors is greater than or equal to the industry median. High diversification equals 1 if the percentage of female directors is greater than or equal to industry median. Low interlock equals 1 if there is no interlocked director sitting on board. Board attendance is already in binary format and equals 1 if all board members attend at least 75% of board meetings. CEO/Chairman separation equals 1 if the CEO is not the chairman of the board. Thus a board index with the value of 6 indicates highest monitoring power and a board index of 0 implies lowest monitoring power. Table 2 shows that on average the board index improves (increases 20%) after a M-F transition but drops 10.4% after a F-M transition and only increases 14.4% for a non-gender-switching CEO transition for the whole sample. The matched sample mean statistics follow the same pattern as the whole sample.

To give a sense of the changes over time following a CEO transition, Figure 1 depicts board structures for the 3 years before and up to 6 years after a CEO turnover for the whole sample. Board size increases more dramatically and is always higher after F-M transition compared to the case of M-F transition. New male CEO increase board size dramatically in the first two years of tenure while female CEOs decrease board size moderately until year  $t+4$ . Board independence seems to increase steadily post transition for a new CEO. After year  $t+1$  new male CEOs seem to have higher board independence than new female CEOs. Gender diversification on the board is increased one year after a male-to-female CEO transition while it decreases in the first year after a female-to-male transition. Overall new female CEOs have higher gender diversity on the board compared to new male CEOs. The percentage of interlocked

directors is higher before transition than after transition for both male-to-female transitions and non-gender-switching transitions. Director attendance declines initially when there is a new male CEO replacing a female CEO. While it improves later, new male CEO firm's director attendance is always lower than that of a new female CEO. In terms of CEO/Chairman duality, both female and male CEO are more likely to be appointed chairperson of the board in the first year after transition year, but from year  $t+2$ , a female CEO seems to retain her position more effectively than male CEO. Board monitoring for a new female CEO increases in the first two years while the index drops for a new male CEO. The board index for male CEOs is always lower than that of new female CEOs. In general, Figure 1 shows consistent univariate trends with our main hypothesis.

### **3.3 Multivariate analysis of the match sample**

#### **3.3.1 Board structures**

We rely on the matched sample to analyze changes in board structures around CEO transitions in the multivariate testing since the matched sample has a more balanced distribution than the whole sample. Following Huang and Kisgen (2013), we utilize difference-in-difference (DID) tests to determine whether female CEO boards are structured differently from their male counterparts'. The difference-in-difference framework allows us to detect changes in board structures before and after CEO transition. Differentiating among three types of CEO transition (female-to-male, male-to-female, and non-gender-switching) enables us to compare the effects of a new female CEO on firms previously led by male CEO with the effects of a new male CEO on firms previously led by female executives, conditioning on non-gender-switching firms. The difference-in-difference approach also removes all time-invariant unobservable firm effects. The

matched transition sample and DID method provide clean tests of changes in board structure following a CEO turnover.

We consider gender-switching CEO transition a treatment. The first type of treatment is a male-to-female transition and its impact on board structures captured by the coefficient  $\beta_1$  on the variable  $MF_i \times Post_{i,t+1}$  in the following regression:

$$BOARD_{i,t+1} = \alpha + \beta_1 MF_i \times Post_{i,t+1} + \beta_2 Post_{i,t+1} + \beta_3 Controls_{it} + v_i + \tau_t + \varepsilon_{it} \quad (1)$$

Where  $BOARD_{i,t+1}$  is the board structure variable of interest measured at the end of year  $t + 1$  i.e. one year after CEO transition.  $Post_{i,t+1}$  is an indicator that takes the value of 1 if year  $t + 1$  is after CEO transition.  $MF_i$  is an indicator equal 1 if firm experiences a male-to-female (M-F) CEO transition, and 0 for non-gender-switching cases i.e. male-to-male (M-M), female-to-female (F-F) transition. Control variables include firm characteristics such as firm size measured by log of total assets, debt-to-equity ratio (leverage) and the market-to-book ratio. We also control for firm performance using return on assets (ROA) and stock return volatility measured as the standard deviation of previous five year monthly stock returns. We also include some CEO characteristics in the control variables that is CEO age (proxy for experience) and whether the CEO serves as a director of the board.  $v_i$  and  $\tau_t$  are firm and year fixed effects, respectively.

The second type of treatment is a female-to-male CEO transition. Again, the coefficient of interest is  $\beta_1$  from the following regression:

$$BOARD_{i,t+1} = \alpha + \beta_1 FM_i \times Post_{i,t+1} + \beta_2 Post_{i,t+1} + \beta_3 Controls_{it} + v_i + \tau_t + \varepsilon_{it} \quad (2)$$

Where  $FM_i$  is an indicator equal 1 if firm experiences a female-to-male CEO transition, and 0 for non-gender-switching cases. The difference-in-difference estimate is  $\beta_1$  which captures the difference in governance for a F-M transition compared to non-gender-switching transitions.

Since both equation (1) and (2) treat the same group of non-gender-switching firms as the non-treatment group, we can compare the coefficient  $\beta_l$  from equation (1) and (2) in order to evaluate whether a change in power from a male to a female CEO would result in increased monitoring board structures than a change from a female to a male CEO.

The difference-in-difference regression results for the matched sample are presented in Table 3. The coefficients on the variable *Post* are highly significant with consistent signs and mostly equal magnitude in all regressions indicating that there are indeed significant changes in board structures post CEO transition. In the first two columns examining board size, the results show that post transitions all firms decrease the number of directors. The coefficient on variable *MF x Post* is negative which is consistent with our hypothesis that a transition to a new female CEO from a former male CEO is associated with a further decrease in board size or increased monitoring, however it is not statistically significant. On the other hand, the coefficient on variable *FM x Post* is positive and significant at 10%. Thus, the impact of the new male CEO is to offset the usual decrease in board size post transition.

The next two columns report changes in board independence associated with CEO replacement. For both gender-switching treatments, the coefficient on the variable *Post* is positive and significant, indicating in general firms tend to increase the percentage of independent directors sitting on board after a CEO replacement. However, while a switch to a new female CEO from a male CEO has no significant impact on board independence, the female-to-male switch has significant negative impact. The result is consistent with our hypothesis that the male CEO is a stronger negotiator thus negatively influences board independence.

The impact of a new female CEO is found to be more significant on board gender diversification compared to board size and board independence, where a treatment of male-to-female is associated with a highly significant increase in the percentage of female directors sitting on board compared to industry average. The positive significant coefficient on  $MF \times Post$  together with the significant positive coefficient on variable  $Post$  show that new female CEO increase board gender diversification more dramatically than the non-gender-switching firms. In contrast, new male CEO significantly hamper board gender diversification as shown by the significant and negative coefficient on variable  $FM \times Post$ . The overall results of board gender diversification is consistent with our hypothesis that the new female CEO is a weaker negotiator and yields to the board to increase the monitoring members in the board.

The percentage of interlocked directors decreases post CEO transition, which may not be surprising with a new CEO. Neither of the coefficients of interest yield significant results.

For all firms in the matched sample, there is a significant spike in director attendance post transition, indicated by a positive and significant coefficient on the variable  $Post$  in the Board Attendance columns. However, a female-to-male CEO transition is associated with a significant negative impact on board attendance while a new female CEO has no significant influence. The board attendance result is again consistent with our hypothesis that a new male CEO with his relatively higher bargaining power impedes board monitoring.

The probability of a new CEO becoming the chairman of the board is higher after the CEO transition as seen by the positive and significant coefficient on variable  $Post$  for the duality regressions. We do not find any significant differences between various types of CEO transition here. Thus, all new CEOs are likely to be given the additional title of chair regardless of gender.

Finally the last two regressions show significant increase in the overall monitoring index of the board since the coefficient on the variable *Post* is positive and significant at the 1% level. A male-to-female CEO transition is associated with improvement of the board index indicated by a positive coefficient on variable *MF x Post*. In contrast, a female-to-male CEO transition negatively impacts the board index as the coefficient on the variable *FM x Post* is negative and significant at 1%.

Overall, the multivariate analyses of the matched sample show consistent results with our hypothesis that a new female CEO is a relatively weaker negotiator and thus lets board structures lean towards stricter monitoring than a new male CEO.

### 3.3.2 CEO compensation analysis

To further confirm our hypothesis that female CEOs are weaker negotiators than male CEOs when bargaining with the board of directors, we look at another outcome of the negotiation between the board and the new CEO, CEO compensation. If female CEOs indeed have lower bargaining power than their male counterparts when it comes to negotiating their compensation, female executives are expected to be paid less.<sup>6</sup> Although the gender pay gap in top executive compensation has been well documented by the literature (Gayle, Golan and Miller 2012; Carter, Franco, and Gine 2015; Albanesi, Olivetti and Prados 2015), there are some studies that find that the gender pay gap disappears when using a matched sample (Bugeja, Matolcsy and Spiropoulos 2012). Using our matched, we examine the compensation outcome to see if this channel also provides consistent evidence for our main hypothesis. An additional reason for the apparent gender pay gap among top executives may be the relatively lower bargaining power of female executives with respect to the board of directors.

---

<sup>6</sup> While there are clearly other explanations like a bias against women, stereotyping, etc. we believe negotiating skills may also play a significant role. Ultimately we cannot disentangle the causes, but our results still provide evidence that women have less bargaining power over compensation whatever the underlying motivation.

We collect CEO compensation data from ExecuComp for the whole sample for the period from 1996 to 2013. We focus on five main compensation variables. For the dollar value of compensation, we collect total compensation, which is CEO annual compensation including salary, bonus, the total value of restricted stock granted, the Black-Scholes value of options granted, long-term incentive payouts and all other annual compensation. Cash compensation includes salary and bonus, while equity compensation is measured as the total value of restricted stock granted and the Black-Scholes value of options granted. We also examine the proportion of cash compensation in total compensation (cash percent) and the proportion of equity compensation in total compensation (equity percent). All dollar values of compensation are converted to year 2000 dollar.

First, we examine whether new female CEOs in our matched sample are paid less than new male CEOs independent of the former CEO's gender by running the following regression:

$$COMPENSATION_{i,t+1} = \alpha + \beta_1 Post_{i,t+1} + \beta_2 FEMALE_i \times Post_{i,t+1} + \beta_3 Controls_{i,t} + v_i + \tau_t + \varepsilon_i \quad (3)$$

Where  $COMPENSATION_{i,t+1}$  is one of the compensation variables as described above.  $Post_{i,t+1}$  equals 1 if year  $t+1$  is after CEO transition.  $FEMALE_i$  is an indicator equal 1 if the new CEO is a woman and 0 otherwise. Control variables include firm characteristics such as firm size measured by log of total assets, debt-to-equity ratio (leverage) and the market-to-book ratio. We also control for firm performance using return on assets (ROA) and stock return volatility measured as the standard deviation of previous five year monthly stock returns. The control vector also includes board structures to account for impacts of the board of directors on CEO compensation (Core, Holthausen and Larcker 1999). We control for CEO experience by including CEO age and CEO tenure in the regression.  $v_i$  and  $\tau_t$  are firm and year fixed effects, respectively.

The results for equation (3) are presented in Panel A of Table 4. Although new CEO in general is paid significantly less than the former CEO, new female CEOs are compensated significantly less than their male counterparts. Their pay structures also lean more towards cash compensation than equity compensation. The results are consistent with previous literature on gender pay gap (Mohan 2014; Albanesi, Olivetti and Prados 2015) and consistent with our prediction that new female CEOs receive lower pay due to their lower bargaining power.

Second, we investigate how the pay gap evolves post transition cross-sectionally. If the pay gap decreases, it might be the case that the power of female CEO is improved after she takes office and proves her ability to the board. Alternatively, stricter board monitoring may enable the board to assess the female CEO's ability better and compensates her more accurately. If, on the other hand, the pay gap persists or widens, it may be that male CEOs gain power and trust much faster and better than female CEOs and/or the weaker monitoring structures of male CEO board allows male CEO to gain even more power after transition. The gender pay gap is determined by the coefficient  $\beta_1$  in the following regression for each time  $t$  around the CEO transition event:

$$COMPENSATION_{i,t} = \alpha + \beta_1 Female_{i,t} + \beta_2 Controls_{i,t-1} + v_i + \tau_t + \varepsilon_{it} \quad (4)$$

Panel B of Table 4 reports the pay gap around CEO transition. For total compensation, the pay gap seems to persist and even widen for year  $t + 2$  and year  $t + 3$ , indicating that post transition, male CEO gains even more power and widens the pay gap between him and his female counterpart. The percent equity gap highlights why the pay gap persists and even widens, consistent with Albanesi, Olivetti and Prados (2015) who found equity compensation explains and exaggerates the gender pay gap. The results reported in Table 5 are consistent with our

conjecture that male CEO's weaker board monitoring leads to the persistence in gender pay gap post CEO transition.

## **4 Robustness checks**

We carry out several robustness checks for the main empirical results presented in Section 3. First we rerun the difference-in-difference analyses for the sample as a whole transition sample without matching to see if the results still hold. Second, we utilize the panel settings of the whole sample to test for the association between the CEO gender and the board structures while addressing self-selection bias. Lastly, we repeat the compensation analyses for the whole sample.

### **4.1 Difference-in-difference regressions of the whole sample**

To test for robustness of the matched sample empirical results, we apply the same difference-in-difference analyses presented in Section 3.3.1 on the whole sample. Although the distribution of transition types in the whole sample is highly imbalanced, we think testing the whole sample provides valuable confirmation of the empirical results.

The difference-in-difference regressions of the whole sample are reported in Table 5. The results are mostly similar to what we found in the matched sample analysis with comparable sign, significance and magnitude of the most important coefficients. The only result that does not remain significant is the board independence variable. Board independence of the whole sample increases significantly post transition, consistent with matched sample results but neither type of CEO transitions has a significant impact on board independence.

## 4.2 Panel regressions of the whole sample

We next conduct a panel data regression for robustness check. The panel approach allows us to consider gender differences as a whole rather than focusing only on newly appointed CEOs. While the DID methodology captures changes in board structures surrounding CEO transitions, it omits some firm-years that are out of the CEO turnover event window in our sample period. However, a panel setting faces a selection bias problem since firms might non-randomly choose to appoint a female CEO. To address this concern in our panel models, we use two-stage least squares to correct for the selection bias in the main empirical tests, following Heckman (1979).

In the first stage, a selection model is set up to capture some selection mechanisms firms might use in selecting a female CEO. As Huang and Kisgen (2013) and Faccio et al. (2015) report, the selection of female CEO varies with firm's cross-sectional characteristics (especially industry and firm leverage) and CEO human capital characteristics (age). We use a probit regression of hiring a female CEO on pre-transition firm characteristics (firm size, profitability, leverage, stock volatility, market-to-book ratio) as well as CEO characteristics and include an exogenous variable which is the state gender equality index by Sugarman and Straus (1988). Following Huang and Kisgen (2013), we posit that firms headquartered in higher gender equality states will be more open towards hiring female CEOs as well as having more female candidates in the labor market.

$$Female_{it} = f(\text{gender equality}_i, \text{firm characteristics}_{it-1}, \text{CEO age}_{it}, \text{internal}_i, \text{industry}) \quad (5)$$

Where *gender equality<sub>i</sub>* is the state gender equality index corresponding to firm's headquarter, *Internal* is a dummy variable equal 1 if the executive joined the company more than one year before he or she was appointed firm CEO. We also include year and firm fixed effects

to capture unobservable firm characteristics that might influence the decision to hire a female CEO. The first stage probit regression shows some significant capture of the firm - CEO selection process. In particular, female CEOs are hired at firms which operate in the nondurable consumer industry, telephone and television, and wholesale, retail and services industry. Those firms also tend to have lower total assets and lower debt-to-equity ratio, consistent with Faccio et al. (2015). Female CEOs are also younger in age, consistent with Huang and Kisgen (2013). State gender equality index has a positive and significant impact on the probability of the firm employing a female CEO.

In the second stage we calculate the inverse-Mills ratio from the probit regression then include it the following regression.

$$BOARD_{i,t} = \alpha + \beta_1 Female_{i,t} + \beta_2 Controls_{i,t} + \beta_3 IMR + v_i + \tau_t + \varepsilon_{it} \quad (6)$$

The coefficient of interest  $\beta_1$  is then corrected for self-election bias. Vector  $Controls_{i,t}$  includes firm characteristics (firm size, ROA, leverage, market-to-book ratio and stock volatility) and CEO characteristics (age and whether the CEO serves as director).

The results for panel settings are reported in Table 6. Results show that female CEO firms have significantly smaller, more independent, and more gender diversified board. Female CEOs have a lower probability of holding the chair position. All of these results are consistent with our previous empirical findings and our hypothesis. There is no significant differences in board interlock and board attendance between male and female CEO board in the panel setting. Lastly, women CEOs are found to have boards with significantly higher board monitoring index than male CEOs. Overall, the panel models provide significant and similar results to our main empirical findings.

### **4.3 Compensation analysis of the whole sample**

Our final robustness check involves repeating the compensation analysis for the sample as a whole. The results are reported in Table 7. All of the compensation analysis results remain intact for the whole sample. We still observe a significant pay gap when comparing compensation of new male and female CEOs. Female CEOs are paid less in terms of total compensation and the pay gap may be attributed to the lower proportion of equity compensation. Post transition, the pay gap persists and even widens, suggesting that male CEOs become even more powerful after taking control of the firm.

## **5. Alternative explanations**

Our research design relies on the replacement of the CEO to examine subsequent changes made to the structures of the new board of directors compared to the previous board. Although this research design is common in the literature examining the determinants of board composition, it might not be the perfect answer to the joint-endogeneity problem facing corporate governance research in general. The interaction between the firm's characteristics, the firm's performance, the CEO's actions and the board's actions are difficult to detangle. We acknowledge that there is a possibility that a board that chooses a female CEO may have already had stricter monitoring structures in place. However, using the difference-in-difference framework shows that even when the former board has already been structured with higher monitoring intensity, a new male CEO would try to decrease board monitoring while a new female CEO would not have any impact or even increase it. Our hypothesis only predicts that because female CEOs on average have weaker negotiation power, the end-results of the negotiation (board monitoring and CEO compensation) will be more favorable for their male counterparts. Another alternative explanation for the stricter monitoring of boards towards

female CEOs might be that since female CEOs are relatively younger and rarely make it to the top executive positions, choosing a female CEO may involve a lot more uncertainty with regards to the CEO's ability and its impact on firm performance. Particularly when the majority of board members are men and their experiences with female leadership may be limited. While we control for age, we acknowledge that a board that chooses to appoint a new female CEO may be extra-cautious with their decision favor stricter monitoring.

The existing literature on gender behavior in finance and management also offer us some counter-arguments with regards to whether a board should monitor female CEOs more strictly. It is important to acknowledge that there might be some behavioral differences between male and female CEOs that lead to the board decreasing their monitor of female CEO. Huang and Kisgen (2013) and Levi, Li and Zhang (2014) both find that female executives are less overconfident relative to their male counterparts, thus they make better corporate decisions (making fewer value-destroying acquisitions, paying less for acquisition target, using lower leverage, etc.). Therefore, there would be lower incentive for the board to monitor female CEO if she indeed makes better decisions. The management literature, on the other hand, suggests that women leadership involves trust-building and information exchange (Jelinek and Adler 1988; Klenke 2003; Trinidad and Normore 2005), which entail lower information asymmetry between female CEO and the board. While we cannot rule out alternative explanations, we contend that our negotiation hypothesis has merit in the setting of a gender change in the CEO position. Likewise, finding that new female CEOs utilize different governance structures is interesting regardless of the underlying reasons.

## 6. Conclusion

The lack of gender diversification in corporate leadership has led to many findings with regards to the importance of women in the corporate environment. Studies in finance have found that female executives are more risk averse and less overconfident relative to males, thus they significantly decrease firm risk taking (Martin, Nishikawa, and Williams 2009; Faccio, Marchica and Mura 2015), decrease firm leverage and decrease firm acquisitions (Huang and Kisgen 2013). We contribute to the current gender literature in finance by offering another channel where behavioral differences may lead to observable implications. We hypothesize, based on Hermalin and Wiesbach's (1998) bargaining framework, that female CEOs' relatively lower bargaining power with respect to their male counterparts leads to increased board monitoring. We consider CEO transitions as a shock to examine subsequent changes in board structures and differentiate between three types of CEO transition (a male-to-female transition, a female-to-male transition, and a non-gender-switching transition). Using an industry and firm size match sample and various robustness checks, we find consistent results that female CEO boards have fewer directors, are more independent, more gender diversified, have better director attendance, and have higher overall board monitoring index.

In order to confirm our hypothesis, we explore another outcome of the CEO – board negotiation by examining CEO compensation. We find that a CEO gender pay gap exists even with a matched sample. Furthermore, the pay gap persists and widens post CEO transition, consistent with the notion that male CEOs gain more control over a weaker monitoring board than female CEOs.

Our paper contributes to the growing literature regarding behavioral biases in corporate finance. Management behaviors play an important role in corporate outcomes and should be

investigated further in future research. While males and females may differ in terms of overconfidence and risk-tolerance, other differences in behavior may matter as well and do affect governance structures.

## References

- Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, *94*, 291-309.
- Adams, R. B., & Ferreira, D. (2012). Regulatory pressure and bank directors' incentives to attend board meetings. *International Review of Finance*, *12*, 227–248.
- Ahern, K. R., & Dittmar, A. K. (2012). The Changing of the boards: The impact on firm valuation of mandated female board representation. *Quarterly Journal of Economics*, *127*(1), 137-197.
- Albanesi, S., Olivetti, C., & Prados, M. J. (2015). Gender and dynamic agency: Theory and evidence on the compensation of top executives. *Working paper*.
- Atkinson, S., Baird, S., & Frye, M. (2003). Do female fund managers manage differently? *Journal of Financial Research*, *26*, 1-18.
- Babcock, L., & Laschever, S. (2003). *Women don't ask: Negotiation and the gender divide*. Princeton, NJ: Princeton University Press.
- Baker, M., & Gompers, P. (2003). The Determinants of Board Structure at the Initial Public Offering. *Journal of Law & Economics*, *46*, 569-598.
- Bueja, M., Matolcsy, Z., & Spiropoulos, H. (2012). Is there a gender gap in CEO compensation? *Journal of Corporate Finance*, *18*, 849–859.
- Catalyst, 2004. Women and men in U.S. corporate leadership: Same workplace, different reality?
- Carter, M. E., Franco, F., & Gine, M. (2015). Executive gender pay gaps: the roles of board diversity and female risk aversion. *Working paper*.

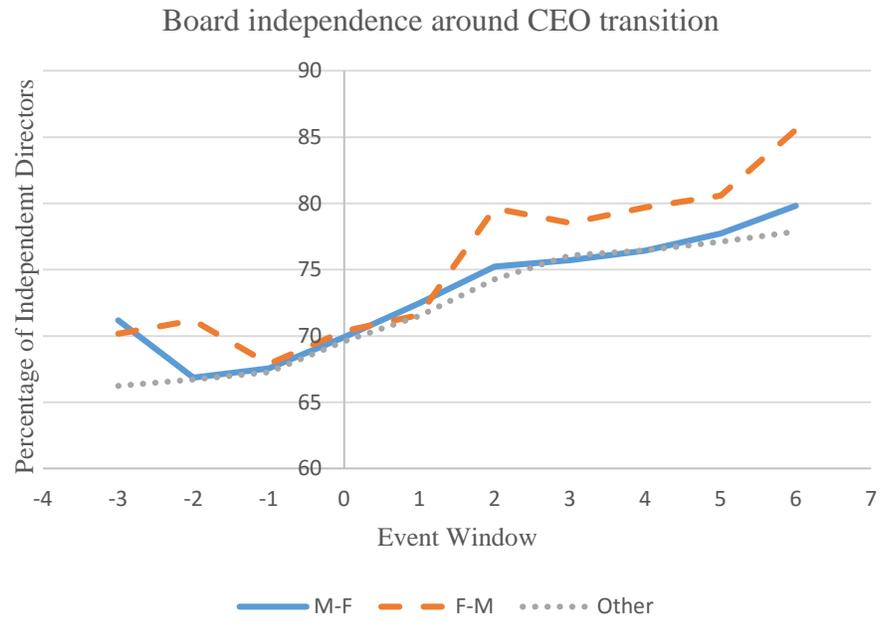
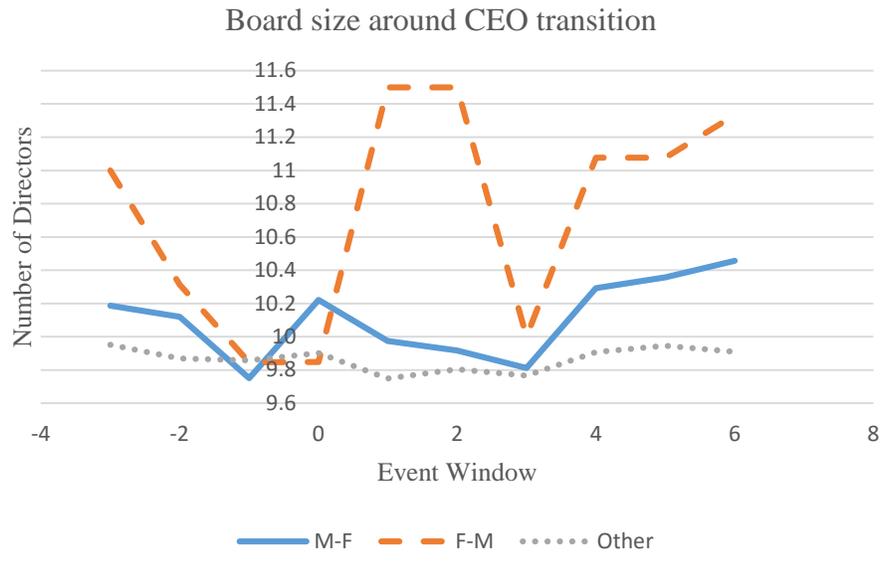
- Coles, J. L., Daniel, N. D., & Naveen, L. (2014). Co-opted boards. *Review of Financial Studies*, 47, 1751-1796.
- Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation and firm performance. *Journal of Financial Economics*, 51, 371-406.
- Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, 47(2), 1-27.
- Dah, M. A., Frye, M. B., & Hurst, M. (2014). Board changes and CEO turnover: The unanticipated effects of the Sarbanes–Oxley Act. *Journal of Banking and Finance*, 41, 97-108.
- Denis, D. J., & Sarin, A. (1999). Ownership and board structures in publicly traded corporations. *Journal of Financial Economics*, 52, 187-224.
- Faccio, M., Marchica, M., & Mura, R. (2015). CEO Gender, Corporate Risk-Taking, and the Efficiency of Capital Allocation. *Working paper*.
- Eckel, C. C., & Grossman, P. J. (2002). Sex differences and statistical stereotyping in attitudes toward financial risk. *Evolution and Human Behavior*, 23(4), 281-295.
- Eckel, C. C., Oliveira, A. C., & Grossman, P. J. (2008). Gender and Negotiation in the Small: Are Women Perceived to Be More Cooperative than Men? *Negotiation Journal*, 24(4), 429-445.
- Gayle, G., Golan, L., & Miller, R. A. (2012). Gender differences in executive compensation and job mobility. *Journal of Labor Economics*, 30(4), 829-71.
- Gilson, S. C. (1990). Bankruptcy, boards, banks, and blockholders. *Journal of Financial Economics*, 27, 355-387.

- Hallock, K. (1997). Reciprocally interlocking boards of directors and executive compensation. *Journal of Financial and Quantitative Analysis*, 32(3), 331-343.
- Heckman, J. J. (1979). Sample selection as a specification error. *Econometrica*, 47, 153-161.
- Hermalin, B. E., & Weisbach, M. S. (1998). Endogenously Chosen Boards of Directors and Their Monitoring of the CEO. *American Economic Review*, 88(1), 96-118.
- Hermalin, B. E., & Weisbach, M. S. (2003). Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature. *FRBNY Economic Policy Review*, 9, 7-26.
- Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics*, 108(3), 822-839.
- Jelinek, M., and N. J. Adler. (1988). Women: World-class managers for global competition. *The Academy of Management Executive*, 2(1), 11-19.
- Jensen, M. C. (1993). The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems. *Journal of Finance*, 48(3), 831-880.
- Johnson, J.E.V. & Powell, P.L. (1994). Decision Making, Risk and Gender: Are Managers Different? *British Journal of Management*, 5, 123-138.
- Kaplan, S. N., & Minton, B. A. (1994). Appointments of outsiders to Japanese boards: Determinants and implications for managers. *Journal of Financial Economics*, 36, 225-258.
- Khan, W. A., & Vieto, J. P. (2013). CEO gender and firm performance. *Journal of Economics and Business*, 67, 55-66.

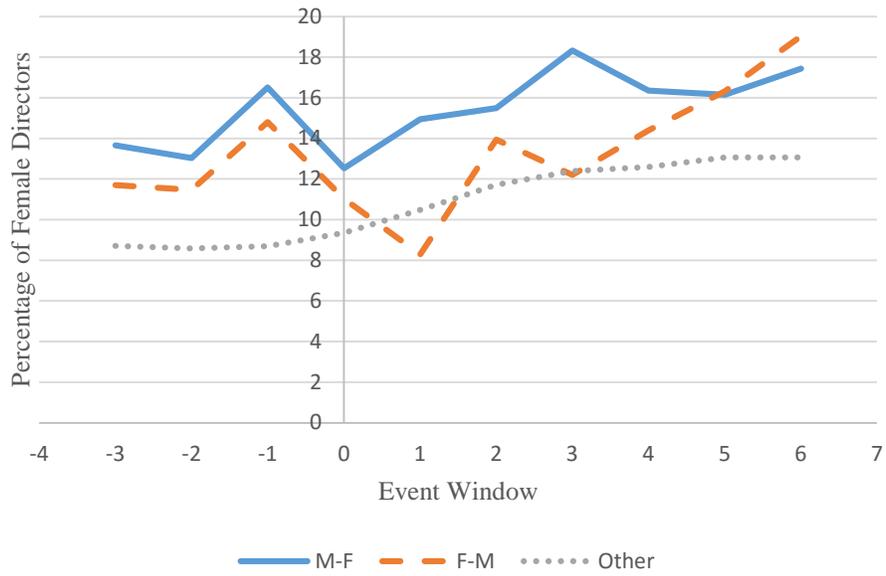
- Klenke, K. (2003). Gender influences in decision-making processes in top management teams. *Management Decision*, 41(10), 1024-34.
- Kray, L. J., & Thompson, L. (2004). Gender stereotypes and negotiation performance: An examination of theory and research. *Research in Organizational Behavior*, 26, 103-182.
- Krishnan, G. V., & Parsons, L. M. (2008). Getting to the Bottom Line: An Exploration of Gender and Earnings Quality. *Journal of Business Ethics*, 78(1/2), 65-76.
- Levi, M., Li, K., & Zhang, F. (2008). Mergers and Acquisitions: The Role of Gender. *Working paper*.
- Martin, A. D., Nishikawa, T., & Williams, M. A. (2009). CEO gender: Effects on Valuation and Risk. *Quarterly Journal of Finance and Accounting*, 48(3), 23-40.
- Matsa, M. A., & Miller, A. R. (2013). Female Style in Corporate Leadership? Evidence from Quotas. *American Economic Journal: Applied Economics*, 5(3), 136-169.
- Niederle, M., & Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much? *Quarterly Journal of Economics*, 122(3), 1067-1101.
- Raheja, C. G. (2005). Determinants of Board Size and Composition: A Theory of Corporate Boards. *Journal of Financial and Quantitative Analysis*, 40(2), 283-306.
- Riley, H., & Babcock, L. (2002). Gender as situational phenomenon in negotiation. *Working paper*.
- Sugarman, D. B., & Straus, M. A. (1988). Indicators of gender equality for American states and regions. *Social Indicators Research*, 20(3), 229-270.
- Trinidad, C., and A. H. Normore. (2005). Leadership and gender: A dangerous liaison? *Leadership & Organization Development Journal*, 26 (7), 574-90.

- Vandegrift, D., & Yavas, A. (2009). Men, women, and competition: An experimental test of behavior. *Journal of Economic Behavior & Organization*, 72(1), 554-570.
- Warner J. B., Watts, R. L., and Wruck, K. H. (1988). Stock prices and top management changes. *Journal of Financial Economics*, 20, 461-492.
- Weisbach, M. S. (1988). Outside directors and CEO turnover. *Journal of Financial Economics*, 20, 431-460.

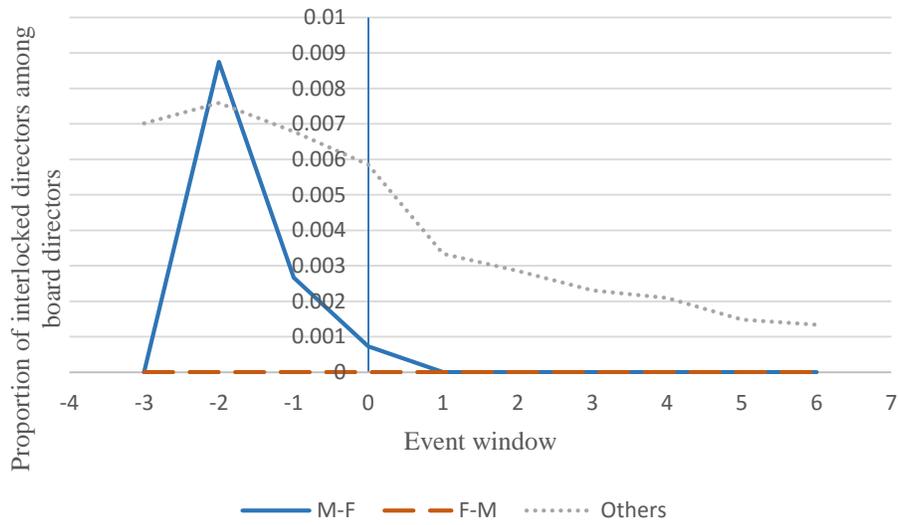
**Figure 1: Board Structures around CEO Transition**



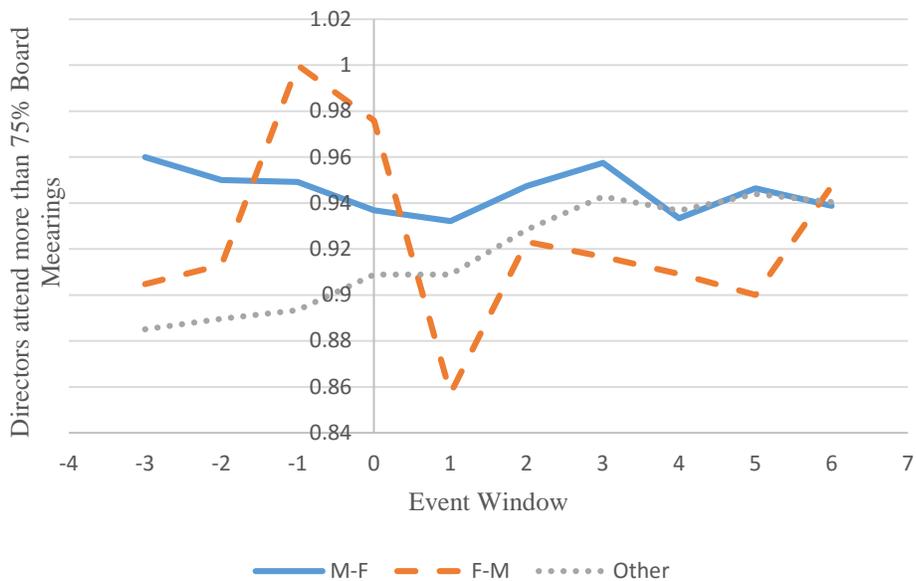
Board gender diversification around CEO transition



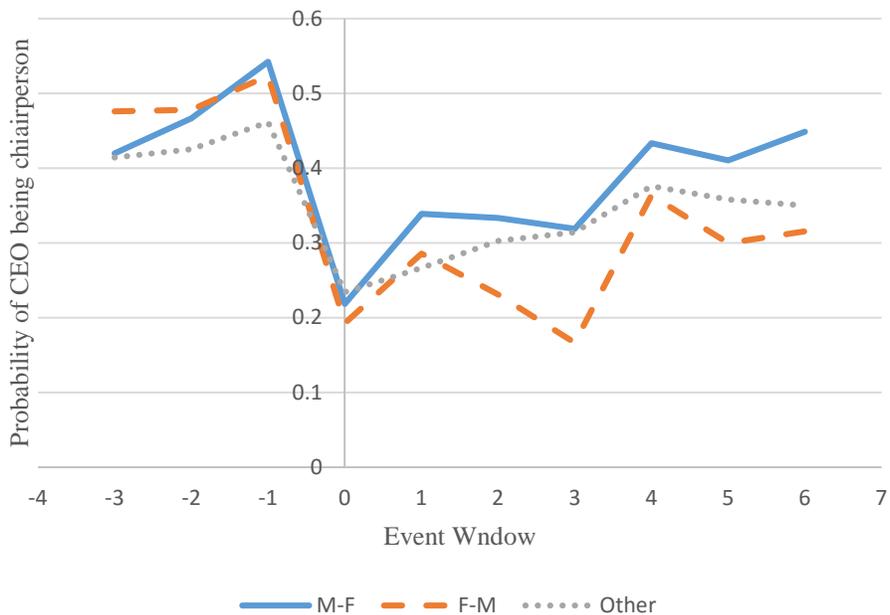
Board interlock around CEO transition



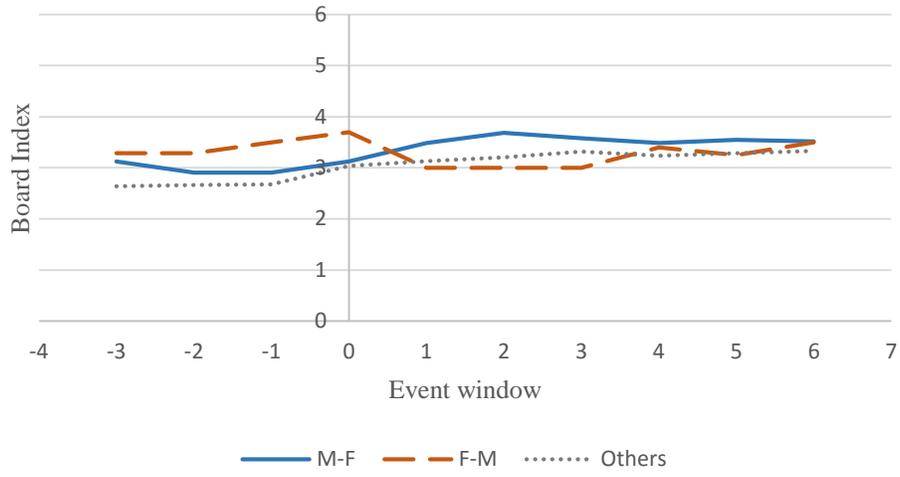
Director attendance around CEO transition



Duality around CEO transition



Board index around CEO transition



**Table 1: Distribution of new CEOs**

This table presents the distribution of new CEO gender and transition types. Transition year is the first year that the CEO is reported as CEO in the annual report. The industry definition follows Fama and French classification on Kenneth French's website [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)

Panel A: Distribution of new CEOs by gender and transition years

Year	Whole Sample				Match Sample			
	Female	Male	Total	% Female	Female	Male	Total	% Female
1996	1	98	99	1.01%	1	25	26	3.85%
1997	1	103	104	0.96%	1	29	30	3.33%
1998	0	121	121	0.00%	0	33	33	0.00%
1999	0	132	132	0.00%	0	34	34	0.00%
2000	4	155	159	2.52%	4	45	49	8.16%
2001	4	179	183	2.19%	4	48	52	7.69%
2002	5	107	112	4.46%	5	32	37	13.51%
2003	4	130	134	2.99%	4	29	33	12.12%
2004	4	129	133	3.01%	4	44	48	8.33%
2005	4	150	154	2.60%	4	28	32	12.50%
2006	7	132	139	5.04%	7	40	47	14.89%
2007	8	167	175	4.57%	8	43	51	15.69%
2008	6	169	175	3.43%				
2009	4	139	143	2.80%	6	41	47	12.77%
2010	7	65	72	9.72%	4	29	33	12.12%
2011	1	36	37	2.70%	1	14	15	6.67%
2012	0	7	7	0.00%	0	4	4	0.00%
2013	0	3	3	0.00%				
<b>Total</b>	<b>60</b>	<b>2,022</b>	<b>2,082</b>	<b>2.88%</b>	<b>59</b>	<b>533</b>	<b>592</b>	<b>9.97%</b>

Panel B: Distribution of new CEOs by gender and industry

Industry	Whole Sample				Match Sample			
	Female	Male	Total	% Female	Female	Male	Total	% Female
<i>Consumer Nondurables</i>	10	122	132	7.58%	10	56	66	15.15%
<i>Consumer Durables</i>	0	69	69	0.00%	0	26	26	0.00%
<i>Manufacturing</i>	6	263	269	2.23%	6	58	64	9.38%
<i>Energy, Oil, Gas, and Coal</i>	1	74	75	1.33%	1	16	17	5.88%
<i>Chemicals</i>	2	83	85	2.35%	2	20	22	9.09%
<i>Business Equipment</i>	10	376	386	2.59%	10	78	88	11.36%
<i>Telephone and Television</i>	3	38	41	7.32%	3	8	11	27.27%
<i>Utilities</i>	4	129	133	3.01%	4	40	44	9.09%
<i>Wholesale, Retail, Service</i>	13	246	259	5.02%	13	77	90	14.44%
<i>Healthcare</i>	3	138	141	2.13%	3	42	45	6.67%
<i>Finance</i>	5	258	263	1.90%	5	64	69	7.25%
<i>Other</i>	3	226	229	1.31%	2	48	50	4.00%
<b>Total</b>	<b>60</b>	<b>2,022</b>	<b>2,082</b>	<b>2.88%</b>	<b>59</b>	<b>533</b>	<b>592</b>	<b>10%</b>

Panel C: Distribution of transition types

Transition type	Whole Sample		Match Sample	
	Freq.	Percent	Freq.	Percent
<i>Male-to-Female</i>	57	2.74%	56	9.46%
<i>Female-to-Male</i>	18	0.86%	16	2.70%
<i>Non-gender-switching</i>	2,007	96.40%	520	87.84%
<b>Total</b>	<b>2,082</b>	<b>100%</b>	<b>592</b>	<b>100%</b>

**Table 2: Mean statistics of board characteristics around CEO transition**

This table presents the mean statistics of board characteristics around CEO transitions by type of transition. Year  $t$  is the transition year,  $t-n$  and  $t+n$  mean is the average of board characteristics 3 year before and after transition.

Variables		Whole Sample			Match Sample		
		M - F	F - M	Non-gender-switching	M - F	F - M	Non-gender-switching
<i>Board Size</i>							
	$t-n$	9.75	9.85	9.86	9.67	10.99	10.17
	$t$	10.22	9.85	9.90	10.37	10.51	10.08
	$t+n$	9.90	11	9.77	9.83	11.00	10.00
<i>Board Independence</i>							
	$t-n$	67.56%	67.89%	67.26%	66.93%	73.59%	66.99%
	$t$	69.91%	70.37%	69.60%	68.84%	73.04%	70.13%
	$t+n$	74.47%	76.58%	73.96%	74.23%	74.96%	72.96%
<i>Board Diversification</i>							
	$t-n$	16.51%	14.80%	8.92%	15.23%	18.52%	9.50%
	$t$	12.53%	11.03%	9.42%	18.82%	17.12%	9.88%
	$t+n$	16.26%	11.48%	11.69%	24.15%	12.77%	12.10%
<i>Board Interlock</i>							
	$t-n$	0.38%	0.00%	0.71%	0.40%	0.53%	0.75%
	$t$	0.07%	0.00%	0.50%	0.08%	0.25%	0.51%
	$t+n$	0.00%	0.00%	0.28%	0.00%	0.00%	0.22%
<i>Attendance</i>							
	$t-n$	0.95	1	0.89	0.96	0.93	0.88
	$t$	0.94	0.98	0.91	0.94	0.97	0.90
	$t+n$	0.95	0.90	0.93	0.94	0.90	0.92
<i>Duality</i>							
	$t-n$	0.54	0.52	0.46	0.45	0.49	0.42
	$t$	0.22	0.19	0.23	0.21	0.23	0.21
	$t+n$	0.33	0.23	0.29	0.33	0.19	0.28
<i>Board Index</i>							
	$t-n$	2.98	3.35	2.66	3.13	3.43	2.84
	$t$	3.12	3.70	3.03	3.48	3.40	3.13
	$t+n$	3.58	3.00	3.22	3.60	3.34	3.25

**Table 3: Match Sample Board Structures Difference-in-Difference Analysis**

This table presents results on board structure decisions surrounding CEO transition using difference-in-difference analysis which considers CEO gender switching a treatment. The dependent variables are board characteristics including the number of directors sitting on the board of directors (board size), the percentage of independent directors among all directors (board independence), the percentage of female directors among all board members (board diversification), the percentage of interlocked directors among all board members, whether all directors attend at least 75% of board meetings (board attendance), whether the CEO also serves as Chairman of the board (duality), and a board index. The board index is the sum of five indicators: small board (board size lower than or equal to industry average), high independence (the proportion of independent directors higher than or equal to industry average), high diversification (the proportion of female directors higher than or equal to industry average), low interlock (board having no interlocked director) and director attendance. All dependent variables except for board index are industry adjusted and are collected three years before and after CEO replacement. The table presents difference-in-difference regression results contrasting the two types of transition: male-to-female vs. female-to-male CEO transitions using the match sample. All regressions include firm and year fixed effects. Constant terms are suppressed. Test statistics are standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% respectively.

Variables	Board size		Board independence		Board diversification		Board interlock		Board attendance		Duality		Board index	
	M-F	F-M	M-F	F-M	M-F	F-M	M-F	F-M	M-F	F-M	M-F	F-M	M-F	F-M
<i>MF x Post</i>	-0.12 (0.164)		0.497 (1.447)		4.494*** (0.802)		0.471 (0.288)		-0.654 (0.510)		0.062 (0.233)		0.168* (0.100)	
<i>FM x Post</i>		0.712* (0.380)		-6.645** (3.299)		-12.751*** (1.739)		0.732 (0.662)		-2.303*** (0.857)		-16.269 (906.684)		-1.335*** (0.231)
<i>Post</i>	-0.198*** (0.055)	-0.224*** (0.056)	3.083*** (0.485)	3.084*** (0.485)	1.603*** (0.269)	1.854*** (0.256)	-0.405*** (0.097)	-0.390*** (0.097)	0.564*** (0.143)	0.570*** (0.144)	0.324*** (0.092)	0.360*** (0.094)	0.265*** (0.034)	0.276*** (0.034)
<i>ROA</i>	-0.106 (0.227)	-0.263 (0.234)	-1.885 (1.997)	-1.187 (2.031)	-1.05 (1.107)	0.427 (1.071)	0.098 (0.398)	0.077 (0.407)	0.675 (0.426)	0.777* (0.430)	-1.266*** (0.376)	-1.175*** (0.397)	-0.166 (0.138)	-0.107 (0.142)
<i>Firm size</i>	1.847*** (0.414)	2.377*** (0.428)	76.242*** (3.646)	76.640*** (3.716)	29.701*** (2.021)	25.637*** (1.959)	-4.994*** (0.719)	-5.266*** (0.736)	3.134*** (0.946)	2.812*** (0.943)	2.448*** (0.628)	2.095*** (0.669)	3.697*** (0.250)	3.512*** (0.257)
<i>Firm leverage</i>	-0.147 (0.277)	-0.097 (0.293)	-10.224*** (2.436)	-9.493*** (2.544)	-1.477 (1.351)	-1.204 (1.341)	-0.372 (0.482)	-0.416 (0.506)	-1.555** (0.719)	-1.597** (0.741)	-0.254 (0.412)	0.139 (0.439)	-0.391** (0.168)	-0.386** (0.177)
<i>Market-to-book</i>	-0.002 (0.003)	-0.003 (0.004)	0.035 (0.025)	0.035 (0.031)	-0.030** (0.014)	0.005 (0.017)	0 (0.005)	-0.002 (0.006)	-0.021 (0.015)	-0.02 (0.014)	-0.002 (0.002)	-0.003 (0.002)	0.002 (0.002)	0.001 (0.002)
<i>Stock volatility</i>	-3.213*** (0.768)	-3.491*** (0.787)	24.027*** (6.759)	27.835*** (6.830)	14.394*** (3.748)	9.276** (3.601)	-0.922 (1.344)	-0.933 (1.365)	4.808** (1.990)	5.293*** (1.984)	4.369*** (1.014)	6.076*** (1.145)	1.818*** (0.467)	1.923*** (0.476)
<i>CEO age</i>	-0.005 (0.005)	-0.008 (0.005)	0.109** (0.043)	0.118*** (0.046)	0.04 (0.024)	0.078*** (0.024)	0.012 (0.009)	0.014 (0.009)	0.002 (0.013)	0.002 (0.013)	0.062*** (0.008)	0.073*** (0.009)	0.006* (0.003)	0.007** (0.003)
<i>CEO serving as director</i>	0.397 (0.296)	0.342 (0.292)	-14.565*** (2.609)	-14.092*** (2.534)	-1.47 (1.447)	-1.08 (1.336)	-0.188 (0.505)	-0.192 (0.494)	-13.471 (435.400)	-13.353 (404.179)	1.348*** (0.460)	1.386*** (0.461)	-0.629*** (0.175)	-0.590*** (0.172)
Observations	3,192	2,897	3,192	2,897	3,192	2,897	3,209	2,911	2,136	2,009	3,241	2,827	3,209	2,911
R-squared	0.02	0.029	0.176	0.185	0.122	0.108	0.032	0.036					0.122	0.12
Pseudo R-squared									0.043	0.049	0.04	0.053		

**Table 4: Compensation of new female CEOs in the match sample**

This table presents compensation analysis of new CEOs in the match sample. Panel A reports the pay gap between male and female CEO after CEO replacement, independent of the former CEO's gender. Panel B examines whether new female CEO receives significantly lower pay than their male counterparts when the former CEO was a man. Panel C investigates changes in the pay gap around CEO transition. Dependent variables are CEO compensation including salary, equity based compensation, bonus, long-term-incentive-payouts and other compensation (total compensation); salary and bonus (cash compensation); reported value of restricted stocks and Black-Scholes value of options granted (equity compensation); the proportion of cash compensation in total compensation (cash percent); and the proportion of equity compensation in total compensation (equity percent). All dollar value compensations are converted to year 2000 dollar. All variables are collected three years before and after CEO replacement. All regressions include firm and year fixed effects. Test statistics are standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% respectively.

Panel A: New female CEO pay gap independent of previous CEO gender

Variables	Total Compensation	Cash Compensation	Equity Compensation	Cash Percent	Equity Percent
<i>Female x Post</i>	-0.200** (0.087)	0.041 (0.091)	-0.195 (0.196)	0.079*** (0.029)	-0.071** (0.030)
<i>Post</i>	-0.127*** (0.030)	0.068** (0.031)	-0.054 (0.055)	0.083*** (0.010)	-0.087*** (0.010)
<i>Board size</i>	0.005 (0.010)	0 (0.010)	-0.053*** (0.016)	-0.001 (0.003)	0.009** (0.003)
<i>Board independence</i>	-0.009*** (0.001)	0.001 (0.001)	0.003 (0.002)	0.004*** (0.000)	-0.006*** (0.000)
<i>Board gender diversification</i>	-0.001 (0.002)	0.002 (0.002)	0.015*** (0.004)	0.002*** (0.001)	-0.003*** (0.001)
<i>Board interlock</i>	0.101 (0.601)	0.316 (0.627)	0.489 (0.856)	0 (0.197)	-0.085 (0.209)
<i>Duality</i>	0.466*** (0.031)	0.211*** (0.032)	0.272*** (0.060)	-0.120*** (0.010)	0.146*** (0.011)
<i>ROA</i>	0.274** (0.126)	0.332** (0.132)	0.148 (0.184)	0.012 (0.041)	0.018 (0.044)
<i>Firm size</i>	-0.007 (0.252)	1.288*** (0.264)	4.575*** (0.513)	0.659*** (0.083)	-0.956*** (0.088)
<i>Firm leverage</i>	-0.833*** (0.153)	-0.817*** (0.160)	-0.578** (0.274)	0.081 (0.050)	-0.126** (0.053)
<i>Market-to-book</i>	0.003* (0.002)	0.001 (0.002)	0.004* (0.002)	0 (0.000)	0 (0.001)
<i>Stock volatility</i>	3.486*** (0.414)	1.785*** (0.433)	1.247 (0.884)	-0.740*** (0.136)	0.964*** (0.144)
<i>Age</i>	-0.013*** (0.003)	-0.014*** (0.004)	-0.013** (0.006)	0.003*** (0.001)	-0.005*** (0.001)
<i>Tenure</i>	0.003 (0.004)	0.027*** (0.004)	-0.005 (0.007)	0.005*** (0.001)	-0.005*** (0.001)
Observations	3,315	3,308	1,738	3,315	3,315
R-squared	0.14	0.058	0.162	0.211	0.274

Panel B: Female CEO pay gap around CEO replacement

t	Total Compensation		Percent Cash		Percent Equity	
	Pay Gap	t value	Pay Gap	t value	Pay Gap	t value
-3	-0.579	-0.69	0.236	1.10	-0.413	-1.76**
-2	0.453	0.84	-0.123	-0.67	0.019	0.10
-1	-1.641	-1.73**	0.054	0.19	-0.134	-0.47
0	-0.422	-1.44	0.183	1.85	-0.222	-2.08**
1	-0.254	-0.76	0.198	1.92	-0.187	-1.67**
2	-0.911	-2.47***	0.364	2.91	-0.399	-2.78***
3	-0.929	-2.61***	0.515	3.46	-0.567	-3.40***

**Table 5: Whole Sample Board Structures Difference-in-Difference Analysis**

This table presents results on board structure decisions surrounding CEO transition using difference-in-difference analysis which considers CEO gender switching a treatment. The dependent variables are board characteristics including the number of directors sitting on the board of directors (board size), the percentage of independent directors among all directors (board independence), the percentage of female directors among all board members (board diversification), the percentage of interlocked directors among all board members, whether all directors attend at least 75% of board meetings (board attendance), whether the CEO also serves as Chairman of the board (duality), and a board index. The board index is the sum of five indicators: small board (board size lower than or equal to industry average), high independence (the proportion of independent directors higher than or equal to industry average), high diversification (the proportion of female directors higher than or equal to industry average), low interlock (board having no interlocked director) and director attendance. All dependent variables except for board index are industry adjusted and are collected three years before and after CEO replacement. The table presents difference-in-difference regression results contrasting the two types of transition: male-to-female vs. female-to-male CEO transitions using the whole sample. All regressions include firm and year fixed effects. Test statistics are standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% respectively.

Variables	Board size		Board independence		Board diversification		Board interlock		Board attendance		Duality		Board index	
	M-F	F-M	M-F	F-M	M-F	F-M	M-F	F-M	M-F	F-M	M-F	F-M	M-F	F-M
<i>MF x Post</i>	-0.162 (0.160)		-0.539 (1.307)		4.123*** (0.711)		0.327 (0.204)		-0.543 (0.492)		0.182 (0.219)		0.169* (0.093)	
<i>FM x Post</i>		0.802** (0.341)		-1.458 (2.766)		-9.983*** (1.486)		0.423 (0.412)		-2.412*** (0.809)		-0.705 (0.627)		-0.940*** (0.197)
<i>Post</i>	-0.188*** (0.028)	-0.196*** (0.028)	4.006*** (0.226)	4.026*** (0.226)	2.033*** (0.123)	2.105*** (0.121)	-0.323*** (0.039)	-0.321*** (0.039)	0.476*** (0.070)	0.480*** (0.070)	0.206*** (0.045)	0.216*** (0.045)	0.276*** (0.016)	0.280*** (0.016)
<i>ROA</i>	0.001 (0.110)	-0.032 (0.110)	-1.356 (0.893)	-1.166 (0.896)	0.853* (0.486)	1.226** (0.481)	-0.023 (0.045)	-0.025 (0.045)	0.228 (0.275)	0.257 (0.272)	0.018 (0.042)	0.015 (0.042)	-0.129** (0.063)	-0.116* (0.064)
<i>Firm size</i>	2.569*** (0.205)	2.705*** (0.206)	67.358*** (1.666)	67.178*** (1.672)	28.283*** (0.906)	27.253*** (0.898)	-2.124*** (0.243)	-2.156*** (0.245)	3.109*** (0.475)	3.040*** (0.474)	1.714*** (0.300)	1.587*** (0.304)	2.843*** (0.118)	2.777*** (0.118)
<i>Firm leverage</i>	0.129 (0.142)	0.134 (0.144)	-4.890*** (1.156)	-4.909*** (1.167)	0.556 (0.629)	0.48 (0.627)	0.203 (0.167)	0.208 (0.169)	-0.512 (0.343)	-0.494 (0.345)	0.201 (0.204)	0.287 (0.208)	-0.174** (0.082)	-0.172** (0.083)
<i>Market-to-book</i>	0 0.000	0 0.000	0.002 (0.002)	0.002 (0.002)	0.001 (0.001)	0.002 (0.001)	0 0.000	0 0.000	-0.001 (0.001)	-0.001 (0.001)	0 0.000	0 0.000	0 0.000	0 0.000
<i>Stock volatility</i>	-3.313*** (0.393)	-3.374*** (0.395)	-0.975 (3.200)	0.164 (3.207)	11.814*** (1.741)	10.501*** (1.723)	-0.364 (0.426)	-0.38 (0.431)	2.538*** (0.931)	2.562*** (0.928)	4.523*** (0.510)	4.950*** (0.524)	1.341*** (0.227)	1.368*** (0.228)
<i>CEO age</i>	-0.010*** (0.003)	-0.011*** (0.003)	0.059*** (0.021)	0.065*** (0.021)	0.030*** (0.011)	0.042*** (0.011)	0.008** (0.003)	0.008** (0.003)	0.017*** (0.006)	0.018*** (0.006)	0.060*** (0.004)	0.062*** (0.004)	0.006*** (0.001)	0.007*** (0.001)
<i>CEO serving as director</i>	0.117 (0.145)	0.11 (0.144)	-7.552*** (1.179)	-7.507*** (1.171)	-0.297 (0.641)	-0.282 (0.629)	-0.007 (0.181)	-0.009 (0.180)	-1.087** (0.506)	-1.091** (0.505)	1.082*** (0.213)	1.082*** (0.213)	-0.297*** (0.082)	-0.292*** (0.082)
Observations	12,414	12,140	12,414	12,140	12,414	12,140	15,784	15,402	8,347	8,235	12,603	12,226	12,476	12,199
R-squared	0.025	0.028	0.186	0.188	0.134	0.13	0.015	0.015					0.099	0.097
Pseudo R-squared									0.026	0.027	0.03	0.032		

**Table 6: Panel Regressions of Board Structures**

This table presents regressions of board structures on firm and CEO characteristics using the whole sample in panel data format with correction for self-selection bias. To correct for non-random matching of firms and female CEOs, we follow Heckman (1979)'s two stage least square. The dependent variables are board characteristics including the number of directors sitting on the board of directors (board size), the percentage of independent directors among all directors (board independence), the percentage of female directors among all board members (board diversification), the percentage of interlocked directors among all board members, whether all directors attend at least 75% of board meetings (board attendance), whether the CEO also serves as Chairman of the board (duality), and a board index. The board index is the sum of five indicators: small board (board size lower than or equal to industry average), high independence (the proportion of independent directors higher than or equal to industry average), high diversification (the proportion of female directors higher than or equal to industry average), low interlock (board having no interlocked director) and director attendance. All dependent variables except for board index are industry adjusted. All regressions include firm and year fixed effects. Test statistics are standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% respectively.

Variables	Board size	Board independence	Board diversification	Board interlock	Board attendance	Duality	Board index
<i>Female</i>	-0.883*** (0.152)	5.439*** (1.301)	10.967*** (0.658)	0.022 (0.209)	0.598 (0.448)	-0.573** (0.234)	0.627*** (0.107)
<i>IMR</i>	-0.284 (0.453)	-11.257*** (3.882)	-1.634 (1.965)	0.433 (0.470)	-0.245 (0.858)	2.389** (0.949)	-0.765** (0.320)
<i>ROA</i>	0.048 (0.104)	-2.365*** (0.890)	0.561 (0.450)	0.235* (0.142)	0.437 (0.267)	-0.823*** (0.202)	-0.002 (0.073)
<i>Firm size</i>	2.887*** (0.198)	77.282*** (1.699)	25.961*** (0.860)	-2.784*** (0.272)	5.119*** (0.542)	-2.328*** (0.331)	3.670*** (0.139)
<i>Firm leverage</i>	0.138 (0.133)	-5.068*** (1.138)	-0.774 (0.576)	0.289 (0.180)	-0.621* (0.372)	-0.084 (0.219)	-0.181* (0.094)
<i>Market-to-book</i>	0 (0.001)	-0.01 (0.006)	0 (0.003)	0 (0.001)	-0.001 (0.001)	-0.002 (0.001)	0 (0.001)
<i>Stock volatility</i>	-2.538*** (0.358)	-0.373 (3.073)	2.167 (1.555)	-0.289 (0.453)	1.690* (0.962)	-0.165 (0.544)	0.39 (0.253)
<i>CEO age</i>	0.004 (0.013)	0.337*** (0.107)	0.049 (0.054)	-0.008 (0.013)	0.025 (0.024)	-0.028 (0.026)	0.015* (0.009)
<i>CEO serving as director</i>	0.001 (0.128)	-6.149*** (1.099)	-0.746 (0.556)	-0.024 (0.191)	-1.193** (0.492)	0.977*** (0.212)	-0.434*** (0.088)
Observations	13,056	13,056	13,056	16,170	7,887	11,930	13,119
R-squared	0.03	0.169	0.1	0.007			0.064
Pseudo R-squared					0.024	0.015	

**Table 7: Compensation of new female CEOs in the whole sample**

This table presents compensation analysis of new CEOs in the whole sample. Panel A reports the pay gap between male and female CEO after CEO replacement, independent of the former CEO's gender. Panel B examines whether new female CEO receives significantly lower pay than their male counterparts when the former CEO was a man. Panel C investigates changes in the pay gap around CEO transition. Dependent variables are CEO compensation including salary, equity based compensation, bonus, long-term-incentive-payouts and other compensation (total compensation); salary and bonus (cash compensation); reported value of restricted stocks and Black-Scholes value of options granted (equity compensation); the proportion of cash compensation in total compensation (cash percent); and the proportion of equity compensation in total compensation (equity percent). All dollar value compensations are converted to year 2000 dollar. All variables are collected three years before and after CEO replacement. All regressions include firm and year fixed effects. Test statistics are standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% respectively.

Panel A: New female CEO pay gap independent of former CEO gender

Variables	Total Compensation	Cash Compensation	Equity Compensation	Cash Percent	Equity Percent
<i>Female x Post</i>	-0.231** (0.091)	0.014 (0.079)	-0.177 (0.193)	0.086*** (0.027)	-0.088*** (0.028)
<i>Post</i>	-0.085*** (0.016)	0.077*** (0.014)	-0.029 (0.030)	0.071*** (0.005)	-0.076*** (0.005)
<i>Board size</i>	0.008* (0.005)	-0.001 (0.004)	-0.018** (0.008)	-0.004*** (0.001)	0.006*** (0.001)
<i>Board independence</i>	-0.007*** (0.001)	0.001** (0.001)	0.004*** (0.001)	0.004*** 0.000	-0.005*** 0.000
<i>Board gender diversification</i>	-0.002 (0.001)	0.003*** (0.001)	0.014*** (0.002)	0.003*** 0.000	-0.003*** 0.000
<i>Board interlock</i>	0.944*** (0.255)	0.561** (0.221)	0.094 (0.395)	-0.064 (0.075)	0.177** (0.079)
<i>Duality</i>	0.342*** (0.014)	0.154*** (0.013)	0.194*** (0.029)	-0.102*** (0.004)	0.115*** (0.004)
<i>ROA</i>	0.397*** (0.057)	0.403*** (0.050)	0.363*** (0.094)	-0.044*** (0.017)	0.060*** (0.018)
<i>Firm size</i>	0.224** (0.113)	1.364*** (0.098)	4.219*** (0.214)	0.661*** (0.033)	-0.902*** (0.035)
<i>Firm leverage</i>	-0.617*** (0.069)	-0.445*** (0.060)	-0.523*** (0.124)	0.069*** (0.020)	-0.053** (0.021)
<i>Market-to-book</i>	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000
<i>Stock volatility</i>	3.374*** (0.189)	0.489*** (0.164)	2.483*** (0.412)	-1.044*** (0.056)	1.226*** (0.058)
<i>CEO age</i>	-0.001 (0.002)	0.003* (0.002)	-0.004 (0.003)	0.002*** (0.001)	-0.004*** (0.001)
<i>CEO tenure</i>	-0.007*** (0.002)	0.005*** (0.002)	-0.007** (0.004)	0.005*** (0.001)	-0.006*** (0.001)
Observations	18,971	18,908	8,860	18,971	18,971
R-squared	0.076	0.046	0.132	0.188	0.249

Panel B: Female CEO pay gap around CEO replacement

t	Total Compensation		Percent Cash		Percent Equity	
	Pay Gap	t value	Pay Gap	t value	Pay Gap	t value
-3	-0.26	-0.24	0.26	0.70	-0.28	-0.69
-2	0.61	0.95	-0.07	-0.32	0.04	0.15
-1	-1.53	-1.24*	-0.38	-0.88	0.32	0.70
0	-0.03	-0.22	0.13	3.17	-0.15	-3.55***
1	0.15	0.45	0.24	2.12	-0.18	-1.44**
2	-0.78	-2.14**	0.34	2.73	-0.37	-2.66***
3	-0.65	-1.45**	0.40	2.53	-0.46	-2.60**