

Director Turnover Heterogeneity

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August, 2014

We examine the probability of director turnover and its sensitivity to firm performance and CEO turnover as a function of observable director attributes. We find that the turnover probabilities of directors who occupy key official board positions are lower than that of directors who are non-key. The turnover probabilities of all directors are high when the CEO departs and when the firm performance is poor. The semi-elasticities of turnover with respect to CEO turnover and firm performance for key directors are significantly greater. Turnover of key directors, however, does not increase beyond the levels for other directors. Our results are robust after controlling for nepotism proxies. Our findings are consistent with the argument that shareholders value a directors firm- and CEO-specific capital and continuity in the board.

PRELIMINARY DRAFT—PLEASE DO NOT QUOTE WITHOUT PERMISSION.

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We would like to thank Renee Adamas and Iftekhar Hasan for their feedback and comments.

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ABSTRACT

We examine the probability of director turnover and its sensitivity to firm performance and CEO turnover as a function of observable director attributes. We find that the turnover probabilities of directors who occupy key official board positions are lower than that of directors who are non-key. The turnover probabilities of all directors are high when the CEO departs and when the firm performance is poor. The semi-elasticities of turnover with respect to CEO turnover and firm performance for key directors are significantly greater. Turnover of key directors, however, does not increase beyond the levels for other directors. Our results are robust after controlling for nepotism proxies. Our findings are consistent with the argument that shareholders value a directors firm- and CEO-specific capital and continuity in the board.

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1 Introduction

The board of directors has been the focus of numerous reform regulations mostly targeted towards making the board more independent of the CEO and accountable to shareholders. These efforts have been successful. Boards are largely composed of independent directors with a dramatic decrease in the number of executives or individuals affiliated with the management serving as directors. However, independence is not the sole criterion by which directors are retained. As articulated in Fama and Jensen (1983) and Adams (2005), the board is seen as fulfilling the dual roles of monitoring and advising firm management. As directors fulfill the advising role, some develop valuable firm- and CEO-specific capital, such as the understanding of the company, its industry and strategy, and the compatibility with the management.

There are recent trends of having explicit board leadership positions, including the separation of the role of Chairman of the board and CEO, and the creation of the role of Lead Director. The directors holding key positions on the board are tasked with the running of the board, and have close working relationship with the management. We argue that holding these positions lead to the building of firm- and CEO-specific capital by directors. There is thus a natural heterogeneity even within the independent members of the board, with some directors having such specific capital and those that have a more arms-length relationship with the firm. In this paper, we examine the impact of firm- and CEO-specific capital on the propensity for directors to be replaced in the board. Given the fiduciary duty of the board to watch out for shareholders and oversee the CEO, we especially focus on performance sensitivity and the impact of CEO turnover on the turnover of directors.

In the modern corporation, the board of directors represents a key institutional mechanism by which shareholders exert influence over managers of a corporation. The board and its committees have front-line duties in providing oversight on matters such as the disclosure and reporting of company financials, designing compensation plans to attract, retain, and motivate management talent, and identify and promote individuals to serve as the CEO and board members. In executing

these tasks, some members of the board develop valuable firm-specific capital that makes their continued service on the board important to the firm. On the other hand, where necessary the board is charged with the responsibility of shaking up and replacing top management. Therefore, the shareholders may also value a degree of separation between board members and top management, a requirement that has led to a largely successful call for directors to be *independent* of the CEO. Shareholders evaluate the board in their execution of the fiduciary obligations and members of the board could face the ultimate penalty of losing their posts if the firm performs poorly. Given that directors differ in their role within the board, a natural question arises on whether shareholders treat the directors who are perceived to be having firm-specific capital differently. It is plausible that shareholders allow CEOs to retain such directors longer, but hold them more responsible for firm performance.

We use institutional features of board to measure the firm- and CEO-specific capital directors possess. Some of the directors on the board are charged with leadership positions. As a result, they have a deeper understanding of the firm and work closely with firm management. Directors holding leadership positions are required to meet and work with the CEO, and other top management, on a regular basis so that the board has the information to competently advise and take decisions on matters that are the prerogatives of the board. Directors holding board leaderships positions commonly observed, i.e., Chairman, Lead Director, Chairman of the Accounting, Nominating, and Compensation committees, thus acquire firm-and CEO-specific capital through their frequent contact with the CEO and the firm management. We consider directors who hold these positions to be *key* directors of the firm and this classification represents our first measure of directors with firm- and CEO-specific capital.

Although firm- and CEO-specific capital is valuable to the firm as the board fulfill its advising function, it might compromise the arms-length relationship that is desirable to monitor the management. Therefore, it is important to control for the nepotism that could exist between directors and the CEO. The dynamics of CEO turnover and appointment create two sets of directors and provide us a measure of CEO-director nepotism. In CEO event time, the board starts with directors who

appointed the CEO, directors whom we refer to as appointing directors. With time, some of the directors leave their positions and are replaced by new directors or new directors are added to the board. These new directors have been appointed when the current CEO is in place and, as Coles, Daniel, and Naveen (2010) argue, can be considered to be co-opted by the CEO, even though they meet the norms for independence and are nominated by independent directors¹. Such appointed directors thus may be co-opted by the CEO and distinguishes them from the directors on the board who took the decision to appoint the CEO. Our first measure of CEO-director nepotism therefore is based on whether the director is an appointed director with respect to the current CEO.

Our second measure of CEO-board nepotism relates to the burgeoning research on the impact of social connections between individuals that arise from having a common educational background, employment history and common interests in social activities. Hwang and Kim (2009) examine the impact of connections between directors and CEOs on CEO compensation and find that firms with connected directors tend to over compensate. The presence of connections and overlaps between directors and CEOs therefore provide an additional dimension of CEO-board nepotism.

We use data on directors and CEOs obtained from the BoardEx database for the ten-year period from 2001 to 2011. For each firm-year covered, BoardEx reports the members of a firm's board of directors and its CEO. For each director covered, BoardEx compiles a full historical profile allowing us to identify the start and end dates of his current and previous board and non-board positions. Overall, our sample consists of 28,292 directors in 4,016 firms over the period from 2001 to 2010 for a total of 168,265 firm-director-year observations. BoardEx's coverage was primarily on large firms prior to 2003, after which it also covers small firms. Consequently the number of firms and firm-directors doubles after 2003. We collate the information on BoardEx with COMPUSTAT to determine the beginning and end of the fiscal year for the firm, firm characteristics in each fiscal year, and the members of a board that is in place at the beginning and end of each fiscal year.

For each director we also obtain information that allows us to classify directors as having CEO

¹Much of the empirical research stresses the CEO involvement in director selection. Early work by Mace (1971) and Lorsch and MacIver (1989) finds that CEOs play a key role in director selection, and Shivdasani and Yermack (1999) find that CEO involvement lessens the odds of appointing outside directors.

specific capital for all three measures we develop. With respect to our first measure, we find that overall 41.67% of directors are classified as being *Key*. The number of directors classified as key increases over time, perhaps because of trends such as the separation of the role of Chair and CEO. The proportion of *Key* directors is 28.19% in 2001 which rises to 46.37% in 2010. the appointment of a director to a key board position is also a function of the CEO appointment year. A large fraction of the key director position are made soon after the CEO is appointed, 25% in the year of the CEO appointment and 10% in the following year. This indicates that the CEO plays an important role in deciding which of the directors holds a key board position and a new CEO selects a new team.

For each director, we also obtain information that allows us to classify directors as having firm- and CEO-specific capital for all three measures we develop. With respect to our first measure, we find that overall 41.67% of directors are classified as being *Key*. The number of directors classified as key increases over time, perhaps because of trends such as the separation of the role of Chairman of the board and CEO. The proportion of *Key* directors is 28.19% in 2001 and rises to 46.37% in 2010. The appointment of a director to a key board position is also a function of the CEO appointment year. A large fraction of the key director positions are made soon after the CEO is appointed, 25% in the year of the CEO appointment and 10% in the following year. This indicates that the CEO plays an important role in deciding which of the directors holds a key board position. In other words, a new CEO selects a new team.

We examine the determinants of director turnover and the importance of firm- and CEO-specific capital. Our baseline turnover specification follows that by Yermack (2006). For the full sample, we find that director turnover is higher when the firm performs poorly in the prior year or the year before. Director turnover is also higher if the industry performs poorly. Director turnover is sensitive to firm performance, indicating that shareholders penalize directors for poor firm performance. Sensitivity to industry performance is however important only in smaller firms. Women directors are a much smaller fraction of the director pool but are less likely to be replaced. In large firms, longer serving directors are likely to be replaced, but this result does not hold in smaller firms. Our results are largely consistent with those of Yermack (2006), especially for large firms. We also

find that director turnover is higher in the year of the CEO turnover, i.e., there is a co-turnover of the directors and the CEO. Lastly *Key* directors are less likely to be turned over, suggesting that shareholders are reluctant to replace directors who are perceived to be working closely with the CEO and appointees of the CEO.

We next examine the co-turnover of CEOs and directors and the role of firm- and CEO-specific capital. We run separate and pooled regressions for *Key* directors. We find that the turnover probabilities of *Key* directors are lower than that of directors who are non-key. We also measure the semi-elasticities for all the control variables separately for directors with and without firm- and CEO-specific capital. We find that the semi-elasticities with respect to firm performance and CEO turnover are greater for *Key* directors. Turnover of directors with firm- and CEO-specific capital, however, does not increase beyond the levels for other directors. These results are robust after we control for CEO-director nepotism, proxied by *Appointed* and *Overlapped* directors. Our results are consistent with the idea that shareholders value a directors firm- and CEO-specific capital and continuity in the board. The directors who are perceived to have firm- and CEO-specific capital are treated differently by shareholders, compared to their counterparts on the board. These directors are less likely to be turned over, but they are held to be responsible for firm performance and are turned over when the CEO departs.

The rest of the paper is as follows. We present a survey of the literature on director turnover and board heterogeneity in Section 2. Section 3 presents the data and sample. Section 4 presents the results. Section 5 concludes.

2 Relevant Literature

In this section, we review the related literature on the role of the board of directors, the replacement and appointment of directors, and CEO-Director social networks.

The independence of directors comprising the board has been a focus of many shareholder and regulatory activities. The Board is seen as fulfilling the dual roles of monitoring and advising firm

management, as articulated in Fama and Jensen (1983) and Adams (2005). Literature has found that the level of independence of the board has been deemed crucial for the board to execute their fiduciary obligations. Weisbach (1988) finds that independent boards are more likely than other boards to replace poorly performing management. Byrd and Hickman (1992), Shivdasani (1993), Cotter, Shivdasani, and Zenner (1997), and McWilliams and Sen (1997) demonstrate that independent boards increase the chances of value increasing merger bids for the shareholders. Beasley, Carcello, Hermanson, and Lapedes (2000), Dechow, Sloan, and Sweeney (1996), Klein (2002), and Uzun, Szewczyk, and Varma (2004) have also found that as the number of independent outside directors on a board increases, the incidence of corporate fraud decreases.

Of particular importance in understanding director independence is the process by which individuals are selected to serve on the Board of Directors, especially the role of the CEO in the nomination process. Early work by Mace (1971) and Lorsch and MacIver (1989) finds that CEOs play a key role in director selection. Shivdasani and Yermack (1999) find that CEO involvement lessens the odds of appointing outside directors. Recent trends in enforcing independence requirements on the board of directors discourage the appointment of insider directors. Nevertheless the CEOs involvement in the nomination process could severely compromise the independence of the board.

Another aspect of director selection relates to the role of pre-existing connections, i.e. *social networks*, between the CEO and the director. There is a burgeoning literature on CEO-Director social networks. Hwang and Kim (2009) examine the impact of such aggregate CEO-Director connections in Fortune 100 firms and find that the presence of connected CEOs is associated with greater CEO compensation. Fracassi and Tate (2009) examine the announcement of accounting restatements and focus on the discovery of fraud. They find that connected CEOs are associated with fewer internally initiated restatements.

Our work also complements the literature that has examined the characteristics and attributes of the board in determining their efficacy and ability to execute their fiduciary obligation. Fich and Shivdasani (2006) study the role of busy directors and find that that busy boards are associated

with weak corporate governance and operating profits. However, Fich and Shivdasani (2007) find that shareholder lawsuits impose costs on directors, suggesting that the potential of losses from their multiple board positions may actually give incentives to such busy directors to monitor management and reduce the probability of a lawsuit. We therefore incorporate the number of directorships held in determining the director replacement and appointment decisions. Our work also builds on the work of Coles, Daniel, and Naveen (2010), who study co-opted boards, or the members of a board brought on board by a new CEO. We characterize more precisely what kinds of individual directors are co-opted on corporate boards.

3 Data

We obtain board structure and director biographic information from the BoardEx database downloaded in May 2012. BoardEx provides the identity of board directors for 64,042 company-years in North America, covering 9,387 companies and 74,086 directors. For each director, BoardEx compiles a full historical profile containing the person’s employment history, board memberships, educational background, and social activities.

Firm-level financial and stock return information are from COMPUSTAT and CRSP, respectively. BoardEx provides CUSIP for companies that are currently trading. Therefore, we first find the COMPUSTAT identifier, GVKEY, for these companies by matching CUSIP. For the rest of the BoardEx companies, we use the Levenshtein algorithm to identify similar company names in the COMPUSTAT universe. We verify these matches by manually checking company information retrieved from corporate websites and SEC filings. We are able to find GVKEY for 7,877 (83.9%) BoardEx companies. We use the merged COMPUSTAT and CRSP database to link GVKEY to the CRSP stock identifier, PERMNO.

We draw the sample of outside directors and CEOs of listed companies in North America from the merged BoardEx-COMPUSTAT-CRSP dataset. Table 1 describes the sample construction process. We focus on listed companies because BoardEx coverage of private firms are sporadic and

we need stock returns to measure firm performance. Our sample period is from year 2001 to 2011 because BoardEx coverage in earlier years is extremely limited. We further exclude financial firms and utilities because their activities including CEO and board changes are heavily regulated. Since we are examining the turnover of outside directors in relation to firm performance, we require that the accounting and stock return data for the firm are available for the previous two fiscal years. We are also interested in the relation between directors and the CEO, so we require that a CEO is identified at the beginning of the fiscal year. We also exclude director deaths to ensure that the director turnovers we observe are potentially related to firm performance. After ensuring the availability of other control variables, the final sample consists of 25,374 firm-years with 4,016 firms and 28,292 outside directors.

Table 2 lists the number of firms by fiscal year. There are fewer firms in the sample for the 2001-2003 period than for the 2004-2011 period, due to the evolution of the BoardEx database. BoardEx went through a major expansion of company coverage in 2005 and backfilled the data to 2003. The pre-2003 sample primarily includes large firms. The post-2003 company coverage includes a large number of firms of different sizes. To address the issue of unbalanced panel data, we include year fixed effects in the regressions. We also split the sample into large firms and small firms in our baseline regressions.

We use board positions to identify key outside directors who are likely to possess CEO-specific capital. We define key board positions as chairman of the board, lead director, and chair of the nomination, compensation, or audit committee. Table 2 lists the number and proportion of firms by fiscal year in which a key outside director position exists. All five key positions have become more prevalent in corporate boards. For example, the proportion of firms with a lead director position is merely 5% in our 2001 sample and grows to almost one third in 2011. The proportion of firms with none of the five key positions drops from 14.88% in 2001 to 0.83% in 2011². The patterns observed in Table 2 indicate a trend for corporate boards to have subordinate structures and formally delegate authority to specific board members, which could be a byproduct of recent

²Our results are robust to the exclusion of firms with no key positions.

reforms requiring more outsiders on boards. Reeb and Upadhyay (2010) suggest that subordinate board structures can alleviate problems that arise with more outsider dominated boards.

The appointment of a director to a key board position is also a function of the CEO appointment year. Figure 1 shows a large fraction of the key director positions are made soon after the CEO is appointed, 25% in the year of the CEO appointment and 10% in the following year. This indicates that the CEO plays an important role in deciding which of the directors holds a key board position. In other words, a new CEO selects a new team.

Table 3 lists the number of firms by fiscal year and outside director turnover count. For every year in the sample period, about 60% of the firms do not experience any outside director turnover, except for in 2003 when this percentage is the lowest at 52.32%. This peak of director turnover activities coincide with the passage of the 2002 Sarbanes-Oxley Act, which sets new standards for all U.S. listed company boards. There are another 26.68% firms have only one outside director turnover. We consider the rest 12.25% firm-years which have two or more outside director turnovers as experiencing significant board changes.

Next we compare turnover rates for key versus non-key outside directors. Table 4 lists the number of directors, turnover count, and turnover rate for both types of directors. The key to non-key director ratio goes up from 39.25% in 2001 to 86.47% in 2011, confirming the trend observed in Table 2 that corporate boards have more subordinate structures over time. The turnover rate of key directors (5.56%) is significantly lower than that of non-key directors (10.04%). This difference in turnover rates is consistent over time, present in every year of our sample period. It is important to take this difference into consideration in interpreting regression results, especially when comparing key and non-key director turnover sensitivities to firm performance and CEO changes.

Table 5 presents descriptive statistics of director characteristics for key vs non-key directors. Two-sample t-tests suggest that there is no significant difference in education overlap with CEO and industry experience. The difference in Ivy plus is significant at the 5% level. All other differences between key and non-key directors are statistically significant at the 1% level.

We observe in Table 5 that key directors are less likely to be female than non-key directors.

Only 7.24% of key directors in our sample are female, and 11.92% of non-key directors are female. These statistics suggest that female participation in corporate leadership is low, even more so for key board positions. The gender difference could be related to recent research on female role in the boardroom. Adams and Funk (2012) find that female directors are less power and security oriented than male directors.

Table 5 shows that key directors have longer tenure than non-key directors. Median age at election is 54 for both key and non-key directors, but key directors are on average two years older than non-key directors.

Table 5 also shows that key directors serve on more boards and are connected to more corporate leaders through common directorships. For 52.47% key directors, this is their sole directorship in the year, while 58.29% of non-key directors only have this one directorship. Furthermore, among those who have multiple directorships, key directors' other board seats are ranked higher than this board seat based on market capitalization, which may lead to stronger reputation concerns.

In relation to the CEO, key directors are more likely to be on the board which appointed the current CEO. Key directors are also more likely to overlap with the CEO through common employment or social activities. This evidence indicates that key directors possess higher CEO-specific capital.

Key directors are more likely to be professional directors but less likely to be CEOs of other firms, possibly due to time constraints. Key directors are more likely to have financial expertise than non-key directors, though they have similar industry experience.

Finally, Table 5 shows that higher percentage of key directors have MBA degrees than non-key directors. Key directors are also more likely to be educated in elite institutions.

In sum, the directors who hold key positions on the board are different than non-key directors in many ways. We need to control for these characteristics in turnover regressions.

4 Results

4.1 Baseline regressions

We estimate logistic regressions to examine how key positions on the board affect outside director turnover. The dependent variable is an indicator variable that equals to one if the outside director departs during the fiscal year, and zero otherwise. We identify key directors as those who serve as chairman of the board, lead director, or chair of the audit, compensation, or nomination committee. Prior studies such as Yermack (2004) document that director characteristics, relation to CEO, and firm performance are influential factors of director turnover. In baseline regressions, our control variables for director characteristics include director tenure in the firm and indicator variables for female directors, directors' ages 65-69, and ages 70 and over. We use two indicator variables to reflect the director's relation to current CEO: one indicates CEO turnover year and the other indicates that the director was appointed after the current CEO took office. We measure firm performance as the firm's annual stock return minus the median return of firms belong to the same 2-digit SIC industry of the same 12-month period. Firm returns are winsorized at the top and bottom 2.5%. Jenter and Kanaan (.) document that industry return affects CEO turnover. So we include industry median return to examine whether industry return affects director turnover as well. We also include year indicator variables.

Table 6 presents the estimated results of baseline logistic regressions of the turnover probability for outside directors. Model (1) includes four indicator variables for each key position we identify. All four estimated coefficients for key positions are negative and significant at the 1% level. The results confirm the pattern presented in Table 4 that directors holding key board positions are significantly less likely to turnover.

Model (1) includes industry-adjusted firm returns and industry median returns for prior two years. The estimated coefficients for all four performance measures are negative and significant, indicating that outside director turnover is sensitive to both poor firm performance and industry performance. Yermack (2004) finds that the director performance-turnover effect depends mostly on

the performance in the prior year, but not in the lagged two year ³. We find both prior two years' returns to be influential, probably because our sample contains firms of all sizes while Yermack focuses on large Fortune 500 firms. In unreported results where we restricted our sample to large firms, we also find that only the lagged one year return is significant.

In Model (2), we use a composite key director indicator that equal to one if the director holds any of the key positions. The estimated coefficient for the composite key director indicator is also negative and significant at the 1% level. We use the composite key director indicator thereafter for more power. For similar reasons, we use the geometric average of prior two year return to measure firm and industry performance in Model (2). We confirm that director turnover probability is negatively associated with both prior firm and industry returns.

As described in Section 3, BoardEx covers larger firms prior to 2003 and expands its coverage to include smaller firms after 2003. So our sample contains an unbalanced panel of firms. To examine whether outside director turnover exhibits different patterns in firms of different sizes, we split the sample into two subsamples based on total revenues. Model (3) of Table 6 uses a subsample of firms with total revenue larger than or equal to the median value of all firm-year observations, and Model (4) uses a subsample of firms with total revenue smaller than the median value. The estimated coefficients for the key director indicator are negative at the 1% level for both large and small firms.

Models (3) and (4) show that the outside director turnover sensitivity to performance is different for large and small firms. Outside director turnover in large firms is sensitive to industry-adjusted firm return, but not the industry median return. However, outside director turnover in small firms is sensitive to both firm and industry returns.

Table 6 indicates that outside director turnover is closely related to CEO turnover. The outside director turnover probability is significantly higher when the CEO departs. The estimated coefficients of the CEO turnover year indicator are positive at the 1% level in all models. Also, if the director was brought on the board after the current CEO took office, his turnover probability is

³Yermack sets the director turnover variable to one for a given year's observation if a director does not appear in the next year's proxy statement. We define the director turnover variable as one for a given year's observation if a director's end date is within the fiscal year. So our base time is approximately one year off.

lower. The estimated coefficients for the appointed director indicator are negative at the 1% level in all models.

The effects of other director characteristics are also interesting. The two age indicators have estimates with opposite signs, both significant at the 1% level. Comparing to outside directors who are younger than 65, those who are between 65 and 69 are less likely to turnover while those who are age 70 or older are more likely to turnover. The positive sign of age 70 and above indicator is consistent with the findings of Yermack (2004) that the retirement ages for outside directors are often between 70 and 75 and director turnover in the 60s age range is rare. The effects of director tenure and gender are concentrated in large firms. Director tenure is positively associated with turnover probability, marginally significant for the full sample, significant at the 1% level for large firms, but bears an insignificant negative sign for the subsample of small firms. The estimated coefficients for female director indicator are negative at the 1% level in the full sample and the subsample of large firms. However, the coefficient of female director indicator is positive in the subsample for small firms, insignificant at the conventional level.

4.2 Key outside director turnover

The results of baseline regressions presented in Table 6 show that director turnover is sensitive to firm performance and CEO turnover. Also, directors who held key positions on the board are less likely to turnover than non-key directors. Next, we further examine the director turnover sensitivity to firm performance and the co-turnover of CEO and directors. We run pooled and separate turnover regressions for key versus non-key directors and present the results in Table 7. The dependent variable is an indicator variable that equals to one if the outside director departs during the fiscal year, and zero otherwise. Model (1) of Table 7 reproduces the estimated coefficients of Model (2) in Table 6. Model (2) is based on the subsample of all key directors. Model (3) uses the subsample of all non-key directors. Model (4) uses the full sample and includes interaction terms of the key director indicator with CEO turnover, and with firm performance. In addition, we report the estimated marginal effects and semielasticities of all control variables in Panel B of Table

7. The marginal effect measures the impact of a one-unit change in the control variable on the expected change in director turnover probability. Since the average director turnover probability is different for key directors and non-key directors, a same probability increment would reflect a different percentage change. Therefore, we also report semielasticity, which measures the percentage changes in turnover probability, given a one-unit change of the control variable.

Models (1) and (4) in Table 7 show that key director indicator is significantly negative, indicating that key directors are less likely to turnover than non-key directors. The marginal effect of being a key director on turnover probability is above 5%, which is more than a two-thirds increase for the average turnover rate of 8%. Indeed, the estimated semielasticity of the key director indicator is -0.670 in Model (1) and -0.686 in Model (4).

Models (2) and (3) in Table 7 are separate director turnover regressions for key and non-key directors, respectively. Comparing the estimated coefficients of control variables, we find that non-key director turnover is significantly related to tenure and gender, while key director turnover is not. The estimated coefficients of firm performance and CEO turnover are larger for key directors than for non-key directors. Panel B shows that the marginal effects of firm performance on turnover probability are -0.027 and -0.026 for key and non-key directors, respectively. Even though the magnitude of probability changes is similar, it represents a larger percentage change for key directors, as indicated by the semielasticities. A one-unit decrease in firm performance increases key director turnover probability by 48.4% and non-key by 26.5%. Similarly, even though the marginal effect of CEO turnover on key director turnover probability is slightly lower than non-key, it represents a larger percentage change. The results indicate that key director turnover is more sensitive to firm performance and CEO turnover, but the turnover of key directors does not increase beyond the levels for other directors even when the firm performs poorly or the CEO departs.

Model (4) in Table 7 shows that the interaction term of key director indicator and CEO turnover indicator is significantly positive, suggesting there is a stronger co-turnover for key directors and the CEO. The interaction term of key director indicator and firm performance is significantly negative, suggesting that key director turnover is more sensitive to firm performance.

The findings in Table 7 are consistent with the idea that shareholders treat the directors who held key positions differently. It is plausible that shareholders retain such directors longer to preserve valuable firm-specific capital and ensure board continuity. However, the effect of key director indicator may be driven by omitted firm, board, or director characteristics. In Table 8, we test the robustness of our results to the inclusion of many such variables. In addition to the control variables used in Tables 6 and 7, we further control for industry fixed effects, firm size, Tobin's Q, firm leverage, board size, board outsider ration, CEO-Chairman duality, the number of board seats held, indicators of CEO of other company, financial expertise, industry experience, and indicators of having an MBA degree and attendance in an elite educational institution.

Masulis and Mobbs (2013) find that directors distribute their effort unequally according to the directorship's relative prestige. We control for their relative prestige measures in Table 8 as well. *Sole* directorship indicates the director has only one directorship. *High* indicates the director has multiple directorships and this directorship is 10% larger than his lowest ranked directorship measured by a firms market capitalization. And *Low* indicates the director has multiple directorships and this directorship is 10% smaller than his highest ranked directorship measured by a firms market capitalization. Consistent with Masulis and Mobbs, we find that directors who rank the directorship higher are less likely to turnover.

Our main findings are not changed in Table 8, as evident by the significant estimated coefficients of key director indicator and its interaction terms with firm performance and CEO turnover in Panel A, as well as the semielasticities and marginal effects reported in Panel B. In unreported results, we find our results robust to the inclusion of director fixed effects, and various types of director-CEO overlaps.

5 Conclusions

The role of member directors who constitute a firm's board of directors is actively debated in the literature and the popular press. Researchers studying issues like turnover of the board and

its performance sensitivity have largely ignored the variation in the individual members role and function in the board. In this paper, we take an initial look focusing on one element of potential diversity on the board, the extent to which individual board members may be affiliated to the firm or the CEO through the acquisition of firm- or CEO-specific capital.

To measure firm- and CEO-specific capital, we rely on the formal roles that individual directors play on the board, such as lead, chair, or committee chair, which requires them to work closely with the CEO and firm management. We refer to these directors as *Key* directors. We find that turnover of directors of directors with firm- and CEO-specific capital is lower than other directors on the board, using any of our three measures. While turnover is sensitive to performance for all directors, the semi-elasticities with respect to performance is greater for directors with firm- and CEO-specific capital. We therefore conclude that shareholders value a directors firm- and CEO-specific capital and continuity in the board.

The value of firm- and CEO-specific capital could be compromised by CEO-director nepotism. We use two measures to control for potential CEO-director nepotism. The first measure distinguishes between directors who are appointed to their positions by the current CEO from appointing directors, i.e. those that were part of the board that hired the CEO. Several studies have shown that the appointed directors may owe their allegiance to the CEO. The second measure relies on the connections that exist between CEOs and Directors from having attended the same school for their studies, from having similar or from having worked together in the past. Our results are robust after controlling for these measures.

Our work suggests heterogeneity among directors of the board along a dimension that has not been explored in the literature. The board of director straddles the gap between providing oversight and providing guidance to the CEO. Some of the directors are more focused on one of these specific roles, and therefore exhibit different turnover patterns.

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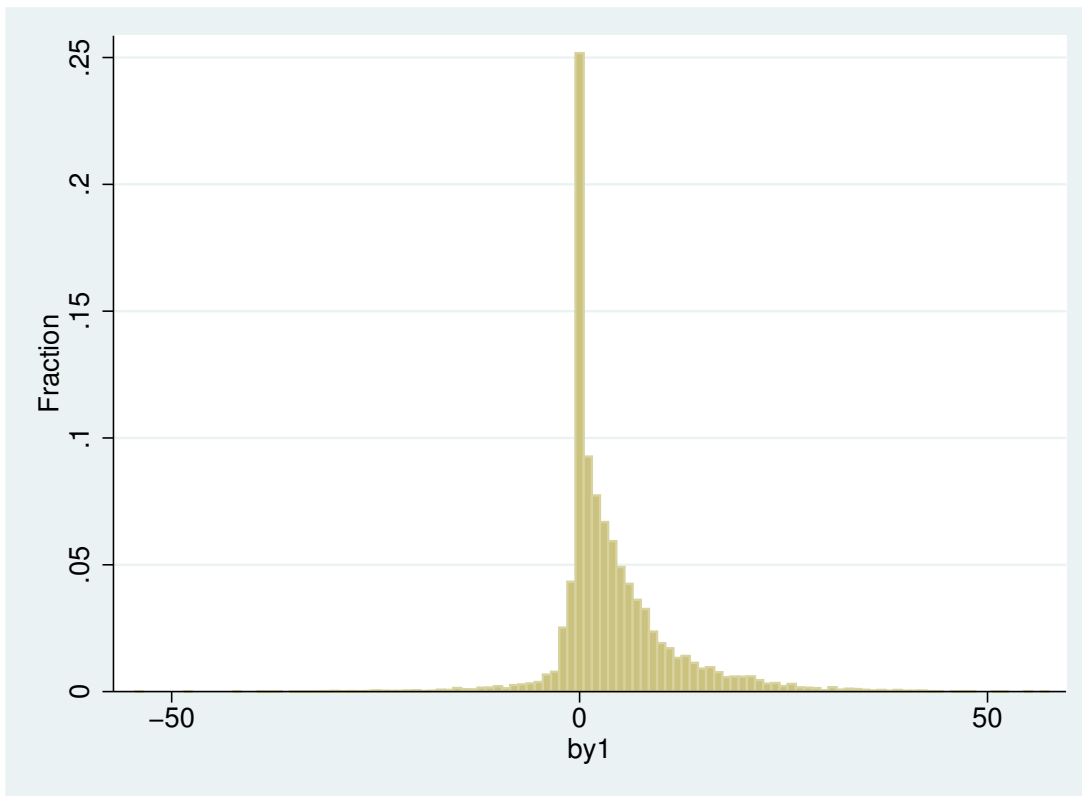


Figure 1: **Fraction of Key appointments relative to CEO appointment year**

This graph shows the fraction of key directors appointed in the event year relative to CEO appointment. `by1` is the number of years between key appointment and CEO appointment. `by1=0` means the director is appointed to a key position at the same year as the CEO, `by1=1` means the director is appointed to a key position one year after the CEO, so on so forth.

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Table 1: **Sample Construction**

This table describes the sample construction process. Initial sample consists of all outside directors of public companies in North America from the merged BoardEx-Compustat-CRSP dataset in the period of 2001-2011. Final sample ensures the availability of control variables.

	Firms	Directors	Firm-years	Director-firm-years
Initial sample	6,108	44,685	39,999	280,313
Financial & utilities excluded	4,446	31,523	29,295	192,254
Prior 2 year accounting and stock returns available	4,052	29,120	25,943	173,176
Begin CEO identified	4,018	28,785	25,382	169,693
Director death excluded	4,018	28,693	25,382	169,056
Final sample	4,016	28,292	25,374	168,265

Table 2: **Key Outside Director Positions on Boards**

This table lists the number and proportion of firms by fiscal year in which a key outside director position exists. Key board positions are chairman of the board, lead director, and chair of nomination, compensation, or audit committee.

Fiscal year	Chairman exists		Lead director exists		Nom. committee chair exists		Comp. committee chair exists		Audit committee chair exists		No key position exists		Total (100%)
	#	%	#	%	#	%	#	%	#	%	#	%	
2001	206	19.04	54	4.99	838	77.45	780	72.09	375	34.66	161	14.88	1,082
2002	249	19.79	87	6.92	1,002	79.65	935	74.32	481	38.24	174	13.83	1,258
2003	279	20.53	141	10.38	1,135	83.52	1,076	79.18	709	52.17	134	9.86	1,359
2004	708	26.63	348	13.09	2,348	88.30	2,133	80.22	1,513	56.90	166	6.24	2,659
2005	843	29.25	481	16.69	2,626	91.12	2,403	83.38	2,002	69.47	131	4.55	2,882
2006	916	32.39	542	19.17	2,625	92.82	2,442	86.35	2,093	74.01	102	3.61	2,828
2007	995	36.30	588	21.45	2,593	94.60	2,442	89.09	2,133	77.82	66	2.41	2,741
2008	1,016	37.90	642	23.95	2,567	95.75	2,435	90.82	2,174	81.09	41	1.53	2,681
2009	1,055	39.37	748	27.91	2,592	96.72	2,481	92.57	2,238	83.51	34	1.27	2,680
2010	1,085	40.56	808	30.21	2,591	96.86	2,479	92.67	2,271	84.90	29	1.08	2,675
2011	1,065	42.11	813	32.15	2,447	96.76	2,351	92.96	2,146	84.86	21	0.83	2,529
Total	8,417	33.17	5,252	20.70	23,364	92.08	21,957	86.53	18,135	71.47	1,059	4.17	25,374

Table 3: **Firm-Level Director Turnover Counts**

This table lists the number and proportion of firms by fiscal year and outside director turnover count.

Fiscal year	Outside Director Turnover Count								Total (100%)
	0		1		2		≥ 3		
	#	%	#	%	#	%	#	%	
2001	647	59.80	279	25.79	103	9.52	53	4.90	1,082
2002	722	57.39	357	28.38	121	9.62	58	4.61	1,258
2003	711	52.32	444	32.67	148	10.89	56	4.12	1,359
2004	1,574	59.20	726	27.30	241	9.06	118	4.44	2,659
2005	1,693	58.74	823	28.56	266	9.23	100	3.47	2,882
2006	1,738	61.46	753	26.63	238	8.42	99	3.50	2,828
2007	1,632	59.54	778	28.38	227	8.28	104	3.79	2,741
2008	1,647	61.43	704	26.26	206	7.68	124	4.63	2,681
2009	1,724	64.33	645	24.07	210	7.84	101	3.77	2,680
2010	1,778	66.47	626	23.40	180	6.73	91	3.40	2,675
2011	1,635	64.65	634	25.07	201	7.95	59	2.33	2,529
Total	15,501	61.09	6,769	26.68	2,141	8.44	963	3.80	25,374

Table 4: **Key vs. Non-key Director Turnovers**

This table lists the total number of directors, number of turnovers, and turnover rates by fiscal year for key directors versus non-key directors. Key board positions are chairman of the board, lead director, and chair of nomination, compensation, or audit committee.

Fiscal year	Key directors			Non-key directors		
	Director #	Turnover #	Turnover rate	Director #	Turnover #	Turnover rate
2001	2,159	112	5.19%	5,500	544	9.89%
2002	2,615	145	5.54%	6,275	626	9.98%
2003	3,141	186	5.92%	6,398	716	11.19%
2004	6,503	328	5.04%	10,353	1,213	11.72%
2005	7,663	444	5.79%	10,825	1,167	10.78%
2006	7,845	461	5.88%	10,551	1,033	9.79%
2007	7,944	468	5.89%	10,084	1,031	10.22%
2008	7,983	492	6.16%	9,779	993	10.15%
2009	8,187	452	5.52%	9,739	935	9.60%
2010	8,243	428	5.19%	9,582	816	8.52%
2011	7,835	385	4.91%	9,061	781	8.62%
Total	70,118	3,901	5.56%	98,147	9,855	10.04%

Table 5: **Director Characteristics**

This table presents descriptive statistics for director characteristics for the full sample and two subsamples based on key board positions. Key board positions are chairman of the board, lead director, and chair of nomination, compensation, or audit committee. Mean (median) are shown for continuous variables. Fractions are shown for dummy variables. See the Appendix for definitions of the other variables.

Variable	All sample	Key directors	Non-key directors
Female	9.97%	7.24%	11.92%
Age	60.98 (62.00)	62.22 (63.00)	60.10 (61.00)
Age at first election	53.24 (54.00)	53.48 (54.00)	53.06 (54.00)
Tenure	7.53 (5.56)	8.53 (6.68)	6.82 (4.61)
Board seats held at public companies	1.97 (1.00)	2.02 (2.00)	1.94 (1.00)
Total connections	22.36 (15.00)	23.00 (16.00)	21.90 (15.00)
Sole Directorship	55.86%	52.47%	58.29%
High	59.80%	57.47%	61.70%
Low	56.03%	59.02%	53.60%
Appointed after CEO	47.57%	40.13%	52.89%
Employment overlap with CEO	11.30%	11.79%	10.95%
Education overlap with CEO	1.16%	1.14%	1.19%
Other overlap with CEO	17.99%	18.45%	17.66%
CEO of other public company	6.04%	5.07%	6.73%
Professional director	44.33%	48.06%	41.66%
Financial expertise	9.91%	14.24%	6.81%
Industry experience	11.21%	11.22%	11.21%
MBA	30.22%	33.08%	28.17%
Ivy	39.72%	40.93%	38.85%
Public Ivy	17.42%	18.27%	16.81%
Ivy Plus	25.38%	25.67%	25.18%

Table 6: **Outside Director Turnover: Baseline Regressions**

This table presents logistic regression estimates of the turnover probability for outside directors. Model (1) and (2) use the full sample. Model (3) uses a subsample of directors in the firms with total revenue larger than or equal to the 50% percentile of all sample firms. Model (4) uses a subsample of directors in the firms with total revenue less than the 50% percentile of all sample firms. See the Appendix for definitions of variables. Standard errors shown in parentheses are clustered by firm. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Whole Sample		Large Firms	Small Firms
	(1)	(2)	(3)	(4)
<u>Director characteristics</u>				
Tenure	0.002 (0.002)	0.003* (0.002)	0.007*** (0.002)	-0.004 (0.003)
Age 65-69	-0.234*** (0.029)	-0.229*** (0.028)	-0.216*** (0.039)	-0.184*** (0.041)
Age 70 and older	0.672*** (0.029)	0.672*** (0.029)	1.007*** (0.039)	0.178*** (0.040)
Female	-0.176*** (0.032)	-0.170*** (0.032)	-0.186*** (0.040)	0.052 (0.055)
<u>Relation to CEO</u>				
CEO turnover year	0.578*** (0.035)	0.565*** (0.035)	0.467*** (0.051)	0.675*** (0.048)
Appointed director	-0.418*** (0.024)	-0.420*** (0.024)	-0.458*** (0.033)	-0.398*** (0.035)
<u>Performance</u>				
Industry-adjusted firm return, t-1	-0.092*** (0.025)			
Industry-adjusted firm return, t-2	-0.096*** (0.024)			
Industry median return, t-1	-0.139** (0.059)			
Industry median return, t-2	-0.167*** (0.054)			
Industry-adjusted firm return, 2-year		-0.359*** (0.043)	-0.382*** (0.066)	-0.282*** (0.053)
Industry median return, 2-year		-0.400*** (0.086)	-0.068 (0.068)	-0.540*** (0.140)
<u>Key positions</u>				
Audit committee chair	-0.826*** (0.032)			
Compensation committee chair	-0.605*** (0.030)			
Nomination committee chair	-0.600*** (0.033)			
Chairman/Lead director	-0.456*** (0.037)			
Key director		-0.730*** (0.021)	-0.769*** (0.029)	-0.754*** (0.030)
<u>Year indicator variables</u>				
Observations	Yes	Yes	Yes	Yes
Pseudo R^2	168,265	168,265	98,382	69,883
	0.041	0.041	0.058	0.033

Table 7: Key Outside Director Turnover

This table presents logistic regression estimates of the turnover probability for outside directors. Model (1) and (4) use the full sample, Model (2) uses the subsample of key directors only, Model (3) uses the subsample of non-key directors only. See the Appendix for definitions of variables. Panel A presents estimated coefficients. Standard errors shown in parentheses are clustered by firm. Panel B presents estimated semielasticities. Marginal effects are in brackets. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	All (1)	Key (2)	Non-key (3)	All (4)
Panel A: Estimated Coefficients				
Tenure	0.003* (0.002)	-0.002 (0.003)	0.004*** (0.002)	0.003* (0.002)
Age 65-69	-0.229*** (0.028)	-0.144*** (0.048)	-0.270*** (0.034)	-0.229*** (0.028)
Age 70 and older	0.672*** (0.029)	0.688*** (0.043)	0.669*** (0.034)	0.672*** (0.029)
Female	-0.169*** (0.032)	0.036 (0.068)	-0.226*** (0.037)	-0.169*** (0.032)
Industry-adjusted firm return, 2-year	-0.359*** (0.043)	-0.513*** (0.071)	-0.295*** (0.048)	-0.292*** (0.047)
Industry median return, 2-year	-0.400*** (0.086)	-0.286** (0.144)	-0.441*** (0.099)	-0.398*** (0.086)
CEO turnover year	0.565*** (0.035)	0.658*** (0.051)	0.521*** (0.039)	0.519*** (0.039)
Appointed director	-0.420*** (0.024)	-0.415*** (0.040)	-0.418*** (0.027)	-0.419*** (0.024)
Key director	-0.730*** (0.021)			-0.747*** (0.023)
Key×CEO turnover year				0.144*** (0.054)
Key×Industry-adjusted firm return				-0.230*** (0.076)
Panel B: Estimated Semielasticities and Marginal Effects				
Tenure	0.003* [0.000]	-0.002 [-0.000]	0.004*** [0.000]	0.003* [0.002]
Age 65-69	-0.211*** [-0.017]	-0.136*** [-0.007]	-0.243*** [-0.024]	-0.210*** [-0.017]
Age 70 and older	0.617*** [0.049]	0.649*** [0.059]	0.602*** [0.036]	0.617*** [0.050]
Female	-0.155*** [-0.012]	0.034 [0.002]	-0.203*** [-0.020]	-0.155*** [-0.012]
Industry-adjusted firm return, 2-year	-0.330*** [-0.026]	-0.484*** [-0.027]	-0.265*** [-0.026]	-0.268*** [-0.021]
Industry median return, 2-year	-0.368*** [-0.029]	-0.270** [-0.015]	-0.397*** [-0.039]	-0.365*** [-0.029]
CEO turnover year	0.519*** [0.041]	0.622*** [0.034]	0.468*** [0.046]	0.476*** [0.038]
Appointed director	-0.386*** [-0.031]	-0.392*** [-0.021]	-0.376*** [-0.037]	-0.385*** [-0.031]
Key director	-0.670*** [-0.053]			-0.686*** [-0.055]
Year indicator variables	Yes	Yes	Yes	Yes
Observations	168,265	70,118	98,147	168,265
Pseudo R^2	0.041	0.029	0.031	0.042

Table 8: **Key Outside Director Turnover: Robustness**

This table presents logistic regression estimates of the turnover probability for outside directors. Models (1) and (4) use the full sample. Model (2) uses the subsample of key directors only. Model (3) uses the subsample of non-key directors only. See the Appendix for definitions of variables. Panel A presents estimated coefficients. Standard errors shown in parentheses are clustered by firm. Panel B presents estimated semielasticities. Marginal effects are in brackets. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

(a) Estimated Coefficients				
	All (1)	Key (2)	Non-key (3)	All (4)
<u>Firm characteristics</u>				
Firm size	-0.083*** (0.008)	-0.068*** (0.012)	-0.088*** (0.009)	-0.083*** (0.008)
Tobin's Q	-0.021** (0.009)	-0.008 (0.011)	-0.028*** (0.010)	-0.021** (0.009)
Leverage	0.262*** (0.063)	0.168* (0.095)	0.294*** (0.068)	0.262*** (0.063)
<u>Board characteristics</u>				
Board size	0.060*** (0.007)	0.073*** (0.010)	0.057*** (0.008)	0.060*** (0.007)
Board outsider ratio	1.005*** (0.156)	1.064*** (0.257)	0.985*** (0.167)	1.006*** (0.155)
CEO duality	-0.023 (0.026)	-0.012 (0.040)	-0.030 (0.029)	-0.023 (0.026)
<u>Director characteristics</u>				
Board seats held	0.004 (0.007)	-0.000 (0.012)	0.007 (0.008)	0.004 (0.007)
CEO of other company	-0.108*** (0.028)	-0.133** (0.054)	-0.090*** (0.033)	-0.108*** (0.028)
Financial Expertise	-0.114*** (0.036)	-0.185*** (0.055)	-0.066 (0.048)	-0.115*** (0.036)
Industry experience	0.131*** (0.033)	0.161*** (0.055)	0.117*** (0.039)	0.132*** (0.033)
Sole directorship	0.065 (0.046)	-0.029 (0.077)	0.106* (0.054)	0.066 (0.046)
High	-0.158*** (0.040)	-0.203*** (0.069)	-0.141*** (0.049)	-0.157*** (0.040)
Low	0.031 (0.041)	-0.022 (0.070)	0.048 (0.048)	0.031 (0.041)
MBA	0.045** (0.022)	0.007 (0.040)	0.059** (0.027)	0.045** (0.022)
Ivy	0.007 (0.020)	0.010 (0.037)	0.004 (0.024)	0.007 (0.020)
<u>Firm performance</u>				
Industry-adjusted firm return, 2-year	-0.236*** (0.044)	-0.426*** (0.074)	-0.161*** (0.049)	-0.167*** (0.048)
Industry median return, 2-year	-0.174* (0.097)	-0.102 (0.170)	-0.196* (0.110)	-0.173* (0.097)
<u>Relation to CEO</u>				
Appointed director	-0.390*** (0.025)	-0.366*** (0.043)	-0.393*** (0.029)	-0.389*** (0.025)
CEO turnover year	0.537*** (0.035)	0.632*** (0.052)	0.495*** (0.039)	0.492*** (0.039)
Key director	-0.704*** (0.021)			-0.719*** (0.024)
Key×CEO turnover year				0.140** (0.056)
Key×Industry-adjusted firm return				-0.237*** (0.075)

Table 8: Continued

(b) Estimated Semielasticities and Marginal Effects

	All (1)	Key (2)	Non-key (3)	All (4)
Industry-adjusted firm return, 2-year	-0.217*** [-0.017]	-0.403*** [-0.022]	-0.145*** [-0.014]	-0.153*** [-0.012]
CEO turnover year	0.493*** [0.039]	0.597*** [0.032]	0.445*** [0.043]	0.452*** [0.036]
Appointed director	-0.358*** [-0.028]	-0.346*** [-0.019]	-0.354*** [-0.034]	-0.357*** [-0.028]
Key director	-0.647*** [-0.051]			-0.661*** [-0.052]
Control variables in Table 7	Yes	Yes	Yes	Yes
Year indicator variables	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	163,278	67,944	95,252	163,278
Pseudo R^2	0.050	0.038	0.041	0.050

Appendix: Definition of Variables

Variable	Definition
Professional director	An indicator variable that equals 1 if the director has no other positions rather than serving as an outside director, and 0 otherwise.
Financial expertise	An indicator variable that equals 1 if the director is holding an accounting or financial certificate such as CPA and CFA, and 0 otherwise.
Industry expertise	An indicator variable that equals 1 if the director has worked in a firm with same 2-digit SIC code, and 0 otherwise.
Appointed	An indicator variable that equals 1 if the director was appointed after the current CEO took office, and 0 otherwise.
Ivy Plus	An indicator variable that equals 1 if the director has attended a “Public Ivy” school defined by Greene and Greene (2001), and 0 otherwise.
Public Ivy	An indicator variable that equals 1 if the director has attended a “Public Ivy” school defined by Greene and Greene (2001), and 0 otherwise.
Ivy	An indicator variable that equals 1 if the director has attended an “Ivy Plus” school defined by Zawel (2005) or an “Ivy Plus” school defined by Zawel (2005), and 0 otherwise.
Sole directorship	An indicator variable that equals 1 if the director has only one directorship, and 0 otherwise.
High	An indicator variable that equals 1 if the director has multiple directorships and this directorship is 10% larger than his lowest ranked directorship measured by a firms market capitalization.
Low	An indicator variable that equals 1 if the director has multiple directorships and this directorship is 10% smaller than his highest ranked directorship measured by a firms market capitalization.
Industry-adjusted firm return	The firm’s stock return minus the industry median return. Firm returns are winsorized at top and bottom 2.5%.
Industry median return	The median stock return of firms with the same 2-digit SIC code.
Firm size	The logarithm of total revenue.
Tobin’s Q	The market value of assets divided by the book value of assets, where the market value of assets is computed as book value of long-term debt plus the market value of common stock.
Leverage	Long-term debt divided by total assets.
Board size	the total number of directors on the board.
Board outsider ratio	The fraction of outside directors on the board.
CEO duality	An indicator variable that equals 1 if the CEO is also the chairman of the board, and 0 otherwise.
Relative high non-key	The percentage of non-key directors for whom this board is ranked relatively high based on market capitalization minus the percentage of high key directors.