Expertise, connections, and the labor market for corporate directors

Abstract

To better understand the role of individual directors on corporate boards, we examine how director attributes affect the likelihood of receiving additional board seats. We find evidence that general skills are valued in the director labor market, as individuals with an MBA, S&P 500 board experience, and more connections to other corporate boards are more likely to receive additional board seats. We also find that only director connections mitigate the negative consequences associated with serving on the board of firms that restate their financials, suggesting that who a director knows is potentially more important than what they know.

The ability of directors to effectively monitor management on behalf of shareholders is central to corporate governance and crucial for a well-functioning financial market (Jensen, 1993). Although board failures have been highlighted in the popular press, the tremendous value created by corporations over the last century could be seen as evidence that on average, boards of directors are doing their jobs (Holmstrom and Kaplan, 2003). Given the critical role that boards play in publicly traded firms, a large body of work examines aggregate board attributes (e.g., independent and "busy" boards, etc.) and how firm and board characteristics are related.

At the same time, Fama and Jensen (1983) argue that boards necessarily comprise individuals with the requisite skills to facilitate their role as advisors to, and monitors of, corporate management. They also suggest that ex-post settling up in the labor market motivates directors to 1) act in the best interests of shareholders, and 2) develop reputations as experts. From this perspective, an understanding of how individual director skills and attributes are viewed in the labor market has the potential to provide insights to the efficacy of boards as a whole and the roles of the individual directors. However, much of the work to date that examines individual directors focuses on extreme events in the labor market rather than the general workings of the marketplace (Yermack, 2004).

We contribute to the literature by providing detailed evidence on how the specific skills and attributes (educational background, experience, and network) of individual directors affect their ability to gain additional board appointments. This is an important first step in ascertaining which attributes the market views as important in affecting a director's ability to monitor and advise management, which in turn affects firm value. We do not try to answer the question of whether or not firms are choosing directors optimally, nor do we attempt to determine whether or

not specific skills or attributes are over- or under-valued in the marketplace. Rather, we assume that the director labor market functions well and that examining market outcomes is informative.

Our analysis differs from prior research along several key dimensions. First, we analyze more than 23,000 unique individuals at over 5,000 firms. Prior research has primarily focused on extreme events (e.g., restatements) or small subsamples of directors (e.g., directors of firms incorporated in Pennsylvania). Second, we consider variables typically not examined in prior research, including work history, education, and business connections. Given that these attributes are central to the recruiting process, it seems important to include them in any labor market analysis. Third, we differ from prior research in that we focus on the post-SOX period, which many view as a different labor market regime for both directors and executives. Finally, we are able to draw inferences about the relative importance of the specific skills and attributes by comparing how they attenuate the negative effects associated with serving on the board of a firm that has restated its financials.

It is difficult to disentangle supply-side and demand-side effects when examining the director labor market. Nonetheless, we find evidence suggesting that aspects of both what a director knows and who a director knows are important in determining which individuals receive additional board seats. Moreover, it appears that only director connections are able to mitigate the negative consequences associated with serving on the board of a firm that restates its financials. Our results are generally robust across different subsamples in that directors' skills and connections are important in explaining who acquires a new board seat at both S&P 500 and non-S&P 500 firms. Further, dividing the sample based on director "busyness" (based on individuals currently holding less than three or three and more board seats) we again find that experience and connections are important, in explaining who receives an additional seat. Our

findings are also supportive of recent work, suggesting that general skills on the part of both CEOs and directors have become increasingly sought after, e.g., Murphy and Zabojnik (2007) and Kaplan, Klebanov, and Sorenson (2010).

In Section I we provide background. Univariate results are reported in Section II and Section III contains our multivariate analysis. Section IV reports on a number of robustness tests and Section V concludes.

I. The market for corporate directors

There is a broad literature suggesting that director attributes are associated with board decision-making and firm value. For example, Rosenstein and Wyatt (1990) report that the market reacts positively to news of outside director appointments, while Nguyen and Nielsen (2010) find negative market reactions to the unexpected death of independent directors. Klein (2002) finds that audit committee, and the board independence are inversely related to abnormal accruals. While Ajinkya, Bhojraj, and Sengupta (2005) find that as the percentage of outside directors increase management's earnings forecasts become more accurate, and less optimistically biased. Several other papers suggest that board members with financial expertise are important (e.g., Booth and Deli (1996), Kroszner and Strahan (2001), and Guner, Malmendier, and Tate (2008)). More recently, Agrawal and Chada (2005) find that restatements are less likely if an independent financial expert serves on the audit committee, while Defond, Hann, and Hu (2005) report positive market reactions to news of directors with accounting experience being appointed to audit committees. Similarly, Fich (2005) finds positive market reactions when firms appoint outside CEOs to their board. On the supply side, Perry and Peyer

(2005) report that firms can benefit from having their executives serve on the boards of other companies.[1]

A growing body of work also suggests that board connections have economic consequences for firms. That is, connectedness may affect the board's independence, their monitoring or advising abilities, and thus board actions. For example, Nguyen (2009) reports that connected CEOs are less likely to be dismissed for poor performance. Barnea and Guedj (2009) find that CEO pay is higher, CEO pay and turnover are less sensitive to firm performance, and forced CEO turnover is less likely in firms where directors are more connected. Consistent with these findings, Fracassi and Tate (2009) report that when board members are more connected to the company's management, the board appears to be a weaker monitor. In contrast, Singh and Schonlau (2009) find that more connected boards are associated with better performing acquisitions.[2] Anecdotal evidence also suggests that director connections are important. For example, Lipin (1999) highlights the efforts of startup firm FirstMark in putting together a powerful and well connected board:

> Its directors include Nathan Myhrvold, chief technology officer at Microsoft; Bert Roberts, chairman of MCI WorldCom; Washington power broker Vernon Jordan and former Secretary of state Henry Kissinger; Sir Evelyn de Rothschild, chairman of N.M. Rothschild & Sons; and Michael Price, a former partner of Lazard Freres, who signed on as co-chief executive. …The contacts have already helped win key licenses to build a so-called fixed wireless network, raised financing for the venture and helped find strategic partners.

Additionally, the literature suggests that the labor market holds directors accountable for their actions. Brickley, Coles, and Linck (1999) report that CEOs at better performing firms gain

[1] In related work focusing on board compensation, Adams and Ferreria (2008) report that the use of meeting fees influences director attendance at board meetings, while Engel, Hayes, and Wang (2010) find that audit committee compensation is associated with the demand for monitoring of the financial reporting process.
[2] Adams, Hermalin, and Weisbach (2010) suggest board networks as an area that warrants further study.

more board seats after they retire than CEOs at poorly performing firms, while Coles and Hoi (2003) find that directors of firms rejecting antitakeover provisions included in Pennsylvania Senate Bill 1310 gain directorships in the following three years. Harford (2003) reports that directors at acquired firms are penalized in the labor market, suggesting a cost to directors who fail in their monitoring role. Consistent with this, Fich and Shivdasani (2007) find that outside directors experience a significant decline in the number of board seats they hold following fraud-related lawsuits. Additionally, Srinivasan (2005) reports that board members at firms that restate their financials lose more directorships and hold fewer directorships in the future, and that this effect is exacerbated for audit committee members. Consistent with these results Ertimur, Ferri, and Stubben (2010b) find that compensation committee turnover is higher at firms where options backdating has occurred, and that the likelihood of turnover increases with the severity of the backdating. Lastly, Ertimur, Ferri and Stubben (2010a) show that implementation of majority-vote shareholder proposals is associated with a reduction in both director turnover and the probability of losing other directorships.

Another strand of the literature provides evidence on the demand for directors by examining how board and firm characteristics are related. For example, several recent papers document increased board independence over time, and suggest that board characteristics are generally reflective of firms' needs.[3] Knyazeva, Knyazeva, and Masulis (2009) report that aggregate board characteristics are associated with local labor market conditions, but that increasingly firms have expanded their search for directors beyond the local marketplace. With regard to specific director attributes, Linck, Netter, and Yang (2009) report that post-Sarbanes-Oxley (SOX) boards comprise fewer insiders, but more consultants, financial experts, lawyers,

[3]These papers include, but are not limited to: Boone, Field, Karpoff, and Raheja (2007), Chhaochharia and Grinstein (2007 a,b), Coles, Daniel, and Naveen (2008), Lehn, Patro and Zhao (2009), and Linck, Netter, and Yang (2008, 2009).

and retired executives. At the firm level, Fahlenbrach, Low, and Stulz (2010) find that firm characteristics, including the firm's current (and recent) board structure, are associated with the likelihood of appointing an external CEO to the board.

While this work provides important insights on the overall structure of corporate boards; there remains a paucity of evidence on the central issue of what individual attributes affect a director's labor market prospects. Of the few papers that directly examine such issues, our work is most closely related to Yermack (2004) and Coles and Hoi (2003). Yermack (2004) examines a period prior to SOX and, amongst other issues, reports general evidence regarding the factors associated with board appointments for 529 directors elected to Fortune 500 company boards. Of note, he finds that the number of future board seats is negatively related to the number of current board seats and director independence. Coles and Hoi (2003) examine the specific case of directors at firms rejecting antitakeover provisions included in Pennsylvania Senate Bill 1310 and finds the these directors gain directorships in the following three years.

Our work is also related to Barnea and Guedj (2009), and Adams and Ferreria (2009). While not the primary focus of their study, Barnea and Guedj (2009) find evidence that future director seats are associated with director connections, age, and the individual's minority status. Similarly, Adams and Ferreria (2009) find that the likelihood a woman is appointed to the board increases significantly if male directors sit on other boards with women.

In contrast to prior studies, we analyze the workings of the labor market for a much broader sample of directors and provide greater definition with regard to director characteristics.[4] We also provide an in-depth analysis of how a director's experience, skills, and business connections affect their labor market prospects in the post-SOX environment. Of note, it has been suggested that the market for executives and board members has changed markedly over

[4] We abstract from gender and ethnicity in our analysis and focus on proxies for skill and talent.

the last decade, particularly following the passage of Sarbanes-Oxley. Murphy and Zabojnik (2007) argue that increased demand for transferrable, rather than firm-specific skills has led to changes in the labor market for both CEOs and directors. Additionally, Lublin (2007) reports on the increased demand for non-CEO executives to serve on corporate boards. Finally, we differ from prior work in that we focus on the general labor market for directors rather than just what happens to directors' career prospects following extreme events.

II. Data and Univariate Analyses

We describe our data in section A and discuss the univariate results in section B.

A. Data

Our data on corporate directors comes from BoardEx.[5] BoardEx collects biographical information on corporate managers and directors, including an individual's date of birth, education, and employment history. The employment history includes information on current and prior positions, directorships, affiliations with non-profits, and beginning and ending dates for each individual's work history. Coverage for many individuals starts in 1999, and personal information for some of those individuals dates back as far as 1926. Prior to 2003, however, the number of firms and directors varies from year to year as the dataset was being fully populated. Accordingly, our analysis focuses on the more stable time period between 2003 and 2008. This is advantageous in that it corresponds to the post-Sarbanes-Oxley period, and arguably allows us to study what others have suggested is a new regime in the labor market for directors.

As noted above, we focus our analysis on the director level, and in particular, directors who would be considered "external" to the firm. For the most part, we capture a director's

[5] The BoardEx database is maintained by Management Diagnostics Limited, a privately owned corporation. Additional information can be found at http://www.boardex.com/index.htm.

biographical characteristics using binary variables that indicate whether or not an individual has a specific trait (e.g., a current executive, a current CEO, has served on the board of an S&P 500 company, holds an MBA or CPA, etc.) We also consider measures that summarize an individual's experience over time. For example, we calculate each individual's aggregate experience as a director and the total number of qualifications each director possesses. Of course, we recognize that some characteristics may reflect a blend of skills and experience, e.g., holding an S&P 500 directorship.

While we use the biographical information to define variables related to an individual's skills and experience, "what they know," we are also concerned with an individual's personal network, "who they know," by way of their connections to other board members. To examine the importance of "who a director knows," we use measures from the sociology literature, which have been increasingly used in the finance literature, to analyze the annual network of directors. Our most basic connectedness measure is *Links*, which is simply the number of direct connections an individual has in the network.[6] Specifically, *Links* is the sum of all unique connections across all current directorships for an individual director.[7] For example, if David sits on only one board with 6 other directors then he has 6 links.

We also include measures of network centrality in our analysis. The intuition is that not all links are equally valuable, and that being "centrally" located in the network may be beneficial. Therefore, we construct two additional connectedness measures: *Closeness* and *Betweeness. Closeness* is formally defined as the normalized reciprocal of the sum of geodesic distances from a given director to all other directors (see Sabidussi (1966)), and measures how central a director is in a network by analyzing the length of the paths between a given director

[6] Our *links* variable is called *degree* in the sociology literature.
[7] We do not double count an individual as two links if they overlap on multiple boards.

and all other directors in the network. *Betweeness* is formally defined as the normalized number of geodesic paths that pass through a director (see Freeman (1977)). *Betweeness* measures the extent to which an individual acts as a conduit to others in the network.

[Insert Figure 1 about here]

Figure 1, developed by Krackhardt (1990), depicts the differences between the network measures we use. First, the geodesic distance between two members of the network is the shortest number of steps it takes to get from one to the other, so the geodesic distance between Brad and Judy is two. John has the most direct connections (6) in the network and thus has the highest *Links* score. Luke and Jenny have the highest *Closeness* score, even though they have fewer direct links than John. This occurs because they can reach other members of the network in fewer steps than John. The only way for most members of the network to connect with Jane is through Judy. Thus, Judy is "between" Jane and the other members of the network and would have the highest *Betweeness* score. While interpreting the sign of *Closeness* and *Betweeness* scores is straightforward, interpreting the magnitude is not. As a result, we focus most of our attention on *Links* due to the ease of interpretation, but still consider the other network measures in our analysis. Although we use biographical characteristics to directly proxy for skill and expertise, we recognize that our network measures may proxy for unobservable skills or talents that are orthogonal to our direct skill and experience proxies. Appendix A provides a list of our variables, as well as detailed definitions.

In addition to the biographical and network information, we consider the attributes of the firms where individuals serve as directors. The rationale is that all directorships may not be equal. For example, the experience and contacts resulting from service on the boards of larger firms might differ substantially from those that result from serving on the boards of smaller

firms. As a result, we attempt to control for potential differences by aggregating firm-level information for each director. Specifically, we aggregate firm size (as measured by market capitalization) for all boards that a director serves on to proxy for the overall reputation of the companies on which an individual serves. Similarly, we calculate prior year value-weighted average ROE as a measure of the performance of the firms where an individual is a director. We also calculate a 2-year value-weighted market return for the firms at which a director has served. Lastly, we track whether or not an individual has served on the board of a firm undertaking a financial restatement. We use CRSP to calculate market values, Compustat for firm-specific financial data, and Audit Analytics to identify firms undertaking a restatement. Our final sample is the intersection between BoardEx, CRSP, Compustat, and Audit Analytics for U.S. companies. We eliminate observations with missing variables to ensure a consistent sample throughout our analysis.

B. Univariate Analyses

Intersecting U.S. firms from BoardEx with CRSP, Compustat, and Audit Analytics results in a sample of 5,036 unique publicly traded firms, with 23,074 unique directors and 8,273 new director appointments from 2003 to 2008 (Table 1). The average director holds 2.07 board seats, a value that has declined somewhat from 2.23 in 2003 to 1.95 by 2008. The unconditional probability of an individual obtaining an additional board seat in our sample is approximately 7.4%.[8]

[Insert Table 1 about here]

[8] We recognize that an individual currently sitting on the board of a company is not eligible for a board seat at that company, which slightly understates our unconditional probability, but does not affect our primary results.

Table 2 provides more detail regarding specific director characteristics. We find that approximately 30% of our directors serve on the board of an S&P 500 company, 12% are current executives, and 8% are current CEOs. In terms of other qualifications, approximately 35% are MBAs, 11.1% have a JD, 11.5% a PhD, and 10.9% a CPA. In terms of the other qualifications we examine, 3% are MDs, and less than 1% have a CFA. The average board member has 2.2 qualifications, is 60 years old, sits on 2 boards, and has some 14 years cumulative board experience.[9] The average director has spent 5 years serving on audit and compensation committees and 4 years on governance committees.

[Insert Table 2 about here]

In terms of connections, the average director has 25 *Links*, a *Closeness* value of 1.6, and a *Betweeness* measure of 0.325. Higher values of *Closeness* and *Betweeness* are indicative of more connected directors. The average aggregate market capitalization of the firms that a director serves on is $14.2 billion ($1.6 billion at the median), the average ROE is 6.5% (median 8.7%), and the average two-year stock return is 43% (median 26%). Later in the paper we examine the labor market consequences of having served on the board of a firm that undertook a financial restatement, directors having served on such a board represent approximately 8% of the director sample.

In Table 2 Panel B we provide a broad comparison of the characteristics of directors who receive an additional board seat during our sample period relative to those who do not. We see that 47% of directors receiving a new appointment have experience with an S&P 500 board, compared to 29% of directors who do not receive an additional seat. Similarly, 15% of new appointees are current executives versus 12% for the sample that do not gain a seat. Of those

[9] Boardex reports numerous qualifications beyond those that we explicitly examine in the paper, thus we also aggregate the qualifications included in the database and report the total number for each director.

receiving an additional seat, 40% possess an MBA compared to 34% for those that do not obtain a new appointment. We also find that directors receiving additional seats have more qualifications, are younger, and have spent less time on boards relative to those who do not gain additional seats. At the same time, new appointees currently serve on: more boards, larger companies (on average), and worse performing firms. Lastly, we see that directors receiving additional seats have more connections and are more centrally located in the director network. Overall these findings are suggestive of differences between directors who receive an additional board seat and those who do not.

[Insert Table 3 about here]

Table 3 reports the Pearson correlation coefficients between our explanatory variables. There are several associations worth highlighting. First, serving on the board of an S&P 500 company is positively correlated with being an executive, a CEO, and the number of qualifications. Second, serving on the board of an S&P 500 company is also positively correlated with time on boards, the number of current board seats the director has, and our network measures. Third, it appears that having an MBA, a proxy for general skills (Murphy and Zabojnik, 2007), is positively correlated with the three measures of board connectedness and the number of current boards. Finally, while our three network measures are positively correlated with each other, recall that they capture different dimensions of connectedness.

III. Multivariate Analyses

In this section we present our main multivariate analyses. Section A focuses on the likelihood of a director receiving a new appointment. Section B focuses on the extent to which skills, expertise, and connections mitigate the negative labor market effects associated with serving on the board of a firm that restates its financials.

A. Aggregate Analysis: Full sample

We first provide general insights as to what matters in the director labor market by examining proxies for "what" and "who" a director knows. To do so, we employ three logistic specifications estimating the likelihood that a director will obtain an additional board seat. Recall that our unit of analysis is the director. As such, our general specification is:

P(New board seat) = *f*(director qualifications, experience, connections, aggregate firm attributes).[10]

[Insert Table 4 about here]

Results are reported in Table 4. Model 1 focuses on director characteristics that are associated primarily with a director's skill set, while Model 2 focuses on characteristics that describe the director's level of connectedness. In Model 3 we incorporate both the director's skill and connectedness characteristics. In all specifications, we control for the aggregate market value, the average ROE, and the stock return over the prior two years of the firms where the individual is a director.

The results in Model 1 suggest that serving on the board of an S&P 500 company increases the likelihood of an additional board appointment by 4.7%, all else equal, accounting for more than 63% of the unconditional probability. We also observe that being a current executive or a CEO increases the likelihood of receiving an additional board appointment by 0.5% and 1.5% respectively. It is interesting to contrast the latter finding with that of Linck, Netter, and Yang (2009) who report fewer corporate executives sit on boards as of 2004. These apparently conflicting results, however, are not inconsistent with each other. Rather, while the prevalence of current executives sitting on their own boards has declined, our results suggest that

[10] We do not attempt to control for industry effects as it is not clear how one would aggregate director experience across industries.

executives are still sought after to serve on the boards of other companies, supporting the anecdotal evidence in Lublin (2007).

Holding an MBA is associated with a 0.4% increase in the likelihood of gaining an additional board seat and gaining one additional qualification increases the likelihood of receiving an additional board seat by 0.3%.[11] In contrast, possessing more specific skills including a JD, a PhD, or a CFA tends to reduce the likelihood of receiving an additional seat. The coefficients for MD and CPA are not significantly different from zero. These findings are broadly consistent with Murphy and Zabojnik's (2007) argument that general skills are more highly valued in the labor market. However, we acknowledge that these results may also be indicative of supply-side effects in that individuals with more specific skills are simply less likely to serve on corporate boards.

Directors closer to retirement and those with more board experience are less likely to receive an additional board seat. While this may indicate that the market favors individuals who are earlier in their careers, it might also indicate that as a director approaches retirement, he or she does not choose to pursue additional directorships. Alternatively, director retirement policies may deter firms from appointing individuals closer to retirement. We also note that board experience is highly correlated with the number of current board seats held, suggesting that the experience result might also be indicative of some individuals facing time constraints. In contrast, the probability of an additional seat increases with audit and governance committee experience. One interpretation of these findings is that audit and governance committee experience are viewed as desirable in the post-SOX legal environment.

Focusing on Model 2, it appears that director connections are important in the labor market. The more links a director has, and the more centrally located in the network the director

[11] One additional qualification is equal to a one standard deviation change in qualifications.

is, the more likely the director is to receive an additional board seat. A one standard deviation increase in *Links* and *Closeness* is associated with an increased likelihood of an additional board seat of 2.1% and 4.7% respectively.[12] The more boards a director currently serves on the more likely they are to gain additional seats, albeit at a diminishing rate as evidenced by the negative coefficient on the squared current boards term.

In Model 3 we combine the "what you know" of Model 1 with the "who you know" of Model 2. Again, we find that general skills are valued in the marketplace, but their importance is somewhat diminished with the inclusion of our "who you know" proxies. That is, in the full specification we find that being a current executive or CEO no longer increases the probability of gaining an additional board seat. We also find that the effects associated with S&P 500 experience and holding an MBA, while still statistically significant, are somewhat reduced: directors currently serving on the board of S&P 500 companies are now just 0.8% more likely to receive an additional board seat, while for MBAs the probability is a slightly lower at 0.3%, compared to the 4.7% and 0.4% observed in Model 1, respectively. Moreover, specific skills do not appear to be as important given the general lack of significance for these variables when the connectedness measures are included in the regression. As in Model 1, age and cumulative board experience remain significantly negative. Surprisingly, and in contrast to the earlier findings, we find that the more committee experience a director has the less likely the director is to receive a new board seat. Given the significance of the correlation between current board seats and experience on these committees (Table 3), these findings suggest that directors with greater time commitments are potentially constrained from accepting new appointments.

[12] Only1.8% of appointees have a direct connection to the board they join suggesting that it is not the case that boards are simply recruiting closely connected candidates.

With regard to connectedness, we find that regardless of the proxy, more connected directors are more likely to receive an additional board seat. A one standard deviation increase in *Links*, *Closeness*, and *Betweeness* is associated with increased probability of obtaining an additional board seat of 1.6%, 2.5%, and 1%, respectively. Similarly, the more boards a director currently serves on, the more likely he or she is to receive an additional seat, and that relation remains concave. In contrast to the results from Model 1, serving on the board of larger firms decreases the likelihood of acquiring an additional board seat. This change of sign is potentially explained by the positive correlation between aggregate market value and our board network measures. That is, aggregate market value may proxy for a director's connections in Model 1. We also see that, perhaps somewhat surprisingly, serving on the boards of better performing firms decreases the likelihood of acquiring an additional board seat. Interestingly, once we include the connectedness measures, the coefficient on the CEO indicator is no longer significant. While this is reflective of the positive correlations between *Links*, *Closeness,* and the CEO indicator variable (Table 3), it is also consistent with the view that certain types of CEO are more sought after or more willing to serve on corporate boards.

Overall these findings suggest that both what a director knows and who a director knows are important factors in the labor market for directors. Interestingly, in Model 3 the evidence is suggestive of who you know being more important than what you know with respect to additional appointments. Evidence of this can be seen by comparing the marginal effects across models. When considering only skills and experience (Model 1) the marginal effect associated with being an S&P 500 director is 4.7%, and explains over 63% of the unconditional probability of receiving an additional board seat. However, when we include the connectedness proxies in Model 3, being a director at an S&P 500 firm remains significant, but with a much lower

marginal effect (0.8%), and now accounts for only 11% of the unconditional probability. Further, a one standard deviation increase in the number of *Links* accounts for over 20% of the unconditional probability, while a one standard deviation change in *Closeness* accounts for more than 30% of the unconditional probability. Additionally, the economic significance of the connectedness measures are an order of magnitude greater than that for most of the "what you know" variables.

Of course, our interpretation is subject to the caveat that there may be an omitted underlying variable that drives these results. Any such omitted variable, however, would by definition be orthogonal to the variables included in our model. Put somewhat differently, any underlying latent measure of talent would have to be unrelated to the aspects of talent that contribute to individuals serving on the boards of S&P 500 firms, large complex firms, or being an executive or CEO etc. To further investigate the tradeoffs between what a director knows and who a director knows, we examine how these characteristics mitigate the negative labor market repercussions of serving on the board of a company that has restated its financials.

B. Do director characteristics mitigate the effect of a restatement?

As noted by Fich and Shivdasani (2007) and Srinivasan (2005), directors at firms restating their financials are less likely to retain their current board seats and are less likely to acquire new board seats. In this section we investigate the extent to which director skills and connectedness mitigate the effects of serving on the board of a company that has filed a restatement. Specifically, we examine the likelihood of receiving an additional board seat using the same general specification as in Model 3 of Table 4; however, we add a restatement indicator, along with interaction terms between the key experience and connectedness measures:

P(New board seat) = *f*(director qualifications, experience, connections, firm attributes, restatements indicator, restatement*experience interaction terms)

[Insert Table 5 about here]

We first add only the restatement indicator. The results, reported in Model 1 of Table 5 are consistent with Fich and Shivdasani (2007) and Srinivasan (2005). Serving on the board of a company that has restated its financials significantly reduces the likelihood of a director receiving an additional board seat by 0.8%. Relative to the unconditional probability of gaining a board seat this equates to a decline of approximately 11%. Of note, this finding suggests that being associated with even a technical restatement, which is often the case post-Sarbanes-Oxley, is associated with negative labor market outcomes.[13]

Model 2 presents evidence on the extent to which a director's skills and connections can mitigate the negative effects associated with a restatement. Specifically, we include interaction terms for *S&P 500* and *Restatement*, and *Links* and *Restatement*. We focus on these particular director attributes because of their consistent significance in our prior analyses, and ease of interpretation. However, we note that our results are generally robust to using various skill and network measure combinations, and further, that statistical significance tends to increase for the alternative network measures. Following Powers (2005), we focus our attention on the marginal effects of the interaction terms, which we compute according to Ai and Norton (2003). We find that the marginal effects on the *S&P 500*Restatement* interaction is insignificant, while the *Links*Restatement* interaction marginal effect is positive and significant. Thus, it appears that while both what you know and who you know are important in determining which directors

[13] When examining the subset of "fraud" and SEC investigations as reported by AuditAnalytics we observe a similar relation but at lower levels of significance. The lower levels of significance are not unexpected given the loss of power that results from the reduced sample size.

receive additional appointments, only who you know appears to mitigate the effects of negative events in the director's past.

IV. Robustness Tests

One question is the extent to which our findings may be attributable to specific subsamples. We investigate this issue along two dimensions. The first is to examine board appointments for large reputable firms, specifically, S&P 500 companies relative to appointments at non-S&P 500 firms. In the second, we focus more closely on board appointments conditioned on the number of board seats that an individual currently holds with the idea that directors can become "busy."

A. S&P 500 versus Non-S&P 500 appointments

In univariate comparisons of the director characteristics for individuals joining the board of S&P 500 firms versus non-S&P 500 firms (not tabled) we observe no statistically significant differences between the two groups with regard to the proportion of individuals holding an MBA, JD, or CFA. However, on most other dimensions there is evidence that director attributes differ between the two samples. In particular, individuals joining S&P 500 boards are more likely to have prior experience on an S&P 500 board, and are more likely to be a current executive or CEO. They also tend to have more board and committee experience, have served on the boards of larger and better performing firms, and tend to be more connected.

[Insert Table 6 about here]

In Table 6, we separately examine director appointments to S&P 500 companies and non-S&P 500 companies. Model 1 reports the results for directors receiving appointments to the boards of S&P 500 firms. Model 2 reports the results for directors appointed to the boards of

non-S&P 500 firms. There are some important differences across the subsamples. For example, prior S&P 500 board experience increases the likelihood of an appointment to an S&P 500 board, but decreases the likelihood of an appointment to a non-S&P 500 board. This might represent a supply-side effect in that S&P 500 directors are less inclined to accept appointments at what could be perceived as less prestigious firms. In contrast, we see that being a current executive reduces the probability of an S&P 500 appointment but increases the probability of a non-S&P 500 appointment. Consistent with Fahlenbrach, Low, and Stulz (2010), we find that being a current CEO reduces the likelihood of accepting a board seat at a non-S&P 500 firm. Additionally, non-S&P 500 firms are more likely to appoint directors who hold an MBA or CPA. Similar to the results for the full sample, older directors and those with more committee experience are less likely to receive appointments at both S&P 500 and non-S&P 500 firms. Further, serving on more boards increases the likelihood of a new appointment and the effect remains concave.

These results are suggestive of different director skills being sought after by different types of firms. In this regard, it appears that for non-S&P 500 firms, having an MBA or a CPA is important. These findings are also consistent with smaller firms gaining general experience and financial expertise by appointing directors with these particular qualifications, while the need for general skills and financial expertise on the part of S&P 500 firms is derived from other aspects of a director's background.

With regard to a director's connections, we find that more centrally located directors are more likely to receive an appointment at both S&P 500 and non-S&P 500 companies, but that links is only significant in explaining appointments to non-S&P 500 firms. On balance, this suggests that S&P 500 firms place a higher value on directors that are centrally located in the

board network and those that act as conduits to others in the network. For non-S&P 500 firms, all aspects of director connectedness are highly valued. These findings are broadly consistent with the results of Engelberg, Gao, and Parsons (2009) who suggest that some firms place a premium on a CEO's connections - in our analysis it appears that smaller firms exhibit a preference for more connected directors.

B. The number of current directorships

It is also possible that there are differences based on other dimensions reflecting aspects of both the demand for, and supply of, directors. For example, the National Association of Corporate Directors (NACD) best practices recommendations are that individuals sit on a maximum of three or four boards. Similarly, Fich and Shivdasani (2006) define a director as busy if they serve on three or more boards. To examine the possibility that the number of boards a director currently serves on alters our findings, we repeat our earlier analysis of director appointments focusing on two subsets of directors: those serving on three or more boards and those serving on less than three boards.[14] The results of this analysis appear in Table 7.

[Insert Table 7 about here]

We find that prior S&P 500 board experience only increases the likelihood of receiving an additional board seat if the director currently sits on less than three boards. This is, perhaps, not surprising. S&P directors with multiple appointments likely face constraints with regard to accepting additional appointments. While being a current executive increases the probability of receiving an additional seat for directors sitting on more than three boards, it lowers the probability of gaining another board seat if the director serves on less than three boards. As in our earlier analysis we see that closer a director is to retiring, and greater board and committee

[14] Ferris, Jagannathan, and Pritchard (2003) also examine director busyness.

experience reduces the likelihood of gaining an additional seat. Lastly we note that the more connections a director has, and the more centrally located the director is, the more likely he or she is to gain another board seat, regardless of how many boards they currently serve on. Again, both "what you know" and "who you know" are important in affecting the likelihood of an individual gaining future board seats.

V. Conclusions

To better understand the role of individual directors on corporate boards, we study the director labor market, examining the role of director expertise, skills, and connections in determining future board appointments. We find that the skills a director possesses and their connectedness affect the likelihood of gaining additional board seats. We also examine the extent to which "what" a director knows, and "who" the director knows is able to mitigate the labor market consequences of a negative event in the director's past. Of note, we find that only a director's connections appear to mitigate the negative consequences associated with serving on the board of a firm that restates its financials.

Our results are generally robust when focusing on different subsamples of firms. For example, more connected directors are more likely to gain board seats at both S&P 500 and non-S&P 500 firms. Moreover, examining subsamples based on director busyness, we find that both director experience and director connections are more important in gaining additional seats. Both "what you know" and "who you know" are valued in the director labor market.

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Table 1. Annual board-level summary statistics

Summary information regarding the number of firms, directors, director board seats, and new board seats awarded each year for our sample of BoardEx, CRSP, and Compustat firms.

Table 1. Annual board-level summary statistics

Year	Firms	Directors	Boards per Director	New Board Seats
2003	3,433	15,828	2.23	629
2004	4,126	18,792	2.13	1,016
2005	4,468	20,164	2.10	1,399
2006	4,458	20,029	2.05	1,658
2007	4,096	19,107	1.98	1,601
2008	3,856	17,567	1.95	1,970
Mean	4,073	18,581	2.07	1,379
Total	24,437	111,487	-	8,273
Unique	5,036	23,074	-	-

Table 2. Annual director-level summary statistics

Summary information regarding director characteristics. Variables include indicator variables for various experience and qualifications including whether the individual is a current *executive* or *CEO*, has an *MBA, JD, PHD, CPA, CFA, MD* or sits on the board of an S&P 500 company. *Number of Quals.* is the sum of all qualifications and degrees. *Time on boards* is the cumulative years of board experience . *Audit, Compensation,* and *Governance* are the cumulative years experience on the respective committees. Network measures include the *current number of boards*, the number of *links* from those boards, and *closeness* as *betweeness* as measures of network centrality. *Total market value* is the sum of the market values of all board seats. *Average ROE* and *2 year market return* are market weighted averages across all board seats held by an individual. More detailed definitions can be found in Appendix A.

Panel A: Full Sample Summary Statistics

	Mean	Median	Std Dev
S&P 500 (1/0)	0.306	0.000	0.461
Executive (1/0)	0.117	0.000	0.322
CEO (1/0)	0.081	0.000	0.272
Number of Quals	2.182	2.000	0.958
MBA (1/0)	0.348	0.000	0.476
JD (1/0)	0.111	0.000	0.314
PHD (1/0)	0.115	0.000	0.319
CPA (1/0)	0.109	0.000	0.311
CFA (1/0)	0.006	0.000	0.079
MD (1/0)	0.025	0.000	0.157
Years to Retire	9.986	9.000	8.792
Time on Boards	14.008	9.300	15.210
Current Boards	2.175	2.000	1.473
Audit	5.237	4.000	5.454
Compensation	4.825	3.000	5.371
Governance	3.630	2.000	4.623
Links	24.975	18.000	22.810
Closeness	1.640	1.737	0.483
Betweeness	0.325	0.103	0.596
Average ROE	0.065	0.087	7.895
Total Market Value	14.238	1.559	45.548
2 Year Mkt Return	0.433	0.258	1.259
Restatements	0.081	0.000	0.273

Panel B: Difference in mean and median for directors receiving an additional seat and those that do not

Observations	New Seat = 0 103,214			New Seat = 1 8,273			Difference in Means	Difference in Medians
	Mean	Median	Std Dev	Mean	Median	Std Dev	p-value	p-value
S&P 500 (1/0)	0.293			0.467			<.0001	
Executive (1/0)	0.115			0.146			<.0001	
CEO (1/0)	0.081			0.082			<.0001	
MBA (1/0)	0.343			0.404			<.0001	
JD (1/0)	0.113			0.093			<.0001	
PHD (1/0)	0.116			0.100			<.0001	
CPA (1/0)	0.107			0.128			<.0001	
CFA (1/0)	0.006			0.004			0.276	
MD (1/0)	0.026			0.023			0.008	
Number of Quals	2.177	2.000	0.958	2.248	2.000	0.960	<.0001	0.001
Years to Retire	9.794	9.000	8.859	12.474	12.000	7.437	<.0001	<.0001
Time on Boards	14.399	9.700	15.406	8.937	5.100	11.224	<.0001	<.0001
Current Boards	2.133	2.000	1.463	2.709	2.000	1.501	<.0001	<.0001
Links	24.058	17.000	22.384	36.837	31.000	24.856	<.0001	<.0001
Closeness	1.625	1.725	0.491	1.845	1.885	0.297	<.0001	<.0001
Betweeness	0.305	0.085	0.583	0.582	0.333	0.697	<.0001	<.0001
Average ROE	0.068	0.086	8.190	0.027	0.098	0.972	<.0001	<.0001
Total Market Value	13.561	1.419	44.591	23.001	4.530	55.755	<.0001	<.0001
2 Year Mkt Return	0.442	0.259	1.294	0.315	0.250	0.636	<.0001	0.103
Restatements	0.080	0.000	0.272	0.092	0.000	0.289	0.009	0.606
Audit	5.213	4.000	5.428	5.540	4.000	5.762	0.548	0.336
Compensation	4.841	4.000	5.381	4.620	3.000	5.241	0.227	<.0001
Governance	3.614	2.000	4.626	3.834	2.000	4.588	0.257	0.342

Table 3. Director characteristics correlation matrix

This table presents the Pearson correlations between independent variables.

	S&P 500	Executive	CEO	Number of Quals	MBA	JD	PHD	CPA	CFA	MD
Executive	0.124*									
CEO	0.046*	-0.108*								
Number of Quals	0.061*	-0.025*	-0.043*							
MBA	0.039*	0.043*	0.035*	0.197*						
JD	0.007*	-0.011*	-0.026*	0.136*	-0.174*					
PHD	0.021*	-0.064*	-0.040*	0.331*	-0.138*	-0.099*				
CPA	-0.077*	0.032*	-0.031*	0.132*	-0.014*	-0.054*	-0.107*			
CFA	-0.014*	-0.011*	-0.002	0.090*	0.049*	-0.005	-0.016*	0.004		
MD	-0.033*	-0.037*	-0.025*	0.131*	-0.096*	-0.053*	0.026*	-0.056*	-0.013*	
Years to Retire	-0.080*	0.151*	0.122*	-0.028*	0.135*	0.014*	-0.087*	0.068*	0.019*	-0.031*
Time on Boards	0.256*	0.093*	0.179*	-0.013*	0.008*	0.028*	0.004	-0.108*	-0.002	-0.023*
Current Boards	0.304*	-0.040*	0.029*	0.080*	0.066*	0.003	0.011*	-0.032*	-0.011*	-0.028*
Links	0.582*	0.076*	0.039*	0.081*	0.061*	-0.001	0.018*	-0.067*	-0.026*	-0.032*
Closeness	0.437*	0.088*	0.053*	0.072*	0.094*	-0.016*	0.019*	-0.086*	-0.024*	-0.027*
Betweeness	0.423*	0.011*	-0.003	0.075*	0.049*	0.013*	0.007*	-0.038*	-0.018*	-0.011*
Average ROE	0.007*	0.000	-0.001	0.001	-0.006	0.005	-0.007*	-0.003	-0.001	-0.010*
Total Market Value	0.419*	0.064*	0.032*	0.046*	0.002	-0.002	0.038*	-0.058*	-0.011*	-0.014*
2 Year Mkt Return	-0.069*	-0.015*	-0.007*	-0.011*	-0.015*	0.008*	-0.009*	0.009*	0.002	-0.003
Restatements	-0.026*	-0.018*	-0.012*	0.020*	0.030*	0.010*	-0.011*	0.019*	0.001	-0.017*
Audit	0.249*	-0.129*	-0.115*	0.082*	0.086*	-0.027*	0.011*	0.091*	0.000	-0.049*
Compensation	0.235*	-0.129*	-0.083*	0.029*	0.038*	0.001	0.017*	-0.103*	-0.020*	-0.020*
Governance	0.313*	-0.118*	-0.080*	0.070*	0.015*	0.042*	0.035*	-0.080*	-0.012*	0.003

Table 3. Continued

	Age	Time on Boards	Current Boards	Links	Close	Between	Average ROE	Total Market Value	2 Year Mkt Return	Restate	Audit	Comp.
Time on Boards	-0.308*											
Current Boards	-0.115*	0.440*										
Links	-0.078*	0.386*	0.611*									
Closeness	-0.035*	0.216*	0.357*	0.524*								
Betweeness	-0.085*	0.383*	0.653*	0.846*	0.389*							
Average ROE	-0.012*	0.005	-0.003	0.000	-0.025*	0.000						
Total Market Value	-0.065*	0.216*	0.250*	0.657*	0.274*	0.480*	0.004					
2 Year Mkt Return	0.022*	-0.046*	-0.055*	-0.083*	-0.097*	-0.057*	0.010*	-0.048*				
Restatements	0.022*	-0.006	0.105*	0.045*	0.048*	0.067*	-0.002	-0.024*	-0.015*			
Audit	-0.213*	0.324*	0.544*	0.431*	0.246*	0.466*	-0.001	0.191*	-0.063*	0.117*		
Compensation	-0.225*	0.399*	0.530*	0.455*	0.251*	0.480*	0.000	0.220*	-0.055*	0.117*	0.504*	
Governance	-0.220*	0.394*	0.506*	0.507*	0.314*	0.525*	-0.002	0.277*	-0.068*	0.107*	0.525*	0.619*

Table 4. Logit analysis of gaining an additional board seat

Results are presented from logistic regressions where the dependent variable is 1 if a director gained a new seat in the given year and 0 otherwise. The analysis uses the sample of 111,487 director years. The independent variables include indicator variables for various experience and qualifications including whether the individual is a current *executive* or *CEO*, has an *MBA, JD, PHD, CPA, CFA, MD* or sits on the board of an S&P 500 company. *Number of Quals.* is the sum of all qualifications and degrees. *Time on boards* is the cumulative years of board experience and *S&P 500* is an indicator if the director sits on the board of an S&P 500 firm. *Audit, Compensation*, and *Governance* are the cumulative years experience on the respective committees. Network measures include the *current number of boards*, the number of *links* from those boards, and *closeness* as *betweeness* as measures of network centrality. *Total market value* is the sum of the market values of all board seats. *Average ROE* and *2 year market return* are market weighted averages across all board seats held by an individual. More detailed definitions can be found in Appendix A. For each model, the first column contains coefficients from the logistic regression and p-values reported in parentheses, which are based on robust standard errors clustered at the director level. Marginal effects are reported in square brackets in the second column and correspond to a 1 standard deviation change for continuous variables, and a change from zero to 1 for indicator variables. Each model also includes year fixed effects.

	Model					
	1	Marginal Effects	2	Marginal Effects	3	Marginal Effects
Intercept	-5.129		-7.514		-8.094	
	(0.000)		(0.000)		(0.000)	
S&P 500 (1/0)	0.961	[0.047]			0.288	[0.008]
	(0.000)				(0.000)	
Executive (1/0)	0.129	[0.005]			0.030	[0.001]
	(0.043)				(0.630)	
CEO (1/0)	0.331	[0.015]			-0.014	[0.000]
	(0.000)				(0.869)	
MBA (1/0)	0.095	[0.004]			0.107	[0.003]
	(0.030)				(0.021)	
JD (1/0)	-0.178	[-0.007]			-0.107	[-0.003]
	(0.011)				(0.161)	
PHD (1/0)	-0.154	[-0.006]			-0.039	[-0.001]
	(0.033)				(0.611)	
CPA (1/0)	-0.022	[-0.001]			0.078	[0.002]
	(0.718)				(0.228)	
CFA (1/0)	-0.706	[-0.021]			-0.463	[-0.010]
	(0.002)				(0.093)	
MD (1/0)	0.002	[0.000]			-0.015	[0.000]
	(0.989)				(0.922)	
Number of Quals	0.065	[0.003]			-0.025	[-0.001]
	(0.003)				(0.327)	
Years to Retire	0.026	[0.001]			0.015	[0.000]
	(0.000)				(0.000)	
Time on Boards	-0.062	[-0.003]			-0.082	[-0.002]
	(0.000)				(0.000)	
Audit	0.018	[0.001]			-0.058	[-0.002]
	(0.001)				(0.000)	
Compensation	0.005	[0.000]			-0.050	[-0.001]
	(0.379)				(0.000)	

Governance	0.020	[0.001]			-0.038	[-0.001]
	(0.002)				(0.000)	
Links			0.212	[0.021]	0.233	[0.016]
			(0.000)		(0.000)	
Closeness			1.073	[0.047]	0.914	[0.025]
			(0.000)		(0.000)	
Betweeness			-0.066	[-0.003]	0.360	[0.010]
			(0.345)		(0.000)	
Current # Boards			0.287	[0.013]	1.001	[0.027]
			(0.000)		(0.000)	
Current # Boards^2			-0.032	[-0.001]	-0.070	[-0.002]
			(0.008)		(0.000)	
Total Mkt Value	0.002	[0.000]	-0.005	[0.000]	-0.004	[0.000]
	(0.000)		(0.000)		(0.000)	
Average ROE	-0.001	[0.000]	-0.006	[0.000]	0.000	[0.000]
	(0.370)		(0.730)		(0.816)	
2 Year Mkt Return	-0.120	[-0.005]	-0.082	[-0.004]	-0.099	[-0.003]
	(0.000)		(0.003)		(0.000)	
Chi Square	1566		1508		2868	
Prob of Chi Square	(0.000)		(0.000)		(0.000)	
Pseudo R2	0.114		0.097		0.213	

Table 5. Logit analysis of gaining an additional board seat after restatement.

Results are presented from logistic regressions where the dependent variable is 1 if a director gained a new seat in the given year and 0 otherwise. The analysis uses the sample of 111,487 director years. The independent variables include indicator variables for various experience and qualifications including whether the individual is a current *executive* or *CEO*, has an *MBA, JD, PHD, CPA, CFA, MD* or sits on the board of an S&P 500 company. *Number of Quals.* is the sum of all qualifications and degrees. *Time on boards* is the cumulative years of board experience and *S&P 500* is an indicator if the director sits on the board of an S&P 500 firm. *Audit, Compensation*, and *Governance* are the cumulative years experience on the respective committees. Network measures include the *current number of boards*, the number of *links* from those boards, and *closeness* as *betweeness* as measures of network centrality. *Total market value* is the sum of the market values of all board seats. *Average ROE* and *2 year market return* are market weighted averages across all board seats held by an individual. Additionally, we interact *Restatements*, an indicator variable that is 1 if the director has ever sat on a board where financials were restated and 0 otherwise, with *Executive*, and *Links*. More detailed definitions can be found in Appendix A. For each model, the first column contains coefficients from the logistic regression and p-values reported in parentheses, which are based on robust standard errors clustered at the director level. Marginal effects are reported in square brackets in the second column and correspond to a 1 standard deviation change for continuous variables, and a change from zero to 1 for indicator variables. Each model also includes year fixed effects.

	Model 1	Marginal Effects	Model 2	Marginal Effects
Intercept	-8.125		-8.102	
	(0.000)		(0.000)	
S&P 500 (1/0)	0.271	[0.008]	0.267	[0.008]
	(0.000)		(0.000)	
Executive (1/0)	0.036	[0.001]	0.052	[0.001]
	(0.572)		(0.427)	
CEO (1/0)	-0.009	[0.000]	-0.008	[0.000]
	(0.912)		(0.925)	
MBA (1/0)	0.107	[0.003]	0.108	[0.003]
	(0.021)		(0.020)	
JD (1/0)	-0.105	[-0.003]	-0.100	[-0.003]
	(0.170)		(0.190)	
PHD (1/0)	-0.039	[-0.001]	-0.037	[-0.001]
	(0.613)		(0.634)	
CPA (1/0)	0.081	[0.002]	0.078	[0.002]
	(0.211)		(0.223)	
CFA (1/0)	-0.460	[-0.010]	-0.455	[-0.010]
	(0.099)		(0.103)	
MD (1/0)	-0.015	[0.000]	-0.017	[0.000]
	(0.920)		(0.908)	
Number of Quals	-0.026	[-0.001]	-0.025	[-0.001]
	(0.311)		(0.322)	
Years to Retire	0.016	[0.000]	0.016	[0.000]
	(0.000)		(0.000)	
Time on Boards	-0.083	[-0.002]	-0.083	[-0.002]
	(0.000)		(0.000)	
Audit	-0.057	[-0.002]	-0.057	[-0.002]
	(0.000)		(0.000)	

Compensation	-0.049	[-0.001]	-0.049	[-0.001]
	(0.000)		(0.000)	
Governance	-0.037	[-0.001]	-0.038	[-0.001]
	(0.000)		(0.000)	
Current # Boards	1.020	[0.028]	1.022	[0.028]
	(0.000)		(0.000)	
Current # Boards^2	-0.072	[-0.002]	-0.072	[-0.002]
	(0.000)		(0.000)	
Links	0.465	[0.013]	0.457	[0.013]
	(0.000)		(0.000)	
Closeness	0.915	[0.025]	0.915	[0.025]
	(0.000)		(0.000)	
Betweeness	0.365	[0.010]	0.361	[0.010]
	(0.000)		(0.000)	
Total Mkt Value	-0.004	[0.000]	-0.004	[0.000]
	(0.000)		(0.000)	
Average ROE	0.001	[0.000]	0.001	[0.000]
	(0.741)		(0.740)	
2 Year Mkt Return	-0.102	[-0.003]	-0.104	[-0.003]
	(0.000)		(0.000)	
Restatements	-0.327	[-0.008]	-0.537	[-0.012]
	(0.000)		(0.000)	
S&P 500 x Restate			-0.226	[-0.006]
			(0.325)	
Links x Restate			0.215	[0.007]
			(0.031)	
Chi Square	2856		2913	
Prob of Chi Square	(0.000)		(0.000)	
Pseudo R2	0.214		0.214	

Table 6. Logit analysis of gaining an additional board seat at an S&P 500 company.

Results are presented from logistic regressions where the dependent variable is an indicator of whether the director received an additional board seat at an S&P 500 company (model 1) or non-S&P 500 company (model 2). Non-S&P additions are dropped from the analysis of S&P 500 companies and vice versa. The independent variables include indicator variables for various experience and qualifications including whether the individual is a current *executive* or *CEO*, has an *MBA, JD, PHD, CPA, CFA, MD* or sits on the board of an S&P 500 company. *Number of Quals.* is the sum of all qualifications and degrees. *Time on boards* is the cumulative years of board experience and *S&P 500* is an indicator if the director sits on the board of an S&P 500 firm. *Audit, Compensation*, and *Governance* are the cumulative years experience on the respective committees. Network measures include the *current number of boards*, the number of *links* from those boards, and *closeness* as *betweeness* as measures of network centrality. *Total market value* is the sum of the market values of all board seats. *Average ROE* and *2 year market return* are market weighted averages across all board seats held by an individual. More detailed definitions can be found in Appendix A. For each model, the first column contains coefficients from the logistic regression and p-values reported in parentheses, which are based on robust standard errors clustered at the director level. Marginal effects are reported in square brackets in the second column and correspond to a 1 standard deviation change for continuous variables, and a change from zero to 1 for indicator variables. Each model also includes year fixed effects.

	Model 1 Join S&P500	Marginal Effects	Model 2 Join Other	Marginal Effects
Intercept	-15.419		-8.374	
	(0.000)		(0.000)	
S&P 500 (1/0)	3.607	[0.013]	-0.561	[-0.009]
	(0.000)		(0.000)	
Executive (1/0)	-0.191	[0.000]	0.126	[0.002]
	(0.075)		(0.088)	
CEO (1/0)	0.184	[0.000]	-0.189	[-0.003]
	(0.178)		(0.077)	
MBA (1/0)	0.092	[0.000]	0.108	[0.002]
	(0.251)		(0.048)	
JD (1/0)	-0.192	[0.000]	-0.037	[-0.001]
	(0.164)		(0.660)	
PHD (1/0)	-0.022	[0.000]	-0.002	[0.000]
	(0.871)		(0.985)	
CPA (1/0)	0.051	[0.000]	0.122	[0.002]
	(0.701)		(0.093)	
CFA (1/0)	-0.300	[0.000]	-0.327	[-0.005]
	(0.254)		(0.254)	
MD (1/0)	-0.146	[0.000]	0.004	[0.000]
	(0.630)		(0.979)	
Number of Quals	0.020	[0.000]	-0.045	[-0.001]
	(0.619)		(0.146)	
Years to Retire	0.022	[0.000]	0.014	[0.000]
	(0.000)		(0.000)	
Time on Boards	-0.082	[0.000]	-0.085	[-0.001]
	(0.000)		(0.000)	
Audit	-0.066	[0.000]	-0.053	[-0.001]
	(0.000)		(0.000)	

Compensation	-0.036	[0.000]	-0.054	[-0.001]
	(0.000)		(0.000)	
Governance	-0.048	[0.000]	-0.027	[0.000]
	(0.000)		(0.002)	
Current # Boards	1.067	[0.001]	0.996	[0.018]
	(0.000)		(0.000)	
Current # Boards^2	-0.091	[0.000]	-0.066	[-0.001]
	(0.000)		(0.000)	
Links	0.084	[0.000]	0.514	[0.010]
	(0.279)		(0.000)	
Closeness	3.298	[0.004]	0.743	[0.013]
	(0.000)		(0.000)	
Betweeness	0.389	[0.000]	0.458	[0.008]
	(0.000)		(0.000)	
Total Mkt Value	-0.001	[0.000]	-0.010	[0.000]
	(0.111)		(0.000)	
Average ROE	0.009	[0.000]	-0.001	[0.000]
	(0.000)		(0.756)	
2 Year Mkt Return	0.017	[0.000]	-0.100	[-0.002]
	(0.700)		(0.001)	
Observations	105,663		109,219	
Chi Square	1581		2006	
Prob of Chi Square	(0.000)		(0.000)	
Pseudo R2	0.376		0.199	

Table 7. Logit analysis of gaining an additional board seat based on the number of current seats.
Results are presented from logistic regressions where the dependent variable is 1 if a director gained a new seat in the given year and 0 otherwise. Model 1 presents the results of our analysis of directors who receive an additional board seat and who currently sit on three or more boards. Model 2 presents the results of the analysis of directors that receive an additional seat and currently sit on less than 3 boards. The analysis uses the sample of 95,022 director years. The independent variables include indicator variables for various experience and qualifications including whether the individual is a current *executive* or *CEO*, has an *MBA, JD, PHD, CPA, CFA*, or *MD*. *Number of Quals.* is the sum of all qualifications and degrees. *Time on boards* is the cumulative years of board experience and *S&P 500* is an indicator if the director sits on the board of an S&P 500 firm. *Audit*, *Compensation*, and *Governance* are the cumulative years experience on the respective committees. Network measures include the *current number of boards*, the number of *links* from those boards, and *closeness* as *betweeness* as measures of network centrality. *Total market value* is the sum of the market values of all board seats. *Average ROE* and *2 year market return* are market weighted averages across all board seats held by an individual. More detailed definitions can be found in Appendix A. For each model, the first column contains coefficients from the logistic regression and p-values reported in parentheses, which are based on robust standard errors clustered at the director level. Marginal effects are reported in square brackets in the second column and correspond to a 1 standard deviation change for continuous variables, and a change from zero to 1 for indicator variables. Each model also includes year fixed effects.

	Model 1		Model 2	
	CB >= 3	Marginal Effects	CB < 3	Marginal Effects
Intercept	-8.382		-6.834	
	(0.000)		(0.000)	
S&P 500 (1/0)	0.120	[0.007]	0.372	[0.005]
	(0.198)		(0.000)	
Executive (1/0)	0.333	[0.021]	-0.261	[-0.003]
	(0.004)		(0.001)	
CEO (1/0)	0.068	[0.004]	-0.148	[-0.002]
	(0.613)		(0.151)	
MBA (1/0)	0.162	[0.009]	0.067	[0.001]
	(0.033)		(0.210)	
JD (1/0)	-0.028	[-0.002]	-0.148	[-0.002]
	(0.819)		(0.086)	
PHD (1/0)	0.020	[0.001]	-0.151	[-0.002]
	(0.870)		(0.079)	
CPA (1/0)	0.178	[0.010]	-0.011	[0.000]
	(0.096)		(0.880)	
CFA (1/0)	-1.469	[-0.045]	-0.117	[-0.001]
	(0.000)		(0.658)	
MD (1/0)	-0.137	[-0.007]	0.036	[0.000]
	(0.633)		(0.797)	
Number of Quals	-0.030	[-0.002]	-0.013	[0.000]
	(0.468)		(0.659)	
Years to Retire	0.013	[0.001]	0.008	[0.000]
	(0.011)		(0.004)	
Time on Boards	-0.058	[-0.003]	-0.171	[-0.002]
	(0.000)		(0.000)	
Audit	-0.033	[-0.002]	-0.131	[-0.002]
	(0.000)		(0.000)	

Compensation	-0.033	[-0.002]	-0.106	[-0.001]
	(0.000)		(0.000)	
Governance	-0.028	[-0.002]	-0.086	[-0.001]
	(0.001)		(0.000)	
Links	0.315	[0.017]	0.515	[0.007]
	(0.000)		(0.000)	
Closeness	1.668	[0.092]	0.746	[0.009]
	(0.000)		(0.000)	
Betweeness	0.293	[0.016]	0.405	[0.005]
	(0.002)		(0.019)	
Total Mkt Value	-0.004	[0.000]	-0.003	[0.000]
	(0.000)		(0.005)	
Average ROE	-0.010	[-0.001]	0.000	[0.000]
	(0.747)		(0.678)	
2 Year Mkt Return	-0.103	[-0.006]	-0.096	[-0.001]
	(0.092)		(0.001)	
Observations	31,332		80,155	
DEP = 1	3329		3624	
Chi Square	668		2474	
Prob of Chi Square	(0.000)		(0.000)	
Pseudo R2	0.174		0.258	

Appendix A: Variable Definitions

S&P 500	Equal to 1 if a director at an S&P 500 firm, 0 otherwise.
Executive	Equal to 1 if listed as a company executive but not the CEO, 0 otherwise.
CEO	Equal to 1 if listed as the CEO, 0 otherwise.
MBA	Equal to 1 if an MBA, 0 otherwise.
JD	Equal to 1 if a JD, 0 otherwise.
PHD	Equal to 1 if a PHD, 0 otherwise.
CPA	Equal to 1 if a CPA, 0 otherwise.
CFA	Equal to 1 if a CFA, 0 otherwise.
MD	Equal to 1 if a Medical Doctor, 0 otherwise.
Qualifications	The number of listed qualifications (CPA, JD, etc.).
Years to Retire	70 minus the age of the director in years.
Time on Boards	The cumulative number of years the individual has served as a director.
Audit	The cumulative number of years the individual has served on audit committees.
Compensation	The cumulative number of years the individual has served on compensation committees.
Governance	The cumulative number of years the individual has served on governance committees.
Avg. ROE	The market weighted average return on equity from all boards from the previous year.
Current # Boards	The number of directorships in the prior year.
Current # Boards^2	The number of directorships in the prior year squared.

Total Mkt Value	The cumulative market value for all of the companies where directorships were held in the prior year.
2 Yr Mkt Return	The market weighted average two-year raw market return from all board seats from the previous year.
Links	The number of direct connections to other people through directorships held in the prior year. For example, if an individual was on two boards with ten directors each and was the only overlapping director then she would have 18 links – 9 from each board.
Closeness	Is the normalized reciprocal of the sum of geodesic distances from a given director to all other directors. See Sabidussi (1966) for more detail. Closeness measures the centrality of a director compared to other directors. A director with a higher closeness score is closer in proximity (geodesic distance) to more directors than someone with a lower score.
Betweeness	Is the normalized number of geodesic paths that pass through a director. See Freeman (1977) for more detail. A director with a higher betweeness score is located on more of the shortest paths between directors than someone with a lower score.
Restatements	Equal to 1 if sat on board of company that restated its financials, 0 otherwise.

Figure 1