

Human and social capital in the labor market for directors*

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Abstract

We examine the director labor market to better understand which director attributes are important for board service. We find that general skills and director connections are valued in the market for directors in that both increase the likelihood of individuals gaining a board seat. Among specific director characteristics, financial expertise, holding an MBA degree, and S&P 500 experience are positively associated with gaining new board appointments. Moreover, regardless of the director's level of expertise, highly connected individuals are more likely to obtain new appointments. Finally, from a range of characteristics, only director connections mitigate the negative consequences of serving on the boards of firms that restate their financials.

Due to the central role that the board of directors plays within a firm, boards have been the focus of extensive study across a variety of disciplines. While early research emphasized the effects of board size and independence, more recent research has focused on board composition in greater detail. Specifically, researchers have begun to examine how various characteristics of the directors composing the board are associated with firm outcomes. However, the results of these studies are often mixed, potentially due to the difficulty associated with linking director characteristics to relatively distal firm outcomes (Johnson, Schnatterly, and Hill (2013)). We take an alternative approach to identifying the characteristics of an effective director by focusing on how a director's business experience (human capital), and social connections (social capital) influence the likelihood that they receive an additional board seat.¹

Our approach stems from the idea that the labor market motivates directors to act in the best interest of shareholders and develop reputations as experts, as described in Fama (1980) and Fama and Jensen (1983). Additionally, Hillman and Dalziel (2003) note that, while directors are motivated to effectively monitor the firm, only those with the necessary ability, human and social capital, will be effective.² Building on this foundation we argue that by studying the association between director characteristics and labor market outcomes, we are able to identify the characteristics that the market associates with director effectiveness.

¹ Hillman and Dalziel (2003) define human capital as an individual's skills and experiences, and social capital as an individual's social connections.

² Evidence consistent with good directors receiving additional board seats is presented by: Brickley, Linck, and Coles (1999); Ferris, Jagannathan, and Pritchard (2003); Coles and Hoi (2003); Ertimur, Ferri, and Stubben (2010a). Additionally, evidence that the director labor market penalizes ineffective directors is presented by: Gilson (1990); Harford (2003); Fich and Shivdasani (2007); Srinivasan (2005).

Understanding the characteristics of an effective director is especially important given the influence that boards have been found to have on firm strategy.³ Additionally, boards have come under increased scrutiny during the past decade. For example, the Sarbanes Oxley Act of 2002 requires specific expertise in the form of financial experts on audit committees, and the NYSE requires fully independent audit, compensation, and nominating committees. More recently, the Dodd-Frank Act included a mandate allowing shareholders to directly nominate individuals for board seats (proxy access). While this provision has been struck down, the Securities and Exchange Commission has adopted rules allowing shareholders to petition for proxy access on a company-by-company basis. In anticipation of such regulatory changes institutional investors, in particular, the California Public Employees' Retirement Systems CalPERS and CalSTERS have jointly developed a database of potential director candidates.⁴

However, all of these changes are being adopted in a relative vacuum of information as to what constitutes an effective director. We explore this issue, and find evidence that both a director's business experiences and social connections increase their chances of gaining an additional board seat, suggesting that both what and who a director knows is associated with director effectiveness. In particular, our analysis indicates that S&P 500 board experience, holding an MBA degree, and having more connections all increase the likelihood of gaining an additional board seat. The preference for directors with S&P 500 experience and an MBA indicates a demand for directors with transferrable or general skills. This echoes the findings of Murphy and Zbojnik (2007) and Kaplan, Klebanov, and Sorenson (2012), which find that the executive labor market prefers such transferrable or general skills.

³ Boards have been found to influence strategic change at firms (Westphal and Frederickson (2001)), acquisitions (McDonald, Westphal, and Graebner (2008); Kroll, Walters, and Wright (2008)) and CEO selection (Tian, Haleblan, and Rajagopalan (2011)).

⁴ Despite the fact that this aspect of Dodd-Frank has been struck down by the federal courts, this remains an open issue; see Jessica Holzer, "No Appeal on SEC Proxy Rule," *Wall Street Journal Online*, September 8, 2011.

Additionally, we find evidence suggestive of the relative importance of a director's social connections. Specifically, we find that professionally connected directors, regardless of their level of skill or expertise, are more likely to gain new board seats than less professionally connected directors. Moreover, only skilled directors who are also highly connected are more likely to receive an additional board seat. We also find evidence that only professional connections are able to mitigate the negative effects of having served on the board of a firm that restated its financials, a result consistent with that of Marcel and Cowen (forthcoming).

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 is relatively efficient, rewards additional board seats to effective directors, and thus studying the aggregate marketplace provides insights into the specific characteristics the market values.

1. Background and Literature Review

1.1 Director Labor Market

Underlying our analysis is the Fama and Jensen (1983) assertion that the labor market for directors rewards individuals who possess characteristics that facilitate effective monitoring and advising of management. Evidence consistent with this view is provided by Brickley, Coles, and Linck (1999), who report that the likelihood that a retired CEO sits on his former firm's board (or other corporate boards) following his retirement is related to the performance of his firm while he served as CEO. Similarly, Ferris, Jagannathan, and Pritchard (2003) find that directors at firms with better performance hold more board seats. Additionally, Coles and Hoi (2003) find that directors of firms rejecting antitakeover protections included in Pennsylvania Senate Bill

1310 gained directorships in the following three years. Lastly, Ertimur, Ferri, and Stubben (2010a) find that directors who implement majority vote shareholder proposals are less likely to lose board seats.

In addition to rewarding effective directors, the market also appears to penalize directors for bad actions. Fich and Shivdasani (2007) find that outside directors at firms subject to fraud-related lawsuits hold significantly fewer board seats in the future. Similarly, Srinivasan (2005) finds that directors tend to hold fewer board seats when a firm they are associated with restates earnings. Moreover, Harford (2003) reports that directors at firms that are the target of hostile takeover bids hold fewer directorships following the takeover attempt. These findings suggest that the market imposes costs on directors who fail in their monitoring role.

Thus, our empirical strategy is to examine the association between labor market outcomes and individual director characteristics in order to provide a market-based perspective as to the importance of human capital, what the director knows, and social capital, who the director knows. Although previous research does provide insight into this issue, the majority of the work to date examines characteristics of the board in general and links these board characteristics to potentially disparate firm outcomes. In contrast, we examine the labor market for directors in order to focus on aspects of a director's human and social capital that are sought after by companies.

1.2 Director characteristics

Our focus is on the role that human and social capital play in the selection of new directors. Human capital refers to a director's experiences and skills, which Carpenter and Westphal (2001) argue is necessary to ensure that the director is able to effectively control and

advise management. Additionally, Kroll, Walters and Wright (2008); and McDonald, Westphal, and Graebner (2008) find evidence that firms with boards that possess acquisition experience are associated with superior acquisitions. Stearns and Mizruchi (1993) and Mizruchi and Stearns (1994) find evidence that the amount and type of financing a firm uses is influenced by the presence of a director who is an employee of a financial institution. More recently, Krause, Semandeni, and Cannella (forthcoming) examine the impact of external executive directors on the board and find that the impact of these directors is dependent on the operational efficiency of the firm, as well as the executive's position in their home firm.⁵ Thus, a number of papers suggest that the importance of a director's human capital.

While human capital refers to a director's experience and skills, social capital refers to a director's social relationships. As noted by Burt (1997) social connections can prove valuable as they provide access to information and resources.⁶ Carpenter and Westphal (2001) argue that social connections allow a director to learn about business practices more quickly than if he or she was forced to rely on secondary sources. Consistent with the view that social connections allow for the learning of business practices, Connelly, Johnson, Tihanyi, and Ellstrad (2011) examine how a firm's directors social connections influences the firm's decision to expand into China. They find that when a firm's directors have social ties to individuals associated with a successful expansion into China, the firm is more likely to expand into China.

Similarly, though not an examination of directors, Geletkanycz and Hambrick (1997) find evidence that a CEO's social connections influence firm strategies. In related work, Geletkanycz, Boyd, and Finkelstein (2001) find evidence that CEOs social connections are valued in that more

⁵ In addition to affecting market reactions and firm outcomes the prior literature presents evidence that a director's human capital impacts the influence he has within the board as well as where the director focuses his attention (Stevenson and Radin (2009) and Wang and Dewhirst (1992)).

⁶ The importance of social connections has also been observed by Bacon and Brown (1974), Booth and Deli (1996), and Carpenter and Westphal (2001).

socially connected CEOs are generally more highly compensated. Moreover, Engelberg, Gao, and Parsons (2013) find that when a firm's directors have fewer connections, they are willing to pay more to hire a well-connected CEO. Further, Tian, Halebian, and Rajagopalan (2011) find evidence that both the human and social capital of the directors play an important role in how the market responds to the appointment of a new CEO.

Anecdotal evidence also suggests that director connections are important. For example, Lipin (1999) highlights the importance of director connections of the start-up firm FirstMark:

Its directors include Nathan Myhrvold, chief technology officer at Microsoft; Bert Roberts, chairman of MCI WorldCom; Washington power broker Vernon Jordan; 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.

2. Data and Univariate Analyses

Our data on corporate directors come from BoardEx.⁷ 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 of each position held. 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 substantially from year to year as the data set was being populated. Accordingly, our analysis focuses on the period between 2003 and 2008. This is also

⁷ 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>.

advantageous in that it corresponds largely with the post-SOX era and thus allows us to study what others have suggested is a new regime in the labor market for directors.

We capture a director's human capital using binary variables that indicate whether or not an individual has a certain trait. There are numerous classifications within the BoardEx database. Rather than use each individually, we use the aggregate number of qualifications reported in BoardEx and then include indicators for specific types of experience that prior studies indicates are likely to influence a director's likelihood of gaining a board seat. Our proxies for financial and legal expertise are CFA/CPA and JD, respectively. We also identify executives and CEOs of publicly traded firms to capture the fact that such individuals often seek, and are sought for, board service.⁸ Indicators for holding an MBA and having S&P 500 board experience proxy for general skills, while indicators for holders of an MD or PHD are designed to capture more specialized backgrounds. 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. Since we are interested in characteristics and experience at the director level, we differentiate between directors that have specific types of experience and those that do not. An example of this is merger experience, which is defined as the cumulative number of merger transactions a director has been involved with. We also track whether or not an individual has served on the board of a firm undertaking a financial restatement.

To focus on each director's social capital we categorize an individual's connections as either "professional" or "other." Professional connections include common board appointments and overlapping work experience. Other connections include education networks, such as

⁸ We identify executives by using the non-executive director indicator in BoardEx. If NED is equal to "no" then we specify the director as being an executive.

attending the same university and connections through non-profit organizations or charities. For each data year we construct both a “professional” network and an “other” network. Following the social networking literature, we calculate: degree, closeness, and betweenness (Sabidussi (1966) and Freeman (1977)). Degree is the number of direct connections each director has in the respective network. While closeness and betweenness attempt to measure how centrally located a director is within each network. Although these variables have very distinct interpretations, they are also highly correlated and are sometimes difficult to interpret. We therefore use a principal components analysis to reduce the social network variables into a single “connectedness” measure for each director in each network each year.

Additionally, we attempt to control for variation in experience and contacts that likely results from service on the boards of different firms. For example, serving on the board of a large firm might differ substantially from serving on the board of a small firm. Therefore, we consider the attributes of the firms at which individuals serve as directors 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 average ROE (value-weighted and industry-adjusted) as a measure of the performance of the firms where an individual is a director. We also calculate a two-year, value-weighted market return for the firms at which a director has served. Given our focus on the director-level, an issue is that many directors serve on multiple boards simultaneously. Thus, any variable used in the director-level analysis must be aggregated across firms. While aggregation is straightforward for some variables (e.g., size and experience), it can pose a challenge for others (e.g., industry and CEO

connectedness); Therefore, we do not attempt to aggregate some variables, such as industry, at the director-level.

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, and Compustat for U.S. companies. The BoardEx sample of U.S. firms has more than 5,400 companies and 127,000 directors while Compustat has data for more than 15,000 firms over this time period. After combining the datasets, we eliminate all observations with missing data points. This results in a sample of 5,036 unique publicly traded firms, with 21,211 unique directors and 4,963 new director appointments from 2003 to 2008 (Table 1).

The average director holds 1.73 board seats, a value that declined somewhat from 1.84 in 2003 to 1.68 by 2008. The unconditional probability of an individual obtaining an additional board seat in our sample is approximately 6.07%.⁹

[Insert Table 1 about here]

Table 2 provides more details regarding our measures of a director's human and social capital. Panel A reports summary statistics for the full sample. In Panel B, we report summary statistics for two subsamples of directors: those who receive additional seats and those who do not. We also report tests of differences between the two groups. In Panel C, we compare the characteristics of individuals joining a board with the characteristics of the director they are replacing.

Focusing on Table 2, Panel A, we find that approximately 23% of our directors serve on the board of an S&P 500 company, 9.7% are current executives, and 7.1% are current CEOs. In terms of other qualifications, approximately 33% are MBAs, 11.2% have a JD, 11.4% a PhD,

⁹ 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.

and 11% a CPA. With respect to the other qualifications we examine, 2.8% are MDs and less than 1% have a CFA. The average board member has 2.15 BoardEx qualifications, is 60 years old, sits on 1.73 boards, and has approximately 12 years of cumulative board experience. The average director has spent some four years serving on audit and compensation committees and three years on governance committees.

[Insert Table 2 about here]

Panel B of Table 2 provides a 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 directors receiving a new appointment are more likely to have S&P 500 experience, currently be an executive, 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, those receiving additional appointments currently serve: on more boards, at larger companies (on average), and at firms with worse performance. Lastly, we see that directors receiving additional seats are more connected with respect to both of our network measures. At an aggregate level this suggests that directors with more human and social capital are more likely to gain new board seats.

Finally, in Panel C we compare the characteristics of new appointees with the characteristics of the individuals they replace. We see that, relative to the person they are replacing, a greater proportion of new appointees have S&P 500 board experience, are current executives, MBAs, or CPAs, and have more audit committee experience. Similarly, new appointees are younger, have less time on boards and governance committees, are less connected, and tend to have less merger-related experience. At the same time, fewer new hires have PhDs, are male, or are from the U.S. The finding that replacement directors have more financial experience is consistent with the increased emphasis on financial expertise given the

requirements resulting from SOX. Additionally, our finding that replacement directors are younger and less connected is potentially explained by boards replacing retiring directors, the average age of the directors being replaced is over 60.

3. Multivariate Analyses

We first provide an overall analysis of factors that are associated with gaining a board seat, and then examine the relative importance of human and social capital in the labor market. We acknowledge that it is difficult to disentangle supply-side and demand-side effects when examining the labor market for directors. One approach is to employ structural modeling and two-sided matching as in contemporaneous work by Matveyev (2012). Our focus, instead, is on the attributes of directors that gain new board seats as an important first-step in understanding the characteristics of effective directors.

In the ideal empirical setting we would examine the pool of candidates who are actively seeking additional board seats. However, this pool is inherently unobservable. Therefore, we focus on current board members and examine the characteristics of those individuals that obtain new board appointments. We note that in unreported tests we limit our sample to professional directors, any director serving on two or more boards that is not currently an executive (Keys and Li (2005)), as these directors are potentially more active in looking for additional seats. We find qualitatively similar results.

3.1 Gaining a new board seat

We first examine how director characteristics affect the likelihood that a director gains an additional board seat.¹⁰ Recalling that our unit of analysis is the director, our general specification is a logistic regression with the following general form:

$P(\text{Gaining a board seat}) = f(\text{director qualifications, experience, connections, aggregate firm attributes})$.¹¹ Note that we also include year fixed effects in each specification.

[Insert Table 3 about here]

The results of this analysis indicate that both human and social capital increases a director's probability of gaining an additional board seat. Specifically, we find that S&P 500 board experience, and holding an MBA are associated with a 1.1% and 0.2% increase in the likelihood of gaining an additional board seat, respectively. To provide some economic intuition regarding these changes, the 1.1% increase associated with S&P 500 experience represents 18% of the unconditional probability that a director will gain a board seat, a sizable increase in a director's chances. We argue that S&P 500 experience, and an MBA represent general skills, as the nature of serve on the board of an S&P 500 firm will likely forces directors to deal with a wide range of issues. Similarly, while MBA programs offer concentrations, most require students to take class across the spectrum of business topics.

While these measures of general skills increase a director's likelihood of gaining additional seats, we find that having more specific skills (qualifications)—either in aggregate or in terms of specific certifications (i.e., PhD, CPA, CFA, or MD)—does not statistically impact a director's likelihood of gaining an additional appoint. These findings suggest that while human

¹⁰ In untabulated analyses we also examine the characteristics of directors who lose a board seat, as losing a seat might indicate a negative labor market outcome. Consistent with our findings for gaining board seats we find that financial experts, such as CPAs, are less likely to lose board seats. Additionally, following a restatement we find that professionally connected directors, and those who are serving as executives, are less likely to lose a board seat. However, we acknowledge that there are reasons beyond negative labor market consequences for losing a board seat, such as retirement or better opportunities, thus we focus our analysis on new appointments.

¹¹ We do not attempt to control for industry effects since it is not clear how to best aggregate director experience across industries.

capital is generally valued by the director labor market, general skills appear to be more valuable than specific skills.

We also find evidence that social capital increases the director's likelihood of gaining additional board seats; directors who are more professionally connected directors, and those serving on more boards, are more likely to gain an additional board seat. A one-standard-deviation increase in our professional connections proxy increases the probability of gaining a new seat by 1.2%, 20% of the unconditional probability that a director will gain an additional seat. Similarly, a one-standard-deviation increase in the number of boards a director currently serves on (1.19) is associated with a 2.7% increase in the probability of a gaining a new seat, this represents approximately 45% of the unconditional probability that a director will gain a seat. While we find evidence that professional connections increase a director's chance of gaining a board seat, we find no evidence of an effect for that social and school connections, as measured by *Other Network*.

In addition to finding evidence that the market values human and social capital, we also find that older directors and those with more board experience are less likely to obtain an additional appointment. A one-standard-deviation increase in total time served on boards (14 years) lowers the probability of a new seat by 2%. These results suggest that the market prefers directors with longer service horizons, potentially due to mandatory retirement policies.

We also find that service on audit, compensation, and governance committees are each associated with a 1% lower probability of gaining a new board seat. One interpretation of these findings is that committee assignments represent a significant time commitment and that directors who already serve on multiple committees may confront time constraints which make them less likely to accept an additional board seat.

3.2 Relative importance of human and social capital

Finding evidence that both human and social capital affect the probability of gaining an additional board seat, we next explore the relative importance of these attributes. We do this in two ways: 1) classifying directors into groups based on their relative level of human capital and social capital and 2) examining how a director's human and social capital mitigate the negative labor market consequences of having served at a firm that restated its financials.

In order to group directors we first conduct principal components analysis to reduce our various human capital proxies to a single variable.¹² The new human capital variable is positively correlated with gaining an additional seat, and has a positive and significant coefficient when included in place of the underlying variables in regression analysis.¹³ Next, we rank directors into terciles each year based on their expertise and their professional connectedness and create four indicator variables to identify directors in the extreme groupings: low expertise, low connectedness; low expertise, high connectedness; high expertise, low connectedness; high expertise, high connectedness. We then estimate the likelihood that a director gains a board seat as a function of these indicator variables and our control variables. The results presented in Table 4 suggest that a director's social capital is more important than his or her human capital in determining whether or not he or she gains an additional board seat. Specifically, we find that highly connected directors, regardless of skill level, are more likely to gain a board seat. While poorly connected directors, regardless of skill level, are less likely to gain a board seat.

¹² The following variables are included in the principal components analysis: S&P 500, Exec, CEO, MBA, CPA, JD, CFA, MD, PhD, Time on Boards, Current Boards, Merger Experience, Audit, Compensation, and Governance.

¹³ We do not report results from regressions using the principal components expertise variable, since including the individual variables is more informative about which types of expertise make the most difference.

Our findings that highly connected directors are more likely to gain a board seat regardless of their skill level, while highly skilled directors are only more likely to gain an additional seat if they are also highly connected, suggests that a director's social capital is more important than his human capital. To explore this further, we next examine the ability of human and social capital to mitigate the negative labor market consequences associated with serving on the board of a firm that restates its financials (in a manner similar to work such as Marcel and Cowen (forthcoming); Fich and Shivdasani (2007); and Srinivasan (2005)).

Table 5 presents our restatement analysis. In Model 1 we use the same specification as in Table 3, but include a restatement indicator. This is to capture the consequences for directors who served at a firm with a financial restatement. In Model 2 we include interaction terms between the restatement indicator and various measure of director characteristics.

Specifically, we model:

$P(\text{Gaining a board seat}) = f(\text{director qualifications, experience, connections, firm attributes, restatements indicator, restatement*experience interaction terms})$

[Insert Table 5 about here]

The results from our baseline regression, reported in Model 1, 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. The marginal effect is negative 0.5% which, relative to the unconditional probability of gaining a board seat, equates to a decline of approximately 8.25%. This finding suggests that being associated with even a technical financial restatement, which is often the case post-SOX, is associated with negative labor market outcomes.¹⁴

¹⁴ When also examining the effect of "fraud" and SEC investigations (as reported by AuditAnalytics) on a director's labor market outcomes, we observe a similar relation but at lower levels of significance. The reduction in

Model 2 presents evidence on the extent to which a director's human and social capital can mitigate the negative consequences associated with a restatement. Specifically, we include interaction terms between the *Restatement* proxy and each of the following: *Professional Network*, *S&P 500 experience*, *MBA*, and *Current Executive* (either executive or CEO). Following Powers (2005), we focus our attention on the marginal effects of the interaction terms, which we compute according to Ai and Norton (2003) to account for the interaction of continuous and indicator variables. We find that the interaction between *Restatement* and *Professional Network* is positive and significant, which suggests that being more connected offsets some of the negative effects associated with serving on the board of a firm that issued a restatement. At the same time, we fail to find a significant relation with any of the skill and expertise interactions. These results, suggest that only a director's connections are able to mitigate the negative labor market effects of restatements.

4 Conclusion

Given the central role that boards play in corporate governance, and the ongoing pressures for regulatory reforms to open the director nomination process to shareholders, understanding the characteristics that make a director effective is important. We examine this issue by studying which director characteristics increase the likelihood that a director will receive an additional board seat. We find that directors with general skills and those who are professionally connected are more likely to gain an additional board seat. This suggests that both human and social capital facilitate a director's effectiveness, and the labor market rewards such individuals with new appointments.

significance likely results from the smaller sample of firms engaged in "fraud" or investigations. To conserve space, we have not tabled these results.

Grouping directors based on their relative skills and connections, we find that highly connected directors are more likely to receive an additional board seat, regardless of their skills. In contrast, highly skilled directors with few connections are less likely to receive an additional board seat. We also find evidence to suggest that a director's connections act to mitigate the negative effects of serving on a board that restates its financials. These results indicate that social capital is more important than human capital in determining a director's likelihood of gaining an additional board seat, which suggests that director's with social capital are more effective.

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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

Year	Firms	Directors	Boards per Director	New Board Seats
2003	3,661	11,676	1.84	366
2004	4,444	14,005	1.74	583
2005	4,688	14,479	1.73	828
2006	4,621	14,667	1.70	1,181
2007	4,427	14,206	1.68	1,161
2008	3,872	12,797	1.68	844
Mean	4,286	13,638	1.73	827
Total	25,713	81,830	-	4,963
Unique	5,036	21,211	-	-

Table 2. Annual director-level summary statistics

Summary statistics 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. *Male* is equal to one if the director is a male. *Nationality* is equal to one if the director is from the United States. *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. *Professional network* is the result of a PCA analysis on network measures calculated using board appointments and work experience. *Other network* is a similar measure but uses connections through non-profits, charities, and educational backgrounds. *Merger Experience* is the cumulative number of deals a director has been associated with. *Total market value* is the sum of the market values of all board seats. *Industry-Adjusted 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 reports overall summary statistics. Panel B reports univariates for individuals who do and do not obtain a new board seat, along with p-values for tests of differences in means and medians. Panel C reports univariates for individuals who join a board, those they replace, and tests of differences in means and medians between the two groups.

Panel A: Full Sample Summary Statistics			
	Mean	Median	Std Dev
S&P 500 (1/0)	0.228	0.000	0.420
Executive (1/0)	0.097	0.000	0.296
CEO (1/0)	0.071	0.000	0.256
MBA (1/0)	0.328	0.000	0.470
JD (1/0)	0.112	0.000	0.315
PHD (1/0)	0.114	0.000	0.318
CPA (1/0)	0.110	0.000	0.313
CFA (1/0)	0.007	0.000	0.084
MD (1/0)	0.028	0.000	0.165
Male (1/0)	0.906	1.000	0.292
Nationality (US = 1)	0.583	1.000	0.493
Age	59.938	60.000	9.105
Number of Quals	2.149	2.000	0.949
Time on Boards	12.255	7.900	14.302
Current Boards	1.725	1.000	1.193
Professional Network	0.739	0.007	2.283
Other Network	0.004	0.000	0.577
Merger Experience	3.630	2.000	4.660
Average ROE	0.057	0.082	9.426
Total Market Value	9.059	0.920	33.983
2 Year Mkt Return	0.358	0.180	1.359
Restatements	0.074	0.000	0.262
Audit	4.265	3.000	4.690
Compensation	3.907	3.000	4.510
Governance	2.835	2.000	3.857

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

	New Seat = 1			New Seat = 0			Difference Mean Difference	Difference in Means p-value	Difference in Medians p-value
	N = 4,963			N = 76,867					
	Mean	Median	Std Dev	Mean	Median	Std Dev			
S&P 500 (1/0)	0.398	0.000	0.489	0.218	0.000	0.413	0.180	<.0001	<.0001
Executive (1/0)	0.122	0.000	0.328	0.095	0.000	0.294	0.027	<.0001	<.0001
CEO (1/0)	0.070	0.000	0.255	0.071	0.000	0.257	-0.001	0.762	0.764
MBA (1/0)	0.385	0.000	0.487	0.325	0.000	0.468	0.060	<.0001	<.0001
JD (1/0)	0.092	0.000	0.289	0.113	0.000	0.317	-0.021	<.0001	<.0001
PHD (1/0)	0.097	0.000	0.296	0.115	0.000	0.319	-0.017	<.0001	<.0001
CPA (1/0)	0.124	0.000	0.330	0.109	0.000	0.312	0.014	0.004	0.002
CFA (1/0)	0.005	0.000	0.072	0.007	0.000	0.085	-0.002	0.052	0.095
MD (1/0)	0.025	0.000	0.157	0.028	0.000	0.165	-0.003	0.252	0.272
Male (1/0)	0.852	1.000	0.355	0.909	1.000	0.288	-0.057	<.0001	<.0001
Nationality (US = 1)	0.560	1.000	0.496	0.585	1.000	0.493	-0.025	0.001	<.0001
Age	57.126	58.000	7.608	60.108	61.000	9.161	-2.983	<.0001	<.0001
Number of Quals	2.208	2.000	0.945	2.146	2.000	0.949	0.062	<.0001	<.0001
Time on Boards	7.412	3.100	11.101	12.548	8.200	14.421	-5.136	<.0001	<.0001
Current Boards	2.259	2.000	1.321	1.693	1.000	1.177	0.566	<.0001	<.0001
Professional Network	2.280	1.465	3.003	0.646	-0.036	2.198	1.634	<.0001	<.0001
Other Network	0.018	0.000	0.733	0.003	0.000	0.566	0.016	0.150	0.757
Mergers	4.486	3.000	5.508	3.578	2.000	4.598	0.908	<.0001	<.0001
Average ROE	-0.005	0.093	0.988	0.061	0.081	9.704	-0.066	0.081	<.0001
Total Market Value	18.589	3.041	49.787	8.483	0.857	32.696	10.106	<.0001	<.0001
2 Year Mkt Return	0.212	0.161	0.706	0.367	0.181	1.388	-0.154	<.0001	<.0001
Restatements	0.082	0.000	0.275	0.074	0.000	0.261	0.008	0.041	0.032
Audit	4.332	2.000	5.083	4.261	3.000	4.666	0.071	0.352	0.002
Compensation	3.705	2.000	4.632	3.919	3.000	4.502	-0.215	0.002	<.0001
Governance	2.956	2.000	3.886	2.828	2.000	3.855	0.128	0.029	0.005

Panel C: Difference in mean and median differences comparing new directors to those they replace

	Join N = 1,305			Replace N = 1,305			Mean Difference	Difference in Mean p-value	Signed Rank p-value
	Mean	Median	Std Dev	Mean	Median	Std Dev			
S&P 500 (1/0)	0.509	1.000	0.500	0.483	0.000	0.500	0.026	0.082	0.101
Executive (1/0)	0.206	0.000	0.405	0.176	0.000	0.381	0.031	0.043	0.038
CEO (1/0)	0.086	0.000	0.280	0.071	0.000	0.257	0.015	0.165	0.165
MBA (1/0)	0.406	0.000	0.491	0.376	0.000	0.485	0.030	0.106	0.089
JD (1/0)	0.095	0.000	0.293	0.096	0.000	0.295	-0.002	0.890	0.891
PHD (1/0)	0.093	0.000	0.291	0.133	0.000	0.340	-0.040	0.001	0.001
CPA (1/0)	0.119	0.000	0.323	0.063	0.000	0.242	0.056	<.0001	<.0001
CFA (1/0)	0.004	0.000	0.062	0.002	0.000	0.048	0.002	0.480	0.727
MD (1/0)	0.021	0.000	0.145	0.014	0.000	0.117	0.008	0.132	0.133
Male (1/0)	0.859	1.000	0.349	0.894	1.000	0.307	-0.036	0.004	0.004
Nationality (US = 1)	0.618	1.000	0.486	0.721	1.000	0.449	-0.103	<.0001	<.0001
Age	57.224	58.000	7.139	62.735	63.000	8.808	-5.511	<.0001	<.0001
Number of Quals	2.204	2.000	0.948	2.225	2.000	0.944	-0.021	0.565	0.419
Time on Boards	8.871	4.550	12.030	18.029	12.250	18.002	-9.158	<.0001	<.0001
Current Boards	2.498	2.000	1.366	2.421	2.000	1.662	0.076	0.173	0.005
Professional Network	3.058	2.085	3.430	3.949	2.530	4.511	-0.891	<.0001	<.0001
Other Network	0.066	0.000	0.824	0.071	0.000	0.961	-0.005	0.883	0.664
Mergers	5.592	4.000	6.109	9.925	8.000	7.970	-4.333	<.0001	<.0001
Average ROE	0.017	0.046	0.148	0.017	0.050	0.190	0.000	0.986	0.013
Total Market Value	27.039	5.455	58.735	31.268	4.526	71.540	-4.229	0.042	0.981
2 Year Mkt Return	0.166	0.119	0.693	0.179	0.140	0.577	-0.012	0.551	0.020
Restatements	0.082	0.000	0.274	0.125	0.000	0.331	-0.044	<.0001	<.0001
Audit	1.219	1.000	1.150	1.011	1.000	1.100	0.225	<.0001	<.0001
Compensation	1.062	1.000	1.030	1.095	1.000	0.989	-0.030	0.521	0.376
Governance	0.946	1.000	0.982	1.075	1.000	1.027	-0.118	0.009	0.003

Table 3. Logit analysis of gaining a board seat

Results are presented from logistic regressions where the dependent variable is one if a director gained a board appointment in the given year and zero otherwise. The analysis uses the sample of 81,830 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. *Male* is equal to one if the director is a male. *Nationality* is equal to one if the director is from the United States. *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. *Professional network* is the result of a PCA analysis on network measures calculated using board appointments and work experience. *Other network* is a similar measure but uses connections through non-profits, charities, and educational backgrounds. *Merger Experience* is the cumulative number of deals a director has been associated with. *Total market value* is the sum of the market values of all board seats. *Industry-Adjusted 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 one-standard-deviation change for continuous variables, and a change from zero to one for indicator variables. Each model also includes year fixed effects.

		Marginal Effect
Intercept	-5.675 (0.000)	
S&P 500 (1/0)	0.473 (0.000)	[0.011]
Executive (1/0)	-0.008 (0.881)	[0.000]
CEO (1/0)	-0.086 (0.201)	[-0.002]
Number of Quals	-0.017 (0.405)	[0.000]
MBA (1/0)	0.090 (0.017)	[0.002]
JD (1/0)	-0.142 (0.024)	[-0.003]
PHD (1/0)	-0.079 (0.200)	[-0.002]
CPA (1/0)	0.077 (0.144)	[0.002]
CFA (1/0)	-0.193 (0.388)	[-0.004]
MD (1/0)	0.005 (0.967)	[0.000]
Male (1/0)	-0.174 (0.000)	[-0.004]
Nationality (US = 1)	-0.017 (0.615)	[0.000]
Age	-0.016	[0.000]

	(0.000)	
Merger Experience	0.000	[0.000]
	(0.968)	
Audit	-0.069	[-0.001]
	(0.000)	
Compensation	-0.054	[-0.001]
	(0.000)	
Governance	-0.047	[-0.001]
	(0.000)	
Time on Boards	-0.091	[-0.002]
	(0.000)	
Current # Boards	1.253	[0.027]
	(0.000)	
Current # Boards^2	-0.107	[-0.002]
	(0.000)	
Professional Network	0.280	[0.012]
	(0.000)	
Other Network	0.037	[0.001]
	(0.169)	
Total Mkt Value	-0.003	[0.000]
	(0.000)	
Average ROE	0.000	[0.000]
	(0.906)	
2 Year Mkt Return	-0.095	[-0.002]
	(0.000)	
<hr/>		
Chi Square	4265	
Prob of Chi Square	(0.000)	
Pseudo R ²	0.210	
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Table 4. Relative human and social capital subgroups analysis

Results are presented from logistic regressions where the dependent variable is one if a director gained a board appointment in the given year and zero otherwise. The analysis uses the sample of 81,830 director years. The expertise variables are reduced using PCA and then annually ranked into terciles to separate high- and low-expertise directors. Directors are also ranked according to their professional network each year. Indicator variables are then assigned to directors who fall into one of the extreme groupings: low expertise, low network; low expertise, high network; high expertise, low network; high expertise, high network. *Male* is equal to one if the director is a male. *Nationality* is equal to one if the director is from the United States. *Industry-Adjusted 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 one-standard-deviation change for continuous variables, and a change from zero to one for indicator variables. Each model also includes year fixed effects.

		Marginal Effect
Intercept	-2.548 (0.000)	
Low Expertise - Low Network	-0.562 (0.000)	[-0.032]
Low Expertise - High Network	1.067 (0.000)	[0.068]
High Expertise - Low Network	-0.457 (0.013)	[-0.011]
High Expertise - High Network	1.053 (0.000)	[0.058]
Male (1/0)	-0.209 (0.000)	[-0.008]
Nationality (US = 1)	-0.124 (0.002)	[-0.004]
Age	-0.047 (0.000)	[-0.002]
Total Market Value	0.003 (0.000)	[0.001]
Average ROE	-0.001 (0.394)	[-0.000]
2 Year Mkt Return	-0.098 (0.000)	[-0.004]
Observations	81,830	
Chi Square	2,855	
Prob of Chi Square	(0.000)	
Pseudo R ²	0.095	

Table 5. Logit analysis of gaining a board seat after restatement.

Results are presented from logistic regressions where the dependent variable is one if a director gained a new seat in the given year and zero otherwise. The analysis uses the sample of 81,830 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 *Professional network* is the result of a PCA analysis on network measures calculated using board appointments and work experience. *Other network* is a similar measure but uses connections through non-profits, charities, and educational backgrounds. *Total market value* is the sum of the market values of all board seats. *Industry-Adjusted Average ROE* and *2 year market return* are market-weighted averages across all board seats held by an individual. Additionally, we interact each *Restatement* variable with *Executive*, *MBA*, *S&P500*, and *professional network*. *Restate* is equal to one if a director has ever been involved with a restatement and zero otherwise. *CAR Rank* is equal to one if the three-day cumulative abnormal return was in the bottom tercile of event returns for firms that announced a restatement for the year, zero otherwise. 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 one-standard-deviation change for continuous variables, and a change from zero to one for indicator variables. Each model also includes year fixed effects.

	Restatements			
	Model 1		Model 2	
Intercept	-5.678 (0.000)		-5.673 (0.000)	
S&P 500 (1/0)	0.457 (0.000)	[0.011]	0.456 (0.000)	[0.011]
Executive (1/0)	-0.006 (0.911)	[0.000]	0.004 (0.951)	[0.000]
CEO (1/0)	-0.083 (0.218)	[-0.002]	-0.071 (0.300)	[-0.001]
Number of Quals	-0.018 (0.401)	[0.000]	-0.017 (0.412)	[0.000]
MBA (1/0)	0.092 (0.015)	[0.002]	0.098 (0.012)	[0.002]
JD (1/0)	-0.140 (0.026)	[-0.003]	-0.138 (0.028)	[-0.003]
PHD (1/0)	-0.078 (0.204)	[-0.002]	-0.078 (0.205)	[-0.002]
CPA (1/0)	0.078 (0.138)	[0.002]	0.076 (0.146)	[0.002]
CFA (1/0)	-0.193 (0.391)	[-0.004]	-0.193 (0.391)	[-0.004]
MD (1/0)	0.004 (0.968)	[0.000]	0.003 (0.980)	[0.000]
Male (1/0)	-0.171 (0.000)	[-0.004]	-0.174 (0.000)	[-0.004]
Nationality (US = 1)	-0.018 (0.608)	[0.000]	-0.017 (0.621)	[0.000]

Age	-0.016	[0.000]	-0.016	[0.000]
	(0.000)		(0.000)	
Merger Experience	0.001	[0.000]	0.001	[0.000]
	(0.829)		(0.832)	
Audit	-0.068	[-0.001]	-0.068	[-0.001]
	(0.000)		(0.000)	
Compensation	-0.053	[-0.001]	-0.054	[-0.001]
	(0.000)		(0.000)	
Governance	-0.046	[-0.001]	-0.047	[-0.001]
	(0.000)		(0.000)	
Time on Boards	-0.091	[-0.002]	-0.091	[-0.002]
	(0.000)		(0.000)	
Current # Boards	1.265	[0.027]	1.267	[0.027]
	(0.000)		(0.000)	
Current # Boards^2	-0.108	[-0.002]	-0.109	[-0.002]
	(0.000)		(0.000)	
Professional Network	0.281	[0.010]	0.277	[0.010]
	(0.000)		(0.000)	
Other Network	0.037	[0.001]	0.036	[0.001]
	(0.168)		(0.178)	
Total Mkt Value	-0.003	[0.000]	-0.003	[0.000]
	(0.000)		(0.000)	
Average ROE	0.000	[0.000]	0.000	[0.000]
	(0.886)		(0.871)	
2 Year Mkt Return	-0.098	[-0.002]	-0.099	[-0.002]
	(0.000)		(0.000)	
Leave after Restate (1/0)	-0.034	[-0.001]	-0.033	[-0.001]
	(0.256)		(0.281)	
Restatements	-0.279	[-0.005]	-0.335	[-0.006]
	(0.000)		(0.000)	
Restate x Network			0.068	[0.003]
			(0.012)	
Restate x SP500			-0.011	[0.000]
			(0.932)	
Restate x MBA			-0.132	[-0.003]
			(0.309)	
Restate x Executive			-0.071	[-0.001]
			(0.564)	
Chi Square	4245		4301	
Prob of Chi Square	(0.000)		(0.000)	
Pseudo R2	0.211		0.211	

Appendix A: Variable Definitions

S&P 500	Equal to one if a director at an S&P 500 firm, zero otherwise.
Executive	Equal to one if listed as a company executive but not the CEO, zero otherwise.
CEO	Equal to one if listed as the CEO, zero otherwise.
MBA	Equal to one if an MBA, zero otherwise.
JD	Equal to one if a JD, zero otherwise.
PHD	Equal to one if a PHD, zero otherwise.
CPA	Equal to one if a CPA, zero otherwise.
CFA	Equal to one if a CFA, zero otherwise.
MD	Equal to one if a medical doctor, zero otherwise.
Male	Equal to one if the director is male, 0 if the director is female.
Nationality	Equal to one if the director is listed as a U.S. citizen, zero otherwise.
Age	The age in years of the director.
Qualifications	The number of listed qualifications (CPA, JD, etc.).
Mergers	The cumulative number of mergers per director.
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.
Professional Network	The first principal component from an analysis that extracts the common variation from links, betweenness, and closeness calculated on the network of professional connections for a given year.
Other Network	The first principal component from an analysis that extracts the common variation from links, betweenness, and closeness calculated on the network of education, non-profit, and connections for a given year.
Degree	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 10 directors each and was the only overlapping director then he or 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.
Betweenness	Is the normalized number of geodesic paths that pass through a director. See Freeman (1977) for more detail. A director with a higher betweenness score is located on more of the shortest paths between directors than someone with a lower score.
Restatements	Equal to one if sat on board of company that restated its financials, zero otherwise.
CAR Rank	Equal to one if the three-day cumulative abnormal return was in the bottom tercile of event returns for firms that announced a restatement for the year, zero otherwise.