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journal homepage: [www.elsevier.com/locate/jempfin](http://www.elsevier.com/locate/jempfin)CEO networks and the labor market for directors<sup>☆</sup>Hyemin Kim<sup>a,1,3</sup>, Rüdiger Fahlenbrach<sup>b,2,3</sup>, Angie Low<sup>c,\*,3</sup><sup>a</sup> Division of Finance, Hanyang University Business School, Hanyang University, South Korea<sup>b</sup> Swiss Finance Institute, Ecole Polytechnique Fédérale de Lausanne (EPFL), European Corporate Governance Institute (ECGI), Switzerland<sup>c</sup> Division of Banking and Finance, Nanyang Business School, Nanyang Technological University, Singapore

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## ABSTRACT

Directors at firms with well-connected CEOs are more likely to obtain directorships at firms that are connected to the CEOs. Recommended directors do not become beholden to the CEO. Reciprocity is an important determinant of recommendations because CEOs are more likely to recommend their directors if they received help from their network filling vacant board positions. CEOs also benefit strategically from the additional appointments of their directors. Analyses of appointment announcement returns and director election results show that shareholders are not concerned by such recommendations. The results highlight the importance of CEOs as intermediaries in the director labor market.

## 1. Introduction

The process of directors selecting new directors from their own network (the “old boys’ network”) has been criticized for more than 40 years (e.g., Mace, 1971; Lorsch and MacIver, 1989). Yet, the recent literature and survey results suggest that the board still heavily relies on its network when it seeks new directors (Adams, 2017; Adams et al., 2018; Akyol and Cohen, 2013; Cai et al., 2022; Ferreira et al., 2017).<sup>4</sup> While the literature has yielded the important insight that directors being appointed through their connections to the CEO are potentially compromised in their independence and monitoring capacity, it has by construction only looked at a small part of the network of corporate America.<sup>5</sup>

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<sup>4</sup> PwC’s 2016 Annual Corporate Directors Survey (PwC, 2016) states that almost 90% of surveyed directors use recommendations from their own board’s network as the most widely used source for identifying new directors, followed by search firm recommendations (60%), management recommendations (52%), and investor recommendations as a distant fourth (18%).

<sup>5</sup> Shivdasani and Yermack (1999) show that when the CEO serves on the nominating committee or no nominating committee exists, firms appoint fewer independent outside directors and more gray outsiders with conflicts of interest. Fracassi and Tate (2012) show that firms with more powerful CEOs are more likely to appoint directors with professional and non-professional ties to the CEO whose independence is subsequently compromised. Coles et al. (2014) find that directors who are appointed by the current CEO are weaker monitors. Hwang and Kim (2009) show that social connections between the CEO and directors facilitate higher pay levels, lower pay-performance sensitivity, and lower turnover probability. Kramarz and Thesmar (2013) show that social networks affect board composition and that firms in which these networks are most active pay their CEOs more, are less likely to replace a CEO who underperforms, and engage in less value-creating acquisitions. Similarly, Nguyen (2012) shows that when the CEO and a number of directors belong to the same social networks, the CEO is less likely to be dismissed for poor performance.

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Our paper focuses on second-degree network connections and in particular situations in which a well-connected CEO recommends a director from her own board to another firm for an additional board seat. These indirect network connections via the CEO could play a large role in the director labor market, as referrals from individuals who have already interacted with the director candidate in a comparable situation ought to be very important. Many practitioners remark that even one director who is too confrontational or not up to the task can lead to a dysfunctional board so that the vetting process for new directors is taken very seriously.<sup>6</sup>

A central part of our paper seeks to understand CEOs' incentives to refer their own directors. A CEO may deliver a recommendation because of a quid pro quo or reciprocity argument — she previously was in a similar position and received help filling a vacancy on her own board or she foresees needing help filling a position in the future (Leider et al., 2009). An agency motive could play an important role — the CEO could recommend one of her own directors with the intention to capture the director and to ensure director loyalty. Finally, a CEO may actively recommend her own directors to join other boards for strategic purposes (Mizruchi, 1996). For example, directors who also serve at financial firms could gain access to financing expertise and loans (Güner et al., 2008). Directors may also be sent to firms to develop better M&A skills (Field and Mkrtychyan, 2017), acquire strategic information about key upstream and downstream markets (Burns et al., 2021; Dass et al., 2014), or provide a certification effect through appointments at larger and more prestigious firms (Carpenter and Westphal, 2001).

Yet, CEOs could be reluctant to recommend their own directors. A CEO who recommends her own director may risk losing an important director who, concerned about too many commitments, steps down from the CEO's own board. Or the director could refocus her attention on the new, potentially more prestigious board (e.g., Masulis and Mobbs, 2014).

Although we cannot directly observe the CEO's involvement in the appointment process, we can potentially infer it from the fact that the director got appointed to a firm within the CEO's network. We hypothesize that CEOs with larger networks are better able to refer their directors to firms within their networks. These CEOs have a bigger pool of potential firms in which to place their directors. Using a sample of directors appointed at U.S. public firms, we first show that second-degree network recommendations through the CEO matter in the director labor market. Following Engelberg et al. (2013), we calculate the number of directors of other firms to which the CEO is connected via education, professional, or club connections as a measure of the size of her network. Our measure of CEO connections only counts incremental connections, i.e. we remove connections common to the director and CEO when calculating the CEO network. We find that directors are more likely to obtain an additional board seat in another firm that is connected to the CEO when the network of the CEO is larger, consistent with CEOs referring their own directors to firms within their network. Additional tests show that these results are not due to the size of the CEO's network proxying for CEO characteristics nor are they due to economic links between the appointing firm and focal firm. A simulation test shows that the observed likelihood of a director being appointed to a firm connected to the focal CEO is much higher than what random assignment might suggest. We have conducted several tests and additional analyses to reduce concerns that omitted variables drive the relation between CEO networks and additional director appointments and believe that we have identified a robust association. Yet, in the absence of exogenous variation in a CEO's network, one should refrain from causal interpretations of our results.

We then turn to the question of why CEOs may recommend their own directors for additional board seats. We find that reciprocity plays an important role in CEOs' recommendations. CEOs are much more likely to recommend their own directors to firms that have helped the focal firm fill director positions in the recent past. CEOs are also more likely to receive help filling positions in the near future from firms which have benefitted from the CEO's recommendations.

We find little evidence for an agency motive. Second-degree recommendations are not associated with higher CEO compensation, nor with lower pay-performance sensitivity, nor with lower forced CEO turnover-performance sensitivity. Through an analysis of shareholder voting and appointment announcement returns, we find no evidence that shareholders at the original firm believe that the independence of their directors is compromised after the CEO recommended them for additional directorships.

Strategic motives play an important role. Directors are more likely to be recommended to firms that have done a successful M&A in the recent past or if the appointing firm is more prestigious, which allows the focal firm to gain relevant M&A skills and signal focal firm board quality, respectively. Insider directors who have stronger incentives to share strategic information with the CEO of the focal firm are more likely to be recommended.

Finally, CEOs are less likely to recommend important directors who sit on key board committees and recommended directors are less likely to leave the board after receiving an additional appointment compared to directors who did not rely on the CEO's referral for additional appointments.

We conclude with an examination of the impact of second-degree network connections on the functioning of the director labor market. Prior literature suggests that network recommendations can help improve the efficiency of the matching process by conveying pertinent information about the potential candidate and the appointing firm to both sides (Montgomery, 1991). We find little evidence that this is the case as more opaque firms and directors with less marketable characteristics do not particularly benefit from the network of the CEO. However, we find some evidence that bigger CEO networks allow soft information about directors to be conveyed to the director labor market, mitigating the appointing firm's need to rely on hard information such as firm performance to evaluate potential director candidates.

One caveat is that we are only examining one part of the importance of the network of corporate America. When a director sits on a board, she is exposed to not only the network of the CEO but also the network of other peer directors sitting on the board.

<sup>6</sup> See for example *What makes an exceptional independent non-executive director?* a study by Korn/Ferry International, an executive search company: <https://www.kornferry.com/insights/this-week-in-leadership/459-what-makes-an-exceptional-independent-non-executive-director>. Also see *Board composition: The road to strategic refreshment and succession* a study by Spencer Stuart, an executive search firm: <https://www.spencerstuart.com/research-and-insight/the-road-to-strategic-board-succession>. Additionally, Spencer Stuart's 2018 Board Services argues that referencing is a critical step in the recruitment process of new directors to avoid mismatches between appointing firms and directors. See: <https://www.spencerstuart.com/research-and-insight/best-practices-for-director-recruitment>.

Given that the board consists of a heterogeneous group of peer directors, it is hard to develop testable predictions for why board members as a group may want to recommend their peer directors to another board position. Therefore, in this paper, we focus on the network referrals by the CEO.

Our paper relates to several strands of the literature. There is a large literature on the importance of CEO connections to the firm and the CEO herself.<sup>7</sup> Another strand of the literature examines the impact of director connections for the firm and the director herself.<sup>8</sup> Contrary to these papers, we show that a CEO's connections help the careers of *other* individuals who are sitting on her board. Furthermore, instead of taking the network as given, we provide evidence on how the network among CEOs, directors, and firms form — there is a system of reciprocity where CEOs recommend their directors to boards of other CEOs who then do the same.

Much work has been carried out on the costs and benefits of interlocking boards.<sup>9</sup> Hallock (1997) and Fich and White (2005) examine interlockings arising from two CEOs sitting on each other's boards, and conclude that such interlocks are formed mainly to benefit the CEOs themselves and not their firms. Other papers have focused on how interlocks enable the propagation of information and found that firm practices such as disclosure policies, option backdating, earnings management, and exit strategies, spread from firm to firm via interlocked directors (e.g., Bizjak et al., 2009; Stuart and Yim, 2010; Chiu et al., 2013; Cai et al., 2014). Contrary to these papers which focus on the consequences of interlocks, we examine the origins of interlocking boards. Documenting the intermediary role of CEOs in the formation of interlocking boards is new to the literature. Furthermore, we uncover more benign motives on the part of the CEO when she makes the recommendations.

Our paper is also related to the labor economics literature on labor market referrals. Researchers have found that referrals and informal contacts of the prospective job candidates reduce adverse selection issues and improve the quality of the worker–employer match (see e.g., Blau, 1990; Brown et al., 2016; Burks et al., 2015; Pallais and Sands, 2016). While prior studies have mostly focused on the effects of referrals on the labor market for rank-and-file employees, we examine the effect of referrals for directors operating in the upper echelons of corporate America. The issue is made especially interesting because of the conflicting interests of the parties involved and the supervisor–supervisee relationship between the referrer (CEO) and the referred (director) in our context. Unlike other studies where it is often the case that an employee recommends a member of her network to a position within her firm, we study whether and why CEOs refer directors who are themselves monitors of the CEO. Through such a referral, additional conflicts of interests are being created which are not present in the other settings. Therefore, a priori, it is unclear whether such referrals are beneficial for the efficiency of the director labor market and our paper advances knowledge over and above what the existing literature has found in other contexts.

The remainder of the paper is organized as follows. In Section 2, we discuss the data and construction of our variables. Section 3 shows the empirical results examining the impact of CEO connections on additional appointments of directors. Section 4 examines the economic incentives of the CEO when making director recommendations and also examines whether second-degree recommendations influence the functioning of the director labor market. Section 5 concludes.

## 2. Data

The data come from multiple sources. We identify the list of directors from the Institutional Shareholder Services (ISS) Director database. We obtain information on the identity of the CEOs, and CEOs' and directors' education, professional, and club connections from Management Diagnostic Limited's BoardEx database. Standard & Poor's (S&P's) Compustat and the Center for Research in Security Prices (CRSP) provide financial and stock return information, respectively. ISS Voting Analytics is the source of data for voting outcomes at director elections. CEO compensation data and director appointment dates come from S&P's Execucomp database and Audit Analytics, respectively. We also obtain information on forced CEO turnovers from Peters and Wagner (2014) and Jenter and Kanaan (2015). Information on acquisitions come from Securities Data Company's (SDC) M&A database and the degree of vertical relatedness among industries is from the Bureau of Economic Analysis (BEA).

### 2.1. Sample selection

BoardEx provides detailed information on executives' past and current employment, educational background, and affiliations to not-for-profit associations, club memberships, and other activities. BoardEx expanded its coverage significantly in 2003 so that any network measure would be incomplete prior to 2003. Our sample therefore starts in 2003 and ends in 2012. We match BoardEx company information with data on firms in the Compustat-CRSP merged database using both manual and computer matching. The matched BoardEx-Compustat-CRSP universe of firm-years is the basis for the construction of our network connection measures.

<sup>7</sup> Engelberg et al. (2013) find that CEOs are paid for their valuable, portable network of connections that bring information into the firm. Faleye et al. (2014) find that CEO connections facilitate investments in corporate innovation because they increase the CEO's access to relevant network information and provide labor market insurance to the CEO by mitigating career concerns. Babina et al. (2020) show that firms with more network connections to other firms through executives and directors have higher survival rates during the great depression. El-Khatib et al. (2015) provide evidence that highly-connected CEOs tend to make more and worse-performing acquisitions. Liu (2014) finds evidence that CEOs are more likely to move to better jobs if they are well-connected.

<sup>8</sup> Fogel et al. (2021) find that directors who are well-connected are better monitors. Larcker et al. (2013) document that boards which are well-connected outperform less-connected boards. Cai et al. (2022) and Hacamo and Kleiner (2022) show that directors and executives rely on their own network to advance their careers.

<sup>9</sup> The earliest papers on board interlocks have considered the possibility that firms form interlocked boards with banks to access capital (Dooley, 1969). Later papers suggested that interlocking boards may be formed by firms for collusion purposes, to coopt sources of environmental uncertainty, to improve contracting relationships especially with customers and suppliers, and as a result of the firm's quest for legitimacy (see Mizruchi, 1996 for a review).

We match the list of directors in ISS to the directors in Boardex using a fuzzy name matching procedure. We were able to match 98.63% of all directors. We use the ISS director classification to identify independent, inside, and affiliated directors. For the most part of our study, we focus on the independent directors as this is where the CEO's conflicting incentives are the most interesting and complex. However, in certain tests, we also include inside and affiliated directors when appropriate.

Finally, we exclude financials and utilities from our sample. Since we examine the effect of CEOs' network on obtaining additional board seats in firms connected to focal firm's CEOs, we restrict our sample to the sample of new appointments. A director can be appointed to multiple appointments each year. Our final sample consists of 3764 firm-year-director-appointing firm observations from 3363 firm-year-director observations, covering 2144 unique directors, 1110 distinct companies, and 2650 firm-year observations.

## 2.2. Construction of the main explanatory network variables and dependent variable

We follow Engelberg et al. (2013) and construct a measure of the CEO's connections to directors currently sitting on boards of firms in the matched BoardEx-Compustat-CRSP universe. We count, for each CEO and in each year, the number of directors to whom she is connected via education, professional, or club connections. Two individuals are connected via an education connection if they attended the same university with the same degree type and graduated within one year of each other. We classify degree types into six categories — undergraduate, masters, MBA, PhD, law, and others. Two individuals share a professional connection if they worked at or sat on the board of the same company at the same time in the past or during the current year. We define that a professional connection exists only when the two individuals work at the same level, i.e., both individuals are at the senior management or director level, or both are at the non-senior management and non-director level. When constructing professional connections, we exclude connections formed in the focal company.

Finally, two individuals share a club connection if they are active members of the same non-work-related organization, such as a charitable organization, trust, or university board. Following Schmidt (2015), we exclude connections through professional or industrial organizations where social interaction is less likely due to the compulsory nature of the membership (e.g., American Bar Association).

When counting education and professional connections, we require that the connections start prior to the beginning of the fiscal year to ensure that we are using pre-existing CEO connections to explain additional directorships obtained by the directors. BoardEx rarely reports the starting dates of memberships in non-work-related organizations. Therefore, we assume that two individuals share a club connection if they ever were affiliated with such an organization, regardless of dates.

We test whether a director gains additional board seats because the CEO's network expands the director's own network. Therefore, *CEO Rolodex* only takes into account the CEO's connections to individuals who themselves are not connected to the focal director, i.e., we focus on non-overlapping connections. As such, directors sitting on the same board in the same year can have different values of *CEO Rolodex* depending on the degree of overlap between their network and the CEO's network. We also use an additional definition of the CEO's connections. *CEO Total Rolodex* includes both overlapping and non-overlapping connections.<sup>10</sup> For the regression analysis, we take the natural logarithm of *CEO (Total) Rolodex* because the variable is highly skewed.

We further refine, in some tests, our measure of professional connections. We expect the network connection to be tighter and the network recommendations to carry more weight if the connection was formed at the same high hierarchical level (senior management team/director-level or SMT connections).<sup>11</sup> The focus on SMT connections also reduces the problem of measurement error. In large firms with many employees, two individuals working for the firm at the same time may not really know each other especially when they work in non-senior management positions.

The main dependent variable is an indicator variable equal to one if the focal director obtains an additional independent directorship at any firm in the BoardEx-Compustat-CRSP universe that is connected to the focal firm CEO within one year after the fiscal year begins, and zero otherwise (*Appointment Connected to CEO*). We consider the appointing firm to be connected to the focal firm CEO if the CEO shares either an education, professional, or club link with at least one of the directors on the board of the appointing firm.

## 2.3. Summary statistics

Panels A and B of Table 1 show summary statistics at the firm-year-director-appointing firm level and Panel C presents summary statistics of the focal firm, board, and CEO characteristics at the firm-year level. Appendix provides detailed descriptions for all variables. We winsorize all continuous variables at the 1% level in both tails each year.

The average CEO has 142 connections in total (*CEO Total Rolodex*), out of which 128 do not overlap with those of the focal director (*CEO Rolodex*). There is substantial variation in the number of CEO non-overlapping connections, with the 25th quartile being 26 connections and the 75th quartile being 192 connections. The network of the CEO comprises on average 86 club connections, 13 education connections, and 34 professional connections. CEOs have 13 SMT professional connections.

Panel B reports the director labor market outcome, network connection measures, and characteristics of the focal director, subsampled based on whether they are classified as an independent, affiliated, or insider director. In our sample, close to 25%

<sup>10</sup> When there are overlapping connections, it is unclear whether the effect is attributable to the focal director or the CEO. Using non-overlapping connections is the more conservative approach, but may underestimate the true effect of CEO connections.

<sup>11</sup> Senior management positions include CEO, CFO, COO, chairman, president, division CEO, division CFO, division chairman, division COO, division president, head of division, regional CEO, regional CFO, regional chairman, regional COO, and regional president (Custódio and Metzger, 2013).

**Table 1**  
Summary statistics.

Panel A: Focal CEO connections						
	N	Mean	Std	25th	Median	75th
CEO Total Rolodex	3764	142.33	136.80	32	99	212
CEO Rolodex	3764	128.38	127.14	26	89	192
Club CEO Rolodex	3764	86.25	106.38	3	42	131
Edu CEO Rolodex	3764	12.94	21.01	0	4	16
Prof CEO Rolodex	3764	34.21	42.43	4	18	47
Prof CEO Rolodex SMT	3764	12.68	14.73	0	8	20
Panel B: Focal director characteristics by director type						
	Independent director (N = 3387)		Affiliated director (N = 215)		Insider director (N = 162)	
	Mean	Median	Mean	Median	Mean	Median
Appointment Connected to CEO (%)	24.80	0	30.23	0	35.80	0
Appointment Connected to Focal Dir (%)	40.95	0	46.51	0	41.98	0
Dir Total Rolodex	167.85	135	167.53	134	161.28	113
Club Dir Total Rolodex	97.09	49	103.93	70	103.01	63
Edu Dir Total Rolodex	16.87	8	18.22	10	16.16	9
Prof Dir Total Rolodex	57.66	43	50.52	36	45.27	30
Prof Dir Total Rolodex SMT	25.99	21	27.68	20	23.94	17
Dir Age	58.98	60	58.63	60	58.58	59
Dir Female	0.19	0	0.05	0	0.05	0
Dir Tenure	5.15	4	5.37	4	5.10	2
Dir Board Seat	2.08	2	2.13	2	1.96	2
Dir Foreign Exp	0.56	1	0.43	0	0.52	1
Dir Finance Exp	0.48	0	0.41	0	0.44	0
Dir MBA	0.32	0	0.34	0	0.38	0
Dir General Ability Index	0.79	0.78	0.95	1.00	1.13	1.09
Dir Poor Attendance	0.01	0	0.02	0	0.00	0
Panel C: Focal Firm and CEO characteristics						
	N	Mean	Std	25th	Median	75th
Sales (Million \$)	2650	4441.48	9282.54	453.55	1210.30	3698.06
Cumulative Ret	2650	0.14	0.40	-0.10	0.10	0.33
Ret Volatility	2650	0.02	0.01	0.02	0.02	0.03
Board Size	2650	9.91	2.11	8.00	10.00	11.00
Board Independence	2650	0.79	0.12	0.71	0.82	0.89
CEO Age	2650	55.22	6.60	51	55	60
CEO Female	2650	0.04	0.19	0	0	0
CEO Tenure	2650	6.31	7.01	2	4	8
CEO Board Seat	2650	1.54	0.75	1	1	2
CEO Foreign Exp	2650	0.43	0.50	0	0	1
CEO Finance Exp	2650	0.29	0.45	0	0	1
CEO MBA	2650	0.27	0.44	0	0	1
CEO General Ability Index	2650	0.19	1.54	-0.99	-0.03	1.06

The table shows summary statistics for our sample of 3764 firm-year-director-appointing firm observations covered in the BoardEx-Compustat-CRSP-ISS universe for the period from 2003 to 2012. Panel A reports statistics for the focal CEO connection measures. Panel B reports statistics for the focal director's connection measure as well as the focal director's characteristics. Panel C reports firm-year level statistics for the focal firms covered in our sample. [Appendix](#) provides detailed descriptions of all variables.

of the independent director appointments are to firms connected to the focal firm CEO. The respective numbers are about 30% for affiliated directors and 36% for insider directors. We find that the unconditional probability of being appointed to firms connected to the focal directors themselves is larger. 41% of independent director appointments are to firms connected to the focal directors themselves, consistent with results in [Cai et al. \(2022\)](#) that directors tap into their own network to find additional director candidates. The average focal independent and affiliated directors are connected to 168 directors. Insider directors have on average about 161 connections.

The average focal independent director is 59 years old with a tenure of about 5 years and sits on 2 boards in the BoardEx-Compustat-CRSP universe, including the focal firm. 19% of the independent directors are female, 56% have foreign experience, 48% have finance experience, and 32% have an MBA. We also measure the focal director's general ability following [Custódio et al. \(2013\)](#) who construct an index of general skills that are transferable across firms and industries. For all types of directors, directors who are appointed at other firms have a positive *Dir General Ability Index*.<sup>12</sup> Only about 1% of the independent directors miss more than 75% of the board meetings during the year. Director characteristics for the affiliated and insider directors are slightly different

<sup>12</sup> The index is standardized to have a mean of zero using the sample of all directors who are appointed and not appointed at other firms. Thus, the index is lower for the directors without additional appointments.

from the independent directors. They are in particular more likely to be male, have a higher *General Ability Index*, are more likely to have an MBA degree and are less likely to have financial or foreign experience.

Panel C reports the summary statistics for firm, board, and CEO characteristics at the firm-year level. The average firm has sales of \$4.4 billion, a 14% annualized stock return, and 2% daily stock return volatility (which corresponds to 32% annualized volatility) over the prior fiscal year. The average board has 10 directors with 79% of directors being considered independent. On average, CEOs are 55 years old and sit on 1.5 boards in the BoardEx-Compustat-CRSP universe, their tenure is 6 years, and their *General Ability Index* is 0.19. Only 4% of CEOs are female, 43% of CEOs have foreign experience, 29% of CEOs have financial experience, and 27% of CEOs have an MBA.

### 3. Do CEO connections matter for director appointments at connected firms?

In Table 2, we examine whether the focal director obtains additional directorships in the companies that are part of the network of the CEO. We hypothesize that CEOs with a larger rolodex are better able to refer their directors to firms within their network since they have a bigger pool of potential firms at which to place their directors. Therefore, the likelihood of a focal director obtaining an additional directorship at a firm connected to the CEO should increase with the size of the CEO's rolodex. We would have liked to directly measure the CEO's involvement in the appointment process, but this is not observable to outsiders. Therefore, we infer the CEO's involvement from the fact that the director got appointed to a firm within the CEO's network.<sup>13</sup>

The regressions are estimated at the firm-year-director-appointing firm level. The dependent variable is *Appointment Connected to CEO*, an indicator variable equal to one if the focal director obtains an additional independent directorship at a BoardEx-Compustat-CRSP firm which is connected to the CEO of the focal firm within one year after the fiscal year begins, and zero if the appointment is at an unconnected firm. The main independent variable is *CEO Rolodex*, respectively. In addition to firm characteristics, we control for the focal director's connectedness, characteristics, and experiences. We estimate logit models with Fama–French 48 industry fixed effects and year fixed effects. Standard errors are clustered at the CEO level. The numbers in brackets are marginal effects and show the percentage point change in the likelihood of appointment for a one standard deviation change in *Rolodex* relative to the mean.

In Column 1, where we include all directors in the regression, we find that *CEO Rolodex* significantly increases the likelihood of the director being appointed to a connected firm relative to unconnected appointments. In terms of economic significance, the likelihood of being appointed to a firm connected to the focal firm CEO increases by 3.31 percentage points when *CEO Rolodex* increases by one standard deviation relative to the mean. The economic significance increases to 6.34 percentage points when we focus on the independent directors in Column 2. In Column 3, the results are economically and statistically similar when we examine *CEO Total Rolodex*, which includes the overlapping connections with the focal director.

Turning to the director's own connections, we do not find that the director's own rolodex has any impact on her appointment to firms that are linked to the focal CEO.<sup>14</sup> The contrast in results between the CEO's connections and focal director's connections is interesting and suggests that our empirical setup is likely to pick up the active involvement of the CEO in referring their directors to firms within their network.

#### 3.1. Endogeneity concerns and alternative hypotheses

The design of our study helps alleviate some of the endogeneity concerns common in the network literature. The network variable could proxy for some uncontrolled firm or director characteristics. For example, one common endogeneity concern is that well-connected CEOs manage better-performing firms and that it is firm performance driving the additional director appointments (Yermack, 2004). Or that well-connected CEOs attract higher caliber directors who in turn tend to get more appointments. Our regression specification already controls for firm stock performance and a wide array of director characteristics. Furthermore, we are examining how a CEO's rolodex affects the likelihood of appointment at a connected firm versus an unconnected firm, conditional upon the subsample of appointments. Such an empirical setup should partially address omitted variables issues relating to firm and director characteristics. If director ability or firm performance are the true drivers of appointments, they should equally impact appointments at connected and unconnected firms, and not just appointments at linked firms as we have observed in Table 2.

One can however argue that it is possible that the variable *CEO Rolodex* is correlated with some omitted focal CEO characteristics, although it is not so easy to come up with a convincing explanation why a non-network related CEO characteristic would increase the likelihood of the director getting an appointment at a connected firm vis-a-vis an unconnected firm. In Columns 4 and 5 of Table 2, we additionally control for variables measuring director characteristics such as age, gender, ability, etc. We continue to find that the likelihood of additional appointments at connected firms increases as the CEO's network gets bigger, suggesting that our results are not driven by non-network related CEO characteristics.

It is possible that directors are more likely to obtain directorships at firms that are economically linked to the focal firm and these economically-linked firms are more likely part of the CEO's network. To identify economically-linked firms, we use the

<sup>13</sup> In 2003, the U.S. Securities and Exchange Commission passed a regulation requiring companies to explain their director nomination process and to disclose the sourcing of all new directors. Regrettably, as shown by Akyol and Cohen (2013), the disclosure is rarely specific enough to identify the exact person who recommended the new director. Hence, we cannot use the new disclosure to identify whether it was the CEO's referral that led to the appointment of the director.

<sup>14</sup> In contrast, when examining all appointments regardless of whether it is to firms connected to the CEO or not, we find that the director's own connections play a positive and significant role in getting herself additional appointments.

**Table 2**  
CEO network and likelihood of additional board seats at connected firms.

	All directors		Independent directors		
	(1)	(2)	(3)	(4)	(5)
Log (CEO Rolodex + 1)	0.193*** (0.000) [3.311]	0.397*** (0.000) [6.339]		0.372*** (0.000) [5.937]	
Log (CEO Total Rolodex + 1)			0.431*** (0.000) [6.848]		0.413*** (0.000) [6.558]
Log (Dir Total Rolodex + 1)	0.014 (0.799) [0.188]	-0.046 (0.426) [-0.604]	-0.069 (0.228) [-0.906]	-0.053 (0.362) [-0.697]	-0.075 (0.193) [-0.985]
Log (Sales)	0.229*** (0.000)	0.166*** (0.000)	0.156*** (0.000)	0.165*** (0.000)	0.155*** (0.000)
Cumulative Ret	0.043 (0.717)	-0.007 (0.959)	-0.003 (0.983)	0.003 (0.980)	0.010 (0.939)
Ret Volatility	-5.905 (0.355)	-6.727 (0.321)	-6.125 (0.368)	-5.792 (0.407)	-5.261 (0.453)
Log (Dir Age)	-0.289 (0.515)	-0.761 (0.112)	-0.774 (0.105)	-0.711 (0.144)	-0.718 (0.140)
Dir Female	-0.302*** (0.007)	-0.312*** (0.006)	-0.303*** (0.007)	-0.302*** (0.008)	-0.294*** (0.009)
Log (Dir Tenure + 1)	0.009 (0.878)	0.090 (0.133)	0.090 (0.135)	0.080 (0.185)	0.080 (0.188)
Dir General Ability Index	-0.022 (0.634)	-0.041 (0.429)	-0.038 (0.455)	-0.037 (0.481)	-0.035 (0.500)
Log (Dir Board Seat)	0.179* (0.065)	0.240** (0.026)	0.239** (0.027)	0.232** (0.035)	0.232** (0.035)
Dir Foreign Exp	-0.330*** (0.000)	-0.334*** (0.000)	-0.331*** (0.000)	-0.323*** (0.000)	-0.321*** (0.000)
Dir Finance Exp	-0.049 (0.583)	-0.039 (0.678)	-0.032 (0.737)	-0.035 (0.716)	-0.029 (0.766)
Dir MBA	0.068 (0.457)	0.070 (0.481)	0.073 (0.463)	0.072 (0.477)	0.075 (0.455)
Dir Poor Attendance	-0.705 (0.158)	-0.691 (0.236)	-0.695 (0.228)	-0.694 (0.236)	-0.697 (0.229)
Log (CEO Age)				1.103** (0.014)	1.101** (0.014)
CEO Female				0.250 (0.302)	0.243 (0.308)
Log (CEO Tenure + 1)				0.040 (0.487)	0.037 (0.529)
CEO General Ability Index				0.003 (0.934)	-0.002 (0.956)
Log (CEO Board Seat)				0.118 (0.347)	0.104 (0.405)
CEO Foreign Exp				-0.054 (0.574)	-0.054 (0.572)
CEO Finance Exp				0.105 (0.295)	0.103 (0.306)
CEO MBA				-0.085 (0.431)	-0.096 (0.371)
Industry and Year FE	Yes	Yes	Yes	Yes	Yes
Observations	3764	3387	3387	3320	3320
Pseudo R <sup>2</sup>	0.078	0.104	0.107	0.107	0.111

The table shows results of logit regressions predicting the likelihood of an independent director obtaining additional independent board seats at firms which share a connection with the focal firm CEO. A connection exists between the focal firm CEO and the appointing firm if the focal firm CEO shares either education, professional, or club connections with at least one of the directors of the appointing firm. The sample consists of 3764 firm-year-director-appointing firm observations covered in the BoardEx-Compustat-CRSP-ISS universe for the period from 2003 to 2012. The dependent variable is an indicator variable equal to one if the independent director obtains an additional independent directorship in another firm which is connected to the focal firm's CEO within one year after the fiscal year starts, and zero if the appointment is at an unconnected firm (*Appointment Connected to CEO*). *CEO Rolodex* is the number of directors of other firms who are connected to the CEO prior to the fiscal year, excluding individuals who are connected to the focal director as well. *CEO (Dir) Total Rolodex* is the number of directors of other firms who are connected to the CEO (the focal director) prior to the fiscal year. Marginal effects, which show the percentage point change in the likelihood of appointment for a one standard deviation change in *Rolodex* relative to the mean are reported in brackets. The model includes Fama-French 48 industry- and year-fixed effects. Appendix provides detailed descriptions of all variables. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% level, respectively.

**Table 3**  
Actual and mechanical likelihood of additional board seats at connected firms.

	Actual likelihood	Mechanical likelihood	Diff
<i>P</i> -value	0.246	0.118	0.128*** (0.000)

The table provides results of a binomial probability test of whether the actual likelihood of being appointed to a connected firm is higher than what a mechanical relationship would suggest. A connection exists between the focal firm CEO and the appointing firm if the focal firm CEO shares either education, professional, or club connections with at least one of the directors of the appointing firm. The sample is restricted to observations where the independent director obtains an additional board seat. To calculate the mechanical probability of the focal firm CEO being accidentally connected to the appointing firm, we first identify hypothetical CEOs for each focal firm CEO. Hypothetical CEOs are CEOs of firms in the same year, same Fama–French 10 industry, and in the same *CEO Total Rolodex* decile. We select hypothetical CEOs from the full BoardEx-Compustat-CRSP-ISS universe. Observations where the number of hypothetical CEOs are in the bottom quartile are dropped, resulting in 2569 firm-year-director-appointing firm observations covered in the BoardEx-Compustat-CRSP-ISS universe for the period from 2003 to 2012. For each focal firm CEO, we calculate the proportion of hypothetical CEOs who are connected to the appointing firm. *Mechanical likelihood* is the average proportion of hypothetical CEOs who are connected to the appointing firm across all the focal firm CEOs. *Actual likelihood* is the proportion of focal firm CEOs who are connected to the appointing firm in our sample. *Diff* shows the difference between *Actual likelihood* and *Mechanical likelihood*. The *p*-values are from binomial probability tests which test the null hypothesis that the *Mechanical likelihood* is equal to the *Actual likelihood*. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% level, respectively.

FactSet Revere database to identify firms that are customers, suppliers, or strategic alliance partners of the focal firm. Only 3.4% of appointments have economic links between appointing firms and focal firms. In untabulated tests, we show that our results continue to hold after excluding such economically-linked appointments.

While the evidence from these additional tests rules out some of the most obvious omitted variable candidates that could invalidate our result of a strong association between a CEO's rolodex and additional focal director appointments, we refrain from making causal claims in the absence of exogenous variation in CEO networks.

### 3.2. Is the increase in the likelihood of appointment mechanical?

We have shown that the likelihood of the director being appointed to a firm from the CEO's network increases with the size of the CEO's rolodex. However, this relation could be mechanical. The likelihood of a CEO being connected to any randomly selected firm in the database naturally increases with the size of her direct network. To rule out this possibility, we conduct the following test.

We start with the sample of firm-year-director-appointing firm observations with independent directors who are appointed at another firm. For each focal firm CEO, we identify a set of hypothetical CEOs from the BoardEx-Compustat-CRSP-ISS universe who are in the same *CEO Rolodex* decile. We further require the hypothetical CEO to be from the same Fama–French 10 industry to take into account any industry connections between the focal firm and appointing firm. To ensure that we have a sufficient number of hypothetical CEOs, we drop the bottom quartile of observations with too few hypothetical CEOs, retaining 2569 observations. On average, we have 40 hypothetical candidates for each focal CEO.

Next, for each focal firm CEO, we calculate the proportion of the hypothetical CEOs that are connected to the actual appointing firm. The results are presented in Table 3. There are 633 director appointments where the focal firm CEO is connected to the appointing firm, i.e. the actual empirically observed likelihood is 633/2569 or 24.6%. The average proportion of hypothetical CEOs that are connected to the appointing firm is only 11.8%. We conduct a binomial probability test and reject the null hypothesis that the mechanical likelihood is equal to the actual likelihood at the 1% level. Therefore, the actual likelihood of a connection between the focal firm CEO and the appointing firm is much higher than what we would expect if the appointments were made randomly.

### 3.3. Types of connections

In Table 4, we split the non-overlapping connections of the CEO into its three subgroups — professional, education, and club connections. To be consistent, the dependent variable is also defined accordingly to the type of connections we examine. For example, in Column 1 when we examine the impact of CEO professional connections, the dependent variable is equal to one if the director is appointed to a firm connected to the focal firm's CEO via professional connections and zero if the appointment is to a firm with either no connections to the CEO or connected to the CEO via non-professional connections. All regressions in Table 4 contain the director and firm characteristics of Columns 1 to 3 of Table 2, but we do not show their coefficients and standard errors for brevity. We report marginal effects when connections increase by one standard deviation relative to the mean, expressed in percentage points.

We learn from Column 1 that the CEO's professional connections are positively related to the likelihood of the director obtaining an additional board seat at connected firms. A director is 2.24 percentage points more likely to obtain a new directorship at connected firms when the CEO's professional connection increases by one standard deviation relative to the mean. Interestingly, the director's own connections have a negative impact on her getting appointed to a firm connected to the CEO. This may be because as the director's own professional network becomes bigger, they are able to leverage on their own connections rather than the CEO's in getting appointments (Cai et al., 2022), suggesting substitutability between the CEO and director's own professional network.



**Table 4**  
CEO network by type and likelihood of additional board seats.

	Professional connections	ProfessionalSMP connections	Education connections	Club connections
	(1)	(2)	(3)	(4)
Log (Prof CEO Rolodex + 1)	2.237*** (0.001)			
Log (Prof Dir Total Rolodex + 1)	-1.456** (0.020)			
Log (Prof CEO Rolodex SMT + 1)		1.730*** (0.003)		
Log (Prof Dir Total Rolodex SMT + 1)		-1.903*** (0.001)		
Log (Edu CEO Rolodex + 1)			2.878*** (0.000)	
Log (Edu Dir Total Rolodex + 1)			-0.461 (0.164)	
Log (Club CEO Rolodex + 1)				9.412*** (0.000)
Log (Club Dir Total Rolodex+ 1)				1.149** (0.016)
Controls in Column 1 of Table 2	Yes	Yes	Yes	Yes
Industry and Year FE	Yes	Yes	Yes	Yes
Observations	3362	3362	2665	3371
Pseudo R <sup>2</sup>	0.053	0.054	0.278	0.242

The table shows results of logit regressions predicting the likelihood of an independent director obtaining additional independent board seats at firms which share a connection with the focal firm CEO. The sample consists of 3387 firm-year-director-appointing firm observations covered in the BoardEx-Compustat-CRSP-ISS universe for the period from 2003 to 2012. In Columns 1 to 4, the dependent variable is an indicator variable equal to one if the independent director obtains an additional independent directorship in another company within the BoardEx-Compustat-CRSP universe which is connected to the focal firm's CEO via professional, professional SMT, education, club connections, respectively, within one year after the fiscal year begins, and zero otherwise. *Prof (Edu) [Club] CEO Rolodex* is the number of directors of other firms who are connected to the CEO via professional (education) [club] connections prior to the fiscal year, excluding individuals who are connected to the focal independent director via professional (education) [club] connections. *Prof CEO Rolodex SMT* is the number of directors of other firms who are connected to the CEO but not the focal director via senior management/director professional connections. Two individuals are connected via senior management/director professional connections if they worked or are working together either as senior management or as directors in the same company, excluding the focal company. *Prof (Edu) [Club] Dir Total Rolodex* is the number of directors of other firms who are connected to the focal director via professional (education) [club] connections prior to the fiscal year. *Prof Dir Total Rolodex SMT* is the number of directors of other firms who are connected to the focal director via senior management/director professional connections. The table reports marginal effects, which are defined as the percentage point change in the likelihood of appointment for a one standard deviation change in *Rolodex* relative to the mean. Appendix provides detailed descriptions of all variables. *P*-values are reported in parentheses below the marginal effects. Standard errors are clustered at the CEO level. All models include the firm and director characteristic control variables of Column 1 in Table 2 as well as Fama–French 48 industry- and year-fixed effects. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% level, respectively.

In Column 2, we use a more precise measure for professional connections where we focus on connections formed when both the CEO and her connections worked in senior management/director positions (*Prof CEO Rolodex SMT*). Focusing on connections formed at the top management level helps reduce the problem of measurement error. In large firms with many employees, two individuals working for the firm at the same time may not really know each other especially when they work in non-senior management positions. We continue to find that CEO connections are important in getting the directors appointed to firms that the CEO is linked to. Finally, in Columns 3 and 4 we find that education and club ties of the CEO also play a role in connected appointments.

#### 4. Economic rationales and impact

We have shown that directors of boards with well-connected CEOs are more likely to obtain additional directorships in firms within the CEO's direct network — exactly where the CEO's connections should matter the most. While we do not observe the actual referrals being made, we interpret our results as CEOs playing an active part in referring their own directors to additional directorships in firms to which they are connected. We now discuss and empirically analyze why CEOs may recommend their own directors to other boards and what impact such second-degree network recommendations have on the functioning of the director labor market.

##### 4.1. CEO incentives — Agency motive

A CEO may actively recommend her directors for additional board seats to capture the directors and entrench herself. If directors accept additional directorships at firms connected to the focal firm's CEO, their monitoring capacity could become compromised. Directors make important decisions about CEO retention and her compensation level and structure. A director who is grateful to the CEO may be willing to approve a higher level of compensation and/or a lower CEO pay-performance sensitivity contract (Hwang and Kim, 2009; Faleye, 2007). A compromised director may also be less willing to fire the CEO for poor performance. In Table 5,

**Table 5**  
Effect of connected appointments on CEO compensation.

	$\Delta$ (Log (Total Compensation))	$\Delta$ (Log (Delta + 1))	Increase Abnormal Compensation	CEO Forced Turnover
	(1)	(2)	(3)	(4)
Connected Appointment: a	-0.067 (0.298)	-0.073 (0.259)	-0.190 (0.327)	0.169 (0.631)
Cumulative Ret: b	0.238*** (0.001)	0.714*** (0.000)	-0.166 (0.438)	-1.385** (0.014)
a x b				-0.824 (0.500)
$\Delta$ (Log (Sales))	0.117 (0.175)	-0.099 (0.350)	-0.404 (0.170)	
$\Delta$ (Ret Volatility)	-2.560 (0.395)	3.569 (0.292)	-4.343 (0.635)	
$\Delta$ (Log (Board Size))	0.219 (0.222)	0.130 (0.517)	-0.303 (0.592)	
$\Delta$ (Board Independence))	0.003 (0.402)	0.005* (0.085)	0.009 (0.274)	
Log (Sales)				-0.124 (0.357)
Ret Volatility				22.297 (0.273)
Log (Board Size)				0.644 (0.475)
Board Independence				0.012 (0.464)
Industry and Year FE	Yes	Yes	Yes	Yes
Observations	792	766	780	614
Adjusted $R^2$ /Pseudo $R^2$	0.014	0.293	0.047	0.136

The table examines the effect of connected appointments on CEO compensation and the likelihood of CEO forced turnover in the focal firm. We estimate OLS regressions for Columns 1 and 2 and estimate logit regressions for Columns 3 and 4. We focus on only unconnected independent directors, where an unconnected independent director is one who is not directly connected to the focal firm CEO via education, professional, or club connections. Therefore, the sample consists of 792 firm-year observations where at least one of the unconnected independent directors of the focal firm was appointed to an additional independent directorship in the period between 2003 and 2012. The Execucomp database provides compensation data. We measure the change in CEO compensation from  $Year_{t-1}$  to  $Year_{t+1}$  where  $Year_t$  is the year of the additional director appointment. We exclude observations if the focal firm CEO changes between  $Year_{t-1}$  and  $Year_{t+1}$ . *Increase Abnormal Compensation* is an indicator variable equal to one if the abnormal compensation of the focal firm CEO increases from  $Year_{t-1}$  to  $Year_{t+1}$ , and zero otherwise. For Column 4, we obtain CEO forced turnover information from Peters and Wagner (2014) and Jenter and Kanaan (2015) and code the dependent variable to be equal to one if there is a forced CEO turnover between  $Year_{t+1}$  to  $Year_{t+3}$ , and zero otherwise. *Connected Appointment* is an indicator variable equal to one if at least one of the independent directors on the board obtains an additional independent directorship in another firm that is connected to the focal firm's CEO, and zero if all of them are appointed to an unconnected firm. A connection exists between the focal firm's CEO and the appointing firm if the focal firm's CEO shares either education, professional, or club connections with at least one of the directors of the appointing firm. The independent variables are measured as the change from  $Year_{t-2}$  to  $Year_t$ , excluding *Cumulative Ret* and the variables in Column 4 that are measured in  $Year_t$ . Appendix provides detailed descriptions of all variables. *P*-values are reported in parentheses. Standard errors are clustered at the focal firm level. All models include Fama-French 48 industry- and year-fixed effects. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% level, respectively.

**Table 6**  
Strategic motives and reciprocity for connected appointments.

Panel A: Univariate tests			
	Appointing firm not connected to CEO	Appointing firm connected to CEO	Difference in means
	(1)	(2)	(1) - (2)
Strategic motives	N = 2801	N = 963	
Finance Industry	0.125	0.150	-0.025**
Successful M&A	0.236	0.297	-0.061***
Vertically-related Industry	0.313	0.276	0.037**
Insider Dir	0.037	0.060	-0.023***
S&P 500 Firm	0.255	0.492	-0.237***
Market Capitalization (Million \$)	4061.246	10 084.690	-6023.444***
Larger Appointing Firm	0.373	0.411	-0.038**
Reciprocity/director characteristics			
Received Dir from Appointing Firm	0.004	0.113	-0.109***
Will Receive Dir from Appointing Firm	0.005	0.035	-0.03***
Dir Committee Member	0.883	0.845	0.038***
Leave Focal Firm	0.370	0.329	0.041**

(continued on next page)

Table 6 (continued).

Panel B: Logit regressions											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Finance Industry	0.091 (0.431)										
Successful M&A		0.202** (0.025)									
Vertically-related Industry			-0.129 (0.179)								
Insider Dir				0.612*** (0.001)							
S&P 500 Firm					0.844*** (0.000)						
Log(Market Capitalization)						0.230*** (0.000)					
Larger Appointing Firm							0.432*** (0.000)				
Appointed Dir from Appointing Firm								3.583*** (0.000)			
Will Receive Dir from Appointing Firm									1.977*** (0.000)		
Dir Committee Member										-0.353*** (0.005)	
Leave Focal Firm											-0.146 (0.116)
Controls in Column 1 of Table 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3764	3764	3369	3764	3764	3541	3541	3764	1958	3764	3764
Pseudo R <sup>2</sup>	0.070	0.071	0.076	0.072	0.092	0.099	0.082	0.125	0.076	0.072	0.070

The table examines CEO strategic motives and the reciprocity argument for recommending directors to other board seats. The sample consists of firm-year-director observations with new appointments, i.e., 3764 firm-year-director-appointing firm observations, for the period from 2003 to 2012. We include all types of directors — insider, affiliated, and independent directors. We examine several possible strategic motives. *Finance Industry* is an indicator variable equal to one if the appointing firm is in the finance industry, and zero otherwise. *Successful M&A* is an indicator variable equal to one if the appointing firm announced at least one successful acquisition (i.e., a positive cumulative abnormal announcement return over the 3 days around the announcement date) during the last five years, and zero otherwise. *Vertically-related Industry* is an indicator variable equal to one if the vertical relatedness coefficient between the focal firm industry and the appointing firm industry is equal to or above 5%, and zero otherwise (Fan and Goyal, 2006). *Insider Dir* is an indicator variable equal to one if the director is an insider director of the focal firm, and zero otherwise. *S&P 500 Firm* is an indicator variable equal to one if the appointing firm is in the S&P 500 Index, and zero otherwise. *Market Capitalization* is the appointing firm's market value of equity in millions of dollars (CPI adjusted). *Larger Appointing Firm* is an indicator variable equal to one if the market capitalization of the appointing firm is at least 10% larger than the market capitalization of the focal firm, and zero otherwise. *Received Dir from Appointing Firm* is an indicator variable equal to one if the focal firm has appointed directors from the appointing firm during the last five years or during the CEO's tenure if her tenure is shorter than five years, and zero otherwise. *Will Receive Dir from Appointing Firm* is an indicator variable equal to one if the appointing firm sends a director to the focal firm within the next five years or during the focal firm CEO's tenure if her tenure is shorter than five years, and zero otherwise. Tests involving this variable is restricted to years 2003 to 2007 due to the need to calculate forward-looking variables. *Dir Committee Member* is an indicator variable equal to one if the director sits on the nominating, compensation, audit, and/or governance committee of the focal firm, and zero otherwise. *Leave Focal Firm* is an indicator variable equal to one if the director leaves the focal firm within five years after obtaining additional independent directorships, and zero otherwise. In Panel A, we divide the sample of appointments based on whether the appointing firm is connected to the focal firm CEO or not. The mean values of the CEO incentive characteristics for each subsample are shown. The *p*-values from two-sample *t*-tests which test whether the average values in the two subsamples are significantly different from each other are reported in the last column together with the difference in means. In Panel B, we present results of logit regressions, where the dependent variable is an indicator variable equal to one if the director obtains an additional independent directorship in another firm which is connected to the focal firm's CEO within one year after the fiscal year begins, and zero if the appointment is at an unconnected firm (*Appointment Connected to CEO*). Appendix provides detailed descriptions of all variables. *P*-values are reported in parentheses. Standard errors are clustered at the focal firm CEO level. All models include the focal firm and director characteristic control variables of Column 1 in Table 2 as well as Fama–French 48 industry- and year-fixed effects. In both panels, \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% level, respectively.

we examine whether the board makes such concessions after one or more directors obtain additional directorships at firms within the CEO's network. To sharpen the tests, we focus on the additional appointments of independent directors who are not directly connected to the CEO via professional, educational, and club links. Directors connected to the CEO and non-independent directors are likely to be already captured by the CEO and thus would experience little change in their monitoring incentives upon receipt of benefits from the CEO (Fracassi and Tate, 2012).

The results are reported in Table 5. The regressions contain all firm-years in which at least one unconnected independent director of the focal firm obtained an additional directorship. The key independent variable, *Connected Appointment*, is an indicator variable equal to one if the unconnected independent director obtained a directorship at a firm within the CEO's network and zero otherwise.

In Columns 1 and 2, the dependent variables are the changes in CEO total compensation and portfolio delta from Year<sub>*t*-1</sub> to Year<sub>*t*+1</sub>, where Year<sub>*t*</sub> is the year of the director appointment. In Column 3, we examine the likelihood of an increase in CEO abnormal compensation from Year<sub>*t*-1</sub> to Year<sub>*t*+1</sub> where CEO abnormal compensation is the residual from a regression of CEO total compensation on Log(sales), lagged buy-and-hold stock returns in excess of the market, lagged ROA, and Fama–French 48 industry-fixed effects

and year fixed effects (De Angelis and Grinstein, 2015; Cai et al., 2009). In Column 4, the dependent variable is *CEO Forced Turnover* which is an indicator variable equal to one if the CEO is fired anytime between Year<sub>*t*+1</sub> and Year<sub>*t*+3</sub>, and zero otherwise.

We do not find any evidence that CEO compensation increases or CEO pay-performance sensitivity decreases after connected appointments. In Column 4, stock performance negatively predicts the likelihood of a forced turnover. However, the turnover-performance sensitivity does not decrease upon a connected appointment. In untabulated tests, we analyze different time periods for calculating the change in CEO compensation, because compensation contracts may take a while to amend. However, using a change in compensation from Year<sub>*t*-1</sub> to Year<sub>*t*+2</sub> or the average of two years before and average of two years after the appointment does not change our finding that CEO compensation is unaltered upon director appointments at connected firms. We also change the time period over which we measure *CEO Forced Turnover*. Using Year<sub>*t*+1</sub> to Year<sub>*t*+4</sub> or Year<sub>*t*+1</sub> to Year<sub>*t*+5</sub> does not change our results. We also include changes in the leverage ratio, Log (Tobin's *q*), and CEO tenure as additional control variables, but find similar results as those reported in Table 5.

Some sample firms have governance structures that could make director monitoring less relevant, and add noise to the above tests, for example closely-held firms and firms that have a dual-class structure. Excluding those firms does not change our results.

#### 4.2. CEO incentives - Strategic motives and reciprocity

We next examine whether strategic motives and reciprocity motivate CEOs to act as intermediaries in the director labor market.

##### 4.2.1. Strategic motives

A CEO may recommend her directors to join other boards so that she can have access to resources and acquire knowledge to cope with the uncertainties inherent in the business environment (Mizruchi, 1996). A CEO may find it advantageous to recommend one of her own directors to a financial institution because a director who understands the business model of a bank can potentially be helpful in developing a better financing strategy at the CEO's own firm or even help the firm obtain loans in the future (Mizruchi and Stearns, 1994; Güner et al., 2008). Second, it could be beneficial for the CEO's own firm if her directors learn about successful M&A strategies (Field and Mkrtchyan, 2017). Third, we consider whether a CEO can acquire strategic information about their upstream and downstream industries by recommending their directors to boards of firms in these markets (Burns et al., 2021; Dass et al., 2014).

Finally, a CEO and her firm may benefit if directors also sit on the boards of other more prestigious firms. The reputations of such interlocked directors are likely to increase upon their appointment to the prestigious firm and having such reputable directors on the board may provide certification for the firm and its management (Fahlenbrach et al., 2010). The fact that a reputable director sits on the board may signal to potential investors or lenders positive information about the quality of the focal firm, as the director would not want to risk her reputation by being associated with a bad firm (Fama and Jensen, 1983; Carpenter and Westphal, 2001).

For the strategic motives tests, we include all types of directors — independent, affiliated, and insider directors in the analysis as the strategic motives do not require directors to be independent. In fact, it may be optimal to send executive directors for strategic motives. These insider directors have much stronger incentives to share the information with the CEO of the focal firm and the CEO is likely to elicit much better intelligence about what is happening at the other firms.

We test for the presence of strategic motives in Table 6. We divide our sample of 3764 director appointments based on whether the director is appointed to a firm connected to the focal CEO or not. We then report for each type of appointment the percentage of directors who are appointed to a firm in the financial industry (*Finance Industry*), to a firm which has executed a successful M&A transaction (*Successful M&A*), and to a firm that is in a vertically-related industry (*Vertically-related Industry*). We also examine whether the recommended director is more likely to be an insider director (*Insider Dir*). We measure the prestige of the appointment by whether the appointment is to an S&P500 firm. We also measure the appointing firm's size (*Market Capitalization*) and whether the appointing firm is bigger than the focal firm (*Larger Appointing Firm*) as additional proxies for the prestige hypothesis.

We show univariate comparisons in Panel A. The CEO's network is important for appointments to firms in the finance industry, as 15% of the connected appointments are to finance firms while only 12.5% of the unconnected appointments are to finance firms. The CEO's network is also positively related to connected appointments in companies with successful M&A transactions, as close to 30% of the connected appointments are to firms with a successful M&A transaction while only 24% of the non-connected appointments are to such firms. We do not find that connected appointments are more likely to be at vertically-related firms. Consistent with the idea that the strategic benefits are greater when insider directors are sent, we find that insider directors are more likely to be recommended to connected firms, with 6% of directors appointed to connected firms being insider directors while the corresponding percentage is only 3.7% for unconnected appointments.

Finally, we find strong evidence consistent with CEOs recommending their directors to other boards to gain prestige and legitimacy. Almost 50% of the connected appointments are to S&P 500 firms, while only 26% of the unconnected appointments are to these big firms. Furthermore, connected appointing firms are almost twice the size of unconnected appointing firms. Similarly, they are more likely to be larger than the focal firm, as 41% of the connected appointments are to larger firms while only 37% of the unconnected appointments are to larger firms.

##### 4.2.2. Reciprocity

Next, we test whether there is reciprocity in the director labor market. The focal firm's CEO may recommend her own directors to a firm because she has received help from the firm in the past to fill a director vacancy at her own firm or because she anticipated

needing a good director in the future. We indeed find that this is the case. 11% of the connected appointments are preceded by the focal firm having appointed a director from the appointing firm in the past five years while this happens only in 0.4% of the unconnected appointments (*Received Dir from Appointing Firm*). We also find that the likelihood of the focal firm receiving a director from the appointing firm in the subsequent five years is higher when the appointing firm is connected to the CEO (*Will Receive Dir from Appointing Firm*). For this test, we restrict our sample to the years 2003 to 2007 due to the need to calculate forward-looking variables.

Social capital is important for economic growth and financial development as it is a potential mechanism to counteract the deadweight loss due to imperfect contracting (Guiso et al., 2004). The economics literature has always been interested in understanding whether social capital gets eroded when economies transit to more market-based and arms-length market transaction replaces bilateral reciprocal exchanges (Leider et al., 2009). Our result is indicative of a ‘quid pro quo’ or reciprocity in the network and is important because it hints at how corporate networks form and how social capital is sustained.

#### 4.2.3. Potential for losing valuable directors

Finally, a large potential cost of director recommendations for the CEO of the focal firm is that directors end up overcommitted. In the worst case, the CEO loses a director to a different firm. In the last two rows of Panel A of Table 6, we ask whether a CEO ought to be reluctant to recommend her own important directors to another firm since these directors will then commit less time to the focal firm after their additional appointments. We also analyze whether a CEO worries about the possibility of her director leaving the board after the director obtains a directorship in another firm. We find that CEOs are significantly less likely to refer directors who are committee members, although the economic difference is small. We also find that directors are less likely to leave the focal firm within the next five years after they are appointed to the board of a firm that is connected to the CEO compared to directors who join unconnected firms (*Leave Focal Firm*).

The results suggest that a CEO’s connection leads to board appointments that increase the number of directorships of the focal directors without the CEO losing important board members, although it also implies that the focal directors become busier. The results are interesting in light of the previous finding that the appointing firms are often bigger and more prestigious when the appointment is a connected one. Directors often depart from existing directorships when they are appointed to new directorships especially if the new appointment is more prestigious (Masulis and Mobbs, 2014), but not if the CEO played a part in the appointment.

#### 4.2.4. Multivariate analysis

In Panel B, we use a multivariate setting and predict the likelihood of a connected appointment versus an unconnected appointment. We add director and focal firm characteristics as additional control variables as well as industry and year fixed effects, similar to the specification used in Table 2, Column 1. We find similar results to Panel A except that the coefficients of *Finance Industry* (*p*-value of 0.43) and *Leave Focal Firm* (*p*-value of 0.12) are no longer statistically significant. We find that connected appointments are motivated by strategic motives as inside directors are more likely to be referred and the referral is often to firms where directors can learn valuable M&A strategies and to larger and prestigious firms. The results also highlight the importance of reciprocity in sustaining the corporate network as CEOs engage in bilateral exchanges of directors. Finally, CEOs are less likely to recommend their more valuable directors — those that sit on important committees.

### 4.3. Shareholder voting in director elections and director appointment announcement returns

So far, our analysis has pointed to CEOs having a more benign motive when recommending their directors to additional appointments. Another way to understand the CEOs’ motives is to look at shareholders’ reactions to the connected appointments at the focal firms. The availability of individual voting data on director elections from the ISS Voting Analytics database enables us to examine at the individual director level, whether focal firm shareholders are concerned about or appreciate news that directors have obtained additional board seats with the help of the CEO. Because we observe the voting results for directors before and after their additional appointments, we can carry out a difference-in-difference analysis that isolates changes in shareholder support for the referred directors relative to all other directors that obtain an additional directorship on their own.

Following Cai et al. (2009), we calculate the *Excess Ratio For*, defined as the difference between the proportion of ‘For’ votes for the newly-appointed director and the average proportion for all directors on the same board. The proportion of ‘For’ votes is the number of ‘For’ votes divided by the sum of ‘For’ and ‘Withhold’ (or ‘Against’) votes. Therefore, *Excess Ratio For* takes into account the performance of the board as a group and allows us to examine how shareholders view the newly-appointed director’s relative performance.

Panel A of Table 7 shows the results with the *Excess Ratio For* expressed in percentage form. We separately examine all the directors and the subsample of unconnected independent directors. If there are any agency motives that drive the referral decision of the CEO, shareholder reactions should be strongest for the group of unconnected independent directors who are least likely to be captured by the CEO prior to the appointment.

Results are generally similar in economic and statistical magnitude for the full sample of all directors and the subsample of unconnected independent directors. In the pre-appointment period for referred directors, we find that shareholders view directors with additional appointments at least as favorably as the rest of the board. There is no statistically significant difference in shareholder support for newly-appointed directors who are referred by the CEO and non-referred directors in the pre-appointment period. In the post-appointment period, on average shareholders view directors with additional appointments less favorably relative

Table 7

Director election voting results and director appointment announcement return results at the focal firm.

Panel A: Director election voting results at the focal firm							
	Pre-appointment			Post-appointment		Post-Pre (DID)	
	N (1)	Mean (%) (2)	Median (%) (3)	Mean (%) (4)	Median (%) (5)	Mean (%) (6)	Median (%) (7)
<b>All directors</b>							
Appointing firm connected to CEO	664	0.11	0.38***	-0.27*	0.23***	-0.38*	-0.15
Appointing firm not connected to CEO	1781	0.25**	0.31***	-0.5***	0.07***	-0.75***	-0.24***
P-value of test of difference		0.47	0.81	0.26	0.06*	0.19	0.05**
<b>Unconnected independent directors</b>							
Appointing firm connected to CEO	466	0.39**	0.44***	-0.31	0.18***	-0.69***	-0.26**
Appointing firm not connected to CEO	1460	0.46***	0.36***	-0.47***	0.09***	-0.93***	-0.27***
P-value of test of difference		0.72	0.89	0.51	0.37	0.56	0.37
<b>Panel B: Director appointment announcement return at the focal firm</b>							
	N	Mean (%)	Median (%)				
<b>All directors</b>							
Appointing firm connected to CEO (%)	368	0.226	0.121				
Appointing firm not connected to CEO (%)	1216	-0.203	-0.356**				
P-value of test of difference		0.127	0.089*				
<b>Unconnected independent directors</b>							
Appointing firm connected to CEO (%)	257	0.258	0.207				
Appointing firm not connected to CEO (%)	1023	-0.250	-0.473***				
P-value of test of difference		0.132	0.076*				

Panel A shows the changes in votes obtained by the director at the focal firm's annual general meeting after the director obtains additional independent directorships in other firms. Panel B shows the announcement returns of the focal firm when one of its directors is appointed to another firm. For both panels, we separately examine the sample of all director (independent, affiliated, and insider) appointments and the subsample of unconnected independent director appointments. An unconnected independent director is an independent director who is not directly connected to the focal firm CEO via educational, professional, or club connections. In both panels, we further separate the sample of appointments based on whether the appointing firm is connected to the focal firm CEO or not. In Panel A, we calculate the *Excess Ratio For*, defined as the difference between the proportion of 'For' votes less the average proportion of 'For' votes of all directors on the same board. The proportion of 'For' votes is defined as the number of 'For' votes divided by sum of 'For' and 'Withhold' (or 'Against') votes. In Panel B, we calculate *Cumulative Abnormal Return*, expressed in percentages, which is calculated from a market model over the event window (-5, +1), where the parameters of the market model are calculated using daily stock returns and CRSP value-weighted market returns from days -280 to -61. *T*-tests (signed rank tests) are used to test the null hypothesis of whether the mean (median) *Excess Ratio For/Cumulative Abnormal Return* is zero. The *p*-values from two-sample *t*-tests (Wilcoxon-Mann-Whitney tests) which test whether the mean (median) *Excess Ratio For/Cumulative Abnormal Return* is significantly different across the two subsamples of connected and unconnected appointments are reported in the third row of both panels. In Columns 6 and 7 of Panel A, we report the change in *Excess Ratio For* between the post-appointment results and the pre-appointment results. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% level, respectively.

to the rest of the board for both directors with appointments to connected and unconnected firms, although the median results show otherwise. Finally, the difference-in-difference results show that shareholders decrease their support for both groups of newly-appointed directors, possibly because shareholders of the focal firm may be concerned that directors with additional appointments become too busy to carry out their duties. Importantly, the change in shareholder support pre- and post-appointment is not significantly different between directors who are appointed to connected firms and directors who are appointed to unconnected firms. In fact, when we examine all the directors, there is some weak evidence that the median decrease in support for referred directors is significantly less than that of the non-referred directors.

In Panel B, we also examine the announcement returns at the focal firm when independent directors receive additional director appointments. Following Fahlenbrach et al. (2017), we obtain director appointment announcement dates from the Audit Analytics Director and Officer Changes database which tracks 8-K filings of director appointments or departures after 2004. Our analysis uses a time period different from the main analysis because the SEC started to require firms to report director departures or appointments within 4 business days through 8-K section 5.02 only after August 23, 2004. We do not examine director appointments that are communicated in proxy statements, because there are potentially many additional value-relevant announcements in these statements. We also exclude 8-K director appointment announcements if the focal firm announces other confounding events (i.e., acquisitions, quarterly earnings, changes in dividend policy, other director or executive changes, and management guidance) in the 10 days surrounding the appointment announcement dates. The final sample of director appointment announcements consists of 1584 focal firm-director appointment observations. Similar to Panel A, we examine all directors and the subsample of unconnected independent directors separately, although results are generally similar between the two samples.

We use the SEC's 8-K filing acceptance date as the announcement date (day 0) and examine the cumulative abnormal returns (CARs) calculated from a market model over the event window (-5, +1), where the parameters of the market model are calculated using data from days -280 to -61. In Panel B, both the mean and median CARs for connected appointments are positive but not significantly different from zero. We further find a significant negative median CAR for the unconnected appointments, which supports the idea that directors become busier. We also find that while the mean CARs are not significantly different between connected appointments and unconnected appointments, the median CARs for connected appointments are higher.

Overall, the voting results and appointment announcement results are in line with our findings in Sections 4.1 and 4.2. Shareholders are not concerned that a CEO recommendation to an additional board position compromises the integrity of the recommended director.

#### 4.4. Impact of CEO recommendations on the efficiency of the director labor market

The director labor market is a market with costly search and bilateral information asymmetry (Oyer and Schaefer, 2011). Appointing firms may not have full information about the ability of the potential director candidates and these director candidates do not have full information about the appointing firms. Firms often employ executive search firms to identify high-quality directors (Akyol and Cohen, 2013). Network recommendations can help improve the efficiency of the matching process by conveying pertinent information about the potential candidate and the appointing firm to both sides (Montgomery, 1991; Hacamo and Kleiner, 2022).

##### 4.4.1. Do CEO recommendations reduce information asymmetries regarding the appointing firm?

If network recommendations help reduce information asymmetries about the quality of firms seeking directors, we would expect small, volatile, poorly-performing, and opaque firms most likely to rely on network recommendations to find qualified directors. Prior results in Section 4.4.1 suggest that the connected appointing firms are bigger and more prestigious than unconnected appointing firms, but it is unclear whether they are poorly-performing, riskier, or more opaque. We examine this issue in Table 8. In Panel A of Table 8, we first divide the sample of appointments based on whether the appointing firm is connected to the focal firm CEO or not. Then, we compare the appointing firm's characteristics between the two subsamples. We find the opposite of what the information asymmetry hypothesis would predict. Appointing firms that are larger, older and less risky are more likely to rely on second-degree connections when appointing directors. We do not find any difference in stock performance and transparency between the two groups of firms.

In Panel B, we use a multivariate setting. We predict the likelihood of a connected appointment controlling for both focal firm and director characteristics, similar to the specification used in Column 2 of Table 2. When we include all the appointing firm characteristics in one regression in Column 6, we find that only the appointing firm's size is significant. Thus, there is little evidence that smaller and more opaque firms rely on second-degree network recommendations to help ease information asymmetry about themselves in the director labor market. Instead, the results suggest that focal firm CEOs help focal directors obtain better and more prestigious board positions than positions that focal directors could otherwise obtain, in line with the results in Table 6. The results also indicate why directors take on these additional board seats despite the increased work load — the new directorships are often at bigger and more prestigious firms compared to otherwise unconnected appointments.

##### 4.4.2. Do CEO recommendations reduce information asymmetries regarding the focal director?

Next, we examine whether network recommendations help reduce information asymmetries about the quality of directors. CEO network recommendations could be especially beneficial for directors who are, based on publicly available information, perceived as weak in the labor market. Outsiders may have difficulty evaluating such directors and therefore rely on recommendations to obtain soft information about them.

In Table 9, we predict the likelihood of a director obtaining an additional appointment at connected firms using focal firm and director characteristics similar to the specification in Table 2 Column 2. To examine whether certain types of directors are more likely to rely on the CEO's network to obtain directorships, we include the interaction term between *CEO Rolodex* and the focal director characteristics. As our *CEO Rolodex* variable is a continuous variable, we create indicator variables which are equal to one if the director has a characteristic that is presumably less desired by the labor market and interact the indicator with the *CEO Rolodex* variable. Directors with smaller networks and less board seats are less popular in the director labor market (Cai et al., 2022; Cashman et al., 2013). The lack of foreign and finance experience and lower general ability may also put the directors at a disadvantage. The standalone CEO rolodex variable continues to significantly predict the likelihood of a connected appointment. However, there is little evidence that “less-desired” directors rely more on their CEO's network to get additional appointments. In untabulated results, we also examine director gender, age, tenure, MBA degrees, and attendance at board meetings and reach similar conclusions. Thus, all types of directors, regardless of whether they are perceived to be weak or not, are equally likely to rely on CEO networks to advance their careers.

##### 4.4.3. Do CEO networks help information flow in general?

Although there is little evidence that CEO referrals help overcome the bilateral information asymmetry problem between appointing firm and focal director, it is possible that CEO networks in general help information flow, especially soft information, in the director labor market (Cohen et al., 2008). Therefore, we test whether CEO rolodex helps convey information about the director, especially soft information which is not easily verifiable. To do so, we rely on the well-known relationship between firm performance and new appointments. Past papers such as Yermack (2004) have shown that the directors from well-performing firms are more likely to obtain additional directorships, indicating that appointing firms make use of hard information such as performance in evaluating potential director candidates. Yet, Cornelli et al. (2013) show that soft information plays a much larger role for board decisions than previously thought. To the extent that the CEO networks allow for soft information about the director to be conveyed to the potential appointing firm, hard information, such as the performance of firms where directors are currently serving on the boards, becomes less important when evaluating potential director candidates. We analyze whether CEO connections mitigate the effects of good firm performance on the likelihood of the director obtaining an additional directorship. We predict the likelihood of a director getting an additional appointment using all director-firm-years including those without appointments.

**Table 8**

Do connected appointments reduce information asymmetries about the appointing firm?

Panel A: Univariate tests of appointing firm characteristics						
	Appointing firm not connected to CEO		Appointing firm connected to CEO		Difference in means	
	(1)		(2)		(1)–(2)	
	N = 2547		N = 840			
Sales (\$ Million)	3278.051		8873.164		–5595.113***	
Firm Age	24.484		34.757		–10.273***	
Opaque Index	0.006		–0.042		0.048	
Ret Volatility	0.028		0.024		0.004***	
Cumulative Ret	0.126		0.114		0.012	
Panel B: Logit regressions						
	(1)	(2)	(3)	(4)	(5)	(6)
Log (Sales)	0.231*** (0.000)					0.202*** (0.000)
Log (Firm Age + 1)		0.465*** (0.000)				0.090 (0.215)
Opaque Index			–0.016 (0.681)			0.008 (0.809)
Ret Volatility				–15.303*** (0.000)		0.801 (0.865)
Cumulative Ret					0.021 (0.819)	0.003 (0.976)
Controls in Column 1 of Table 2	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3275	3387	2866	3121	3121	2838
Pseudo R <sup>2</sup>	0.107	0.098	0.085	0.087	0.082	0.106

The table shows how appointing firm characteristics impact the likelihood of an independent director being appointed to a connected firm. In both panels, the sample consists of firm-year-director observations with new appointments, i.e., 3387 firm-year-director-appointing firm observations, for the period from 2003 to 2012. We include only independent focal directors with new appointments. We examine the appointing firm characteristics. *Sales* is the appointing firm's total sales in millions of dollars (CPI adjusted). *Firm Age* is the number of years since an appointing firm has been covered in either CRSP or Compustat. *Opaque Index* is the first factor from a principal component analysis of the number of analysts who follow the appointing firm, forecasting errors, and forecasting dispersion (Duchin et al., 2010). *Ret Volatility* is the standard deviation of the appointing firm's daily stock returns over the fiscal year. *Cumulative Ret* is the appointing firm's cumulative daily stock returns over the fiscal year. All appointing firm characteristics are measured before the appointment. In Panel A, we divide the sample of appointments based on whether the appointing firm is connected to the focal firm CEO or not. We show the mean values of the appointing firm characteristics. The *p*-values from two-sample *t*-tests which test whether the mean values in the two subsamples are significantly different from each other are reported in the last column. In Panel B, we present results of logit regressions, where the dependent variable is an indicator variable equal to one if the independent director obtains an additional independent directorship in another firm which is connected to the focal firm's CEO within one year after the fiscal year begins, and zero if the appointment is at an unconnected firm (*Appointment Connected to CEO*). *P*-values are reported in parentheses. Standard errors are clustered at the focal firm CEO level. All models include the focal firm and director characteristic control variables of Column 1 in Table 2 as well as Fama–French 48 industry- and year-fixed effects. In both panels, \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% level, respectively.

In untabulated results, we find that although poor focal firm stock returns negatively impact the likelihood of the firm's directors getting additional appointments, it is attenuated when the CEO of the focal firm has a larger network.<sup>15</sup> The results suggest that network connections may help to convey soft information about the prospective director candidate to the appointing firm, mitigating the need to rely on hard information such as firm performance to evaluate directors.

## 5. Conclusion

We demonstrate that second-degree connections have important explanatory power in the formation of networks in the director labor market. Well-connected CEOs act as intermediaries in the director labor market, referring directors currently sitting on their boards to other firms, especially to firms within their network.

We do not find evidence that CEOs recommend their own directors due to an agency motive. CEO pay, pay-performance sensitivity, and forced turnover-performance sensitivity are unaffected by connected appointments so that CEOs gain little personally from such recommendations. Results from shareholder voting and appointment announcement returns at the focal firm also suggest that shareholders are not particularly concerned when the CEO recommends her own directors to sit on the boards of other firms. Instead, we find that CEOs recommend their directors to other boards for strategic motives — these recommendations are more frequent at firms with M&A expertise and at prestigious firms. We also uncover important evidence of reciprocity, i.e., a CEO is

<sup>15</sup> We also examine the impact of poor operating performance but do not find any significant impact. The result is in line with Dou (2017) who examines both operating performance and stock market performance and finds that higher stock market performance of the focal firm increases the number of board memberships for a director but operating performance has no significant impact.



**Table 9**  
Do connected appointments reduce information asymmetries about the focal director?

Director characteristic indicator:	Low Dir Total Rolodex	Low Dir General Ability Index	Low Dir Board Seat	Dir No Foreign Exp	Dir No Finance Exp
	(1)	(2)	(3)	(4)	(5)
Log (CEO Rolodex + 1): a	0.486*** (0.000)	0.403*** (0.000)	0.375*** (0.000)	0.339*** (0.000)	0.427*** (0.000)
Dir characteristic listed in the first row: b	0.734 (0.117)	-0.003 (0.993)	-0.648 (0.137)	-0.216 (0.591)	0.292 (0.472)
a x b	-0.154 (0.114)	-0.009 (0.910)	0.068 (0.460)	0.118 (0.162)	-0.054 (0.527)
P-value of test: b + a x b = 0	0.121	0.968	0.095	0.760	0.462
Excluded control variables Industry and Year FE	Log (Total Dir Rolodex + 1) Yes	Dir General Ability Index Yes	Log (Dir Board Seat) Yes	Dir Foreign Exp Yes	Dir Finance Exp Yes
Observations	3387	3387	3387	3387	3387
Pseudo R <sup>2</sup>	0.104	0.103	0.105	0.104	0.104

The table shows results of logit regressions predicting the likelihood of an independent director obtaining additional independent board seats at firms which share a connection with the focal firm CEO. A connection exists between the focal firm CEO and the appointing firm if the focal firm CEO shares either education, professional, or club connections with at least one of the directors of the appointing firm. The sample consists of 3387 firm-year-director-appointing firm observations covered in the BoardEx-Compustat-CRSP-ISS universe for the period from 2003 to 2012. The dependent variable is an indicator variable equal to one if the independent director obtains an additional independent directorship in another company within one year after the fiscal year begins, and zero otherwise (*Additional Appointment*). *Low Dir Total Rolodex* is an indicator variable equal to one if *Dir Total Rolodex* is below the median, and zero otherwise. *Low Dir General Ability Index* is an indicator variable equal to one if *Dir General Ability Index* is below the median, and zero otherwise. *Low Dir Board Seat* is an indicator variable equal to one if the focal director holds only one directorship, including that of the focal firm, and zero otherwise. *Dir No Foreign Exp* is an indicator variable equal to one if the focal director has no foreign experience, and zero otherwise. *Dir No Finance Exp* is an indicator variable equal to one if the focal director has no finance experience, and zero otherwise. [Appendix](#) provides detailed descriptions of the variables. *P*-values are reported in parentheses. Standard errors are clustered at the CEO level. All models include the focal firm and director characteristic control variables of Column 1 in [Table 2](#) as well as Fama-French 48 industry- and year-fixed effects. \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% level, respectively.

more likely to recommend her directors to appointing firms if her own firm has benefitted from recommendations of directors from the appointing firm in the recent past.

Overall, our results highlight the importance of CEOs' network referrals in the director labor market and that CEOs generally act in the interests of their shareholders when they recommend their own directors for additional appointments.

### CRedit authorship contribution statement

**Hyemin Kim:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Validation, Visualization, Writing – original draft, Writing – review & editing. **Rüdiger Fahlenbrach:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Validation, Visualization, Writing – original draft, Writing – review & editing. **Angie Low:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Validation, Visualization, Writing – original draft, Writing – review & editing.

### Appendix. Variable definitions

Variable	Definition	Source
<i>Key Dependent Variables</i>		
Appointment Connected to CEO	Indicator variable equal to one if the focal director obtains an additional independent directorship at a BoardEx-Compustat-CRSP firm which is connected to the CEO of the focal firm within one year after the fiscal year begins, and zero if the appointment is at an unconnected firm. A connection exists between the focal firm CEO and the appointing firm if the focal firm CEO shares either education, professional, or club connections with at least one of the directors of the appointing firm.	BoardEx

Variable	Definition	Source
Appointment Connected to CEO via Professional (Professional SMP, Educational, Club) Connections	Indicator variable equal to one if a director obtains an additional independent directorship in a firm which is connected to the focal firm CEO via professional (professional SMP, educational, club connections), and zero if it is another appointment.	BoardEx
Total Compensation	Consumer price index-adjusted total compensation in thousands of dollars ( <i>TDC1</i> in ExecuComp).	ExecuComp
Delta	Dollar change in a CEO's stock and option portfolio for a one percent change in the stock price, in thousands of dollars and consumer price index-adjusted (Coles et al., 2006; Core and Guay, 2002).	ExecuComp
Increase Abnormal Compensation	Indicator variable equal to one if the CEO's abnormal compensation increases, and zero otherwise. Abnormal compensation is the residual from a compensation regression where the dependent variable is logarithm of CEO <i>Total Compensation</i> and independent variables are the logarithm of <i>Sales</i> , prior-year market excess stock returns, prior-year ROA, and Fama–French 48 industry and year fixed effects (De Angelis and Grinstein, 2015; Cai et al., 2009).	Execu-Comp/Compustat/CRSP
CEO Forced Turnover	Indicator variable equal to one if a CEO leaves the firm involuntarily, and zero otherwise (Peters and Wagner, 2014; Jenter and Kanaan, 2015).	Peters and Wagner (2014)/Jenter and Kanaan (2015)
Excess Ratio For	The proportion of 'For' votes minus the average proportion of 'For' votes of all directors on the same board, where the proportion of 'For' votes is the number of 'For' votes divided by the sum of 'For' and 'Withhold' (or 'Against') votes.	ISS Voting Analytics
Cumulative Announcement Return	The cumulative abnormal return to the appointing firm over the event window (−5, +1), where day 0 is the day the 8-K filing of the director appointment is accepted by the SEC. The abnormal return is calculated based on a market model where the market model parameters are obtained from regressing the daily stock returns on the CRSP value-weighted market portfolio over the days −280 to −61.	CRSP
<i>Connection variables</i> (All connections are measured one year prior to the start of the fiscal year)		
CEO Total Rolodex	The number of directors in the BoardEx-Compustat-CRSP universe who are connected to the CEO. A connection exists if two individuals (1) attended the same university and graduated with the same degree within one year of each other (education connection), (2) previously worked or are working for the same company (excluding the focal company) at the same level (i.e., both individuals are at the senior management or director level, or are at the non-senior management and non-director level) (professional connection), or (3) are active members of the same nonprofessional organization (club connection).	BoardEx
CEO Rolodex	The number of directors in the BoardEx-Compustat-CRSP universe who are connected to the CEO via education, professional, or club connections but who are not connected to the focal director.	BoardEx
Dir Total Rolodex	The number of directors in the BoardEx-Compustat-CRSP universe who are connected to the focal director via education, professional, or club connections.	BoardEx
Prof (Edu) [Club] CEO Rolodex	The number of directors in the BoardEx-Compustat-CRSP universe who are connected to the CEO via professional (education) [club] connections only but who are not connected to the focal director via professional (education) [club] connections.	BoardEx
Prof CEO Rolodex SMT	The number of directors in the BoardEx-Compustat-CRSP universe who are connected to the CEO via senior management/director professional connections only, excluding those who are connected to the focal director via senior management/director professional connections. A senior management/director professional connection exists if the two individuals previously worked or are working for the same company (excluding the focal company) either as senior management or directors.	BoardEx

Variable	Definition	Source
Prof (Edu) [Club] Dir Total Rolodex	The number of directors in the BoardEx-Compustat-CRSP universe who are connected to the focal director via professional (education) [club] connections only.	BoardEx
Prof Dir Total Rolodex SMT	The number of directors in the BoardEx-Compustat-CRSP universe who are connected to the focal director via senior management/director professional connections only.	BoardEx
Connected Appointment	A firm-year level indicator variable equal to one if at least one of the unconnected independent directors obtains an additional independent directorship in a firm which is connected to the focal firm CEO, and zero if all the additional appointments are at unconnected firms. An unconnected independent director is an independent director who is not directly connected to the focal firm CEO via educational, professional, or club connections.	BoardEx
Appointments Connected to Focal Dir	Indicator variable equal to one if a director obtains an additional independent directorship in a firm which is connected to herself, and zero otherwise.	BoardEx
<i>CEO and Director Characteristics Variables</i>		
CEO (Dir) Age	Fiscal year minus director's birth year. Measured at the beginning of the fiscal year.	BoardEx
CEO (Dir) Female (Male)	Indicator variable equal to one if the CEO (director) is female (male), and zero otherwise.	BoardEx
CEO Tenure	The number of years since the CEO was initially appointed at the focal firm as a CEO. Measured at the beginning of the fiscal year.	BoardEx
CEO (Dir) General Ability Index	Standardized principal component analysis of five proxies of general ability of the director, calculated as in <a href="#">Custódio et al. (2013)</a> . The proxies include the number of positions held, number of firms worked for, number of different industries worked in, a CEO experience indicator variable, and a conglomerate experience indicator variable. All experiences and jobs are measured relative to firms in the BoardEx-Compustat-CRSP universe. Measured one year prior to the start of the fiscal year.	BoardEx/Compustat
CEO (Dir) Board Seat	Total number of board seats in the BoardEx-Compustat-CRSP universe of firms held by the CEO (director). Board seats are measured one year prior to the start of the fiscal year and are required to be held as of the start of the fiscal year.	BoardEx
CEO (Dir) Foreign Exp	Indicator variable equal to one if the CEO (director) has studied abroad, or has worked or is working at a non-U.S. private or public firm, and zero otherwise ( <a href="#">Oxelheim et al., 2013</a> ). Measured one year prior to the start of the fiscal year.	BoardEx
CEO (Dir) Finance Exp	Indicator variable equal to one if the CEO (director) is a CPA or CFA charterholder, or has financial management or accounting experience in the BoardEx-Compustat-CRSP universe (e.g., CFOs, treasurers, controllers, or having another banking, finance, investment, or accounting titles), or work experience in the BoardEx-Compustat-CRSP universe of financial companies (SIC code 6000-6999), and zero otherwise. Measured one year prior to the start of the fiscal year.	BoardEx
CEO (Dir) MBA	Indicator variable equal to one if the CEO (director) holds an MBA degree, and zero otherwise.	BoardEx
Dir Tenure	The number of years since the director was initially appointed to the board of the focal firm. Measured at the beginning of the fiscal year.	BoardEx
Dir Poor attendance	Indicator variable equal to one if the director attends less than 75% of the board meetings during the year, and zero otherwise.	ISS Directors
Insider Dir	Indicator variable equal to one if the director is an insider director of the focal firm, and zero otherwise.	BoardEx
Dir Committee Member	Indicator variable equal to one if the director sits on the nominating, compensation, audit, and/or governance committee, and zero otherwise.	BoardEx
Leave Focal Firm	Indicator variable equal to one if the director leaves the focal firm within five years after obtaining additional independent directorships, and zero otherwise.	BoardEx

Variable	Definition	Source
<i>Firm Characteristics Variables</i>		
Sales	Consumer price index-adjusted sales (in millions of dollars) as of the last fiscal year.	Compustat
Cumulative Ret	Cumulative daily stock returns over the prior fiscal year.	CRSP
Ret Volatility	Standard deviation of the firm's daily stock returns over the prior fiscal year.	CRSP
Board Size	The number of directors at the beginning of the fiscal year.	ISS Directors
Board Independence	The number of independent directors divided by board size at the beginning of the fiscal year.	ISS Directors
Finance Industry	Indicator variable equal to one if the appointing firm is in the finance industry (SIC code 6000-6999), and zero otherwise.	Compustat
Successful M&A	Indicator variable equal to one if the appointing firm announced at least one acquisition with a positive cumulative abnormal announcement returns (CAR(-1, +1)) during any of the last five years, and zero otherwise. CAR(-1, +1) is the sum of the abnormal returns over the event window (-1, +1), where day 0 is the acquisition announcement date. The abnormal return is calculated based on a market model where the market model parameters are obtained from regressing the daily stock returns on the CRSP value-weighted market portfolio over the days -205 to -6.	CRSP/SDC Platinum
Vertically-related Industry	Indicator variable equal to one if the vertical relatedness coefficient between the focal firm's industry and the appointing firm's industry is equal to or above 5%, and zero otherwise (Fan and Goyal, 2006).	Bureau of Economic Analysis
S&P 500 Firm	Indicator variable equal to one if the appointing firm is in the S&P 500 Index, and zero otherwise.	CRSP
Market Capitalization	Consumer price index-adjusted market value of equity (multiplying common shares outstanding by stock price) in millions of dollars as of the last fiscal year.	Compustat
Larger Appointing Firm	Indicator variable equal to one if the market capitalization of the appointing firm is at least 10% larger than the market capitalization of the focal firm, and zero otherwise.	Compustat
Received Dir from Appointing Firm	Indicator variable equal to one if the focal firm has appointed directors from the appointing firm during the last five years or during the CEO's tenure if her tenure is shorter than five years, and zero otherwise.	BoardEx
Will Receive Dir from Appointing Firm	Indicator variable equal to one if the appointing firm sends a director to the focal firm within the next five years or during the focal firm CEO's tenure if her tenure is shorter than five years, and zero otherwise.	BoardEx
Firm Age	Number of years that a firm is covered in either Compustat or CRSP.	Compustat/CRSP
Opaque Index	Principal component analysis of three information related proxies (1) number of analysts who posted forecasts about the firm, (2) absolute difference between the mean analysts' quarterly earnings forecast prior to a quarterly earning announcement and the actual earnings, normalized by the firm's stock price at the beginning of the quarter and averaged across four quarters, and (3) standard deviation of quarterly earnings forecasts across analysts prior to a quarterly earning announcement, normalized by firm's stock price at the beginning of the quarter and averaged across four quarters in a given fiscal year (Duchin et al., 2010). Firms with high a high index number are considered opaque.	IBES

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