Corporate Governance Contagion through Overlapping Directors

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Directors at large, publicly-listed firms tend to hold several directorships. The literature on "social networks" suggests that directors with multiple directorships may spread what they learn on one board to another board. This suggests that overlapping directors may cause corporate governance practices to be propagated across firms in contagion-like fashion.

The first goal of this paper is to empirically test the hypothesis that director overlap leads to governance similarity. Fourteen governance practices are targeted for this examination to see if firms that share directors have governance practices that are more similar than those of other firms that do not. Strong supporting evidence is found for most of the fourteen governance practices examined.

The second goal is to examine whether these results are driven by a "familiarity effect" or an "influence effect". The familiarity effect says that the relationship between director overlap and governance similarity arises because firms are simply selecting directors who are already serving at firms with similar governance practices. The influence effect says that the relationship arises because a director – even one currently serving at firms with dissimilar governance practices – exerts influence on the firm's governance practices after joining the board. Since influence is based on what the director has learned from the other directorships, governance practices tend to become more similar. Empirical support is found for both the familiarity and influence effects.

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CORPORATE GOVERNANCE CONTAGION THROUGH OVERLAPPING DIRECTORS

1. INTRODUCTION

Firms, even those that are publicly-traded, have substantial leeway in choosing their corporate governance practices, including board size, the fraction of outside directors, the number of board meetings, director base pay, and so on. How do firms decide which governance practices to adopt? The theoretical governance literature has provided insights. Fama and Jensen (1983),[1] Hermalin and Weisbach (1998), Raheja (2005), Song and Thakor (2006), Adams and Ferreira (2007) and Harris and Raviv (2008) have addressed a variety of governance design issues such as optimal board size, the optimal fraction of outside directors, and the accuracy of information communication from the CEO to the board of directors. Empirically, however, many other governance practices that have not been theoretically studied as optimized choices have been documented. These practices have been found to vary across firms (e.g. Baker and Gompers, 2003; Gillan, Hartzell and Starks, 2004; Boone, Field, Karpoff and Raheja, 2007; and Coles, Daniel and Naveen, 2008). How do firms go about selecting these governance practices, which include practices like the average age of directors, the number of female directors, and so on?

This paper hypothesizes that firms' choices of corporate governance practices are affected by the governance practices of other firms their directors serve at. It is well-known that directors of large firms tend to serve on multiple boards: the average and median director of a Forbes 500 firm, for example, holds three directorships (Fich and Shivdasani, 2006).[2] This overlap in directors across firms means that there are "social networks" of directors that facilitate communication among them, creating a scope for firms to learn from each other through their directors, and thereby creating the possibility of governance practices spreading across firms that share directors. The importance of social network effects is well established in a variety of other contexts. For example, Bertrand, Luttmer and Mullainathan (2000) provide evidence that social networks strongly affect welfare participation, whereas Hong, Kubik and Stein (2004) show that social interaction affects

[1] While Fama and Jensen (1983) point out that the board cannot be effective unless it limits the decision discretion of top managers, Jensen (1993) takes this a step further in his Presidential Address and argues that the board can only be effective if the CEO is not the chairman of the board

[2] Directors at the largest firms tend to hold more directorships than others. Ferris, Jagannathan and Pritchard (2003) document that directors at 3,190 firms with total assets over $100 million on average hold 1.6 directorship (median: 1.4).

stock market participation. This paper examines the empirical validity of social networks for understanding governance practices. In particular, I ask: does director overlap among firms lead to similarity in governance practices at these firms?

To address this question, I focus on fourteen governance practices. These are: (1) board size; (2) the percentage of outside directors; (3) the number of board meetings; (4) director base pay; (5) the percentage of directors who are active CEOs; (6) the percentage of directors on a board with tenure exceeding 15 years; (7) the percentage of directors with more than four public directorships; (8) the percentage of directors over the age of 70; (9) the percentage of female directors; (10) the percentage of directors that did not meet the board's minimum attendance standards; (11) the percentage of directors who own zero shares in the company; (12) the Gompers-Ishii-Metrick (GIM) index; (13) a dummy that equals 1 if the firm has a classified board; and (14) a dummy that equals 1 if the CEO is the chairman (CEO duality). The consideration of this large number of governance variables is a departure from the existing literature on board-related governance practices which has typically focused on only three of these characteristics – board size, the fraction of outside directors, and CEO duality.

I begin by hypothesizing which governance variables are likely to be more strongly linked to director overlap and which are likely to be less strongly linked.[3] The governance variables are then regressed one at a time on the weighted average governance practices at firms with overlapping directors (one year lagged), while controlling for other factors which the literature has found to be important determinants of board-related governance, including CEO and firm characteristics.[4] I find results that strongly suggest that director overlap matters and helps shape corporate governance practices: the coefficients on the governance practices at firms with overlapping directors are positive and highly significant in most cases. Interestingly, the effect is strong even for several governance variables for which the effect was hypothesized to be weak.

I then examine two possible sources of this documented effect: familiarity and influence. The familiarity effect says that firms may simply choose directors who already have directorships at firms with governance characteristics that are similar to their own practices. That is, firms tend to choose directors who are "familiar" with their own governance practices. The influence effect is

[3] See Section 4.4.

[4] The firm's own governance practices are not included in the weighted average governance practices at firms with overlapping directors to ensure that the results are not driven by "stickiness" of governance practices.

suggested by the literature on "social networks". It says that a firm may choose directors for a variety of reasons, some of which may be unrelated to familiarity. These directors, who may serve on boards of firms with different governance characteristics, may influence the firm's governance practices in the direction of those at the other firms they serve at.[5]

If the familiarity effect is driving the results, I should find that a person is more likely to be selected as a director at a particular firm if he already holds directorships at other firms with similar governance practices. To examine this, I specify a model of how directors are selected. It includes measures of governance similarity as well as a variety of other factors, including whether an individual already has a directorship at a firm in the same industry, at a firm of similar size, at a geographically-close firm, or knew one of the directors because he served with that person on another board in the past. For two-thirds of the governance variables, I find that an individual is more likely to be appointed as a director at a firm if he already is a director at firms with governance practices that are similar to the firm's own practices. This suggests that the familiarity effect is at work. But the other variables are also statistically significant, suggesting that the familiarity effect is not the sole determinant of director selection.

If the influence effect is also driving the results, I should find that a bigger gap in governance practices between the other firms at which a firm's directors serve and the firm itself leads to bigger subsequent governance changes at the firm in question. In contrast, if the familiarity effect is the *sole* driving force, I should find *no* effect. For twelve out of fourteen governance variables, I find that a bigger governance gap is followed by bigger governance changes. These results strongly suggest that an influence effect is also driving the relationship between director overlap and governance similarity. Thus, it appears that both the familiarity effect and the influence effect lead to governance similarity.

The findings of this paper highlight two kinds of social network effects. One is a social network effect pertaining to director selection. An individual is more likely to obtain a board seat at a firm if he already has a board seat at a similar-sized firm, at a firm in the same industry, at a geographically-close firm, at a firm with similar governance practices, and if he served on another board with someone who is a director at this firm. This is the familiarity effect – firms select

[5] Directors may bring other insights and experiences to the table as well, such as those gleaned from newspapers and journals, experiences on boards they served at a long time ago, etc. However, to the extent that these other effects are at work, they should create a bias against finding any relationship between a firm's governance practices and the governance practices at other firms its directors serve at.

directors from a network of firms that have governance practices they are familiar with. The second kind of social network effect pertains to director influence on governance practices. The overlap in directors across firms facilitates the adoption of common governance practices by firms that are networked through common directors because these directors influence the adoption of certain governance practices based on what they know from the practices they observe at other firms.

The rest of the paper is organized as follows. Section 2 contains a review of related literature. Section 3 describes the corporate governance data. Section 4 examines whether governance practices can be explained by the governance practices at firms with overlapping directors. Section 5 analyzes the determinants of the relationship between director overlap and governance similarity. Section 6 summarizes and concludes.

2. LITERATURE REVIEW

This paper is in particular related to the literatures on corporate governance and social network effects. I discuss these two literatures in turn.

One strand in the corporate governance literature examines the determinants of board structure. Theoretical contributions in this area include Hermalin and Weisbach (1998), who recognize that boards of directors are endogenously chosen, and show that board independence declines with CEO tenure and that firms will add outsiders to the board after poor performance. In contrast, Raheja (2005) argues that the number of outsiders increases as the CEO's influence goes up. Adams and Ferreira (2007) and Raheja (2005) show that optimal monitoring by the board increases with managerial private benefits, leading to greater board independence in the face of higher managerial private benefits. However, Song and Thakor (2006) show that the career concerns of the CEO or board members can render monitoring by outside directors ineffective because career concerns can corrupt the integrity of information communication and project choice. Harris and Raviv (2008) examine the conditions under which control by insiders versus outsiders is optimal. Their results show that firm profitability and the number of outside directors are endogenous, implying that the often-found negative relationship between board size and performance has to be interpreted with care.

Various recent empirical papers have studied the determinants of board-related governance practices. These papers tend to focus on a fairly limited number of governance practices, such as

board size, the fraction of inside versus outside directors, and CEO duality (i.e. the CEO being the chairman of the board). On the issues of board size and inside versus outside directors, Coles, Daniel and Naveen (2008) argue that one size may not fit all. They provide evidence that complex firms have larger boards, potentially because they need more monitoring, and that R&D-intensive firms (and other firms at which insiders' firm-specific knowledge is critical) have a bigger fraction of insiders on the board. Linck, Netter and Yang (2008) find that large firms have larger boards than small firms and a bigger fraction of outsiders.[6] Yermack (1996) finds that firms with smaller boards have higher market valuations. On the issue of CEO duality, Brickley, Coles, and Jarrell (1997) argue that (successful) CEOs become chairmen of the board of directors as part of the succession planning process. Gillan, Hartzell and Starks (2004) show that firm and industry factors – including investment opportunities, the competitive environment and product uniqueness –help explain board size, director independence and CEO duality. In contrast to this literature, this paper analyzes a far broader set of governance practices, and focuses on the propagation of corporate governance practices across firms via overlapping directors.

Another strand in the empirical governance literature has focused on the nature and effects of board interlocks, situations in which a director of a firm sits on the board of at least one other firm (e.g., Dooley, 1969). As summarized in Mizruchi (1996), this literature has put forth several reasons for the existence of interlocks: (i) they are formed to facilitate collusion among competitors; (ii) board seats by large shareholders, bankers and customers facilitate monitoring; (iii) they help directors to advance their careers; and (iv) they represent social ties among members of the upper class. Part of this literature has focused on "busy directors". Several studies use the number of directorships held by outsiders as a proxy for director reputation (Shivdasani, 1993; Vafeas, 1999). Some suggest that too many directorships, however, may make outside directors less effective monitors. For example, Fich and Shivdasani (2006) find that firms at which over 50% of the outside directors hold at least three directorships are associated with weaker corporate governance and lower firm performance (including market-to-book ratios). In contrast, Ferris, Jagannathan and Pritchard (2003) find no relationship between the average number of board seats held by directors and their firms' market-to-book ratios. Core, Holthausen and Larcker (1999) find that CEOs

[6] Some board determinant papers focus on firms around the time of the IPO. Baker and Gompers (2003) find that the fraction of outsiders decreases with CEO power but increases with the power of outsiders. Boone, Field, Karpoff and Raheja (2008) analyze the evolution of corporate governance over a decade following the IPOs.

receive excessive compensation packages when outside directors tend to be busy. In this paper, I also examine directors with multiple board seats, but focus on how overlapping directorships may help to spread governance practices rather than examining the value implications of having busy directors.

The second literature related to this paper focuses on social network effects. Case and Katz (1991) show that living in a neighborhood in which a big fraction of youths is involved in crime affects an individual's probability of being involved in crime. Glaeser, Sacerdote and Scheinkman (1996) address the question of relative influence in social networks. They argue that policies at firms may be affected by the policies set by "leading firms" (rather than all firms), but that the policies of the leading firms themselves are *not* affected by those of other firms. Bertrand, Luttmer and Mullainathan (2000) provide empirical evidence suggesting that social networks affect welfare participation. Individuals use welfare more if they speak the same language as high-welfare-using language groups. Madrian and Shea (2000) and Duflo and Saez (2002) show that co-workers' decisions on whether or not to participate in employer-sponsored retirement plans affect an individual's choice. Hong, Kubik and Stein (2004) show that social interaction affects stock market participation. Households that interact with their neighbors or attend church are far more likely to invest in the stock market than those that do not. None of these papers have examined the role of social interaction among directors in influencing corporate governance practices at firms, which is the focus of this paper.

Several papers which find that social interaction affects economic outcomes stress the importance of distance. Most of these papers argue that information is more efficiently procured when distances are smaller (Coval and Moskowitz, 1999, 2001; Huberman, 2001; Grinblatt and Keloharju, 2001; Petersen and Rajan, 2002; Hong, Kubik and Stein, 2004, 2005; Malloy, 2005; Butler, 2008; and Uysal, Kedia and Panchapagesan, 2008). This paper too relies on a similar intuition in positing that geography has a role to play in director selection, and finds evidence that having more directorships at firms in a given geography increases the likelihood of being appointed director at another firm within that geography.

3. CORPORATE GOVERNANCE DATA

This section describes the corporate governance data used in the paper. I start with all the firms included in The Corporate Library's Board Analyst database. Board Analyst contains governance data on virtually every firm included in the S&P 500, the S&P midcap 400 index, the S&P smallcap 600 index, the Fortune 1000, and the Russel 3000 between 2001 and 2007. It also has detailed information on each firm's directors.

The Board Analyst's "Companies" dataset (which includes the firm-level data) is merged with the "Directorships" dataset (which contains the director-level data); this combination contains a wide variety of board-related corporate governance variables. The Gompers-Ishii-Metrick (GIM) governance index is then added to the dataset.

The following fourteen governance variables are used in all of the analyses: (1) board size measured as the number of directors; (2) the percentage of outside directors as a measure of board independence;[7] (3) the number of board meetings; (4) director base pay;[8] (5) the percentage of directors who are active CEOs; (6) the percentage of directors with tenure exceeding 15 years; (7) the percentage of directors with more than four public directorships; (8) the percentage of directors over the age of 70; (9) the percentage of female directors; (10) the percentage of directors who did not meet the board's minimum attendance standards; (11) the percentage of directors who own zero shares in the company; (12) the GIM index; (13) a dummy that equals 1 if the firm has a classified board; and (14) a dummy that equals 1 if the CEO is the chairman.

4. OVERLAPPING DIRECTORS AND CORPORATE GOVERNANCE PRACTICES

This section addresses the first question: does director overlap lead to similarity in corporate governance practices? It discusses the methodology, explains the variables, provides summary statistics, and formulates hypotheses regarding the expected strength of the effect of director overlap on governance similarity.

[7] Similar results are obtained using the percentage of outside-related directors, i.e. directors that have or have had a significant relationship with the firm, instead of the percentage of outside directors.
[8] Director stock and option ownership are missing for a large fraction of directors, and hence not used.

4.1. Methodology

The methodology employed here is to examine if a number of important governance practices at firm A can be explained by the governance practices at firm B if firms A and B have common directors. This examination involves regressing the fourteen board-related corporate governance practices highlighted in Section 3 on the weighted average corporate governance practice of other firms at which its directors have board seats (see Section 4.2). Each regression focuses on one governance practice, and the key independent variable "matches" the dependent variable. For example, a firm's board size is regressed on the weighted average size of the boards on which the firm's directors serve. In all cases, key firm and CEO characteristics which the literature has found to be important determinants of board-related governance practices are controlled for (see Section 4.3).

OLS regressions are used in twelve cases, while logit regressions are performed in two cases in which the dependent variable is a dummy variable. In line with the board determinant literature, all regressions include year and industry fixed effects (e.g., Baker and Gompers, 2003; Coles, Daniel and Naveen, 2008; and Linck, Netter and Yang, 2008). Industries are based on 17 Fama-French industry groupings. Robust standard errors are clustered by firm.

4.2. Calculating the key independent variable: weighted average governance practices at firms with overlapping directors

For each firm, the weighted average governance practices at firms with overlapping directors are obtained using a two-step procedure.

In the first step, I calculate "overlap scores" between the firm of interest, call it firm A, and all of the firms at which firm A's directors are board members. This is done as follows. Suppose firm A has *N* directors. So each director of firm A gets a weight of $\frac{1}{N}$. Suppose that director *i* of firm A sits on the boards of *K other* firms. Let firm *j* be one of those firms. Then the weight assigned to firm *j* related to director *i* is $\frac{1}{N} * \frac{1}{K_i}$ if director *i* sits on firm *j*'s board and is 0 otherwise. Let n_j be the number of directors of firm A who are directors at firm *j*. Then, firm *j*'s *overlap score* with firm A is $S_{jA} = \sum_{i=1}^{n_j} \left[\frac{1}{N} * \frac{1}{K_i}\right]$, where the summation is over all directors of firm A who are also directors of firm *j*.

In the second step, the weighted average governance practice of firms with overlapping directors is calculated. The *weighted average governance practice* for firm A is $WAgov_A = \sum_{j=1}^{J} x_j S_{jA}$, where J is the number of firms with which firm A has overlapping directors, x_j is the governance practice at firm j, and S_{jA} is the overlap score of firm j with firm A.

A numerical example helps to clarify these two steps. Suppose firm A has 10 directors, so that each director is 10% of A's board, i.e., $\frac{1}{N} = \frac{1}{10}$. Suppose also that those directors collectively have directorships at four other companies (companies B, C, D, and E), i.e. there is director overlap with four companies ($J = 4$). Overlap scores of these companies are calculated as follows. Director 1 of firm A sits on three other boards: B, C, and D. So for director 1, companies B, C and D each receive a 0.033 $\left(\frac{1}{10} * \frac{1}{3}\right)$ weight. Director 2 sits on only one other board, E. So for director 2, company E gets a 0.10 $\left(\frac{1}{10} * \frac{1}{1}\right)$ weight. Director 3 sits on two boards B and E. So for director 3, companies B and E each get a 0.05 $\left(\frac{1}{10} * \frac{1}{2}\right)$ weight. If these are the only overlapping directors, company B's total weight or overlap score with firm A is $S_{BA} = 0.033 + 0.05 = 0.083$. Similarly, the overlap scores of companies C, D and E with firm A are $S_{CA} = 0.033$, $S_{DA} = 0.033$, and $S_{EA} = 0.15$, respectively. Suppose the number of directors is the board characteristic of interest (x), and companies B, C, D, and E have 5, 6, 8 and 12 directors, respectively. The weighted average governance practice (here: number of directors) of companies at which firm A's directors are board members is then $WAgov_A = 5 * 0.083 + 6 * 0.033 + 8 * 0.033 + 12 * 0.15 = 2.68$.

The intuition behind these calculations is that each weighted average governance characteristic at firms with overlapping directors is affected by three factors. The first factor is the number of board seats a director has at other firms: more directorships implies a smaller weight for the board characteristics of each firm at which the person is a director. The second factor is the number of firms with which a firm shares directors The third factor is the specific board characteristics at the firms with overlapping directors.[9,10]

[9] In the numerical example, if the number of directors at B, C, D, and E had been 6, 8, 12 and 15, respectively, the weighted average number of directors had been higher.

[10] It is important to note that while the weighted average number of directors in the example (2.68) is much lower than the number of directors at firm A (10), this will not affect the results. The values of weighted average governance practices can be arbitrarily scaled up: doing so will affect the size of the regression coefficients but not the statistical significance of any regression results.

In the numerical example, each director's weight is the inverse of the number of directors on the board. The implicit assumption is that each director has an equal say in the voting process. Informal discussions with select board members at publicly-listed firms suggest that this is a reasonable assumption. One could imagine, however, that some board members may be more important than others in the decision-making process. Members of important committees and those holding important positions could potentially have greater influence. Robustness checks in which members of the audit and compensation committees or the lead director and the financial expert on the audit committee receive twice the weight other directors are assigned yield results that are qualitatively similar to the ones presented in this paper.

If a director has directorships at multiple firms, the governance practices at each of those firms receive equal weight. It is possible that a director does not draw equally on the experiences learned at those firms. However, to the extent that this is true, it only makes it harder to find significance.

In the rest of the paper, for clarity, I will generally refer to "the weighted average governance practices at other firms at which a firm's directors serve" as "the governance practices at other firms" or "the governance at firms with overlapping directors".

4.3. Control variables

The existing literature has found that a variety of firm and CEO characteristics can explain some key board-related governance practices such as board size, the fraction of outside directors, and whether or not the CEO is the chairman of the board (Baker and Gompers, 2003; Coles, Daniel and Naveen, 2008; Linck, Netter and Yang, 2008). The other governance practices listed in Section 3 have been studied to a lesser extent and it is not clear in all cases which control variables should be included in regressions that try to explain, say, the fraction of female directors or the fraction of directors over age 70.

For consistency, I show regression results using the same set of control variables for every governance practice. The firm characteristics include firm size measured as the log of total assets; book leverage measured as the total amount of interest-bearing debt divided by total assets; firm age measured as the number of years since the firm first occurred on CRSP; R&D intensity defined as

R&D divided by total assets; and free cash normalized by total assets. The CEO characteristics include CEO age and CEO tenure.

The key independent variable and all the control variables are lagged by one year to reduce potential endogeneity (specifically: reverse causality) concerns. As a result, the sample period is restricted to 2002 – 2007. The sample includes 7,085 firm-year observations in most regressions. In a few cases, the sample is smaller because data are not available in every year for some governance variables.

Table 1 contains key summary statistics on the regression variables. It shows that the average board in the sample has 9.4 directors of which 71% are outside directors. The average board meets 7.9 times a year and its directors receive base pay of $30,050. One in four directors (26%) is an active CEO. One in seven directors (14%) has served as a director for over 15 years, while one in nine (11%) serves on at least four boards in the sample. Some 9% are over 70 years of age, and 11% is female. A mere 1% of all directors failed to meet the board's minimum attendance standards. Some 15% of the directors did not own any shares in the company he served on. Sixty percent of the firms have a classified board. The CEO is the chairman in 64% of the cases. Summary statistics on the governance practices at firms with overlapping directors are excluded because they weight the average governance practices at other firms by the effect of each director and hence make it harder to interpret the levels of those variables.

Place Table 1 here

4.4. Hypothesized strength of the effect of director overlap on governance similarity

The effect of board overlap on governance is unlikely to be strong (in the sense of statistical significance) for all fourteen variables. The governance practices seem to fall into two categories.

The first is the "weak effect" category. It contains the three variables about which we have existing theories – board size (e.g., Raheja, 2005; and Harris and Raviv, 2008), the fraction of outside directors (e.g, Hermalin and Weisbach, 1998; Raheja, 2005; Adams and Ferreira, 2007; and Harris and Raviv, 2008), and CEO duality (e.g., Fama and Jensen, 1983; and Jensen 1993). Existing theories suggest that these variables are optimally chosen by firms and these optimal choices reflect various firm-specific factors. Since firms choose these variables optimally to reflect their own specific circumstances, it is unlikely that firms would alter their choices based merely on

what other firms do. As a result, the social influence effect is likely to be relatively weak for these governance practices.

The "weak effect" category also includes some governance variables about which we do not yet have theories, but where a firm-specific or industry-specific optimum is likely to exist. These variables include the number of board meetings, the percentage of directors with zero shares, the GIM index, and the classified board dummy. For example, firms that are associated with relatively frequent information shocks – such as firms that operate in rapidly-changing industries, younger firms and firms that are less profitable – may need more board meetings. But after controlling for industry effects, firm age and firm profitability, we would expect social network effects to be small. The percentage of directors with zero shares in the firm and the GIM index seem to be governance variables for which there seems to be little potential for influence effects as well. Firms are likely to optimize both aspects based on their specific needs. Whether or not a classified board is optimal for a firm is likely to depend on the need for continuity and institutional memory at that firm, and hence the potential effect of social network effects may be small.

The second is the "strong effect" category which contains the remaining governance variables, including director base pay, the percentage of directors who are active CEOs, the percentage of directors with tenure exceeding 15 years, the percentage of directors who serve on more than four public boards, the percentage of directors over the age of 70, the percentage of female directors, and the percentage of directors that did not meet the board's minimum attendance standards. It is economically intuitive that these governance practices may be subject to the influence of other firms with which the firm shares directors. We have no theories that tell us what a director's base pay should be, the percentage of directors who should be active CEOs, what the optimal tenure or age of a director should be, what represents an optimal gender mix on the board, etc. Moreover, there is no compelling economic rationale that precise point estimates of firm-specific optima that reflect explicit tradeoffs exist. Rather, a wide range of choices for each variable may exist that all yield the same outcomes. Such practices are particularly susceptible to strong influence by the choices made by other firms since the actual choices may be driven largely by heuristic rules of thumb. For example, while director base pay may in part be based on general labor market conditions for directors, a firm's directors may collectively have some negotiating power, making it possible that their compensation is affected by the compensation practices at other

firms at which its directors are board members. There are no theories or economic arguments about the role of gender in director effectiveness, so it is possible that the number of female directors is driven by what firms observe about other firms, and these may be a wide range of practices at other firms to choose from. The empirical evidence on whether it is optimal for a firm to have fewer or more active CEOs or busy directors (here: directors who serve on more than four public boards) on the board is mixed, again opening up the possibility that the choices of firms are affected by what they observe other firms doing. Similarly, we do not have theories about the relationship between director age and effectiveness. So variables like CEOs with tenure over 15 years or directors over the age of 70 on the board are likely to be susceptible to social network effects.

Figure 1 below summarizes the hypothesized effect of social network effects on governance.

Figure 1: The hypothesized and documented effect of social network effects on governance

	Effect on governance:	
Governance practice	**Hypothesized**	**Documented**
1. Board size	Weak	Weak
2. % of outside directors	Weak	Strong
3. Number of board meetings	Weak	Weak
4. Director base pay	Strong	Strong
5. % of directors who are active CEOs	Strong	Strong
6. % of directors with tenure exceeding 15 years	Strong	Weak
7. % of directors with more than 4 public directorships	Strong	Strong
8. % of directors over the age of 70	Strong	Strong
9. % of female directors	Strong	Strong
10. % of directors that did not meet minimum attendance standards	Strong	Strong
11. % of directors who own zero shares in the company	Weak	Strong
12. GIM index	Weak	Strong
13. Classified board	Weak	Strong
14. CEO = chairman (CEO duality)	Weak	Strong

4.5. Regression results

As indicated above, I regress fourteen governance practices – one at a time – on the governance practices at firms with overlapping directors, while controlling for other factors which the literature has found to be important determinants of board-related governance.

Table 2 columns 1-12 and 13-14 contain the results of OLS and logit regressions, respectively (see also the last column in Figure 1 above for a summary of the results). Consistent with the existing literature, board size increases with firm size, firm age, and CEO age, and decreases in CEO tenure (Baker and Gompers, 2003; Coles, Daniel and Naveen, 2008; Linck, Netter and Yang, 2008). Similarly, the fraction of outsiders decreases significantly in CEO tenure, a finding that is consistent with Baker and Gompers (2003).

It is not straightforward to discuss the coefficients on the governance variables in terms of the economic significance of the magnitudes, because the governance practices at other firms at which a firm's directors serve are weighted by the influence of each director. Thus, rather than engage in a calibration exercise, I provide a qualitative assessment of the results.

Based on the logic formulated in the previous section, I expected to find the coefficients on the governance at firms with overlapping directors to be positive and significant for seven out of the fourteen governance variables. Interestingly, however, I find statistical significance (with significance generally at the 1% level) for eleven governance variables. I now discuss these results in turn.

The results are conform expectations for eight out of fourteen governance variables. As expected, board size and the number of board meetings are not significantly affected by social network effects. Also as expected, director base pay, the percentage of directors who are active CEOs, the percentage of directors serving on more than four public boards, the percentage of directors over the age of 70, the percentage of female directors and the percentage of directors who fail to meet attendance standards do have a statistically significantly positive impact on the associated governance practice at the firm.

Three findings are surprising. First, social network effects have no significant impact on the percentage of CEOs with tenure exceeding 15 years. This suggests that it is optimal for certain types of firms to retain a certain fraction of directors for a substantial time period, and hints at the importance of institutional memory. The second surprising finding is that the coefficients on two of

the variables for which we do have theories, the percentage of outside directors and the CEO = chairman dummy, are positive and significant. That is, firms are more likely to have a higher fraction of outsiders if its directors serve on other boards with a bigger fraction of outsiders, and the CEO is more likely to be the chairman if this practice is already in place at other firms at which the firm's directors are board members. The third surprising finding is that the coefficients on the percentage of directors with zero shares in the firm, the GIM index, and the classified board dummy are also positive and highly significant, even though our intuition suggested that the effect of social network effects should be weak for these variables. Thus, these three practices are affected by the governance practices at firms with overlapping directors.

Place Table 2 here

4.6. Robustness: are the results driven by intertemporal persistence in governance practices?

One potential concern is that board-related corporate governance practices tend to be relatively persistent through time (Hermalin and Weisbach, 1998), suggesting that the annual firm-level observations in the sample may not be independent. To ameliorate this concern, the main results are based on robust standard errors clustered by firm. However, one could object that this does not do enough to address the concern. To further explore this issue, the sample is restricted to include observations from only every second year (2003, 2005 and 2007) or every third year (2004 and 2007) as suggested by Linck, Netter and Yang (2008).

Table 3 Panels A and B contain the results. Columns 1-12 and 13-14 again contain the results of OLS and logit regressions, respectively. The results presented in Panel A suggest that limiting the sample period to 2003, 2005 and 2007 does not materially affect the level of the coefficients or the statistical significance of the results. Limiting the sample period to 2004 and 2007 (see Panel B) does not affect the size of the coefficients much, but it does affect the statistical significance of a few results. Specifically, the coefficients on board size and the percentage of directors with tenure over 15 years are now significant, while the coefficient on the percentage of directors that fail to meet minimum attendance standards loses significance. The conclusion then is that the main results do not seem to be driven by the choice of using all available years.

Place Table 3 here

5. A FAMILIARITY EFFECT OR AN INFLUENCE EFFECT?

The results presented so far suggest that a wide range of governance practices are affected by overlapping directors. This section examines the determinants of the results documented earlier. The focus is on two possible effects discussed earlier: a *familiarity effect* and an *influence effect*.

5.1. A familiarity effect?

If the familiarity effect is the underlying driver of the results, I should find that a person is more likely to be selected as a director at a particular firm if he already holds directorships at other firms with similar governance practices. To assess the empirical significance of this effect requires a model of how directors are selected, which includes measures of governance similarity and a variety of other factors. So I begin the section with such a model. I then discuss the methodology and present the regression results.

5.1.1. Independent variables used in the director selection regressions related to the familiarity effect

The following independent variables are included in the director selection model.

Governance gap: governance similarity is captured by fourteen "governance gap" measures. The familiarity effect says that a person is more likely to be appointed director if he is currently a director at a firm with similar governance practices. So the smaller the governance gap between the governance practices of firms *A* and *j*, the higher is the probability that a director at firm *j* will be appointed director at firm *A*. For each director, I construct these governance gap measures based on the fourteen governance variables used before. Each (director-level) governance gap is calculated as the average governance practice at the other firms at which the person served as a director in the previous year minus the firm's own governance practice in that year. To give an example, suppose a person is considered for a director's position at firm A, which has 10 directors. If the person had directorships at firms B and C with 15 and 9 directors respectively, the gap in board size for that director equals [(15 – 10) + (9 – 10)] / 2 = 2. In the analyses, I use the *absolute percentage* governance gap, since the familiarity effect hypothesis suggests that an individual is more likely to be selected as a director if the percentage governance gap, positive or negative, is smaller.

Firm size: a firm may be more likely to select a particular director if the person already holds a board seat at a similar-sized firm because the issues a board confronts may be dependent on firm size. This suggests that experience as a board member at another firm of similar size may be more valuable than experience at a firm with a different size. A similar-size dummy is created that equals one if a director held at least one directorship in the previous year at another firm of similar size, measured as a firm with sales between 50% and 150% of the firm of interest.

Industry: a firm may also be more likely to pick someone as a director if the person already is a director at a firm in the same industry because industry-specific experience is likely to be of value. While it has been illegal for directors to serve on the boards of competitors since the Clayton Act of 1914, experience as a board member in an *adjacent* industry may be useful. For example, a board member of Anheuser Busch may be an attractive candidate for a directorship at Coca Cola which is not a direct competitor of Anheuser Busch, but both are in the broadly-defined beverage industry. A same-industry dummy is constructed which equals one if a director was on the board of at least one firm in the same industry (measured based on the 17 Fama-French industry groupings) in the previous year.

Geographic proximity: social interaction among CEOs and board members is likely to be facilitated by being in the same neighborhood. Those who are in the same city, for example are more likely to socialize with each other and communicate information about potentially good board members.[11] Thus, it is possible that the likelihood of obtaining a board seat at a particular firm increases if the person held at least one directorship at a geographically-proximate firm. To construct this variable, I obtain the location (city) of the headquarters of every firm in the sample from Compustat, and latitude and longitude data from the Census 2000 U.S. Gazetteer. Compustat city names are checked to ensure that they correspond with the names found in the Gazetteer "places" files and are corrected when needed. In case a Compustat city name could not be found on the Gazetteer file, I check the actual location of the city on maps.google.com and assign the observation to the nearest place that is on the Gazetteer file within a 15 kilometer radius of the original location. The distance between cities is estimated using the Haversine formula.[12] Firms

[11] Another, potentially more direct way of measuring the impact of geographic proximity might have been to use the actual home (or mailing) address of each director. Unfortunately, Board Analyst only provides this information for a small fraction of the directors.

[12] The haversine formula gives great-circle distances between two points on a sphere. The distance between cities 1 and 2 is calculated as $d_{12} = R \times 2 \times \arcsin(\min(1, \text{sqrt}(a)))$, where R is the earth's radius (approximately 6371 kilometers), a

that are headquartered within a 100-kilometer of the firm are defined as being "geographically close" (e.g., Coval and Moskowitz, 2001; Malloy 2005; Kedia and Rajgopal, forthcoming; and Uysal, Kedia and Panchapagesan, forthcoming). Similar results are obtained using a 250-kilometer radius instead.

Director network: personal acquaintanceship may increase the likelihood of being appointed as a director. A clear example of this is provided by Davis, Yoo and Baker (2003). They indicate that Vernon Jordan, the individual with the most Fortune 1000 board memberships in 1999, was almost always acquainted with – from having previously served together on another board – at least one of the directors at the firm that invited him to be a director. To capture this network effect, for each director in the sample, I first create an overview of all the boards the person served on in the previous year. I then find the names of all the other directors on those boards. For each of those other directors, I create a list of all the boards they served on in that year and flag cases in which one of those directors served on the board of the firm of interest. Finally, I create a network dummy that equals 1 if the person was a director at another board in the previous year with someone who already served on the firm's board.

Firm performance: evidence provided by Ferris, Jagannathan and Pritchard (2003) suggests that an individual who serves on boards of firms with strong performance is more likely to be picked as a director. I therefore add the average stock price performance of all the other firms on which boards a director served in the previous year to the regressions.

Director age: a director's age may affect the likelihood of being appointed. Older individuals may be less likely to be selected since many boards have age limits for directors.

Number of directorships: the number of board seats a person already has may affect the odds of obtaining a new directorship. Directors who already have at least one other directorship may be more attractive because the number of directorships may be interpreted as a signal of director quality (Shivdasani, 1993; Vafeas, 1999).[13]

$= (\sin(dlat / 2))^2 + \cos(lat_1) \times \cos(lat_2) \times (\sin(dlon / 2))^2$. In this expression, $dlat = lat_2 - lat_1$ and $dlon = lon_2 - lon_1$. Lat_1 and lon_1 (lat_2 and lon_2) are the latitudes and longitudes of $City_1$ and $City_2$, respectively.

[13] Some suggest that too many directorships, however, may make outside directors less effective monitors (e.g., Fich and Shivdasani, 2006).

5.1.2. Methodology

To estimate the likelihood of being appointed as a director, logistic regressions are run in which the probability of being appointed as a director at a particular firm is regressed on the variables highlighted above. The regressions are run fourteen times: each regression includes one of the fourteen governance gap variables and all of the other variables.

It is important to include in the director selection analysis not just individuals who were picked as directors, but also other individuals who could have been picked but were not. To achieve this, I use a two-step procedure. First, the sample is limited to firms that appointed new directors – between 953 and 1,278 firms in a particular year – and for each of those firms, all the newly-appointed directors are kept. Second, for each firm-director pair, I randomly select 1,000 directors out of all the directors in the dataset (between 10,309 and 19,062 in a particular year) as potential matches.[14] The firm could have picked any of these directors but did not. Ideally, I would have used a complete list of other individuals a firm considered for each director's position. However, this information is unavailable.

This procedure leads to sample sizes that are far bigger than those used in the previous section, between 1.48 million and 3.14 million firm-director observations over the sample period. All regressions include year fixed effects. Robust standard errors are clustered by firm.

5.1.3. Regression results on the role of the familiarity effect in director selection

Table 4 contains the logistic regression results for the fourteen governance gap variables. The coefficients on nine governance gap variables (based on board size, the percentage of outside directors, director base pay, the percentage of directors with tenure exceeding 15 years, the percentage of directors with more than four public directorships, the percentage of female directors, the GIM index, the classified board dummy, and the CEO = chair dummy) are positive and significant and smaller than one. In these cases, an individual is less likely to be appointed as a director when the governance gap is bigger. This implies that the odds of being chosen as a director are greater when the governance gap is smaller, which is consistent with the familiarity effect. The

[14] Using all directors as potential matches does not seem to be justifiable since no firm will consider 10,000 – 20,000 individuals for a directorship. Besides, it leads to huge datasets that can contain over 25 million observations in later sample years, creating a considerable computational challenge.

coefficients on most of the other five governance gap variables are also positive and smaller than one, but *not* significant.

The coefficients on the other variables are also revealing. The results in the first column, which includes the gap in board size as the governance gap variable, suggest that an individual is significantly more likely to be appointed as a director if in the previous year the person had a directorship at another firm in the same industry (odds +81.6%), at a firm of similar size (odds +30.3%), or at a geographically close firm (odds +429%). The person is also more likely to be picked if in the previous year he served on the board of another company with a current board member of the firm (odds +1387%). The average stock performance of the other firms whose boards the director served in the previous year does not significantly improve the odds of being selected as a director. While director age has a slightly negative effect on the probability of being appointed (odds -3.6%), the number of directorships has an insignificantly positive effect (odds +2.6% for each additional directorship). The results in the other columns, which include the remaining governance gap variables, are qualitatively similar, except that the coefficients on firm performance are significant when the governance gap variables are based on the number of board meetings and the CEO = chairman dummy, providing weak evidence that a director is more likely to be selected if the other firms at which he serves as a director exhibited better stock price performance in the previous year.

This section examined whether the familiarity effect, which says that firms may simply choose directors who already have directorships at firms with governance characteristics that are similar to their own practices, could be a driver of the main results. It was shown that individuals are more likely to be appointed as directors if the governance gap is smaller, but this holds only for roughly two-thirds of the governance variables. In addition, a variety of other factors also significantly affect the director selection outcome. Thus, the evidence provided in this section suggests that the familiarity effect is at work, but it is not the sole driving force.

Place Table 4 here

5.2. An influence effect?

If the influence effect is also an underlying driver of the results, I should find that a bigger gap in governance between the other firms at which a firm's directors serve and the firm leads to bigger

subsequent governance changes. This section addresses the importance of the influence effect. It first discusses the key independent variable (the percentage governance gap), then explains the methodology and finally presents regression results.

5.2.1. Key independent variable used in the influence effect regressions: percentage governance gap

The influence effect analysis uses *firm-level* governance gap variables, in contrast to the *director-level* governance gap variables used in the director-selection analysis in Section 5.1. To illustrate how the (firm-level) governance gap is calculated, I use the GIM index, one of the fourteen governance variables, as an example. For each director, the average GIM index of all the other firms on which boards he serves is calculated. The director-specific governance gap, g_i, is then calculated by deducting the firm's own GIM index from this number. The director-specific governance gap is then weighted by the director's potential influence at the firm, w_i.[15] The firm-level governance gap, g_A, is then obtained by taking the average of the potential influence-weighted director-specific governance gap numbers of all the firm's directors who hold other directorships. In the regressions, this number is normalized by firm A's own GIM index. That is, suppose that director i serves on the boards of K_i other firms and x_{ij} is the governance practice at firm j that director i serves on, x_A is the governance practice at firm A, M is the number of directors at firm A who hold other directorships, g_i is the director-specific governance gap for director i at firm A, w_i is director i's potential influence at firm A, and g_A is the firm-level governance gap for firm A. Then $g_i = \sum_{j=1}^{K_i}[x_{ij}/K_i] - x_A$ and $g_A = \sum_{i=1}^{M}[g_i * w_i]/M$ and $g_{A\%} = g_A/x_A$.

A numerical example helps to clarify the procedure. Firm A, introduced in Section 4.2, has 10 directors. Three of them collectively have directorships at four other companies (B, C, D, and E). Suppose the GIM index is 9 at firm A, and 9, 14, 7, and 15 at companies B, C, D and E, respectively. Director 1 serves on the board of companies B, C, and D, so his director-specific governance gap is $g_1 = [(9 + 14 + 7)/3] - 9 = 1$. The governance gap for director 2 who serves

[15] As discussed in Section 4.2, I assume that each director has equal weight. In this case, $w_i = \frac{1}{N}$, where N is the total number of directors at company A. However, robustness checks in which members of important committees (the audit and compensation committees) and directors holding important positions (lead director and the financial expert on the audit committee) receive double weight yield regression coefficients of similar size and significance to the ones reported in the paper.

on E's board is $g_2 = [(15)/1] - 9 = 6$, and that of director 3 who serves on the boards of B and E is $g_3 = [(9 + 15)/2] - 9 = 3$. Assuming that all directors have equal influence, their weight is the inverse of the number of directors at firm A, i.e. $w_1 = w_2 = w_3 = \left[\frac{1}{10}\right]$. Firm A's firm-specific governance gap is then $g_A = \left[\left(1 * \frac{1}{10}\right) + \left(6 * \frac{1}{10}\right) + \left(3 * \frac{1}{10}\right)\right]/3 = 0.33$, or expressed as a percentage of firm A's GIM index, $g_{A\%} = 0.33/9 = 3.67\%$.[16]

5.2.2. Methodology

The goal is to examine whether bigger governance gaps are associated with greater subsequent changes in governance. OLS regressions are run in which the percentage change in governance between year t-1 and year t is regressed on the percentage governance gap (explained above) that existed between the other firms at which the firm's directors had board seats and the firm in year t-1. I lag the independent variables because the goal is to examine how the governance gap in a particular year leads to subsequent governance changes.

All of the firm-specific and CEO-specific control variables from the regressions that examine whether director overlap leads to similarity in governance practices (see Section 4) are included. These are: firm size; book leverage; firm age; R&D intensity; free cash flow normalized by total assets CEO age; and CEO tenure. As before, the regressions also include industry and year fixed effects and robust standard errors clustered by firms are used.

5.2.3. Regression results on the influence effect

Table 5 contains the regression results. The coefficients on the governance gap variables are positive and highly significant (generally at the 1% level) in twelve out of fourteen cases. These cases include: board size, the percentage of outsiders, director base pay, the percentage of active CEOs, the percentage of CEOs with tenure over 15 years, the percentage of directors with over four board seats, the percentage of directors over age 70, the percentage of female directors, the percentage of directors who did not meet the firm's attendance standards, the percentage of

[16] Using $(1 + 6 + 3)/3 = 3.3$ as the average governance gap between the other firms and firm A would overstate the influence of the three directors who hold external directorships because only three out of ten directors have such positions.

directors with zero shares in the company, the GIM index, and the classified board dummy.[17] In these twelve cases, the bigger the governance gap, the greater the subsequent change in governance, which supports the predictions of the influence effect hypothesis. Results are similar if the sample is restricted to cases in which an actual change in directors occurred.

The results presented in this section strongly suggest that an influence effect may also be driving a key result of the paper that overlapping directors affect governance. Given the results in Section 5.1, we can conclude that both the familiarity effect and the influence effect are contributors to the positive relationship between director overlap and governance similarity across firms that share directors. In other words, overlapping directors affect governance in part because firms simply select directors from firms with similar governance practices and in part because directors chosen from firms based on other criteria begin to exert their influence on governance practices after they join the board.

6. SUMMARY AND CONCLUSION

This paper has focused on the propagation of governance practices across firms through overlapping directorships. Specifically, it is hypothesized that when directors serve on multiple boards, important social network effects arise which lead to similarities in corporate governance structures across these firms. The first goal of the paper was to examine this empirically.

A broad set of fourteen corporate governance variables was regressed – one at a time – on the weighted average governance practices at firms with overlapping directors, while controlling for other factors which the literature has found to be important board-related governance determinants, including CEO and firm characteristics. The fourteen governance practices included: (1) board size; (2) the percentage of outside directors; (3) the number of board meetings; (4) director base pay; (5) the percentage of directors who are active CEOs; (6) the percentage of directors on a board with tenure exceeding 15 years; (7) the percentage of directors with more than four public directorships; (8) the percentage of directors over the age of 70; (9) the percentage of female directors; (10) the percentage of directors that did not meet the board's minimum attendance standards; (11) the percentage of directors who own zero shares in the company; (12) the GIM index; (13) a dummy that equals 1 if the firm has a classified board; and (14) a dummy that equals 1

[17] Results are insignificant based on the CEO = chair dummy. Results based on the number of board meetings suggest that the bigger the governance gap, the smaller the governance change. It is unclear what drives this result.

if the CEO is the chairman (CEO duality). The results strongly suggest that director overlap matters and helps shape corporate governance practices.

The second goal of the paper was to examine whether these results are driven by a familiarity effect or an influence effect. The familiarity effect says that firms may simply choose directors who already have directorships at firms with governance characteristics that are similar to their own practices. The influence effect says that a firm may choose directors for various reasons besides familiarity and that these directors, many of whom may serve on boards of firms with different governance characteristics, may cause the firm's governance practices to move in the direction of those of the other boards these directors serve on. The results strongly suggest that both effects are at work. In the case of about two-thirds of the governance practices, directors who already serve on boards of firms with governance practices similar to those of firm A are more likely to be appointed as directors of firm A. Thus, the familiarity effect seems to be at work for at least a majority of the governance practices. But other variables are also significant in explaining how directors are selected, suggesting there is more going on than just the familiarity effect. The empirical results also reveal that the bigger the difference in governance between the firms at which firm A's directors serve and firm A's own governance, the greater is the subsequent change in governance at firm A. This is evidence in support of the influence effect – once a person becomes a board member at multiple firms, the governance practices of these firms tend to converge through the channel of director influence. Thus, both the familiarity effect and the influence effect contribute to the positive relationship between director overlap and governance similarity.

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Table 1: Summary statistics

This table provides summary statistics on the fourteen governance variables and the control variables used in the regressions that examine whether director overlap leads to similarity in governance practices. Sample period: 2002 – 2007.

The governance measures include: (1) board size measured as the number of directors; (2) the percentage of outsiders, i.e. directors who are not employees of the company; (3) the number of board meetings; (4) director base pay; (5) the percentage of directors who are active CEOs; (6) the percentage of directors with tenure exceeding 15 years; (7) the percentage of directors with more than four public directorships; (8) the percentage of directors over the age of 70; (9) the percentage of female directors; (10) the percentage of directors that failed to meet the board's minimum attendance standards; (11) the percentage of directors who own zero shares in the company; (12) the GIM index; (13) a dummy that equals 1 if the firm has a classified board; and (14) a dummy that equals 1 if the CEO is the chairman.

Log(assets) is the log of total assets. Book leverage is interest-bearing debt divided by the sum of the book value of equity and interest-bearing debt. Firm age is the number of years since the firm firs appeared in CRSP. R&D intensity is defined as R&D divided by total assets. FCF / TA, is free cash flow divided by total assets. CEO age is the CEO's age. CEO tenure is the number of years the CEO has been in charge.

Variable	N	Mean
Board size	7085	9.4
% Outsiders	7085	71%
Nr of board meetings	4479	7.9
Director base pay ($)	6983	30,050
% Active CEOs	7085	26%
% Directors tenure over 15 years	7085	14%
% Directors on > 4 boards	7085	11%
% Directors over age 70	7085	9%
% Female directors	7085	11%
% Failed directors	7085	1%
% Directors with 0 shares	7085	15%
Classified board dummy	5041	60%
CEO = chairman dummy	7085	64%
Log(assets)	7085	7.7
Book leverage (%)	7085	34%
Firm age (years)	7085	23.5
R&D / assets (%)	7085	0%
FCF / assets (%)	7085	2%
ROA (%)	7085	2%
CEO age (years)	7085	54.7
CEO tenure (year)	7085	7.0

Table 2: Can governance practices be explained by practices at firms with overlapping directors?

This table shows the results of OLS regressions (columns 1-12) and logistic regressions (columns 13-14) to address whether a firm's corporate governance practices can be explained by the (weighted average) governance practices at firms with overlapping directors.

The governance measures include: (1) board size measured as the number of directors; (2) the percentage of outsiders, i.e. directors who are not employees of the company; (3) the number of board meetings; (4) director base pay; (5) the percentage of directors who are active CEOs; (6) the percentage of directors with tenure exceeding 15 years; (7) the percentage of directors with more than four public directorships; (8) the percentage of directors over the age of 70; (9) the percentage of female directors; (10) the percentage of directors that failed to meet the board's minimum attendance standards; (11) the percentage of directors who own zero shares in the company; (12) the GIM index; (13) a dummy that equals 1 if the firm has a classified board; and (14) a dummy that equals 1 if the CEO is the chairman.

Log(assets) is the log of total assets. Book leverage is interest-bearing debt divided by the sum of the book value of equity and interest-bearing debt. Firm age is the number of years since the firm first appeared in CRSP. R&D intensity is defined as R&D divided by total assets. FCF / TA, is free cash flow divided by total assets. ROA is return on assets, measured as net income divided by total assets. CEO age is the CEO's age. CEO tenure is the number of years the CEO has been in charge. Year and industry fixed effects are included in every regression.

p-values based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Governance practices 1 through 7

	Board size	**% Outsiders**	**Nr of board meetings**	**Director base pay**	**% Active CEOs**	**% CEOs tenure over 15 yrs**	**% Directors on > 4 boards**
	1	**2**	**3**	**4**	**5**	**6**	**7**
Weighted average governance practices at firms with overlapping directors:							
1. Board size	0.027						
	(0.177)						
2. % Outsiders		0.256					
		*(0.000)****					
3. Nr of board meetings			0.024				
			(0.582)				
4. Director base pay				0.293			
				*(0.000)****			
5. % Active CEOs					0.219		
					*(0.000)****		
6. % CEOs tenure over 15 yrs						0.102	
						(0.226)	
7. % Directors on > 4 boards							1.175
							*(0.000)****
Log(assets)	0.691	-0.007	0.261	4947.629	-0.001	-0.009	0.004
	*(0.000)****	*(-0.002)****	*(0.000)****	*(0.000)****	*(-0.487)*	*(-0.001)****	*(0.012)***
Book leverage	0.252	0.024	0.550	-1020.302	-0.012	-0.045	0.027
	(0.163)	*(0.065)**	*(0.085)**	*(-0.503)*	*(-0.253)*	*(-0.002)****	*(0.001)****
Firm age	0.016	0.001	-0.008	41.245	0.001	0.002	0.000
	*(0.000)****	*(0.000)****	*(-0.052)**	*(0.071)**	*(0.000)****	*(0.000)****	*(0.019)***
R&D intensity	-5.258	0.044	-40.297	15248.613	-0.446	0.254	0.026
	*(-0.001)****	*(0.560)*	*(-0.634)*	*(0.235)*	*(-0.000)****	*(0.005)****	*(0.808)*
FCF / assets	0.090	-0.003	0.046	3671.508	-0.013	0.008	-0.006
	(0.488)	*(-0.743)*	*(0.914)*	*(0.007)****	*(-0.166)*	*(0.360)*	*(-0.380)*
ROA	0.637	-0.004	-4.960	3955.681	-0.035	0.088	-0.031
	*(0.022)***	*(-0.854)*	*(-0.000)****	*(0.140)*	*(-0.082)**	*(0.000)****	*(-0.032)***
CEO age	0.024	0.000	-0.007	153.564	-0.001	0.001	0.000
	*(0.000)****	*(0.640)*	*(-0.478)*	*(0.002)****	*(-0.052)**	*(0.189)*	*(0.695)*
CEO tenure	-0.016	-0.001	-0.065	-305.644	0.000	0.007	0.000
	*(-0.041)***	*(-0.001)****	*(-0.000)****	*(-0.000)****	*(0.721)*	*(0.000)****	*(0.150)*
Observations	7085	7085	4479	6983	7085	7085	7085
Adj. R-squared	0.38	0.15	0.08	0.31	0.14	0.17	0.35

Governance practices 8 through 14

	% Directors over age 70	% Female directors	% Failed directors	% Directors with 0 shares	GIM index	Classified board dummy	CEO = chairman dummy
	8	**9**	**10**	**11**	**12**	**13**	**14**
Weighted average governance practices at firms with overlapping directors:							
8. % Directors over age 70	1.092						
	*(0.000)***						
9. % Female directors		0.697					
		*(0.000)***					
10. % Failed directors			0.150				
			*(0.011)***				
11. % Directors with 0 shares				0.412			
				*(0.000)***			
12. GIM index					0.291		
					*(0.000)***		
13. Classified board dummy						6.518	
						*(0.000)***	
14. CEO = chairman dummy							10.600
							*(0.000)***
Log(assets)	-0.008	0.008	0.000	-0.017	-0.246	0.875	1.099
	*(-0.000)***	*(0.000)***	*(0.591)*	*(-0.000)***	*(-0.000)***	*(0.001)***	*(0.015)***
Book leverage	0.003	0.005	0.002	-0.043	0.599	1.106	1.375
	(0.742)	*(0.550)*	*(0.483)*	*(-0.003)***	*(0.026)***	*(0.667)*	*(0.121)*
Firm age	0.000	0.000	0.000	-0.002	0.023	0.994	1.012
	(0.135)	*(0.351)*	*(0.008)***	*(-0.000)***	*(0.000)***	*(0.057)**	*(0.000)***
R&D / assets	0.049	-0.249	-0.061	-0.015	-0.503	522.655	1322.957
	(0.656)	*(-0.000)***	*(-0.013)***	*(-0.956)*	*(-0.827)*	*(0.171)*	*(0.445)*
FCF / assets	-0.023	0.021	0.001	-0.011	0.058	1.285	0.821
	*(-0.007)***	*(0.000)***	*(0.735)*	*(-0.490)*	*(0.741)*	*(0.232)*	*(0.266)*
ROA	-0.001	0.050	-0.013	-0.192	0.723	1.992	0.755
	(-0.965)	*(0.000)***	*(-0.087)**	*(-0.000)***	*(0.100)*	*(0.113)*	*(0.420)*
CEO age	0.002	-0.001	0.000	-0.002	0.007	1.003	1.050
	*(0.000)***	*(-0.038)***	*(0.175)*	*(-0.000)***	*(0.411)*	*(0.715)*	*(0.000)***
CEO tenure	0.002	0.000	0.000	0.000	-0.019	0.991	1.190
	*(0.000)***	*(0.796)*	*(0.002)***	*(0.398)*	*(-0.032)***	*(0.241)*	*(0.000)***
Observations	7085	7085	7085	7085	5961	5041	7085
Adj. R-squared (Pseudo R-squared in columns 13 and 14)	0.12	0.24	0.02	0.16	0.15	0.04	0.20

Table 3: Robustness: are the results driven by intertemporal persistence in governance practices? *(Restricted years)*

This table shows the results of OLS regressions (columns 1-12) and logistic regressions (columns 13-14) to address whether a firm's corporate governance practices can be explained by the weighted average governance practices at firms with overlapping directors. To ensure that the results are not driven by intertemporal persistence in governance practices, only part of the years are included in the analysis. In Panel A, the years 2003, 2005, and 2007 are included. In Panel B, results are based on the years 2004 and 2007.

The governance measures include: (1) board size measured as the number of directors; (2) the percentage of outsiders, i.e. directors who are not employees of the company; (3) the number of board meetings; (4) director base pay; (5) the percentage of directors who are active CEOs; (6) the percentage of directors with tenure exceeding 15 years; (7) the percentage of directors with more than four public directorships; (8) the percentage of directors over the age of 70; (9) the percentage of female directors; (10) the percentage of directors that failed to meet the board's minimum attendance standards; (11) the percentage of directors who own zero shares in the company; (12) the GIM index; (13) a dummy that equals 1 if the firm has a classified board; and (14) a dummy that equals 1 if the CEO is the chairman.

Every regression includes the following control variables (not shown for brevity). Log(assets) is the log of total assets. Book leverage is interest-bearing debt divided by the sum of the book value of equity and interest-bearing debt. Firm age is the number of years since the firm first appeared in CRSP. R&D intensity is defined as R&D divided by total assets. FCF / TA, is free cash flow divided by total assets. ROA is return on assets, measured as net income divided by total assets. CEO age is the CEO's age. CEO tenure is the number of years the CEO has been in charge. Year and industry fixed effects are included in every regression.

p-values based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

PANEL A: Regression results based on years 2003, 2005 and 2007

Governance practices 1 through 7

	Board size	% Outsiders	Nr of board meetings	Director base pay	% Active CEOs	% CEOs tenure over 15 yrs	% Directors on > 4 boards
	1	2	3	4	5	6	7
Governance gap:							
1. Board size	0.018						
	(0.379)						
2. % Outsiders		0.264					
		*(0.000)***					
3. Nr of board meetings			-0.046				
			(-0.422)				
4. Director base pay				0.322			
				*(0.000)***			
5. % Active CEOs					0.503		
					*(0.000)***		
6. % CEOs tenure over 15 yrs						0.132	
						(0.146)	
7. % Directors on > 4 boards							1.162
							*(0.000)***
Observations	3140	3140	1927	3082	3140	3140	3140
Adj. R-squared	0.37	0.15	0.08	0.31	0.18	0.17	0.39

Governance practices 8 through 14

	% Directors over age 70	% Female directors	% Failed directors	% Directors with 0 shares	GIM index	Classified board dummy	CEO = chairman dummy
	8	9	10	11	12	13	14
Governance gap:							
8. % Directors over age 70	1.091						
	*(0.000)***						
9. % Female directors		0.698					
		*(0.000)***					
10. % Failed directors			0.141				
			*(0.083)**				
11. % Directors with 0 shares				0.481			
				*(0.000)***			
12. GIM index					0.300		
					*(0.000)***		
13. Classified board dummy						6.509	
						*(0.000)***	
14. CEO = chairman dummy							10.515
							*(0.000)***
Observations	3140	3140	3140	3140	2738	2663	3140
Adj. R-squared (Pseudo R-squared in columns 13 and 14)	0.12	0.24	0.01	0.15	0.16	0.05	0.23

PANEL B: Regression results based on years 2004 and 2007

Governance practices 1 through 7

	Board size	% Outsiders	Nr of board meetings	Director base pay	% Active CEOs	% CEOs tenure over 15 yrs	% Directors on > 4 boards
	1	2	3	4	5	6	7
Governance gap:							
1. Board size	0.049						
	*(0.058)**						
2. % Outsiders		0.271					
		*(0.000)****					
3. Nr of board meetings			0.062				
			(0.311)				
4. Director base pay				0.274			
				*(0.000)****			
5. % Active CEOs					0.437		
					*(0.000)****		
6. % CEOs tenure over 15 yrs						0.198	
						*(0.100)**	
7. % Directors on > 4 boards							0.950
							*(0.000)****
Observations	1770	1770	1470	1734	1770	1770	1770
Adj. R-squared	0.36	0.16	0.11	0.30	0.25	0.17	0.32

Governance practices 8 through 14

	% Directors over age 70	% Female directors	% Failed directors	% Directors with 0 shares	GIM index	Classified board dummy	CEO = chairman dummy
	8	9	10	11	12	13	14
Governance gap:							
8. % Directors over age 70	1.191						
	*(0.000)****						
9. % Female directors		0.638					
		*(0.000)****					
10. % Failed directors			0.157				
			(0.173)				
11. % Directors with 0 shares				0.617			
				*(0.000)****			
12. GIM index					0.301		
					*(0.000)****		
13. Classified board dummy						8.092	
						*(0.000)****	
14. CEO = chairman dummy							12.647
							*(0.000)****
Observations	1770	1770	1770	1770	1446	1305	1770
Adj. R-squared (Pseudo R-squared in columns 13 and 14)	0.14	0.23	0.01	0.18	0.16	0.04	0.22

Table 4: A familiarity effect?

This table shows the results of logit regressions to address whether the main results are driven by a familiarity effect in that firms simply select board members from firms with similar governance practices. The probability of being appointed as a director is regressed on the (absolute value of the percentage) governance gap and various other factors that may affect the likelihood of being picked.

The governance gap measures are based on the following governance variables: (1) board size measured as the number of directors; (2) the percentage of outsiders, i.e. directors who are not employees of the company; (3) the number of board meetings; (4) director base pay; (5) the percentage of directors who are active CEOs; (6) the percentage of directors with tenure exceeding 15 years; (7) the percentage of directors with more than four public directorships; (8) the percentage of directors over the age of 70; (9) the percentage of female directors; (10) the percentage of directors that failed to meet the board's minimum attendance standards; (11) the percentage of directors who own zero shares in the company; (12) the GIM index; (13) a dummy that equals 1 if the firm has a classified board; and (14) a dummy that equals 1 if the CEO is the chairman.

Same-industry dummy = 1 if the director already has a directorship in the same industry (based on the 17 Fama-French industry groupings). Similar-size dummy = 1 if the director already has a directorship at a similar-sized firm, where similar size means sales totaling between 50% and 150% of the firm's sales. Geographically-close dummy = 1 if the director already has a directorship at another firm in the same geographic area (within a 100-kilometer radius). Network dummy = 1 if the director served on the board of another firm in the previous year with a current board member of the firm. Firm performance is the average stock price performance at other firms at which the director served on the board in the previous year. Director age is the age of the director. Nr of directorships is the number of boards the director serves on. Year fixed effects are included in every regression.

p-values based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Governance practices 1 through 7

	Prob (Picked)	**Prob (Picked)**	**Prob (Picked)**	**Prob (Picked)**	**Prob (Picked)**	**Prob (Picked)**	**Prob (Picked)**
	1	**2**	**3**	**4**	**5**	**6**	**7**
Absolute value of the % governance gap based on:							
1. Board size	0.555						
	*(0.000)****						
2. % Outsiders		0.683					
		*(0.000)****					
3. Nr of board meetings			0.991				
			(0.853)				
4. Director base pay				0.850			
				*(0.000)****			
5. % Active CEOs					0.952		
					(0.187)		
6. % CEOs tenure over 15 yrs						0.885	
						*(0.017)***	
7. % Directors on > 4 boards							0.813
							*(0.005)****
Same-industry dummy	1.816	1.829	1.883	1.862	1.807	1.778	1.679
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Similar-size dummy	1.303	1.342	1.332	1.294	1.339	1.410	1.280
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Geographically-close dummy	5.290	5.328	5.009	5.193	5.307	5.685	4.599
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Network dummy	14.870	15.037	15.158	15.389	15.197	14.943	12.425
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Firm performance	1.039	1.045	1.175	1.028	1.045	1.044	1.032
	(0.369)	*(0.312)*	*(0.006)****	*(0.547)*	*(0.311)*	*(0.453)*	*(0.589)*
Director age	0.964	0.963	0.960	0.963	0.963	0.963	0.959
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Nr of directorships	1.026	1.022	1.000	1.043	1.032	1.017	1.077
	(0.315)	*(0.385)*	*(0.997)*	*(0.113)*	*(0.216)*	*(0.634)*	*(0.012)*
Observations	3142033	3138525	1702785	2765810	3117015	1835890	1585713
Pseudo R-squared	0.08	0.08	0.07	0.08	0.07	0.08	0.07

Governance practices 8 through 14

	Prob (Picked)	Prob (Picked)	Prob (Picked)	Prob (Picked)	Prob (Picked)	Prob (Picked)	Prob (Picked)
	8	**9**	**10**	**11**	**12**	**13**	**14**
Absolute value of the % governance gap based on:							
8. % Directors over age 70	0.933						
	(0.268)						
9. % Female directors		0.818					
		*(0.007)***					
10. % Failed directors			1.094				
			(0.581)				
11. % Directors with 0 shares				0.948			
				(0.103)			
12. GIM index					0.798		
					*(0.010)***		
13. Classified board dummy						0.849	
						*(0.015)***	
14. CEO = chairman dummy							0.863
							*(0.030)***
Same-industry dummy	1.810	1.672	1.834	1.947	1.788	1.882	1.662
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Similar-size dummy	1.302	1.407	1.450	1.198	1.278	1.375	1.287
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Geographically-close dummy	5.248	4.972	5.485	5.598	5.220	5.624	4.997
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Network dummy	17.675	13.385	13.521	14.023	15.261	15.638	14.532
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Firm performance	1.067	1.017	1.079	1.087	1.025	1.027	1.102
	(0.302)	*(0.753)*	*(0.476)*	*(0.167)*	*(0.624)*	*(0.642)*	*(0.071)**
Director age	0.967	0.960	0.956	0.965	0.960	0.963	0.962
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****
Nr of directorships	1.004	1.049	0.994	0.965	1.025	1.023	1.047
	(0.912)	*(0.091)*	*(0.934)*	*(0.341)*	*(0.355)*	*(0.479)*	*(0.137)*
Observations	1483909	2065703	405999	1742403	2540803	1877847	1844334
Pseudo R-squared	0.07	0.08	0.08	0.07	0.08	0.08	0.07

Table 5: An influence effect?

This table shows the results of OLS regressions to address whether the main results may be driven by an influence effect. The influence effect says that a firm may choose directors for a variety of reasons, some of which may be unrelated to familiarity. These directors, who may serve on boards of firms with different governance characteristics, may influence the firm's governance practices in the direction of the other boards they serve at. The change in governance is regressed on the (percentage) governance gap and other factors that may affect a change in governance. The governance gap is the difference between the weighted average governance practice at firms with overlapping directors minus the firm's own governance practice.

The governance gap measures are based on the following governance variables: (1) board size measured as the number of directors; (2) the percentage of outsiders, i.e. directors who are not employees of the company; (3) the number of board meetings; (4) director base pay; (5) the percentage of directors who are active CEOs; (6) the percentage of directors with tenure exceeding 15 years; (7) the percentage of directors with more than four public directorships; (8) the percentage of directors over the age of 70; (9) the percentage of female directors; (10) the percentage of directors that failed to meet the board's minimum attendance standards; (11) the percentage of directors who own zero shares in the company; (12) the GIM index; (13) a dummy that equals 1 if the firm has a classified board; and (14) a dummy that equals 1 if the CEO is the chairman.

Every regression includes the following control variables (not shown for brevity). Log(assets) is the log of total assets. Book leverage is interest-bearing debt divided by the sum of the book value of equity and interest-bearing debt. Firm age is the number of years since the firm first appeared in CRSP. R&D intensity is defined as R&D divided by total assets. FCF / TA, is free cash flow divided by total assets. ROA is return on assets, measured as net income divided by total assets. CEO age is the CEO's age. CEO tenure is the number of years the CEO has been in charge. Year and industry fixed effects are included in every regression.

p-values based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Governance practices 1 through 7

	Change in:						
	Board size	**% Outsiders**	**Nr of board meetings**	**Director base pay**	**% Active CEOs**	**% CEOs tenure over 15 yrs**	**% Directors on > 4 boards**
	1	**2**	**3**	**4**	**5**	**6**	**7**
% Governance gap based on:							
1. Board size	0.138						
	*(0.000)****						
2. % Outsiders		3.69					
		*(0.000)****					
3. Nr of board meetings			-0.145				
			*(-0.000)****				
4. Director base pay				0.000			
				*(0.000)****			
5. % Active CEOs					7.981		
					*(0.000)****		
6. % CEOs tenure over 15 yrs						2.051	
						*(0.000)****	
7. % Directors on > 4 boards							6.482
							*(0.000)****
Observations	7085	7081	4471	6253	7035	4068	3924
Adj. R-squared	0.108	0.157	0.036	0.046	0.443	0.025	0.237

Governance practices 8 through 14

	Change in:						
	% Directors over age 70	**% Female directors**	**% Failed directors**	**% Directors with 0 shares**	**GIM index**	**Classified board dummy**	**CEO = chairman dummy**
	8	**9**	**10**	**11**	**12**	**13**	**14**
% Governance gap based on:							
8. % Directors over age 70	2.386						
	*(0.000)****						
9. % Female directors		4.980					
		*(0.000)****					
10. % Failed directors			10.265				
			*(0.000)****				
11. % Directors with 0 shares				3.614			
				*(0.000)****			
12. GIM index					0.049		
					*(0.000)****		
13. Classified board dummy						0.189	
						*(0.031)***	
14. CEO = chairman dummy							0.062
							(0.629)
Observations	3225	4683	869	4001	5961	3084	4208
Adj. R-squared	0.015	0.026	0.069	0.04	0.089	0.03	0.13