

Why do CEOs reciprocally sit on each other's boards?

Eliezer M. Fich^{a,*}, Lawrence J. White^b

^a *LeBow College of Business, Drexel University, Philadelphia, PA 19104-2875, USA*

^b *Stern School of Business, New York University, New York, NY 10012-1126, USA*

Received 25 April 2003; accepted 21 June 2003

Available online 4 December 2003

Abstract

The reciprocal interlocking of chief executive officers is a non-trivial phenomenon: among large companies in 1991, about one company in seven was in a relationship whereby the CEO of one company sat on a second company's board and the second company's CEO sat on the first company's board. We develop hypotheses to distinguish whether this practice furthers the interests of shareholders or the private interests of the CEOs. Using a sample of large companies, we employ a probit model to test these hypotheses. Our empirical findings are that these reciprocal CEO interlocks primarily benefit the CEOs rather than their shareholders.

© 2005 Elsevier B.V. All rights reserved.

JEL classification: G34; J33; K22

Keywords: Interlocking directorates; CEOs; Board of directors; Corporate governance; Stock options

1. Introduction

The practice of interlocking directorates¹ has been a subject of debate among corporate governance activists and academics for many decades. Although Section 8 of the Clayton Act of 1914 prohibited interlocking directorates between competing firms, it did not prohibit board interlocks in general. The proxy disclosure rules promulgated by the Securities and Exchange Commission (SEC) in 1992 require firms to disclose director interlocks where matters of executive compensation are concerned. The National Association of Corporate

* Corresponding author. Tel.: +1-215-895-2304; fax: +1-215-985-2955.

E-mail addresses: efich@drexel.edu (E.M. Fich), lwhite@stern.nyu.edu (L.J. White).

¹ An interlocking directorate is defined as the phenomenon whereby a person is on the board of directors of two or more corporations, thereby providing a link or interlock between them.

Directors Blue Ribbon Commission guidelines (NACD, 1996) advocate the avoidance of interlocking directorates. In practice, interlocking directorates occur regularly across industries and have often been favorably praised, since they mobilize a scarce resource: the expertise of senior managers and directors of large corporations.

Recent studies in financial economics have devoted attention to the possible implications of interlocking directorates.² However, none have considered the factors that determine why firms might reciprocally share the services of their most senior executives—specifically, their chief executive officers (CEOs)—through mutual board membership. We note that these types of reciprocal interlocks are a non-trivial phenomenon: Among large companies in 1991, one firm in seven was involved in this type of reciprocal interlock. Since there is considerable academic and policy interest in board composition and interlocking directorates generally, the development of new information about reciprocal CEO interlocks, which involve the corporate executives with the greatest authority and marginal productivity (Smith and Watts, 1992) as well as the potential for substantially influencing board activities, represents a significant expansion of the knowledge base in this field.

Our objective is to examine the factors that explain this reciprocal interlocking of CEOs. These interlocks may arise because they are in the interests of the companies' shareholders. Or they may occur because they are in the CEOs' private interests. A reciprocal CEO interlock occurs when the CEO of firm *i* serves as a director of firm *j*, and the CEO of firm *j* serves as a director of firm *i*. Our empirical results indicate that the reciprocal interlocking of CEOs is more likely to occur in firms where the CEO is on the board's nominating committee, where the CEO earns a lower fraction of his compensation through stock options, when the board's directors have larger numbers of outside directorships, when the board has fewer meetings per year, and when the CEO has spent more years in the employ of his company. However, the interaction of the CEO's presence on the nominating committee and his options compensation has a negative influence on the probability of a reciprocal CEO interlock. Our findings also indicate that the probability of a reciprocal CEO interlock increases as the company's Tobin's Q increases and if the company is *not* a commercial bank. Interestingly, we did not find a significant link between the probability of a reciprocal CEO interlock and a strategic motive (as would be evidenced by a reciprocal interlock with a CEO whose company was in a supplier/customer relationship) or where the CEO has a larger ownership position. The overall weight of these findings points in the direction that these reciprocal CEO interlocks primarily benefit the CEOs themselves and not their shareholder-owners.

These results contribute to the corporate governance literature by identifying some of the determinants of a significant category of board interlocks—specifically, those involving reciprocal CEO interlocks—and they advance the general understanding of the composition of corporate boards and the outside-the-firm decisions of CEOs. In addition, our results shed some direct and indirect light on the implications of reciprocal CEO interlocks for shareholder wealth.

² See, for example, Hallock (1997) and Core et al. (1999).

Our paper proceeds as follows: The next section reviews the prior academic literature studying interlocking directorates. Our theories and hypotheses are contained in Section 3. Section 4 describes the sample selection and the data used in this study. Empirical analyses and results are the subject of Section 5. In Section 6 we provide a summary and conclusions of this study.

2. Literature review

A simple board interlock occurs when a person serves on the board of more than one company. Mutually interlocking relationships are defined to occur when at least two directors together serve on the boards of two different corporations.³ When a sense of direction to this mutuality can be identified—as when, for example, the CEO of one company is serving on the board of a second company, while the CEO of that second company is also serving on the board of the first—we define this as reciprocal interlocking.

One of the first academic studies in the United States to consider simple board interlocks is Dooley (1969). Dooley finds that less solvent firms are likely to be interlocked with banks. Later studies also report that firms with high debt-to-equity ratios (Pfeffer, 1972) or organizations with an increased demand for capital (Mizruchi and Stearns, 1988) have a higher tendency to interlock their boards. Two possible interpretations can be drawn from these studies. On the one hand, it is possible that financially distressed firms seek to add bank officers to their boards in order to receive favorable consideration from the lending institution. On the other hand, a bank could demand to have one or more of its officers as a board director in order to monitor the firm's investment prospects more closely. However, Kroszner and Strahan (1999) find that banks tend to avoid having an officer sit on the board of a company to which they have lent and that may become financially troubled, because of concerns about subsequent claims of conflict of interest. Also, Kracaw and Zenner (1998) examine the stock price reactions to bank loan announcements when the bank and the borrower have interlocking directorates. They find significant negative returns to bank loan announcements when a bank officer serves on the borrower's board. They note that the negative reactions are less prevalent among larger firms.

Behaviorists argue that companies use board-interlocks as a mechanism to improve contracting relationships (Schoorman et al., 1981). Some papers in this literature focus on the reconstitution of broken or disrupted interlock ties between firms (e.g., Palmer, 1983) or in the assessment of the importance of interlocks in reducing the information uncertainties created by resource dependencies between firms (Pettigrew, 1992).

In addition to the organizational behavior literature, a number of recent studies in financial economics are concerned with interlocking relationships between firms. For instance, a study of Australian firms reveals that company and individual director interlocks as well as board size have decreased since the mid 1980s (Roy et al., 1994). Booth and Deli (1996) report that when employees (not necessarily CEOs) of two different companies sit on each other's boards, the CEOs hold more outside directorships. Hallock (1997) finds that

³ This definition is used in Fich (2000) and Fich and White (2003).

CEOs serving in employee interlocked firms earn higher salaries than they otherwise would. As is true of Hallock's (1997) study, Core et al. (1999) do not find any association between director interlocks and total compensation. In contrast, Fich and White (2003) report positive associations between the number of interlocking directorships and the compensation that CEOs derive from executive stock options.

Cotter et al. (1997) study director interlocks between bidder and target firms. Their results suggest that the presence of director interlocks reduces the gains to target shareholders and decreases the likelihood that a target firm receives multiple bids. They indicate that interlocking directorships can affect target shareholder gains in at least two ways. First, interlocked directors have fiduciary obligations to the shareholders of both the target and the bidder, thus creating a conflict of interest. Second, such directors can ameliorate the information asymmetry between the interlocked bidder and target (but not necessarily with respect to other potential bidders) and may therefore dissuade other likely bidders from bidding. Fich and White (2003) report a negative association between the number of interlocking directorships and the probability of CEO turnover. These results suggest that interlocking directorates can create abuse if they endanger the independence of interlocked firms, decrease competition in the market for corporate control, exacerbate agency problems, or violate directors' fiduciary obligations as the agents of stockholders.

Results presented by Fich (2000) indicate the absence of a relationship between the number of CEO interlocks, or any employee interlock, and firm value as measured by Tobin's Q. These results suggest that interlocking relationships do not enhance the value of the firm and cast doubt on the extent to which firms use these relationships to improve their strategic objectives.

Recent studies provide some insight for understanding the reasons why CEOs accept outside directorship positions. Vancil (1987) maintains that as CEOs delegate authority to their likely successors, they free themselves to hold director positions with other firms. Booth and Deli (1996) argue that outside directorships do not represent unchecked perquisite consumption by CEOs. They find that CEOs of firms with growth opportunities hold fewer outside directorships and that CEOs are likely to hold more outside director positions as they transfer decision rights to their ventual successor. *Their research does not provide potential reasons for firms to interlock their CEOs.*

All of these studies suggest that interlocking relationships between the boards of different companies warrant further scrutiny. *In this study we attempt to explain why CEOs of different firms reciprocally interlock their boards by serving as directors on each other's boards.*

3. Theories and hypotheses⁴

Two over-arching questions pervade the literature that describes and tests hypotheses about the behavior of the senior managements of corporations: Are

⁴ As will be clear in the discussions of the data and results in Sections 4 and 5, in addition to the primary hypotheses advanced in the text below, we also include in our empirical testing a number of control variables, such as the size of the firm, the size of the board, characteristics of the CEO, etc.

their actions consistent with the best interests of the owners/shareholders of their companies? Or are their actions more in consonance with the senior managers' private interests? Our hypotheses concerning reciprocal CEO interlocks will be in this tradition.

Further, the problem of determining the important influences on whether two CEOs sit on each other's board of directors is one of "double matching": Company i must want the CEO of company j to serve on its board, and the CEO of j must want to serve on that board; and company j must want the CEO of company i to serve on its board, and the CEO of i must want to serve on that board. Thus, a strong element of a reciprocal relationship is likely to enter this dual arrangement. Though we observe the presence or absence of reciprocal CEO interlocks from the perspective of individual companies, we will attempt wherever possible to formulate our hypotheses with this reciprocity in mind. Equivalently, we will try to distinguish the hypotheses that involve two-sided or *direct* determinants of the *reciprocal* arrangements (i.e., those that operate to attract CEO $_i$ to CEO $_j$'s board and to attract CEO $_j$ to CEO $_i$'s board) from those that involve one-sided or *indirect* determinants (i.e., those that operate just to make a board more attractive to other CEOs or to cause a CEO to seek outside board memberships).

3.1. CEO membership on the board's nominating committee

A CEO generally wants allies on his board. A reciprocal interlock with another CEO provides a means of achieving greater loyalty, since both CEOs vote on each other's board and thus are "hostage" to each other. An important way for a CEO to increase the likelihood of this reciprocating arrangement with another CEO is to be on his own board's nominating committee.

Where the CEO is on the nominating committee and thus is influential in the selection of board members, those board members are more likely to be loyal to the CEO and his interests than to the larger interests of the company's shareholders. Indeed, [Shivdasani and Yermack \(1999\)](#) show that the quality of director appointments diminishes when the CEO is involved in the appointment of new directors. They show that market reactions are significantly lower when the CEO is on the nominating committee (and thus involved in appointments) than when the CEO is not. This tendency to cronyism is likely to apply to reciprocal CEO arrangements as well. Thus, we interpret a positive relationship as a likely indicator that the CEO is pursuing his own interests.

Accordingly, we conjecture that reciprocal CEO interlocks will be more likely when the CEO is on the board's nominating committee, leading to

H1. The probability of a reciprocal CEO interlock increases in a company where the CEO is on his board's nominating committee.

This variable is captured by a 1,0 dummy variable indicating whether the CEO is or is not on the nominating committee. This hypothesis, by focusing on the potential for cronyism, captures a direct determinant of the reciprocal relationship, as described above.

3.2. CEO remuneration structure

Berle and Means (1932) suggest that managerial ownership in large companies is too small to make managers interested in profit maximization. Jackson and Lazear (1991) and others report the benefits of deferred compensation, usually in the form of stock options for retaining executives. They argue that stock-based compensation aids in the retention of executives because its payoffs are often deferred for a number of years into the future, requiring managers to stay with the firm and to make decisions that enhance the firm's long-run value in order to be able to receive payment. Hagerty et al. (1991) show that stock options can be especially effective at inducing far-sighted managerial behavior. Milgrom and Roberts (1992) argue that since the job performed by top management has a greater impact on overall firm performance, top management's potential responsiveness to incentives is greater. Baker et al. (1988) assert that managers respond to the absence of incentives by taking "uneconomic actions."⁵

All of these studies suggest that compensation contracts that include appropriate levels of deferred performance contingent pay should be effective in retaining highly qualified managers with the firms. The most utilized form of performance-contingent compensation for senior management is the executive stock option. Indeed, Yermack (1995) indicates that the lion's share of the CEO's compensation package results from variability in stock option awards. And Mehran and Yermack (1997) find an inverse and significant association between the probability of CEO turnover and the dollar value of stock option compensation that the CEO receives relative to his other compensation (i.e., basic salary and bonus).

Two characteristics of executive stock options are (1) that they augment base salaries with a call option and (2) executives are contractually restricted from exercising stock options for a specific period of time after the grant.

The first characteristic serves a dual purpose. On the one hand, the call option implies that managers' total compensation pattern is aligned with the compensation of shareholders. On the other hand, in order to augment the value of the call option managers should stay focused on their work with the firm and are less likely to look elsewhere for outside directorships. The second stock option characteristic also creates an important mechanism to keep valuable managers with the firm, since executives will have to wait before they are contractually allowed to exercise the options and cash in. Jensen and Murphy (1990) report the lack of strong pay-for-performance incentives for CEOs. If CEOs are not motivated enough to increase their firm performance, they may seek additional compensation opportunities elsewhere.

Equivalently, in the context of our reciprocity discussion, if a CEO is not compensated for performance, he may be interested in a reciprocal board appointment with another CEO, so as to promote remuneration reciprocity. If the CEO is remunerated for performance, then reciprocity may be less important.

⁵ However, the corporate governance revelations of 2001–2002 have also indicated that improperly structured stock options may cause corporate executives too readily to yield to the temptations of accounting manipulations.

This discussion suggests that CEOs who receive a significant amount of their pay from firm performance-contingent instruments would be less likely to seek or accept reciprocal interlocks with the chief executives of other firms.⁶ These conjectures lead to:

H2. The probability of a reciprocal CEO interlock decreases in a company where the CEO derives large fractions of his total remuneration from stock options.

The key explanatory variable that we use to test H2 is the fraction of the CEO's total compensation that comes from executive stock options. The numerator has the value of the new stock options the CEO receives when granted during the year; the denominator encompasses the total compensation of the CEO, including his regular salary, bonus, fringe benefits, and the value of the options.

The value of new stock options when granted during 1991 is computed assuming that the prevailing stock price equals the option's exercise price⁷ and is calculated using the Black and Scholes (1973) methodology, adjusted for dividend payouts (Merton, 1973), which is:

$$\text{optval} = N[Pe^{-dT}F(Z) - Ee^{-rT}F(Z - s(T)^{1/2})]$$

$$Z = [\ln(P/E) + T(r - d + s^2/2)]/[s(T)^{1/2}]$$

where: N =number of shares represented by the stock option award, P =price of underlying stock at the end of the year, E =average exercise price of the stock options granted, d =log (1+dividend rate/price at the end of the year), r =log (1+year-end interest rate), F =cumulative probability function (normal distribution), s =expected stock return volatility over life of option, T =time to expiration.

3.3. The interaction of the CEO's remuneration structure with his membership on the nominating committee

If the CEO's compensation is more heavily weighted toward performance-related components, then he is less likely to pursue cronyism on his board. In that event, his presence on the nominating committee need not be a means of assuring the presence of appointees that have greater loyalty to him. Accordingly, the interaction of the remuneration structure variable with the CEO's presence on the nominating committee should have a negative effect on the presence of CEO interlocks, leading to

H3. The probability of a reciprocal CEO interlock decreases in a firm where the CEO derives a large fraction of his total remuneration from stock options and he is on the board's nominating committee.

⁶ Because the stock options affect only one CEO, this hypothesis involves a one-sided or indirect determinant of the reciprocity relationship.

⁷ In the calculations it is assumed that the underlying stock price at the time of the award equals the exercise price of options, because almost all firms set the exercise price equal to the current stock price (see, e.g., Smith and Zimmerman, 1976; Yermack, 1995). The average yield on 10-year U.S. Treasury bonds during the last month of the year is used for the interest rate. Finally, a maturity time of 10 years for the options is assumed, since this is the duration for the majority of CEO awards and the limit imposed by the IRS for options to receive favorable tax treatment (see Matsunaga, 1995).

We test H3 by interacting the compensation structure variable with the dummy variable that indicates the CEO's presence on the nominating committee. This interacting hypothesis involves a two-sided or direct determinant of the reciprocal relationship.⁸

3.4. Equity ownership

Academics have long noted that low levels of managerial stock ownership encourage agency problems. As argued by Berle and Means (1932) as well as by Jensen and Meckling (1976), when managers own little equity ownership and stockholders are diffuse, managers may deviate from stockholder value maximization and instead embrace self-gain policies. Significant amounts of equity ownership have long been identified as an effective mechanism to align the incentives of managers with those of their shareholders and thus entice managers to embrace value-maximizing projects for the benefit of shareholders. An outside directorship may provide a learning experience for a CEO, which can benefit his "home" company; or it may represent time and effort that he undertakes because of personal gain and that divert him from his primary responsibilities.⁹

In the context of reciprocal CEO interlocks, a CEO with a larger ownership position benefits more from the improved performance of his firm and thus would be less inclined to seek a reciprocal interlock with another CEO so as to pursue pay reciprocity (consistent with our H2). Accordingly, we are led to the following hypothesis:

H4. The probability of a reciprocal CEO interlock decreases with larger amounts of equity ownership by the CEO.

To test this hypothesis we use the CEO's fractional ownership of the firm as an independent variable in our econometric analysis. The numerator of this variable is the number of shares owned by the CEO and or his/her immediate family. The denominator is the total number of the firm's shares that are outstanding. Again, this hypothesis involves a one-sided or indirect determinant of the reciprocal relationship.

3.5. Strategic interactions

Relationships between firms may evolve in order to reduce contracting costs between two parties. Firms may interlock corporate boards to improve or solidify their contracting relationships. For instance, a firm may want to have a customer on their board and/or to place one of its executives on the customer's board. If the firm is very dependent on the particular contracting relation that it has with the other party, it may wish to have its CEO as a member on that other firm's board. In addition to the possible strategic

⁸ We thank the referee for suggesting this hypothesis and test.

⁹ Bacon and Brown (1974) suggest a number of reasons why a CEO might join other boards. Booth and Deli (1996) directly test hypotheses concerning the numbers of outside directorships held by CEOs.

advantage a firm may acquire by a board interlock, Booth and Deli (1996) argue that asymmetry of information is reduced for the buyer (supplier) when she is a member of the supplier's (buyer's) board. Since any customer–supplier relationship is (by definition) two-sided, a reciprocal CEO interlock will strengthen any strategic advantages that can be gained from these closer ties.

These assertions lead us to identify as an empirically testable question the use of interlocking relationships as a tool for enhancing the strategic objectives of firms and thus to

H5. The probability of a reciprocal CEO interlock increases if the two CEOs' companies are in a customer–supplier relationship with each other.

To test this “strategic objective” hypothesis we construct a 1,0 dummy variable to indicate whether an outside CEO on the board is a “gray” director (i.e., is the CEO of a customer or supplier firm). This hypothesis involves a two-sided or direct determinant of the reciprocal relationship.

3.6. Board reputation

Fama (1980) views the board of directors as an important governance mechanism, arguing that the directors' concerns for their own reputation in the director labor market causes them to be effective monitors.¹⁰ Mace (1986) suggests that directorships can be a source of prestige and business contacts, which may induce board members to seek outside directorships. However, if there is an efficiently functioning market for managerial human capital, only the most experienced and effective directors would be invited to serve as directors on other boards.

Directors who have reputations as good monitors might be sought for service on many boards, and some studies have therefore used the number of additional board appointments as a measure of a director's quality.¹¹ For these reasons boards whose members have larger numbers of other director obligations are likely to be perceived as being of high quality. This reputation for quality may extend to the firm's CEO, who has succeeded in assembling and presiding over the high-quality board. If this is the case, then CEOs from companies with highly reputable boards would be sought by other companies to serve as directors on their boards. Further, the CEOs of these other firms might also want to serve as directors on the highly reputable boards, either for personal reasons (e.g., to build personal prestige, develop contacts, etc.) or to enhance their productivity as CEOs of their “home” company. However, these large numbers of obligations may instead indicate that the board has insufficient time to provide the necessary oversight for the CEO's activities.

¹⁰ However, if directors believe that a reputation for being “soft” in their monitoring of management will attract some CEOs to seek them as directors, then the reputation effects may be perverse. Other mechanisms, such as equity-based pay, must be in place to encourage directors to fulfill their fiduciary responsibility and act in the best interests of the stockholders.

¹¹ Evidence presented by Kaplan and Reishus (1990), Shivdasani (1993), and others supports the view that the number of directorships may serve as an indicator of director reputation.

These concepts lead to:

H6. The probability of a reciprocal CEO interlock increases in a firm with a highly reputable board.

In line with previous studies, we use the total number of outside board obligations (directorships) of a given board as a proxy for the board's (or its directors') reputation. This hypothesis involves a one-sided or indirect determinant of the reciprocal relationship.

3.7. *Board activity*

The board of directors of a major corporation should meet regularly in order to monitor and discuss the various activities of the firm. Vafeas (1999) finds that increasing board meeting activity sends a negative signal to the market: Firms whose boards meet more frequently are less valued by the market. Lipton and Lorsch (1992) maintain that the most widely shared problem that directors confront is a lack of time to carry out their duties. Shivdasani and Yermack (1999) argue that the benefits of outside directorship levels could be non-linear, declining for the highest directorship levels as busy directors might have less available time to attend other board meetings and monitor properly the activities of other firms.

These studies suggest that increasing board activity may dissuade CEOs from seeking reciprocal interlocks with their counterparts whose companies have active boards. This lack of interest might arise because increasing board activity could be a signal of bad news for the firm (Jensen, 1993) or simply because the directors are expected to monitor aggressively the activities of the firm. In addition, if a CEO's "home" board is more active (as evidenced by more meetings), that CEO may have less free time and therefore be less inclined (e.g., because of less free time) to seek directorships on other boards. These arguments lead us to:

H7. The probability of a reciprocal CEO interlock decreases in a firm with greater board meeting activity.

Board meeting activity is measured as the actual number of board meetings per year that firms report in their proxy statements. This variable includes all meetings of the board of directors during the fiscal year, including regular and special meetings, but not telephone meetings or action by written consent. Since this hypothesis affects the attractiveness of a company to another CEO, as well as the company's own CEO's availability to serve elsewhere, it is a two-sided or direct determinant of the reciprocal relationship.

3.8. *Tenure with the company*

The longer that a CEO is with a company, especially as a senior manager, the greater will be the opportunities that he will have to meet senior managers (and potential or actual CEOs) of other large firms and (through natural selection) the more likely is he to gain a favorable reputation, for himself and for his company. Both effects of longevity would encourage the formation of reciprocal CEO interlocks. Accordingly,

H8. The probability of a reciprocal interlock increases in a firm where the CEO has had a longer tenure with the company.

Tenure with the company is measured as the total number of years since the individual joined the company in any capacity. This hypothesis involves a one-sided or indirect determinant of the reciprocal relationship.

3.9. Control variables

In addition to our eight primary hypotheses involving the direct and indirect determinants of the reciprocal relationship, we also implicitly test a number of lesser hypotheses by including control variables in our regressions, which involve variables encompassing the firm's characteristics (e.g., the firm's total assets, Tobin's Q, whether the firm is a bank), the board's characteristics (e.g., the number of CEOs on the board,¹² the size of the board, board compensation), and the CEO's characteristics (e.g., the CEO's age and tenure as CEO).

4. Sample selection, data description, and summary statistics

The estimations reported below rely on our examination of a data set that provides board composition, compensation, and other company information for firms during the 1991 proxy season.¹³ The data set includes information on board and director characteristics, firm performance, and other company attributes for all the companies in the set.

To qualify for inclusion in the sample, a firm is required to rank among *Forbes* magazine's largest 500 U.S. companies in any of the categories of total assets, market capitalization, sales, or net income.¹⁴ For each firm, compensation data were collected and arrayed from the corporation's SEC proxy, 10-K, and 8-K filings. Data on board and ownership structure and operational and stock market performance were also collected and classified for all companies in the sample. Further, for each of the firms in the sample, data on their board composition was gathered and organized. Each director is assigned a classification according to his/her principal occupation. Full-time employees of the company are designated as inside directors. Those individuals who are closely associated with the firm—for example those who are relatives of corporate officers, lawyers, consultants, or those who

¹² The presence of another company's CEO on a company's board already provides the first link of a potential reciprocal CEO interlock. Further, that CEO's presence may encourage reciprocation, for a number of potential reasons: First, the reciprocal interlock may strengthen any strategic links between the two companies. Second, the two individuals may recognize the opportunities for mutual support on each other's board (i.e., mutual "back scratching"). Third, the two may simply come to appreciate and be comfortable with each other.

¹³ We wish to thank David Yermack and Kevin Hallock for graciously sharing their data with us.

¹⁴ There were 790 companies in total in the *Forbes* "500" list for 1991. The *Forbes* 500 data set has been used as the source of firms for the investigation of a number of other corporate governance questions; see, for example, Murphy (1985), Murphy and Zimmerman (1993), Yermack (1995), Hallock (1997), and Vafeas (1999). As a partial test for large firm bias, we split the sample in half by size of firm, and re-ran the basic regressions of Section 5 using the two subsamples of larger and smaller firms. The same results emerged for the two subsamples as is reported for our overall sample, and an *F*-test indicated the absence of a significant difference between the two sub-sample estimations.

Table 1
Sample statistics

Variable	Mean	Median	Standard deviation
<i>CEO Characteristics</i>			
CEO's salary and bonus (in thousands of dollars)	992.74	824	720.59
CEO's other compensation	291.86	46	672.21
Value of the CEO's options when granted (in thousands of dollars)	551.63	142	1380.82
Fraction of the CEO's compensation coming from stock options	0.21	0.0013	0.23
Fractional ownership of the CEO in the firm (% of outstanding shares)	0.02	0	0.06
Age of the CEO (years)	56.56	58	6.42
CEO tenure as CEO (years)	8.44	6	7.89
CEO tenure in the firm (years)	24.12	26	12.13
CEO as founder: 1 if the CEO is a member of the founding family, 0 otherwise	0.12	0	0.33
<i>BOARD characteristics</i>			
Board size (number of directors)	12.88	12	3.72
Number of inside directors	3.78	3	2.09
Number of outside directors	7.88	8	3.54
Number of gray directors	1.23	1	1.43
Number of directors who are CEOs of other firms	2.14	2	1.88
Number of board meetings during the fiscal year	8.21	8	3.20
Board reputation (number of outside directorships)	10.43	8	8.78
Number of reciprocal CEO interlocks	0.13	0	0.33
Number of reciprocal company interlocks	0.34	0	0.77
Director's retainer fee (in dollars)	20,466.56	20,000	9,356.62
Nominating committees with CEO as a member	0.34	0	0.47
<i>COMPANY characteristics</i>			
Firm size (natural log of assets)	8.49	8.23	1.15
Return on assets	0.10	0.09	0.08
Tobin's Q	1.09	1.00	0.61
Bank (1,0) indicator	0.13	0	0.33

The sample consists of 576 annual observations for 1991. A firm is included in the sample if *Forbes* ranked it as one of the 500 largest U.S. public companies during the year on any of four criteria: total assets, market capitalization, sales, or net income. A reciprocal CEO interlock occurs when the CEO of firm *i* serves as a director of firm *j* and the CEO of firm *j* serves as a director of firm *i*. A reciprocal company interlock occurs when any current or retired employee from firm *i* (including the CEO) sits on firm *j*'s board and any current or retired employee from firm *j* (including the CEO) sits on firm *i*'s board. Board size represents the number of board directors, as listed in the proxy statement as of the annual meeting date during the fiscal year. Inside directors are those who are current or former officers of each firm. Gray directors are those who are relatives of corporate officers, or those who have a substantial business relationship with the firm, either personally or through their principal employers. Outside directors are those who have neither inside nor gray status. Director fees include annual retainers and fees paid for regular and special board meetings during the fiscal year. The number of board meetings per year reports meetings of the board of directors during the fiscal year, including regular and special meetings, but not telephone meetings or actions by written consent. The value of stock options granted consists of new stock options (including stock appreciation rights) granted during the year, adjusted for stock splits calculated using the [Black and Scholes \(1973\)](#) formula. The CEO-from-founding-family dummy variable equals 1 if the CEO is a member of the company's founding family or if the CEO is a member of a family that acquired control of the firm. Tobin's Q is the market value of assets divided by the replacement value of the assets. The bank (1,0) indicator is a variable that takes the value of one if the company is a bank and takes the value of zero otherwise. Board reputation is measured by the number of outside directorships held by the company's board members.

Table 2
Incidence of reciprocal CEO interlocks

CEO Interlock	Frequency	Percent
0	506	87.85
1	66	11.46
2	4	0.69

have substantial business relationships with the company—are designated as “gray” directors. Outside directors are those who do not have either inside or gray status.

The data set includes the name of the firm for which he/she serves as director, full name and occupation, principal employer, and whether he or she is retired. The data cover 9804 director seats held by 7519 individuals. There are fewer individuals than seats since some directors are members of more than one board. When necessary the data from annual reports and proxy statements were supplemented with information from the Million Dollar Directory, Standard & Poor’s Register of Corporations, the Directory of Corporate Affiliations, Who’s Who in Finance and Industry, the Lexis–Nexis System, and Laser Disclosure.¹⁵

The final data set analyzed consists of the 576 firms for the 1991 proxy season for which complete data could be gathered from these sources, supplemented by operational data gathered from COMPUSTAT and stock market performance data obtained from the Center for Research on Securities Prices (CRSP).

We present some sample descriptive statistics in Table 1. These data encompass CEO, board, and company attributes. The mean board size of 12.88 in our sample is comparable to the board sizes of 12.62 reported by Booth and Deli (1996) for 1989–1990 and 12.30 reported by Klein (1998) for 1992–1993 data. The mean tenure of a CEO as CEO reported in our Table 1 (8.44) is similar to the CEO tenure (8.4) reported by Booth and Deli (1996). And the mean number of board meetings (8.21) reported in Table 1 is comparable to the annual number of board meetings (7.45) reported by Vafeas (1999) for 1990–1994.

Table 2 presents statistics on the incidence of reciprocal CEO interlocks in our sample. Seventy firms, or 12.15% of the firms in the sample, have at least one reciprocal CEO interlock relationship.¹⁶ Of these 70 firms, almost all (66 firms) have only one reciprocal CEO interlock.

5. Probit analyses and results

For all of our analyses, our unit of observation is a company (in 1991), and its CEO, board, and company characteristics are the relevant variables.

¹⁵ We wish to thank April Klein for graciously sharing her nominating committee data with us, which we supplemented with our own data gathering to increase the sample to 576.

¹⁶ The original sample for this study consisted of 610 firms, of which 87 (one in seven) had at least one reciprocal CEO interlock. The collection of the data that would allow the estimation of the probit equations of Table 3 required the elimination of some companies where data were unavailable, leading to a final sample of 576, of which 70 (one in eight) had at least one interlock.

5.1. The specific model

To test our hypotheses we construct an indicator variable that takes the value of one if a company is part of at least one reciprocal CEO interlock and the value of zero otherwise.¹⁷ We use this (1,0) indicator variable as the dependent variable in the estimation of the following probit model:

Probability (occurrence of reciprocal CEO interlock) = f (CEO on the nominating committee; fraction of the CEO's pay coming from stock options; the interaction of the nominating committee position and the fraction of option-based pay; the fractional equity ownership of the CEO in the firm; strategic objectives indicator; board reputation, number of board meetings; CEO tenure with the firm; Tobin's Q; the number of CEO-directors on the board; and other [control] variables).

In addition, to account for industry effects we include as independent variables a set of (1,0) dummy variables representing the primary two-digit SIC industry of each firm.¹⁸

5.2. Empirical results

The results of our probit regressions are presented in Table 3, in terms of the marginal effects of a one unit change in each of the independent variables.¹⁹ The first column presents the probit regression results without the interaction term; the second column presents the probit regression results that include the interaction term. As can be seen, the results of the two models—in terms of the general magnitudes of the marginal effects and levels of statistical significance—are quite similar. We present the results in the table and the discussion below in the order in which we developed our hypotheses.

The presence of the CEO on the board's nominating committee has a positive and significant effect on the likelihood of the presence of a reciprocal CEO interlock. Further, the CEO's presence on the nominating committee has a large quantitative effect on the probability of reciprocal CEO interlock in both regressions. We thus find support for H1 and for the argument that the reciprocal CEO interlocks are likely a tool for CEO self-enhancement rather than for promoting shareholders' interests.

The fraction of the CEO's pay that comes from stock options has a negative and significant effect on reciprocal CEO interlocks, as is predicted by H2. The absolute size of the CEO's remuneration is controlled for by the inclusion of the CEO's base salary and bonus as an explanatory variable; it is not significant. Accordingly, a CEO who is rewarded relatively well from a strong performance of his company is less likely to be pursuing the cronyism that appears to be associated with reciprocal CEO interlocks.

The interaction of the CEO's presence on the board's nominating committee with the fraction of the CEO's pay that comes from stock options has a negative and significant effect

¹⁷ In an earlier version of this paper we also conducted an ordered probit analysis where the dependent variable indicated the number of reciprocal CEO interlocks; the results were quite similar to those reported below.

¹⁸ The aggregate group of industry dummy variables does not pass an F-test for significance, and their presence does not change the coefficient values or significance levels appreciably. Nevertheless, for completeness, both probit regressions shown in Table 3 include the industry dummy variables as (unreported) explanatory variables.

¹⁹ The marginal effects are evaluated at the means of the variables.

Table 3
Probit marginal effects estimates: reciprocal CEO interlock

Variable		
<i>Primary hypotheses</i>		
CEO on the nominating committee (1,0) indicator	0.84 ^a (0.23)	0.47 ^a (0.15)
Fraction of the CEO's total pay coming from stock options	−0.36 ^b (0.14)	−0.19 ^b (0.075)
Fraction of the CEO's total pay coming from stock options × CEO on the nominating committee indicator	—	−0.32 ^b (0.15)
Fractional ownership of the CEO in the firm (% of outstanding shares)	−0.34 (0.77)	−0.22 (0.51)
Strategic objectives (1,0) indicator	0.02 (0.17)	0.01 (0.10)
Board reputation (total number of outside directorships)	0.03 ^a (0.006)	0.015 ^a (0.004)
Number of board meetings	−0.05 ^b (0.02)	−0.02 ^b (0.01)
Tenure of the CEO with the firm	0.009 ^c (0.005)	0.005 ^c (0.003)
<i>Control variables</i>		
Tobin's Q (market value of assets over replacement value of assets)	0.13 ^b (0.067)	0.08 ^b (0.04)
Bank (1,0) indicator	−0.61 ^c (0.34)	−0.37 ^c (0.21)
Natural log of the CEO's salary and bonus	−0.09 (0.08)	−0.06 (0.05)
CEO's age	0.008 (0.009)	0.005 (0.004)
Tenure of the CEO as CEO	0.007 (0.007)	0.004 (0.004)
CEO as founder (1,0)	−0.14 (0.11)	−0.08 (0.05)
Natural logarithm of board size	0.04 (0.03)	0.02 (0.02)
Number of directors who are CEOs of other firms	0.02 (0.02)	0.01 (0.01)
Natural log of directors' fees	0.29 (0.23)	0.17 (0.13)
Firm size (natural logarithm of total assets)	0.04 (0.05)	0.03 (0.03)
<i>n</i>	570	570
Pseudo <i>R</i> ²	0.07	0.09

Marginal effects estimates for probit models, of a one unit change in an independent variable on the probability of a reciprocal CEO interlock. The dependent variable in both columns is a 1,0 indicator for the presence of at least one reciprocal CEO interlock. A reciprocal CEO interlock occurs when the CEO of firm *i* serves as a director of firm *j* and the CEO of firm *j* serves as a director of firm *i*. Both models include industry 1,0 dummy variables. Standard errors appear in parentheses below each estimate. Please refer to Table 1 for a full variable description.

^a Significant at the 1% level.

^b Significant at the 5% level.

^c Significant at the 10% level.

on the probability of a reciprocal CEO interlock, as is predicted by H3. Thus, when the CEO's compensation structure is more heavily weighted toward performance-based compensation, his presence on the board's nominating committee is less likely to result in a reciprocal CEO interlock. As we argued above, when the CEO is appropriately compensated, he has less need to use his position on the nominating committee to advance his own self-interest.

The CEO's fractional ownership of the company has a negative effect on the likelihood of the presence of a reciprocal CEO interlock, as predicted by H4, although the coefficients are not statistically significant for either model. However, the CEO ownership variable is strongly and positively correlated with the tenure of the CEO as CEO and with the CEO as founder, as well as showing lesser levels of association with the other explanatory variables. These other influences may be on

founding and weakening the underlying negative relationship (that is shown by the negative and significant difference in the means of CEO ownership in the subsamples of companies with and without reciprocal CEO interlocks).²⁰

The strategic objectives variable has a positive coefficient, as is predicted by H5. But the coefficients are statistically insignificant in both regressions. Thus, there is no statistical support for the notion that the presence of reciprocal CEO interlocks is a tool for the promotion of the company's strategic interests.

The most significant explanatory variable in both regressions is the reputation of the company's board, as proxied by the number of outside directorships held by that company's directors.²¹ It is worth noting that the board size itself is one of the control variables and is not significant. This strong positive relationship between a firm's involvement in a CEO reciprocal interlock and the external involvement of its board provides strong support for H6. CEOs do seem to want to associate with "classy" boards, and a CEO who has succeeded in assembling a "classy" board is more desirable as a member of other companies' boards.

However, an additional interpretation of this result would be that a company that has a corporate culture of its directors' holding outside positions would likely involve the CEO in this culture as well. Core et al. (1999) question the efficiency of directors who serve on multiple boards. Thus, this positive association between reciprocal CEO interlocks and outside board positions by the CEO's board may be an indication that this inefficient culture encourages an inefficient practice by the company's CEO.

The annual number of board meetings is negatively and significantly associated with the probability of a reciprocal CEO interlock, as is predicted by H7. The magnitude of the directors' fees is also included as an explanatory variable, but is not significant. More meetings may keep a CEO more involved "at home" and mean less time for outside involvements; and/or the time commitment of more meetings may deter a CEO from another company from becoming a director; and/or more meetings may be indicative of company difficulties, which another company's CEO may want to avoid.

The CEO's tenure with the firm is positively associated with the probability of a reciprocal CEO interlock, as is predicted by H8. The age of the CEO and his tenure as CEO are controlled for, but they are not significant.²² Thus, the CEO's longevity with the firm in all capacities does appear to encourage reciprocal CEO interlocks.

²⁰ In addition, when the dependent variable is regressed directly on the fractional ownership variable (i.e., when the confounding influences are absent), the coefficient is negative and significant at the 10% level.

²¹ We also tried an alternative version of a board reputation variable: the average number of outside directorships held by the company's board members. The regression results were qualitatively the same as those reported.

²² The last result differs somewhat from that of Booth and Deli (1996), who find a significant positive association between the number of outside directorships that a CEO holds and his tenure as CEO. They interpret their result as support for Vancil's (1987) process of CEOs' transferring responsibilities to their successors as their tenure as CEO lengthens, which thereby reduces the cost to the company of the CEO's taking an outside directorship.

There are two other variables that are significant and that are worthy of discussion. First, the firm's Tobin's Q ²³ is positively associated with the probability of a reciprocal CEO interlock.²⁴ A larger Tobin's Q is likely to be indicative of a highly valued firm with more growth opportunities. Alternatively, the higher Tobin's Q may indicate greater intangible assets of the senior management of the firm (Morck et al., 1989). For either reason, other CEOs may want to be associated with such a firm, and other companies may want this firm's CEO to add luster to their boards.²⁵

Second, the bank indicator variable is negative and significant in both regressions.²⁶ The quantitative effect of this variable is sizable and second only to that of the CEO's presence on the board's nominating committee (although opposite in sign). The CEOs of banks may be more reluctant to participate in reciprocal interlocks than are their counterparts at other firms, either because of their fears of conflict-of-interest claims (Kroszner and Strahan, 1999) or because of regulatory pressures that leave bank CEOs with less free time for outside directorships; and, also, non-bank CEOs may be more reluctant to serve on bank boards than on other boards because of fears of additional regulatory burdens, or even fears of a tarnished reputation if a bank fails. Either reason (because of the "double matching" problem) would be sufficient to cause the strong negative effect that we observe.

The remaining control variables did not yield significant coefficients.²⁷ Nevertheless, they are worthy of some discussion. First, the size of the firm itself, as measured by total assets, yielded positive coefficients, but it was not significant.²⁸ Second, as noted above,

²³ Tobin's Q is defined as the market value of the firm's assets divided by the replacement costs of the assets. We follow Yermack (1996) in using the recursive methodology proposed by Perfect and Wiles (1994) for valuing debt, inventory, and fixed assets. The market value of assets is computed by adding the estimated values of the components of total liabilities and stockholders' equity. Recursive algorithms that take into account the effect of inflation, real depreciation rates, capital expenditures, and the method of inventory valuation used by each company are used to estimate the replacement costs of inventories and fixed assets. Other assets are assumed to have replacement costs equal to book values (Yermack, 1996).

²⁴ We also investigated the reverse possibility: that the reciprocal CEO interlock might influence (positively or negatively) a firm's Tobin's Q . When we estimated a Tobin's Q explanatory regression, in a two-stage least squares format (since the reciprocal CEO interlock variable would be endogenous), the coefficient on the reciprocal CEO interlock variable was not significantly different from zero. Similarly, when the regressions of Table 3 are estimated in a two-stage least squares format (with Tobin's Q as endogenous), the coefficient on Tobin's Q is not significantly different from zero.

²⁵ Booth and Deli (1996) find a negative relationship between the number of outside directorships held by a CEO and the market-to-book ratio of the company's assets. They interpret their result as an indication that, for firms with greater growth opportunities, the opportunity costs of the CEO's holding outside directorships are larger. It is worth noting that our Tobin's Q variable is different from their market-to-book variable and also that we measure reciprocal CEO interlocks and not just the number of outside directorships held by a CEO.

²⁶ This negative effect is present even though the set of two-digit SIC dummy variables includes a separate variable for all financial institutions. When the regressions are estimated without the inclusion of the industry dummy variables, the same results hold: the bank variable remains negative in both regressions.

²⁷ To check for robustness, a number of other explanatory variables—such as the composition of the board, the annual return on assets of the company, etc.—were tried in these regressions, with insignificant results and with no change in the main results reported above. Included in these robustness checks was a measure of board independence, represented by a 1,0 dummy variable indicating whether a majority of the board were independent directors. Again, this variable was insignificant, and its presence did not affect the main results.

²⁸ Other measures of firm size, such as the natural log of sales, were also tried, yielding similar absences of significant effects.

the size of the board is insignificant. Third, and perhaps surprisingly, though the presence of other (outside) CEOs on a company's board does yield positive coefficients in both regressions, those coefficients are not significant.²⁹

5.3. *A summing up*

The hypotheses that were advanced in Section 3 are largely borne out by the probit regression results shown in Table 3. Notable, however, is the absence of support for a strategic purpose that might underlie reciprocal CEO interlocks. By contrast, hypotheses that are consistent with this phenomenon's being a tool for the CEO to advance his own interests are generally supported.

6. Conclusion

The board of directors of a public corporation represents a key mechanism for monitoring managers and making important financial decisions. The composition of boards of directors is an important component of a system of corporate governance. Increased knowledge about the determinants of that composition can further the understanding of corporate governance structures.

We start by noting that the reciprocal interlocks of CEOs on the boards of large corporations—situations where the CEO of company *i* is on the board of company *j* and the CEO of company *j* is on the board of company *i*—occur in a non-trivial number of instances: in 1991 about one large company in seven was involved in a reciprocal interlock of this type. We are unaware of any previous efforts to explain this phenomenon. We next offer some hypotheses as to the circumstances that may encourage or discourage such reciprocal interlocks. We conjecture that reciprocal CEO interlocks are (a) more likely when a CEO is on his board's nominating committee; (b) less likely when a larger fraction of the CEO's compensation is in the form of options; (c) less likely when the CEO is on the nominating committee *and* a greater fraction of his compensation comes as options; (d) less likely when the CEO owns a larger fraction of his company's shares; (e) more likely when the reciprocal CEO interlock can promote a strategic interest for the firm; (f) more likely when the company's board is more prestigious; and (g) less likely when the board is more active and holds more meetings. In addition, we include a

²⁹ Paradoxically, the absence of a significant positive coefficient for this variable may be an indication of systematic behavior, since the random-behavior alternative would seem to be that the presence of a CEO on a company's board should increase the probability that a reciprocal CEO interlock can or will occur. However, the number of other companies' CEOs that are on a company's board is strongly and positively associated with the size of the board and with the outside directorships held by that company's board members. Further, when the number of outside CEOs on a company's board is regressed against all of the other explanatory variables in a simple OLS regression, about a third of the variance can be explained. The strong positive association between the number of outside CEOs on a company's board and the outside directorships held by that company's board members raises another possible explanation for the lack of significance of the CEO variable in the multivariate context: CEOs from other companies may want to join a board, so as to be able to associate with its "classy" members; but the CEO of that company may not feel as strongly about reciprocating.

number of control variables and thus test lesser hypotheses, including the effects of Tobin's Q, the CEO's tenure as CEO, the size of the company, whether or not it is a bank, and the presence of more CEOs from other companies as outside directors on a CEO's board.

We test these hypotheses on a sample of 570 large corporations in 1991, using company, board, and CEO characteristics as control variables. Using a probit model, we find significant statistical support for most of our hypotheses but do not find support for the strategic motive for reciprocal CEO interlocks. We also find significant positive relationships between the probability of a reciprocal CEO interlock and the Tobin's Q of a company and the tenure of the CEO with the company, and we find an inverse and significant relationship between the probability of a reciprocal CEO interlock and whether the CEO's firm is a bank.

Our results shed some direct and indirect light on the consequences of reciprocal CEO interlocks for shareholder wealth. We find a significant positive association between CEO reciprocal interlocks and the CEO's involvement in the selection of directors (i.e., the CEO's presence on the board's nominating committee); since [Shivdasani and Yermack \(1999\)](#) find negative market reactions to director appointments when CEOs are involved in the selection of new directors, a likely negative market reaction to CEO reciprocal interlocks seems reasonable as well. But when the fraction of a CEO's compensation paid as options is interacted with the nominating committee variable, the probability of a reciprocal CEO interlock decreases; thus, as the performance-based fraction of a CEO's compensation increases, the CEO's use of the nominating committee to arrange for reciprocal interlocks decreases. Further, the option-based compensation itself has a negative effect on the likelihood of a reciprocal CEO interlock.

In addition, we do not find that CEO reciprocal interlocks occur in a way that might advance the strategic objectives of the firm. Also, the positive association that we find between the outside directorships of a company's board and CEO reciprocal interlocks may indicate that a "classy" board membership is a magnet for other CEOs; but the prevalence of outside directorships may also mean that the company's affairs do not receive adequate board attention, and this inefficient culture may encourage the CEO similarly to divert his attention to other companies' boards. Further, the prospect of a larger annual number of board meetings has the expected negative effect on the probability of a reciprocal CEO interlock. And a CEO's longer tenure with a company has a positive influence on the likelihood of a reciprocal CEO interlock.

In sum, we have shown that reciprocal CEO interlocks are not random phenomena but have significant and sensible determinants. Our results strongly suggest that a reciprocal CEO interlock is more likely to be an instrument that enhances a CEO's private interests and is less likely to be a corporate governance feature for advancing the interests of the company's shareholders. Ours is, however, only the first study of this non-trivial phenomenon. Future investigations could build on our results to explore these issues further. We believe that such research, along with the results presented in this paper, can widen the understanding of this significant aspect of board composition and corporate governance.

Acknowledgements

We would like to thank Jay Hartzell, Rob Hansen, David Yermack, the participants at a seminar at the University of North Carolina, our discussant Tatiana Nenova at the American Finance Association 2001 meetings, and an anonymous referee for their valuable comments and suggestions on an earlier draft. Fich gratefully acknowledges financial support in the research and writing of this manuscript from a Willensky fellowship from the Stern School.

References

- Bacon, J., Brown, J., 1974. Corporate directorship practices: role, selection and legal status of the board. Joint Research Report from the Conference Board and the American Society of Corporate Secretaries, New York, NY.
- Baker, G.P., Jensen, M., Murphy, K., 1988. Compensation and incentives: practice vs. theory. *The Journal of Finance* 43, 593–616.
- Berle, A., Means, G., 1932. *The Modern Corporation and Private Property*. Macmillan, New York.
- Black, F., Scholes, M., 1973. The pricing of options and corporate liabilities. *Journal of Political Economy* 81, 637–659.
- Booth, J., Deli, D., 1996. Factors affecting the number of outside directorships held by CEOs. *Journal of Financial Economics* 40, 81–104.
- Core, J., Holthausen, R., Larcker, D., 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics* 51, 371–406.
- Cotter, J., Shivdasani, A., Zenner, M., 1997. Do independent directors enhance target shareholder wealth during tender offers? *Journal of Financial Economics* 43, 195–218.
- Dooley, P., 1969. The interlocking directorate. *American Economic Review* 59, 314–323.
- Fama, E., 1980. Agency problems and the theory of the firm. *Journal of Political Economy* 88, 103–288.
- Fich, E.M., 2000. Board effectiveness and corporate governance, Unpublished dissertation manuscript, New York University, N.Y.
- Fich, E.M., White, L.J., 2003. CEO compensation and turnover: the effects of mutually interlocked boards. *Wake Forest Law Review* 38, 935–959.
- Hagerty, K., A. Ofer, A., Siegel, D., 1991. Managerial compensation and incentives to engage in far-sighted behavior, Working Paper, Northwestern University.
- Hallock, K., 1997. Reciprocally interlocking boards of directors and executive compensation. *Journal of Financial and Quantitative Analysis* 32, 331–344.
- Jackson, M.O., Lazear, E.P., 1991. Stocks, options and deferred compensation. *Research in Labor Economics* 12, 41–62.
- Jensen, M., 1993. The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance* 48, 831–880.
- Jensen, M.C., Meckling, W.H., 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3, 305–360.
- Jensen, M.C., Murphy, K.J., 1990. Performance pay and top-management incentives. *Journal of Political Economy* 98, 225–264.
- Kaplan, S., Reishus, D., 1990. Outside directorships and corporate performance. *Journal of Financial Economics* 27, 389–410.
- Klein, A., 1998. Firm performance and board committee structure. *The Journal of Law and Economics* 41, 275–303.
- Kracaw, W.H., Zenner, M., 1998. Bankers in the boardroom: good news or bad news? Working Paper, The Kenan-Flagler Business School. The University of North Carolina, Chapel Hill, NC.
- Kroszner, R., Strahan, P., 1999. Bankers' role in corporate governance, in *Global Financial Crises: implications*

- for Banking and Regulation. Federal Reserve Bank of Chicago, 35th Annual Conference on Bank Structure and Competition, 242–254.
- Lipton, M., Lorsch, J., 1992. A modest proposal for improved corporate governance. *Business Lawyer* 48, 57–59.
- Mace, M., 1986. *Directors: Myth and Reality*. Harvard Business School Press, Boston.
- Matsunaga, S.R., 1995. The effects of financial reporting costs on the use of employee stock options. *Accounting Review* 70, 1–26.
- Mehran, H., Yermack, D., 1997. Compensation and top management turnover. Working paper, Stern School of Business, New York University. New York, NY.
- Merton, R.C., 1973. Theory of rational option pricing. *Bell Journal of Economics and Management Science* 4, 141–183.
- Milgrom, P., Roberts, J., 1992. *Economics, Organization and Management*. Prentice-Hall, Englewood Cliffs, NJ.
- Mizruchi, M., Stearns, L., 1988. A longitudinal study of the formation of interlocking directorates. *Administrative Science Quarterly* 33, 194–210.
- Morck, R., Shleifer, A., Vishny, R., 1989. Alternative mechanisms for corporate control. *American Economic Review* 79, 842–852.
- Murphy, K., 1985. Corporate performance and managerial remuneration: an empirical analysis. *Journal of Accounting and Economics* 7, 11–42.
- Murphy, K., Zimmerman, J., 1993. Financial performance surrounding CEO turnover. *Journal of Accounting and Economics* 16, 273–315.
- National Association of Corporate Directors, 1996. NACD blue ribbon commission report on director professionalism (Washington, DC).
- Palmer, D., 1983. Broken ties; interlocking directorates and intercorporate coordination. *Administrative Science Quarterly* 28, 40–55.
- Perfect, S.B., Wiles, K.W., 1994. Alternative construction of Tobin's Q: an empirical comparison. *Journal of Empirical Finance* 1, 313–341.
- Pettigrew, A., 1992. On studying managerial elites. *Strategic Management* 13, 163–182.
- Pfeffer, J., 1972. Size and composition of corporate boards of directors. *Administrative Science Quarterly* 17, 218–228.
- Roy, M., Fox, M., Hamilton, R., 1994. Board size and potential corporate and director interlocks in Australasia. *Australian Journal of Management* 19, 201–212.
- Schoorman, F., Bazerman, M., Atkin, R., 1981. Interlocking directorates: a strategy for reducing environmental uncertainty. *Academy of Management Review* 6, 243–251.
- Shivdasani, A., 1993. Board composition, ownership structure, and hostile takeovers. *Journal of Accounting and Economics* 16, 167–198.
- Shivdasani, A., Yermack, D., 1999. CEO involvement in the selection of new board members: an empirical analysis. *Journal of Finance* 54, 1829–1853.
- Smith, C.W., Watts, R.L., 1992. The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics* 32, 263–292.
- Smith, C.W., Zimmerman, J.L., 1976. Valuing employee stock option plans using option pricing models. *Journal of Accounting Research* 14, 357–364.
- Vafeas, N., 1999. Board meeting frequency and firm performance. *Journal of Financial Economics* 53, 113–142.
- Vancil, R., 1987. *Passing the Baton: Managing the Process of CEO Succession*. Harvard Business School Press, Boston.
- Yermack, D., 1995. Do corporations award CEO stock options effectively? *Journal of Financial Economics* 39, 237–269.
- Yermack, D., 1996. Higher market valuation of companies with a small board of directors. *Journal of Financial Economics* 40, 185–211.