

Essays on Board of Directors' External Connections

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The two essays in this dissertation study issues related to the board of directors' external connections, i.e., social ties to directors and executives of other firms. The first essay examines whether and how directors' external connections affect the operating performance of the firm for which they are board members. Using a large sample of 393,481 directors and executives from 7,627 companies over the time period from 2000 to 2010, I map the social network of directors and senior level executives, and construct a measure of directors' external connections capturing how connected an individual director is to directors and executives of other firms. I find a positive association between the extent of directors' external connections and firm performance. In addition, I find that firms experience efficiency gains through cost reductions in the presence of well-connected directors. Overall, my findings suggest that directors' external connections provide economic benefits to firms by increasing sales growth, lowering production costs, and improving firm profitability.

The second essay investigates whether directors' external connections influence director compensation and appointment. Drawing on my findings in the first essay, I argue that the external connections of directors are reflected in labor market outcomes for directors. Consistent with prior literature, I find that directors' external connections are positively associated with the level of their compensation and that directors with more extensive external connections earn more than those with more limited external connections. I then examine the impact of directors'

external connections on director appointments. Using the subsample of directors who departed as a director of one firm during the period from 2003 to 2010, I examine whether directors' external connections impact the likelihood of being selected as a new director at another firm. I find that the extent of a director's external connections increases the likelihood that he/she will obtain a new directorship at another firm, suggesting that external connections play an important role in director selection process. Collectively, this dissertation provides empirical evidence that relational capital captured in directors' external connections provides access to valuable resources and information to the firm, thereby enhancing its financial performance, and has significant impact on labor market outcomes for directors in the form of director compensation and director appointment.

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PREFACE

I would like to thank the members of my dissertation committee, John Harry Evans III, Jongsub Lee, Kwang June Lee, and especially my chairs, Nandu J. Nagarajan and Dhinu Srinivasan, for their guidance, help and encouragement as I complete my dissertation.

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1.0 THE IMPACT OF DIRECTORS' EXTERNAL CONNECTIONS ON FIRM PERFORMANCE

1.1 INTRODUCTION

“There is a growing belief on the part of institutional investors that board of directors, as legally the highest authority in the company, are in a position to exert a significant impact on firm performance” (Petrovic 2008, p. 1373). A board of directors serves two main functions, monitoring management and providing resources. First, boards monitor top executives to ensure that they act in good faith and bring about firm performance that satisfies the interests of the owners. Second, boards provide resources in the form of advice and counsel, and bring their expertise and connections to meetings to help management improve firm performance. Most prior research seeking to understand how boards can influence firm performance has focused on the monitoring function. Such research has examined the condition under which board members are more or less effective as monitors (Baysinger and Butler 1985; Core, Holthausen, and Larcker 1999; Ferris, Jagannathan, and Pritchard 2003; Fich and Shivdasani 2006; Hwang and Kim 2009, 2011; Lee, Lee, and Nagarajan 2013).

This paper is about the second function, the provision of resources. I explore a mechanism by which boards help improve firm performance. Connections between directors in the corporate networks can facilitate access to resources and be helpful in acquiring resources

from important elements outside the firm (Hillman and Dalziel 2003). While the impact of social networks on firms' economic outcomes has recently received much attention in academic research in finance and accounting, these studies have primarily focused on intra-board connections such as the links between chief executive officers' (CEOs) and his or her board members (Engelberg, Gao, and Parsons 2013; Liu 2010; Hwang and Kim 2009, 2011; Dey and Liu 2011; Fracassi and Tate 2012). Relatively fewer studies have provided empirical evidence to assess the impact of directors' external connections, social ties to directors and executives in other firms, on firms' economic outcomes.¹ In this chapter, I examine the relationship between the extent of directors' external connections and firm performance.

As the predominant theory used in the corporate governance literature, agency theory suggests that directors are responsible for effective oversight of corporate managers, and board effectiveness depends on a board's ability to perform its monitoring role effectively. Continuing research in agency theory has investigated the board's role in monitoring management and studied the effectiveness of boards in their monitoring of management. The literature finds that links between the CEO and board members may reduce governance quality and impair economic value. For example, Fracassi and Tate (2012) find that powerful CEOs hire directors who are socially connected with them, leading to weaker monitoring, and more value-destroying mergers. Chidambaran, Kedia, and Prabhala (2010) find a significant relation between the likelihood of fraud and CEO-board connectedness. Dey and Liu (2011) document that social connections between the CEO and board members are associated with lower operating performance, lower accruals quality, and a higher probability of restatements. Hwang and Kim (2011) show that

¹ Ishii and Xuan (2011) investigate the impact of social ties between the senior executives and directors of the acquiring and target firms on merger outcomes, focusing on ties across the two merging firms. Ishii and Xuan (2011) find that between-firm social ties have a significantly negative effect on the abnormal returns to the acquirer and to the combined entity upon the merger announcement.

social ties between the CEO and members of the audit committee are associated with high levels of earnings management. Lee, Lee, and Nagarajan (2013) show that political alignment between CEOs and Directors can increase managerial entrenchment and the likelihood of fraud.

In addition to agency theory, resource dependence theory has also influenced the corporate governance literature. However, in contrast to the agency theory literature, which focuses on the board's monitoring role, resource dependence theory suggests that a board plays another distinct role, i.e., that of providing essential resources, which may be directly related to firm performance (Pfeffer 1972).² Resource dependence theory asserts that the board's function as a link to the external environment is important in that directors bring essential resources in the form of advice and counsel, channels of information flow, preferential access to resources, and legitimacy to firms through linkages to the external environment (Pfeffer and Salancik 1978), and directors also bring access to key constituents such as suppliers, buyers, lenders, public policy decision makers, and social groups (Hillman, Cannella, and Paetzold, 2000), resulting in reducing dependency between the firm and external contingencies, diminishing uncertainty for the firm, lowering transaction costs, and ultimately aiding in the survival of the firm (Hillman and Dalziel 2003).

An important channel through which directors provide essential resources to firms is their external connections. Directors' external connections can provide channels for communicating important information between external organizations and the firm, such as industry trends, market condition and regulatory changes, and lead to shared contacts. As a result, directors' external connections are believed to affect firms' decisions and firm performance. A board with well-connected directors can facilitate access to resources such as capital and improved terms of

² Peng (2004, p. 455) states that "it [i.e., resource dependence theory] predicts that the more resource-rich outside directors are on the board to help bring in needed resources, the better the firm performance."

contracts, link the firm to important stakeholders or other important entities, and aid in the formulation of strategy or other important decisions. Moreover, directors' external connections could potentially affect the flow and the quality of information available to managers, create links among decision makers across firms, and influence the corporate decision making process, leading to better decision making and management practices, and improve firm performance. I expect that directors with more extensive external connections increase the ability of boards to bring in needed resources, resulting in a positive effect on firm performance.

While most prior studies using resource dependence theory to examine board effectiveness as a provider of resources have primarily focused on board human capital, such as directors' expertise, experience, knowledge, skill, reputation, and skills (Pearce and Zahra 1992; Certo, Daily, and Dalton 2001), less attention has been paid to the association between board relational capital, i.e., directors' contacts with and connections to external entities, and firm performance. Geletkanycz and Hambrick (1997) show that top executives' external ties contribute to the shaping of the firm's strategic conformity to the industry's central tendencies and it will be beneficial to firm performance. Using survey data from China, Peng and Luo (2000) find that managers' ties with top executives at other firms and with government officials have a positive influence on firm performance. Most recently, Larcker, So, and Wang (2011) measure the centrality of firms in the boardroom network by counting the total number of shared directorates between companies. They document that central firms earn significantly higher future returns than non-central firms, and also find that central firms experience significantly higher increases in profitability compared to non-central firms.

In this chapter, I focus on board relational capital, captured in directors' external connections and explore how the external connections of individual directors affect the operating

performance of the firm for which they serve as board members. Using a large sample of 393,481 directors and executives from 7,627 companies over the time period from 2000 to 2010, I map the social network of directors and executives, and construct a measure of directors' external connections. The measure captures how connected an individual director is to other directors and executives in the network of firms.

I find a positive association between changes in directors' external connections and changes in the firm's sales revenue. This association holds after controlling for governance attributes, directors' human capital, and other related firm characteristics. This suggests that, on average, the revenue of a firm increases after the firm brings well-connected individuals to the board. This is consistent with the view that relational capital is positively associated with the provision of resources by the board, which, in turn, is positively associated with firm performance. Prior literature suggests that the impact of managers' external ties on firm performance differs among firms in different stages of a firm's life cycle (Peng and Luo 2000). Consistent with this prior literature, which finds that the impact of external connections on firm performance is more pronounced among firms that stand to benefit the most from such resources (Larcker, So, and Wang 2011), I find that the impact of the external connections is most pronounced among firms that have high growth potential and are at an earlier stage in their life cycle. I also examine the impact of directors' external connections on profitability. I find a positive association between changes in directors' external connections and changes in firm profitability. This suggests that the ROA of a firm increases after the firm appoints well-connected directors.

I then examine whether firms experience efficiency gains through cost reductions in the presence of well-connected directors. I find that the extent of directors' external connections is

negatively associated with cost of goods sold. Firms experience efficiency gains through production cost reductions after the firm appoints well-connected directors. However, the extent of directors' external connections is not significantly associated with SG&A expenses. Overall, my findings suggest that companies with well-connected boards have better operating performance than companies whose boards are less well-connected, thus directors' external connections provide economic benefits to firms by helping to increase sales growth, improve profitability, and lower production costs.

In addition, I investigate the impact of different types of directors' external connections on firm performance. I partition directors' external connections into professional, educational, and other connections and examine their impact on firm operating performance. The results indicate that directors' past professional and educational connections have a greater impact on firm performance than other connections. Further industry analysis shows that the importance of directors' external connections in providing resources to a firm may vary by industry. The impact of directors' external connections on firm performance is most significant in the regulated and relatively smaller customer and supplier base industries. In industries with very large customer and supplier bases, such as wholesale and retail industries, directors' external connections appear to have little immediate effect on firm performance. In addition, I examine whether the improvements in profitability of firms with well-connected directors comes from improved asset turnover, increased profit margin, or improvement in both. My results suggest that the significant improvements in ROA after the appointment of well-connected directors are more driven by the improvements in asset turnover of the firm than the improvements in profit margin.

This chapter contributes to the literature along several lines. First, this paper adds to the literature on the role of boards by complementing agency theory with resource dependence theory. Prior studies have examined the role of boards of directors, but the focus has primarily been on the monitoring function of the boards by examining the relationship between proxies for board incentives to monitor and firm performance. The resource provision function of the boards has been less explored (Hillman and Dalziel, 2003). Results from this chapter provide evidence that directors' external connections may help boost the role of directors in improving firm performance.

Second, this study integrates resource dependence and social network theories. Prior resource dependence studies focus primarily on the impact of one aspect of board capital, human capital, on firm performance. Building on social network theory, I examine the impact of another aspect of board capital, relational capital, on firm performance. This paper provides some of the first empirical evidence that directors' external connections enhance firm performance by providing access to resources and information to the firm. The results would also shed light on the relative importance of board relational capital to firm performance.

Third, this paper also contributes to the growing literature on the impact of social networks among all board members. While much of the existing literature on social networks among board members has focused primarily on the CEO's social ties, less attention has been paid to the social connections of other directors. I believe that my results will extend the existing literature that has largely focused on a CEO's social ties. To the best of my knowledge, this is one of the first papers to study social networks of directors, broadening the scope of social network literature beyond the CEO's social network to include directors' social networks.

Finally, this paper utilizes the most comprehensive measure of directors' external connections by examining executives and directors from over 7,000 companies. Prior studies use small-samples of the 30 largest publicly traded firms in the branded food and computer industries (Geletkanycz and Hambrick, 1997) or of 127 surveyed firms (Peng and Luo, 2000). My measure captures several aspects of external connections including directors' employment history, educational background, and other social ties. I also differentiate my measures from others by analyzing external connections of each individual director. Related studies focus on external connections of CEOs (Liu, 2010) or shared director positions (Larcker, So, and Wang 2011).

The remainder of the chapter is organized as follows. Section 1.2 reviews the background literature. Section 1.3 describes the data and provides descriptive statistics on the external networks of directors. Section 1.4 describes the construction of variables and research design, and presents empirical results, which are analyzed further in Section 1.5. Section 1.6 concludes.

1.2 BACKGROUND

The link between boards of directors and firm performance has been studied from two different perspectives, "agency theory perspective" and "resource dependence perspective". Agency theorists argue that a key activity for boards is monitoring management and effective monitoring can improve firm performance by reducing agency costs (Hillman and Dalziel 2003). These researchers explore the monitoring role of boards and examine the relationship between effective monitoring and firm performance (Dalton, Daily, Certo, and Roengpitya 2003; Dalton, Daily, Ellstrand, and Johnson 1998). A large number of studies have investigated the characteristics of the board and examined whether the characteristics of the board affect board

effectiveness in monitoring management and firm performance. The most widely discussed question regarding the characteristics of the board is how board composition, such as the proportion of outside directors (Hermalin and Weisbach 1991; Mehran 1995; Klein 1998; and Bhagat and Black 2000), demographic diversity (Erhardt, Werbel, and Shrader, 2003), and size (Dalton, Daily, Johnson, and Ellstrand 1999; Hermalin and Weisbach 2003; Yermack 1996) are related to monitoring management and firm performance. There is also a large and growing literature on directors serving on multiple boards (Core, Holthausen, and Larcker 1999; Fich and Shivdasani 2006; Ferris, Jagannathan, and Pritchard 2003). However, prior research on this topic seems still inconclusive.

In contrast, resource dependence theorists focus on the board as providers of resources and contend that boards are chosen to maximize the provision of important resources to the firm (Pfeffer 1972; Pfeffer and Salancik, 1978; Klein 1998; Lynall, Golden, and Hillman, 2003). In this research, scholars examine the relationship between boards' provision of resources and firm performance. Pfeffer and Salancik's (1978) seminal work on resource dependence theory suggested that "directors bring four benefits to organizations: (a) information in the form of advice and counsel, (b) access to channels of information between the firm and environmental contingencies, (c) preferential access to resources, and (d) legitimacy" (Hillman, Withers, and Collins 2009, p. 1408). Board research based on resource dependence perspective suggests that directors provide advice and counsel to top management (Mintzberg 1983; Lorsch and MacIver 1989), bring their own experiences, knowledge, and expertise to the firm (Baysinger and Hoskisson 1990), aid in the formulation of important firm decisions (Judge and Zeithaml 1992; Lorsch and MacIver 1989), and enable firms to gain linkages to important stakeholders or other important entities (Burt 1980; Hillman, Keim, and Luce 2001).

Resource dependence theorists argue that board capital encompassing both human capital, such as directors' expertise, experience, knowledge, skill, reputation, and skills, and relation capital, such as directors' contacts to external organization and connections, can bring substantial resources to a firm. Prior empirical studies in this area examine the relationship between boards capital and firm performance. Pearce and Zahra (1992) find that board composition as measured by size of board members is positively associated with future firm performance, suggesting that a large board enhances a company's ability to understand and respond to diverse stakeholders. Certo, Daily, and Dalton (2001) document that firms with more prestigious boards are likely to have lesser underpricing that occurred in the initial public offering, suggesting that prestigious directors help firms overcome information asymmetry problems that might otherwise deter potential investors. In general, board capital helps firm strengthen the linkages with the external environment by acquiring additional access or control over resources so that such board capital can positively affect a firm's performance.

Social network theory posits that social ties create trust, goodwill, or expectations of reciprocity, which enable the individual to obtain the needed resources from other (Aldrich and Cliff 2003; Coleman 1988). The literature in social network theory has documented that having broad networks can enhance the ability of people to convey complex ideas to diverse audiences (Reagans and McEvily 2003). Gargiulo and Benassi (2000) find that more effective managers have less constrained networks. Managers with better connections tend to earn more income, get more frequent promotions, and have better careers (Burt 1997; Granovetter 1985). Barnea and Guedj (2009) report evidence that connections between directors and top executives are related to executive compensation.

In a similar line of research, there have been numerous studies on the interlocking directorates. Levine (1972) finds the existence of interlocked directorates between the boards of major banks and the boards of major industrials. Mizruchi and Stearns (1988) show that interlocking directorates enable firm to gain outside funding. Gulati and Westphal (1999) find that formation of alliance is positively related to the number of board interlocks. Haunschild and Beckman (1998) document that interlocking board members may facilitate an exchange of important information, leading to better firm performance. On the other hand, Hallock (1997) observes a positive correlation between CEO compensation and interlocked boards, and Bizjak, Lemmon, Whitby (2009) document that interlocked boards play a significant role in the spread of employee stock options backdating. However, research on interlocking directorates has provided inconclusive evidence on a link between board interlocks and firm performance (Mizruchi 1996).

Recently, literature in finance investigates the impact of CEO's social connections on economic outcomes. Liu (2010) finds that an outside CEO candidate benefits significantly by having connections to the board of the hiring firm. Engelberg, Gao, and Parsons (2013) document that CEOs with extensive networks of personal connections to those outside the firm earn more than those with smaller networks. Hwang and Kim (2009) measure social ties between the CEO and outside directors at Fortune 100 firms and find that social ties have an effect on how directors monitor and discipline CEOs based on compensation and turnover. Dey and Liu (2011) examine whether an independent director's social connections with the firm's CEO are associated with the directors' monitoring effectiveness. They document that firms with directors who have social and professional connections to the CEO are associated with lower usefulness and reliability of reported earnings numbers. Chidambaran, Kedia, and Prabhala (2010) examine

the relation between fraud probability and CEO-board social connectedness. They find that professional connections formed due to common prior employment decrease fraud while nonprofessional connections due to shared educational and non-business antecedents increase fraud probability.

The influence of social networks on the provision of resources function of directors has received considerable attention through a series of articles. D'Aveni (1990) finds that well-connected managers influence creditors to support the existing top management's right to continue in control of the firm without supervision by the bankruptcy courts. Westphal (1999) find that social ties between CEO and outside directors facilitate interaction by raising the frequency of advice and counsel, leading to increase in firm performance. Carpenter and Westphal (2001) document that boards consisting of directors having ties to strategically related organizations were able to provide better advice and counsel. Agrawal and Knoeber (2001) find that politically experienced directors are more prevalent in firms with greater government contracts, exports, and lobbying and lawyer-directors are more prevalent in firms where costs of environmental regulation are higher. Cohen, Frazzini, and Malloy (2008) find that mutual fund managers invest in firms where board members share the same education network. Engelberg, Gao, and Parsons (2012) demonstrate that firms with connection to capital suppliers enjoy more favorable terms of lending, improved credit ratings, and superior stock price performance. Anecdotal evidence also shows that boards' connections and expertise help a start-up company lay the groundwork for growth. For example, directors' past professional connections have helped win key license to build a fixed wireless network, raised financing, and helped find strategic partners for the venture company (Lipin 1999).³ However, the net economic

³ See Appendix for more details.

consequences of boards' social networks on firm performance have yet to be firmly established empirically (Larcker, So, and Wang 2011).

Only a few papers explore the impact of executives' external connections on firm performance. Geletkanycz and Hambrick (1997) find that top executives who held board appointments in different industries, which presumably follow different strategic practices, were more likely to initiate strategic change at their own firm, and top executives' external ties enhance firm performance. I differentiate my approach from Geletkanycz and Hambrick's (1997) study, which focuses on the board capital of top executives rather than that of directors by examining the depth of relational capital of all board members.

Also, this paper goes beyond their sample of 30 largest publicly traded firms in the branded food and computer industries for 1983 – 1987. Using survey data from China, Peng and Luo (2000) conduct a study closely related to Geletkanycz and Hambrick's (1997) study. They find that managers' ties with top executives at other firms and with government officials help improve firm performance. I study the extensive external connections formed by directors and executives in over 7,000 U.S. companies. However, Peng and Luo (2000) employ relatively small-sample survey data of 127 responses and rely primarily on perceptual measures of external ties. Most recently, Larcker, So, and Wang (2011) examine whether the position of a firm in the boardroom network formed by shared directorates is associated with future stock price and firm performance. They find that centrally positioned firms in the boardroom network have higher future stock price returns and greater future profitability than non-centrally positioned firms. However, their study focuses on shared director positions rather than individual directors' external connections.

In summary, directors' external connections may play an important role as channels of information, advice, counsel, and access to essential resources enable a firm to accomplish higher economic outcomes, which improve firm performance.

1.3 DATA AND SAMPLE SELECTION

I construct executive and director networks from BoardEx database provided by Management Diagnostics Limited, an independent private research company specializing in collecting and classifying social network data on the board of directors and executives of US and European public and private companies. BoardEx consolidates in-depth information concerning the board of directors and senior management of publicly quoted and large private companies. The database contains executives and directors' current and past employment history (including positions held and the start and end dates of the position), educational background (including undergraduate, graduate and professional education and degree information), other activities such as memberships in general social associations, organizations and charitable groups. The personal biographical information in BoardEx dates back to as early as 1926.

BoardEx covers over 435,000 directors and executives of over 15,000 publicly quoted and large private companies. The coverage is split into over 8,250 US company boards, 2,700 UK company boards, and a further 5,000 company boards, split between Continental Europe and the rest of the world. For this study, I focus on US companies over the time period from 2000 to 2010, because BoardEx's coverage prior to 2000 is not complete. Using these data, I construct each individual board member's network.

Financial data are obtained from COMPUSTAT. The key firm identification variable in BoardEx is “*Company ID*”. Since there is no existing link between “*Company ID*” as reported in BoardEx and identifiers from other commonly used databases (Engelberg, Gao, and Parsons 2013), I created links between the BoardEx database and COMPUSTAT and CRSP databases in multiple steps. Following Engelberg, Gao, and Parsons (2013), I, first, match “*Company ID*” as reported in BoardEx with GVKEY (S&P identifier) by ticker symbol, which is provided in the BoardEx database, and CUSIP which is derived from the International Security Identification Number (ISIN) in BoardEx database for companies that are currently trading. Second, for companies in the BoardEx database without ticker symbols and ISIN, I match the company name recorded in BoardEx with the name of a company on COMPUSTAT and CRSP using the name matching algorithm in SAS. All matches are manually checked. I also look up similar company names using similar name matching algorithms and verify such matches by checking their information from various sources. I collect corporate governance variables from the IRRC and BoardEx. This results in the final sample of 7,627 matched companies consisting of 393,481 executives and directors over the time period from 2000 to 2010.

Table 1.1 presents summary statistics of sample firms. It shows the number of sample firms and firm characteristics, expressed in million dollars from 2000 to 2010. It suggests that many small firms were added to the BoardEx database around the fiscal year of 2003.

[Insert Table 1.1]

Panel A of Table 1.2 presents summary statistics on the directors’ external connections that I construct. On average, a director has 372.2 external network connections to all other directors. The directors’ external connections vary by types of directors. An employee director has an average of 247 external network connections. A grey director (affiliated non-executive

directors)⁴ has an average of 326.8 external network connections. Independent directors have the biggest network connections, an average of 417.7 external network connections. Panel B of Table 1.2 reports the average external connections of directors per firms by industry. Industries are defined by the Fama-French 12-industry categories.⁵ Firms in Chemicals, Business Equipment (which includes computers, software, and electronic equipment), and Utilities industries have directors with relatively extensive external network connections. Financial firms have directors with relatively limited external network connections.

[Insert Table 1.2]

1.4 EMPIRICAL ANALYSIS

I begin by describing my measures for directors' external connections used in the regression analyses in Section 1.4.1. I present my research design in Section 1.4.2, and discuss the results of my analyses in Section 1.4.3.

⁴ According to definitions stated in the Combined Code (2003), grey directors have personal or commercial ties with the firm or executives. Such ties are inferred where the non-executive is related to any of the firm's directors, advisors or senior employee, has served on the board for more than nine years, was formerly an employee of the company or group, has received additional remuneration apart from director's fee, has any material business relationships with the company, represents a significant shareholder, or interlocking directors.

⁵ See Ken French's website at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html for the definition of the twelve Fama-French industry categories.

1.4.1 Variable Descriptions

Following Fracassi (2008), I construct a measure of directors' external connections. The measure captures how connected an individual director is to other directors and executives in the boardroom networks. The external connections of a director r at year t is defined by

$$DEC_{r,t} = \sum Past\ Professional\ Connections + Educational\ Connections + Other\ Connections ,$$

where *Past Professional Connections* represent the number of directors and executives whom the director has worked with, or sat either on the board of directors or on the top management group in the past in the same company at the same time, *Educational Connections* represent the number of directors and executives with whom the director went to the same school and graduated within two years with the same undergraduate, professional, masters or doctorate degree, and *Other Connections* represent the number of directors and executives with whom the director shares membership in general social associations, organizations or charitable groups. A firm i 's total external connections at year t is the sum of external connections belonging to all N board members of the firm, defined as

$$TDEC_{i,t} = \sum_{r=1}^N DEC_{r,t} .$$

My measure of firm i 's directors' external connections is the average of external connections belonging to N board members of the firm, defined as

$$ADEC_{i,t} = \frac{1}{N} \sum_{r=1}^N DEC_{r,t} .$$

1.4.2 Research Design

To examine the relationship between the extent of directors' external connections and firm performance, I focus on the contemporaneous association between changes in directors' external connections and changes in firm operational performance. I use various measures of firm performance: sales growth, ROA, cost of goods sold, and selling, general and administrative (SG&A) expenses. The empirical models are specified in the following equation:

$$\Delta SALES_{i,t} = \alpha + \beta_1 \Delta ADEC_{i,t} + \text{control variables} + \varepsilon_{i,t} \quad (1)$$

$$\Delta ROA_{i,t} = \alpha + \beta_1 \Delta ADEC_{i,t} + \text{control variables} + \varepsilon_{i,t} \quad (2)$$

$$\Delta COGS_{i,t} = \alpha + \beta_1 \Delta ADEC_{i,t} + \text{control variables} + \varepsilon_{i,t} \quad (3)$$

$$\Delta SG\&A_{i,t} = \alpha + \beta_1 \Delta ADEC_{i,t} + \text{control variables} + \varepsilon_{i,t} \quad (4)$$

where, for each firm i and year t :

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1}),$$

$$\Delta SALES_{i,t} = \ln(SALES_{i,t}) - \ln(SALES_{i,t-1}),$$

$$\Delta ROA_{i,t} = \ln(ROA_{i,t}) - \ln(ROA_{i,t-1}),$$

$$\Delta COGS_{i,t} = \ln\left(\frac{COGS_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{COGS_{i,t-1}}{SALES_{i,t-1}}\right),$$

$$\Delta SG\&A_{i,t} = \ln\left(\frac{SG\&A_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{SG\&A_{i,t-1}}{SALES_{i,t-1}}\right),$$

In these models, dependent variables are changes in financial performance measures. Using changes in financial performance measures allows for control of the level of financial performance measures prior to the test period, and I use a natural logarithmic transformation to

control for skewness in the directors' external connections (*DEC*), although the results are similar when this transformation is not used.

The control variables I use in equations (1) through (4) are consistent with those used in prior research (Agrawal and Knoeber 2001; Barnea and Guedj 2009; Dey and Liu 2010; Engelberg, Gao, and Parsons 2013; Larcker, So, and Wang 2011). For firm characteristic variables, I include firm size, the market-to-book ratio, firm age, and leverage ratio. I use a natural logarithm of total assets as a proxy for firm size. Larger firms tend to have larger boards. As a consequence, larger firms will likely have more directors with more extensive connections. I use a natural logarithm of the market-to-book ratio and firm age to control for the presence of high growth opportunities. The *market-to-book* ratio is calculated as the market value of equity divided by the sum of the book value of equity and deferred taxes. *Firm Age* is the age of the firm (years) based on the date in which a firm's share price first appeared on the CRSP. The inclusion of the market-to-book ratio and firm age reflects the fact that firms with high growth opportunities and firms in an early stage of their life cycle are more likely to benefit from the external connections of their senior executive and board members. Thus, I expect a positive association between directors' external connections and market-to-book ratio and a negative association between directors' external connections and firm age. *Leverage ratio* is computed as the fraction of long-term debt in total assets.

To control for the effectiveness of monitoring, I include board characteristic variables such as board size, the proportion of outside directors on the board, CEO and board chair duality, and the fraction of busy directors on the board. *Board size* is the number of directors on the board. The proportion of outside directors (*Outside Director*) is calculated as the percentage of directors defined as independent directors or non-employee directors. *CEOCHAIR* is a dummy

variable that takes the value one when CEO is serving as chairman of the board. The fraction of busy directors (*Busy Director*) is calculated as the percentage of directors holding more than two directorships. Fich and Shivdasani (2006) find that boards with a majority of busy directors are associated with weak corporate governance and operating profits.

I construct two intra-board social connection variables to capture the degree of the relational capital among the board members, 1) social ties among board members and 2) social tie between CEO and independent directors. Social ties among board members (*Intra-Board Ties*) are measured by the number of pairs of connected directors scaled by the number of pairs of board members. Social tie between CEO and independent directors (*Tie to the CEO*) is measured by the fraction of the independent directors having social tie to the CEO.

I also construct four variables to capture the board's human capital, 1) industry experience, 2) board experience, 3) graduate degrees, and 4) elite educations. Industry experience (*IndExp*) is computed as the proportion of the board members possessing the same industry experience. Board experience (*BoardExp*) is defined as the sum of the cumulative years directors have served as a director scaled by the number of board members. Graduate degrees (*Graduate*) is the fraction of directors holding graduate degrees such as MBA, Master, JD, MD, or PhD degree on the board. Elite education (*Elite*) is measured by the percent of directors who graduated from Ivy League undergraduate schools.

Finally, I include the new appointments of directors to the board in the year before, $\Delta ADEC_{i,t-1}$ as control variable to eliminate the lagging effect of external connections of directors who are appointed to the board in the previous year on firm performance because I focus on the contemporaneous association between changes in directors' external connections and changes in firm operational performance in this study.

1.4.3 Empirical Results

Table 1.3 reports descriptive information for the key variables in my sample. Panel A provides means, medians, standard deviations, first quartile, and third quartile values for the key variables in my sample. Panel B shows a simple correlation matrix for the key variables in the sample. For the univariate data, I average across time for each firm and then determine the mean for the sample by averaging across firms. Panel A of Table 1.3 shows that on average, a firm has 372.2 total external connections, 247.4 professional connections, 72.3 educational connections, and 36.3 other connections. In terms of board characteristics, the average firm in my sample has 8.7 directors on board, 68.7% are independent directors, and 17.3% are busy directors. 61.3% of CEOs serve as the chairperson of the firm of which he or she is the CEO. The average social ties among board members is 0.155 and 18.8% of board members have social connection with the CEO of the firm of which he or she sits on the board. In terms of board human capital, on average, 19.8% of directors have an specific industry experience, they have 14.7 years board experience, 52.2% of directors have graduate degrees, 30.4% of directors graduated from Ivy League undergraduate schools. Panel B of Table 1.3 provides a correlation matrix for some of the key variables in the analysis. Directors' external connections appear to bear a positive association with firm size, firm profitability, and board size. In addition, directors' external connections are positively correlated with board human capital variables.

[Insert Table 1.3]

Table 1.4 presents results from ordinary least squares regressions of changes in sales revenue on changes in directors' external connections. Panel A of Table 1.4 shows the results of regression analysis based on all directors sample. Column (1) reports the results of base regression. I find changes in directors' external connections at year t are significantly ($p < 0.01$)

positively associated with changes in total sales revenue at year t . This association holds after controlling for the governance and other firm and board characteristic variables. This finding implies that the addition of directors with more extensive external connections to the board bring increases in total sales of the firm. The coefficient of market-to-book ratio is positive and significant ($p < 0.01$), and the coefficient of firm age is significantly negative, suggesting that firms with high growth opportunities and firms in an early stage of their life cycle are more likely to benefit from directors' external connections. Column (2) adds the control variable, changes in directors' external connections at year $t-1$. The results suggest that even after controlling for the addition of directors with more extensive external connections to the board in the year before, the relation between changes in directors' external connections at year t and changes in total sales revenue at year t is still significantly positive ($p < 0.01$). Year and Fama-French 49 industry controls are added in column (3) and (4). Similar to results in column (1) and (2), the coefficient of changes in directors' external connections at year t is significantly positive ($p < 0.01$), indicating that new appointments of directors with more extensive external connections to the board accrues value to the firm by boosting sales revenue of the firm.

Panel B of Table 1.4 report the results of regression analysis based only on the subsample of directors who are defined as independent by the BoardEx database. In each column, the results are very similar to those reported in column (1) through (4) of Panel A of Table 1.4 based on all directors sample except the coefficients of changes in directors' external connections of the firm for independent directors only are slightly weaker than those of changes in directors' external connections of the firm for all directors. Taken together, this evidence suggests that directors' external connections as board relational capital play an important role in enhancing firm performance by increasing sales growth.

[Insert Table 1.4]

Next, I examine whether there is an association between the extent of directors' external connections and firm profitability. Table 1.5 presents results from regressing changes in ROA on changes in directors' external connections. Panel A of Table 1.5 shows the results of regression analysis based on all directors sample. Column (1) reports that changes in directors' external connections at year t are significantly ($p < 0.01$) positively associated with changes in ROA at year t , indicating that directors' external connections provide economic benefit to firms by improving profitability. Similar to the results in Table 1.4, the results suggest that controlling for the governance and other firm and board characteristic variables, firms with more well-connected directors show higher profitability than firms with less well-connected directors. The results also suggest that firms in an early stage of their life cycle are more likely to benefit from directors' external connections. Column (2) adds the control variable, changes in directors' external connections at year $t-1$. The results show that the coefficient of the change in directors' external connections at year $t-1$ is not statistically significant. After controlling for the change in directors' external connections at year $t-1$, the association between the change in directors' external connections at year t and the change in ROA at year t is marginally positive ($p < 0.1$). Column (3) and (4) show the result of the regression including year and Fama-French 49 industry controls. In the presence of both year and industry controls, the results are very similar to those reported in column (1) and (2). I find the coefficient of the change in directors' external connections at year t is significantly positive ($p < 0.01$) in column (3) and the coefficient of the change in directors' external connections at year t is marginally positive ($p < 0.1$) in column (4). The findings imply that new appointments of directors with more extensive external connections to the board help firms improve their profitability.

Panel B of Table 1.5 report the results of regression analysis based only on the subsample of independent directors. Consistent with my results based on all directors sample, I find a significantly positive association between the extent of directors' external connections and firm profitability except specifications controlling the change in directors' external connections at year $t-1$, which show the positive, but not statistically significant association. Together, the results are consistent with directors' external connections providing economic benefit to firms by improving profitability.

[Insert Table 1.5]

To examine whether firms experience efficiency gains through cost reductions in the presence of directors with more extensive external connections, I investigate the relationship between the change in directors' external connections and the change in cost of goods sold and SG&A expenses for the firm. Table 1.6 presents the results from regressing changes in cost of goods sold on changes in directors' external connections. Panel A of Table 1.6 shows the results of regression analysis based on all directors sample. Column (1) reports the results of the base regression. I find that the association between the change in directors' external connections at year t and the change in cost of goods sold at year t is significantly ($p < 0.01$) negative, indicating that the firm experiences product cost reductions after the appointment of new directors to the board with more external connections. This association holds after controlling for the governance and other firm and board characteristic variables. The results also suggest that firms in an early stage of their life cycle are more likely to benefit from directors' external connections though cost reductions. Column (2) adds the change in directors' external connections at year $t-1$ as a control variable. The results suggest that even after controlling for the addition of directors with more extensive external connections to the board in the year before,

the relation between the change in directors' external connections at year t and the change in cost of goods sold at year t is still negative, although the coefficient is marginally significant at a 10% significant level. These associations hold after controlling for the influence of industry and year fixed effects, shown in column (3) and (4).

Panel B of Table 1.6 report the results of regression analysis based only on the subsample of independent directors. While the signs of the coefficients of changes in directors' external connections are all negative, none of these coefficients is statistically significant, indicating that external connections of employee directors contribute more to product cost reductions than those of independent directors. To examine the relationship between changes in directors' external connections and changes in cost of goods sold, I use changes in cost of goods sold scaled by sales. Given my findings in Table 1.4 show that changes in directors' external connections are significantly positively associated with changes in sales revenue, it is possible that additional subtraction by the changes in sale measure captured in the changes in cost of goods sold measure may lead to strong negative association between changes in directors' external connections and changes in cost of goods sold in Table 1.6. To rule out this possibility, I estimate another model using a measure of cost of goods sold without scaling. The results (untabulated) from this analysis are qualitatively similar to those obtained from the analysis reported in Table 1.6.

[Insert Table 1.6]

Then I investigate the relationship between changes in directors' external connections and changes in SG&A expenses of firms. Table 1.7 presents the results from regressing changes in SG&A expenses on changes in directors' external connections. Panel A of Table 1.7 shows the results of regression analysis based on all directors sample. The results are mixed depending on the control variables. Column (1) reports the results of the base regression. I find the

association between changes in directors' external connections at year t and changes in SG&A expenses at year t is negative, but not statistically significant. This association is valid only after controlling for the changes in directors' external connections at year $t-1$, shown in column (2) and (4). Panel B of Table 1.7 report the results of regression analysis based only on the subsample of independent directors. Those results are consistent with the results based on all directors sample. Overall, these findings suggest that firms may experience efficiency gains through cost reductions, particularly, for cost of goods sold, in the presence of directors with more extensive external connections. Directors' external connections may contribute less to lower SG&A expenses.

[Insert Table 1.7]

Taken together, my results suggest that the social capital captured in directors' external connections provides economic benefits to firms by increasing sales growth, lowering production costs, and improving profitability of firms.

1.5 ADDITIONAL ANALYSES

1.5.1 Impact of Different Types of Directors' External Connections on Firm Performance

“The sociology literature suggests that different types of networks are activated in different situations and may therefore have different effects on the board's monitoring and advising roles.” (Chidambaran, Kedia, and Prabhala 2012, p. 10). In this section, I further examine the impact of three different types of directors' external connections; professional connections, educational connections, and other connections to firm operating performance.

I partition the measure of directors' external connections (*DEC*) described in Section 1.4 into *Professional Connections*, *Educational Connections*, and *Other connections*. My measure of firm *i*'s directors' professional connections is the average of professional connections belonging to *N* board members of the firm, defined as

$$APC_{i,t} = \frac{1}{N} \sum_{r=1}^N PC_{r,t}.$$

My measure of firm *i*'s directors' educational connections is the average of educational connections belonging to *N* board members of the firm, defined as

$$AEC_{i,t} = \frac{1}{N} \sum_{r=1}^N EC_{r,t}.$$

My measure of firm *i*'s directors' other connections is the average of other connections belonging to *N* board members of the firm, defined as

$$AOC_{i,t} = \frac{1}{N} \sum_{r=1}^N OC_{r,t}.$$

I repeat the main regression model (1) to (4), described in Section 1.4. Specifications (1) to (3) include only one of three external connection measures, *APC*, *AEC*, *AOC*, as a main explanatory variable, and Specification (4) includes all of three external connection measures as main explanatory variables.

Table 1.8 reports that results from regressing changes in sales revenue on changes in three different types of directors' external connections. Panel A of Table 1.8 shows the results of regression analysis based on all directors sample. Specification (1) presents the regression estimates for the professional connections. The results show that the coefficient for professional connections is significantly positive ($p < 0.01$) so professional overlaps tend to increase sales

growth. Specification (2) presents the regression estimates for the educational connections. The results also show that changes in directors' educational connections are significantly ($p < 0.01$) positively associated with changes in sales revenue. Specification (3) presents the regression estimates for the other connections. The results show that the coefficient of the change in directors' other connections is marginally positive ($p < 0.1$). All these associations hold after controlling for the governance, other firm and board characteristic variables, and industry and year effects. Specification (4) shows that the coefficients of professional and educational connections remain positive and significant, but the coefficient of other connections is not statistically significant. To measure relative importance of three connection variables to the changes in sales revenue, I provide standardized regression coefficients of three connection variables. The standardized regression coefficients of changes in professional, educational, and other connections are 0.015, 0.015, and 0.006 respectively. The results indicate that directors' past professional and educational connections have greater impact on firm performance than directors' other connections. Panel B of Table 1.8 reports the results of regression analysis based only on the subsample of independent directors. The results are very similar those reported in Panel A of Table 1.8.

[Insert Table 1.8]

Table 1.9 reports that results from regressing changes in ROA on changes in three different types of directors' external connections. Panel A of Table 1.9 shows the results of regression analysis based on all directors sample. Specification (1) presents the regression estimates for the professional connections. The results show that the coefficient for professional connections is significantly positive ($p < 0.05$) so professional overlaps tend to improve profitability. Specification (2) presents the regression estimates for the educational connections.

The results also show that changes in directors' educational connections are significantly ($p < 0.05$) positively associated with changes in ROA. Specification (3) presents the regression estimates for the other connections. The results show that the coefficient of the change in directors' other connections is positive, but not statistically significant. All these associations hold after controlling for the governance, other firm and board characteristic variables, and industry and year effects. Specification (4) shows that the coefficient of professional connections is only significant, and that the coefficients of educational and other connections are not significant. Panel B of Table 1.9 reports the results of regression analysis based only on the subsample of independent directors. The results are similar those reported in Panel A of Table 1.9 except for Specification (4) indicating that the impact of all three types of connections are significant ($p < 0.05$, $p < 0.05$, $p < 0.1$ respectively). To measure relative importance of three connection variables to the changes in ROA, I provide standardized regression coefficients of three connection variables. The standardized regression coefficients of changes in professional, educational, and other connections are 0.010, 0.009, and 0.002 respectively. The results indicate that directors' past professional and educational connections have greater impact on firm performance than directors' other connections.

[Insert Table 1.9]

Table 1.10 reports that results from regressing changes in cost of goods sold on changes in three different types of directors' external connections. Panel A of Table 1.10 shows the results of regression analysis based on all directors sample. Specification (1) presents the regression estimates for the professional connections. The results show that the coefficient for professional connections is significantly negative ($p < 0.01$) so professional overlaps tend to contribute product cost reductions. Specification (2) presents the regression estimates for the

educational connections. The results also show that changes in directors' educational connections are significantly ($p < 0.01$) negatively associated with changes in cost of goods sold. Specification (3) presents the regression estimates for the other connections. The results show that the coefficient of the change in directors' other connections is not significant. All these associations hold after controlling for the governance, other firm and board characteristic variables, and industry and year effects. Specification (4) shows that the coefficients of professional and educational connections remain negative and significant, but the coefficient of other connections is not statistically significant. To measure relative importance of three connection variables to the changes in cost of goods sold, I provide standardized regression coefficients of three connection variables. The standardized regression coefficients of changes in professional, educational, and other connections are -0.025, -0.024, and 0.000 respectively. The results indicate that directors' past professional and educational connections have greater impact on firm performance than directors' other connections. Panel B of Table 1.10 reports the results of regression analysis based only on the subsample of independent directors. The results show that the impact of educational connections is the most significant, and the impact of both professional and other connections are not statically significant, indicating that independent directors play a slightly different role in providing resources for cost reductions.

[Insert Table 1.10]

Table 1.11 reports that results from regressing changes in SG&A expenses on changes in three different types of directors' external connections. Panel A of Table 1.11 shows the results of regression analysis based on all directors sample. Consistent with my main results, Specifications (1) to (4) show that none of three types of connections is associated with changes in SG&A expense. Panel B of Table 1.11 reports the results of regression analysis based only on

the subsample of independent directors. I find the similar results as the results in Panel A of Table 1.11. The significance levels of the external connections variables are all comparable to those shown in Panel A of Table 1.11.

[Insert Table 1.11]

Taken together, my results indicate that directors' past professional connections have greater impact on firm performance than directors' educational connections and other connections.

1.5.2 Industry Analysis

The literature in sociology describes how social capital such as managerial ties and networks is a function of brokerage opportunities in a network and explains when and where social capital is valuable (Granovetter 1973; Freeman 1977; Cook and Emerson 1978). Burt (1997) argues that the value of social capital to an individual is contingent on the number of peers and finds that social capital is especially valuable to individual with few peers. Furthermore, several researchers (Baysinger and Butler 1985; Zahra and Pearce 1989) suggest that boards may vary significantly in the level of resources they bring to the firm and some resources may be more critical to one specific firm than others depending on the firm's internal and external contingencies. I expect that the impact of directors' external connections on firm performance is more pronounced among industries that are not yet fully open for market competition, regulated by government, or have relatively smaller customer and supplier base.

I use 12 industry classifications of Fama-French (Consumer Non-Durables, Consumer Durables, Manufacturing, Energy, Chemicals, Business Equipment, Telecommunication, Utilities, Wholesale and Retail, Healthcare, Finance, Other) to test the impact of directors'

external connections on firm performance by industry. I then repeat the main regression model (1) to (4), described in Section 1.4 for each of the 12 industry groups.

Table 1.12 presents the impact of directors' external connections on firm operating performance by different industry groups. Column (1) reports the results from regressing changes in sales revenue on changes in directors' external connections.⁶ The coefficients of directors' external connections in Finance, Utilities, Healthcare, Business Equipment, and Manufacturing industries are all positive and statistically significant. The results show that the impact of directors' external connections on firm performance in terms of increases in sales revenue is significant among firms in regulated industries and firms in relatively smaller customer and supplier base industries. The industries that have very large customer and supplier base like wholesale and retail industry appear to have little immediate effect on sales boosting.

Column (2) presents the impact of directors' external connections on profitability. The coefficients of directors' external connections in Finance and Energy industries are positive and statistically significant. The results show that the impact of directors' external connections on the improvement in profitability is significant among firms in regulated industries.

Column (3) and (4) report the impact of directors' external connections on cost of goods sold and SG&A expenses respectively. The results show that the coefficients of directors' external connections are not significant in any industries, suggesting that the impact of directors' external connections on cost of goods sold and SG&A expenses do not vary across the different industries.

⁶ Total revenue for Finance industry is defined as the gross income received from all divisions of the company including interest and related income, investment securities, investment banking income, commissions and fees (Broker/Dealer, Real Estate), development revenue (Real Estate), insurance premiums (Insurance), investment income (Real Estate, Insurance).

Results from Table 1.12 suggest that by accessing to critical firm resource through relational capital captured in directors' external connections, a firm may improve its operational performance, but the importance of directors' external connections in providing resources to a firm may vary by industry.

[Insert Table 1.12]

1.5.3 DuPont Analysis

In Section 1.4, I documented significant improvement in both revenue and return on assets (ROA) of the firm following the addition of well-connected directors to the board. While revenue increase is consistently significant across all models I examine in Section 1.4, alternative explanations exist concerning which component of ROA, i.e., either asset turnover or profit margin might drive the observed ROA increase.

To examine two fundamental elements of firm profitability (ROA), I disaggregate ROA (net income \div average total assets) into two components, profit margin (net income \div sales) and asset turnover (sales \div average total assets). Asset turnover measures the firm's ability to generate sales with a given level of investment, and product margin measures the firm's ability to control costs at a given level of sales activity (Atkinson, Banker, Kaplan, and Young 2001). I use the same models elaborated in Section 1.4. In these models, dependent variables are changes in asset turnover (ΔATO) and profit margin (ΔPM) respectively.

I expect the addition of well-connected directors to the board to be associated with improved asset turnover. The resources that well-connected directors bring to the board may be integrated to create a strategic direction so that the firm can increase its asset turnover through

improved production efficiencies, improved inventory management, proper outsourcing, or reductions in capital costs.

I also expect the addition of well-connected directors to be associated with increased profit margin. Although the results in the Section 1.4 show that there is no association between the extent of directors' external connections and SG&A cost reduction, the results suggest that directors' external connections are associated with lower production costs. The firms with well-connected directors are more likely to develop cost-saving solutions, thereby increasing profit margin.

First, I examine the relationship between changes in directors' external connections and changes in asset turnover of the firm (ΔATO). Table 1.13 presents the results from regressing changes in asset turnover (ΔATO) on changes in directors' external connections. Column (1) reports the results of base regression. I find the association between the change in directors' external connections and the change in asset turnover at year t is positive, but not statistically significant. However, after controlling for year and industry fixed effects, I find that directors' external networks have some impact on asset turnover of the firm. That is, conditional on year and industry factors, the firm experiences an improvement in asset turnover following addition of well-connected directors to the board, shown in column (3). Columns (2) and (4) show the results after controlling for the changes in directors' external connections at year $t-1$. Even after controlling the addition of directors with more extensive external connections to the board in the year before, the relation between the change in directors' external connections at year t and the change in asset turnover at year t is still positive and statistically significant. Overall, these findings suggest that addition of well-connected directors to the board is associated with the improvement in asset turnover of the firm.

[Insert Table 1.13]

Next, I examine the relationship between changes in directors' external connections and changes in profit margin of the firm (ΔPM). Table 1.14 investigates the relationship between changes in directors' external connections and changes in profit margin of the firm (ΔPM). Column (1), (2), (3) and (4) report that changes in directors' external connections at year t are positive associated with changes in profit margin at year t , but those are not statistically significant. Overall, these results provide little evidence that the addition of well-connected directors to the board is significantly associated with the improvement in profit margin.

[Insert Table 1.14]

Taken together, my empirical findings suggest that the significant improvements in ROA after the appointment of well-connected directors are more driven by the improvements in asset turnover of the firm than the improvements in profit margin.

1.5.4 Robustness Tests

An alternative explanation for my main findings is that well-connected directors who develop reputations might acquire directorships in better performing firms. Directors seek to develop and maintain a favorable reputation as active representatives of shareholder welfare, thus enhancing their human capital on the boards on which they sit and increasing their attractiveness as candidates for board appointments at other firm (Zajac and Westphal 1996). Ferris, Jagannathan, and Pritchard (2003) examine whether the overall performance of a company affects the number of board seats secured by its outside directors under general and not extraordinary conditions. They find a positive association between performance and directors obtaining new board seats. To the extent to which this is the case, my findings of the better

performance observed for firms with newly appointed well-connected directors may not be due to the resources that the directors bring to the firms but due to well-connected directors acquiring directorships only in firms with better prospects.

To rule out this alternative explanation, I restrict the sample to firms that experienced a decrease in sales revenue prior to appointing well-connected directors to the board. I also restrict the sample to firms whose profit (ROA) deteriorated before well-connected directors are appointed to the board. Using these two alternative sets of sample data, I repeat the main regression model (1) to (4), described in Section 1.4. Table 1.15 presents results from regressing changes in sales revenue on changes in directors' external connections using two alternative sets of sample data. Panel A of Table 1.15 shows the results of regression analysis based on the alternative sample of firms that experienced a decrease in sales revenue before director appointments. The coefficient of changes in directors' external connections on changes in sales revenue is positive and statistically significant. Panel B of Table 1.15 shows the results of regression analysis based on the alternative sample of firms whose profit deteriorated before the well-connected directors are appointed. The coefficient of changes in directors' external connections on changes in sales revenue is also positive and statistically significant.

[Insert Table 1.15]

Table 1.16 presents results from regressing changes in ROA on changes in directors' external connections using two alternative sets of sample data. Panel A of Table 1.16 shows the results of regression analysis based on the alternative sample of firms that experienced a decrease in sales revenue before director appointments. The coefficient of changes in directors' external connections on changes in ROA is positive and statistically significant. Panel B of Table 1.16 shows the results of regression analysis based on the alternative sample of firms whose profit

deteriorated before the well-connected directors are appointed. The coefficient of changes in directors' external connections on changes in ROA is also positive and statistically significant.

[Insert Table 1.16]

Table 1.17 presents results from regressing changes in cost of goods sold on changes in directors' external connections using two alternative sets of sample data. Panel A of Table 1.17 shows the results of regression analysis based on the alternative sample of firms that experienced a decrease in sales revenue before director appointments. The coefficient of changes in directors' external connections on changes in cost of goods sold is negative and statistically significant. Panel B of Table 1.17 shows the results of regression analysis based on the alternative sample of firms whose profit deteriorated before the well-connected directors are appointed. The coefficient of changes in directors' external connections on changes in cost of goods sold is also negative and statistically significant.

[Insert Table 1.17]

Table 1.18 presents results from regressing changes in SG&A expenses on changes in directors' external connections using two alternative sets of sample data. Panel A of Table 1.18 shows the results of regression analysis based on the alternative sample of firms that experienced a decrease in sales revenue before director appointments. The coefficient of changes in directors' external connections on changes in SG&A expenses is negative, but not statistically significant. Panel B of Table 1.18 shows the results of regression analysis based on the alternative sample of firms whose profit deteriorated before the well-connected directors are appointed. The coefficient of changes in directors' external connections on changes in SG&A expenses is negative, but not statistically significant.

[Insert Table 1.18]

Throughout this chapter, I use a contemporaneous measure of directors' external connections, $\Delta ADEC_{i,t}$ as a baseline specification for my regression models. Given that the possibility of reverse causality, I estimate models using lagged variable of directors' external connections, $\Delta ADEC_{i,t-1}$ as a conservative baseline specification. The results (untabulated) from these models are qualitatively similar to those obtained from models using the contemporaneous measures of directors' external connections.

In summary, my results are robust to the alternative explanation and specification. I obtain similar inferences when using two alternative samples, and using a conservative specification, indicating that relational capital captured in directors' external connections provides economic benefits to firms by helping to increase sales growth, improve profitability, and lower production costs.

1.6 CONCLUSIONS

In this chapter, I examine the impact of directors' external connections on firm performance. Resource dependence theory suggests that directors provide critical resources to the firm through linkages with the external environment. I argue that relational capital captured in directors' external connections plays an important role as links that provides access to strategic inputs including raw materials and capital, information about the general environment, and knowledge of the industry and of the general business environment. I expect that well-connected directors in the boardroom networks create these benefits for the firm. Consistent with this, I find that directors' external connections help improve firm operating performance. Firms that appoint well-connected directors to the board experience significant increases in sales

revenue, product cost reduction, and improvement in profitability, even after controlling for year and industry effects, and other control variables. I also find that firms that have high growth potential and are in an earlier stage of their business life cycle are more likely to benefit from directors' external connections.

In addition, I investigate the impact of different types of directors' external connections on firm performance. I partition directors' external connections into professional, educational, and other connections and examine their impact on firm performance. I find that directors' professional and educational connections have greater impact on firm operating performance than directors' other connections. In further analysis, I find that the importance of directors' external connections in providing resources to a firm may vary by industry. The impact of directors' external connections on firm performance is most significant in the regulated and relatively smaller customer and supplier base industries. In industries with very large customer and supplier bases, such as wholesale and retail industries, directors' external connections appear to have little immediate effect on firm performance. In addition, I extend the impact of directors' external connections on firm profitability by using DuPont analysis. I find that the significant improvements in ROA after the addition of well-connected directors to board seem to be realized mainly by significant increases in asset turnover.

This paper expands on our understanding of what boards do and how they affect firm performance by documenting that in addition to the common perspective that boards create value by monitoring management, the relational capital captured in directors' external connections provides economic benefits to firms. My results also extend the existing literature that has largely focused on the relationship between CEO's social ties and firm performance. As a first study to provide empirical evidence on how, under what circumstance, and to what extent,

directors' external connections affect firm operational performance, this paper opens up further questions in this area for future research. An interesting area of future research would be to provide an explanation of the processes whereby firms transform what well-connected directors bring into the boardroom into economic benefit to firms. For example, the connections between the respective directors of buyers and suppliers may have the implications of cost reductions for buyers. Another interesting area of future research would be to examine whether firms in financial trouble are likely to get directors with extensive connections. Comparing pre- and post-firm performance on the events such as sudden death of well-connected director is also left to future research.

2.0 THE IMPACT OF EXTERNAL CONNECTIONS ON DIRECTOR COMPENSATION AND APPOINTMENT

2.1 INTRODUCTION

While CEO compensation and appointment have attracted significance attention from both researchers and practitioners, compensation paid to directors and appointment/selection of directors have received relatively less attention. Extant empirical research on director compensation and appointment has been largely grounded in agency theory perspectives by exploring the relations between the structure of director compensation and board of director independence (e.g., Bryan, Hwang, and Klein 2000; Brick, Palmon, and Wald 2006; Farrell, Friesen, and Hersch 2008). The agency theory perspective suggests that inside board members, large boards, CEOs who also chair the board, and entrenched CEOs result in less independent and less effective boards of directors (Ryan and Wiggins 2004). Brick, Palmon, and Wald (2006) find a significantly positive association between CEO and director compensation after controlling for monitoring proxies and provide evidence that this relation is due to the excessive compensation received by directors and managers associated with an environment of ineffective monitoring. Anecdotal evidence of the Enron scandal seems to suggest that excessive compensation of directors may have prevented directors from fulfilling their responsibilities in monitoring management on behalf of shareholders. Farrell, Friesen, and Hersch (2008) identify

an asymmetric relation between changes in director compensation and changes in the value of firm equity. Firms that fall below the market level begin adjusting director compensation back to the market immediately. However, there is no immediate downward-adjustment when compensation rises above the market level due to passive increases in the equity value.

In contrast, Bryan, Hwang, Klein, and Lilien (2000) find that board compensation packages are designed largely around agency-cost reduction, arising from management oversight and control that is separate from ownership. Recent studies on CEO compensation explore the impact of CEO's network connections on his/her compensation. However, to my knowledge there has been no research on how directors' external network connections impact their compensation and appointment.

This chapter examines the relationship between directors' external connections and director compensation and appointment. First, I explore the following question: How do directors' external connections affect director compensation? Drawing on my findings in Chapter 1 that document that directors' external connections have a positive impact on firm performance, I argue that the external connections of directors should also be reflected in director compensation. Consistent with prior literature, which finds that CEO networks are positively associated with CEO compensation (Geletkanycz, Boyd, and Finkelstein 2001, Engelberg, Gao, and Parsons 2013, Liu 2010), I find that directors' external connections are positively associated with the level of their compensation and that directors with more extensive external connections earn more than those with more limited external connections, supporting the argument that directors' external connections are strategically valuable to firms (Geletkanycz and Hambrick 1997). This association holds after the controlling for the influence of the firm characteristics, industry and year fixed effects.

It is possible that this association merely reflects the endogeneity of directors' external connections, whereby directors' external connections are correlated with directors' attributes such as experience and education. To evaluate this explanation, I further examine the association by controlling for directors' experience and educational attainments which are potentially related to director compensation, and decomposing the external connection variable into three individual components; professional, educational, and other connections. Even after controlling for these director characteristics, human capital, I find that the main association still holds. I find that professional connections of outside directors are important determinants of pay for serving as a director, but educational and other connections of outside directors are not associated with their compensation. This finding is in contrast to Engelberg, Gao, and Parsons (2013) who find that CEO' educational connections are more valuable than either professional or other connections. One interpretation of this result is that directors and CEOs have different roles within the firm. CEO ability is important in managing the operations of the firm, while directors are concerned with monitoring and resource provision. As a result, we may expect that different connections play different roles for CEOs and directors in benefiting the firm. This claim is supported by an additional test using the subsample of employee directors. I find that educational connections of employee directors as well as professional connections of employee directors are significantly associated with their compensation.

In addition, I examine whether the association between the extent of external connections and director compensation is confounded by CEO and board related governance characteristics. I find that the impact of directors' external connections on director compensation is significantly positive, suggesting that my primary results are unlikely to be confounded by CEO and board related governance characteristics.

Next, I discuss the impact of directors' external connections on another director labor market outcome, director appointment. Using the subsample of directors who departed as a director from the firm on which he/she served during the period from 2003 to 2010, I examine whether directors' external connections impact the likelihood of being selected as a new director. O'Neal and Thomas (1995) argue that director selection occurs primarily through networking rather than through recruiting channels. Consistent with this argument, I find that directors who exit are more likely to obtain new directorships through their external connections, suggesting that external connections play an important role in the director selection process. In particular, I find that professional connections are more valuable in increasing the likelihood of receiving additional board seats than educational and other connections.

The effects of control variables on director appointment are also interesting. I find that the existence of a social connection between the exiting director and other board members in the new firm, the number of qualifications, the number of other directorships which the exiting director currently holds, aggregate board experience, and big corporation board experience increase the likelihood of obtaining a new director appointment. The profitability measured by ROA of the firm on which the director previously served is marginally associated with the likelihood of gaining a new director appointment. However, the stock return of the firm on which the director previously served and gender of the exiting director are not associated with the likelihood of gaining a new director appointment. Consistent with prior literature (Srinivasan 2005; Fich and Shivdasani 2007), I find that directors who served on the board of firms that had financial restatements during their tenure are less likely to obtain a new director appointment. I also find that older exiting directors are less likely to obtain a new director appointment.

Collectively, my findings suggest that directors' external connections increase the likelihood of obtaining additional board seats.

Given that large sample data on supply and demand in director labor market are not readily available, the subsample of the exiting directors used in this study is informative. However, it is a small and potentially biased sample. To check the robustness of the results, I use the sample of all directors in the BoardEx database during the period 2003 to 2010. I find that my finding is robust to the alternative analysis.

Unlike datasets in other studies that are largely based on board interlocks, I map the entire network of over 393,000 board level directors and executives, and construct my measure of directors' external connections, using detailed biographical data for directors and executives provided by the BoardEx database. While interlocks capture only current direct ties among directors and executives, my external connection measure captures indirect ties as well as direct ties developed in the past and present.

This chapter contributes to the literature on board of director compensation in the following ways. Prior research examines the relationship between director compensation and board independence (e.g., Ryan and Wiggins 2004). While I also provide some insight into how director independence contributes to the level and structure of director compensation, I identify an important attribute in a director that explains director compensation. Examining how directors' external connections affect director compensation provides additional insights, increasing our understanding of director compensation. My findings suggest that the external connections of directors accrue value to the firm, and thus impact director compensation. The results extend the prior literature that shows that CEOs with larger networks of personal connections to those outside the firm earn more than those with smaller networks (Engelberg,

Gao, and Parsons 2013) by identifying a specific director attribute that has meaningful impact on director compensation.

This paper also contributes to the existing literature that investigates the determinants of the selection or retention of individual directors. Using a subsample of exiting directors, I provide the evidence that external connections of directors increase the likelihood of the exiting directors getting new board seats. This result complements prior research that documents that CEOs play a key role in selecting new board members (Lorsch and MacIver 1989), or find that directors who serve larger firms and sit on larger boards are more likely to attract additional directorships (Ferris, Jagannathan, and Pritchard 2003). This result also extends prior literature that finds an outside CEO candidate benefits significantly by having connections to the board of the hiring firm (Liu 2010).

The remainder of the chapter is organized as follows. Section 2.2 reviews the background literature. Section 2.3 describes the data and the construction of variables, and provides descriptive statistics on external connections, compensation, and appointments of directors. Section 2.4 describes research design, and presents empirical results on director compensation including several robustness tests. Section 2.5 provides research design, and presents empirical results on director appointment. Section 2.6 provides concluding remarks.

2.2 LITERATURE REVIEW

Section 2.2.1 provides a review of prior research that considers the determinants of the director compensation. Section 2.2.2 summarizes the studies on the director appointment.

2.2.1 Director Compensation

While executive compensation is the subject of a vast literature, director compensation is relatively less explored. Existing research on director compensation can be broadly divided into two categories: research which examines the impact of director compensation on board decision making and firm performance, and research which considers the determinants of director compensation.

Most existing empirical research has focused on the impact of director compensation on board decision making and firm performance. A large number of studies have investigated the association between directors' compensation mix and board effectiveness and/or firm performance. Bhagat, Carey, and Elson (1999) examine the relationship between outside director stock ownership and effective monitoring and firm performance. They find that outside director stock ownership is significantly associated with firm performance and the likelihood that executives are replaced following poor performance. Vafeas (1999) finds that a significant predictor of the adoption of equity based director incentive plans is the proportion of outside directors, which is positively related to adoption. Perry (2000) examines whether the structure of director compensation affects CEO turnover and find that equity-based compensation increases the level of monitoring and the likelihood of CEO turnover following poor performance. Ryan and Wiggins (2004) examine the relation between the structure of director compensation and board independence. They find that director compensation is determined by the board's power relative to that of the CEO, and varies with barriers to effective monitoring, suggesting that powerful managers use their power to influence the directors' compensation to provide fewer incentives to monitor by reducing the directors' pay sensitivity to overall firm performance. Fich and Shivdasani (2005) examine the market reaction to the adoption of equity based director

incentive plans. They show that firms with high market-to-book ratios are more likely to utilize option compensation for their directors than firms with low market-to-book ratios. They also find that the market reacts positively to the adoption of a director stock option plan. Bryan and Klein (2004) examine whether there is an association between director stock option grants and managers taking on more risky, higher net present value projects. They find that significantly positive associations between the stock option compensation for directors and future investments, volatility of returns and firm performance. Becher, Campbell, and Frye (2005) examine how regulatory changes affect equity-based compensation for non-employee directors. They find that deregulation within the banking industry is associated with an increase in the use of equity-based compensation for bank directors and that this increase accompanies improved accounting profitability. Adams and Ferreira (2008) investigate the impact of board meeting fees on outside directors' attendance at board meetings. They find the positive association between board meeting fees and outside directors' attendance records.

The empirical research on the determinants of director compensation has been relatively less explored. Most of the existing empirical research has focused on the independence of directors comprising the board in this line of literature. Brick, Palmon, and Wald (2006) find CEO and directors indirectly influence their own pay and CEO pay tends to be higher when director pay is higher, suggesting that the positive relationship between CEO and director excess compensation is due to mutual back scratching. Linn and Park (2005) find that elements of outside director compensation are significantly related to the investment opportunity set. Firms with more investment opportunities pay a higher level of compensation to their outside directors than firms with fewer investment opportunities. In addition to paying more total compensation, firms with greater investment opportunities compensate directors more heavily with stock-based

forms of compensation than with cash. They also document a positive relation between total compensation of outside directors and firm size. They conclude that firms pay more and emphasize incentive-based compensation to motivate outside directors to act in the interests of shareholders when the costs of monitoring are high.

Bryan, Hwang, Klein, and Lilien (2000) find that board compensation is structured to mitigate agency problems inherent in firms whose management control is separated from ownership. Thus, compensation packages paid to outside directors are designed to resemble compensation packages paid to the CEO. Prior literature examines whether director independence affects the level of director compensation. Yermack (2004) investigates the incentives received by outside directors. He finds that “outside directors receive positive performance incentives from compensation, turnover, and opportunities to obtain new board seats” (p. 2282). Linck, Netter, and Yang (2009) find that after the Sarbanes-Oxley Act (SOX), there are significant increases in director pay and overall director costs, particularly among smaller firms.

Recently, literature in finance investigates the impact of CEO’s social connections on CEO labor market outcomes. Hwang and Kim (2009) measure social ties between CEOs and outside directors at Fortune 100 firms and examine the effect of social ties on executive compensation. They find that CEOs with social ties to board members receive more compensation. The study by Engelberg, Gao, and Parsons (2013) is perhaps most closely related to this paper. They find that CEOs with large networks of personal connections to those outside the firm earn more than those with smaller networks. I extend this literature by identifying a specific director attribute that has meaningful impact on director compensation. Specifically, my

results suggest that directors with more extensive external connections earn more than those with more limited connections.

2.2.2 Director Appointment

Prior literature that examines the selection or retention of individual directors has concentrated on the role of the CEO in the director selection process. Mace (1971) provides anecdotal evidence on the influence of CEOs in director selection. Lorsch and MacIver (1989) find CEOs play a key role in selecting new board members. Westphal and Zajac (1995) find that relatively powerful CEOs are likely to appoint individuals to the board who are demographically similar to themselves. Conversely, relatively powerful boards are more likely to appoint individuals who are demographically similar to the existing board. Shivdasani and Yermack (1999, p. 1830) find that “when the CEO is involved, firms appoint fewer independent outside directors and more gray outsiders.” Collectively, this evidence supports the hypothesis that CEOs play a dominant role in the identification and selection of directors.

Another stream of research investigates the role of network in the director selection process. O’Neal and Thomas (1995) argue that director selection through networking such as board memberships, professional associations, social contacts, personal acquaintances, and school ties rather than through the recruiting channels is the primary process in executive selection, and director networks have been the dominant means of identifying candidates for new directors. A recent study by Liu (2010) examines the role of prospective CEOs’ social connections to board members in the new CEO selection process. She finds that an outside CEO candidate benefits significantly by having connections to the board of the hiring firm. I extend this literature by providing empirical evidence that networking plays an important role in the

director selection process and that directors with more extensive connections are more likely to obtain new directorships.

Several other papers examine the market for directors. Gilson (1990) finds that a director will be less likely to remain with the firm after the conclusion of bankruptcy or debt restructuring. Directors who resign from financially distressed firms subsequently serve on fewer boards of other companies. Ferris, Jagannathan, and Pritchard (2003) find that directors who serve larger firms and sit on larger boards are more likely to attract additional directorships. They also find that the past performance of the firm for which an individual serves as a director correlates with the number of directorships subsequently held by that individual. Harford (2003) documents that directors at firms that are the target of hostile takeover are unlikely to be retained on the new board. Coles and Hoi (2003) examine the relation between a board's decision to reject antitakeover provisions of Pennsylvania Senate Bill 1310 and subsequent labor market opportunities of those same board members. They find that directors who served on the board of Pennsylvania firms that decided to reject all or some antitakeover provisions of SB1310 are more favorably received in the market for external board seats than are directors who served on the board of Pennsylvania firms that decided to retain all of the law's provisions. Srinivasan (2005) examine career and litigation consequences of accounting restatements for outside directors. He finds that outside directors lose positions on other boards following a restatement. Fich and Shivdasani (2007) investigate the reputational impact of financial fraud for outside directors. They find that outside directors do not face abnormal turnover on the board of the sued firm but experience a significant decline in other board seats held following a financial fraud lawsuit. Ertimur, Ferri, and Stubben (2010) examine the consequences of the implementation decision of majority-vote shareholder proposals for outside directors' reputations in the labor market. They

find that the implementation of majority-vote shareholder proposals is associated with approximately a one-fifth reduction in both the probability of director turnover and the probability of losing other directorships.

2.3 DATA AND DESCRIPTIVE STATISTICS

2.3.1 Data and Sample Selection

As described in Chapter 1, the primary data source for this study is BoardEx database. The database covers over 435,000 directors and executives of over 15,000 publicly quoted and large private companies. It contains biographical information of directors and executives and directors including current and past employment history, educational background, and other activities like memberships in general social associations, organizations, or charitable groups, and directors' qualification such as CPA, CFA, or JD. I collect corporate governance variables from BoardEx.

I obtain director compensation data during the period from 2000 to 2010 from three sources, ExecuComp, BoardEx, and company proxy statements. I collect compensation data for outside directors and employee directors separately since these two types of directors are compensated differently. For example, depending on the firm, outside directors may receive an annual cash retainer, meeting fees, committee fees and equity awards. However, employee directors are not compensated for their service on the board. I define directors who are also officers of the firm as employee directors. According to definitions stated in the Combined Code (2003), I classify non-employee directors who have personal or commercial ties with the firm or

executives as grey directors. I classify all other directors as outsider directors. I measure the total compensation received by each outside director including fees earned in cash, stock and option awards, and all other compensation. Cash compensation received by each outside director is composed of the sum of fees earned in cash and all other compensation, and equity-based compensation received by each outside director is composed of the sum of stock and option awards. Employee directors' total compensation comprises salary, bonus, total value of restricted stock grants, long-term incentive payouts, and all other compensation. Employee directors' cash compensation is composed of the sum of salary, bonus, and all other total compensation. Employee directors' equity-based compensation is composed of the sum of stock and option awards.

I obtain director appointment and departure data from two sources, BoardEx and company proxy statements. I identify director departures and director appointments that occurred during the period from 2003 to 2011. Then I follow each exiting director, and track the exiting director's new position.

I use COMPUSTAT for firm-specific financial data and CRSP for stock price data. I use the Audit Analytics to identify restated quarterly and annual reports. My final sample is the intersection among BoardEx, COMPUSTAT, CRSP, and Audit Analytics matched by following multiple steps described in Chapter 1. This results in 7,627 matched companies consisting of 52,146 unique directors.

2.3.2 Descriptive Statistics

Panel A of Table 2.1 presents summary statistics on the compensation of outside director. The average cash compensation for outside directors is \$84 thousand in 2010. The average value

of equity-based compensation for outside directors is \$213 thousand in 2010. The average total compensation for outside directors increased from \$183 thousand to \$285 thousand between 2000 and 2010. By types of outside directors, on average, grey directors (Panel B of Table 2.1) receive total compensation of \$923 thousand and independent directors (Panel C of Table 2.1) receive total compensation of \$253 thousand for serving as a director in 2010. While the average cash and equity-based compensation of grey directors are \$134 thousand and \$859 thousand respectively, those of independent directors are \$81 thousand and \$183 thousand respectively suggesting that grey directors earn more than independent directors for serving as a director and the difference in pay package between grey directors and independent directors is mainly due to the significantly higher equity-based compensation for grey directors. The total compensation of grey directors is significantly higher than that of independent directors throughout my sample period (2000 – 2010). However, the proportion of grey directors in boards decreases significantly from 28.3% to 5.0% between 2000 and 2010.

Panel D of Table 2.1 presents summary statistics on the compensation of employee directors. The average cash compensation for employee directors is \$975 thousand in 2010. The average value of equity-based compensation for employee directors is \$12,761 thousand in 2010. The average total compensation for employee directors is \$13,049 thousand in 2010.

Panel E of Table 2.1 presents summary statistics on the compensation of employee directors excluding CEO. The average cash compensation for employee directors excluding CEO is \$550 thousand in 2010. The average value of equity-based compensation for employee directors is \$7,974 thousand in 2010. The average total compensation for employee directors is \$7,562 thousand in 2010.

[Insert Table 2.1]

Table 2.2 presents summary statistics of annual director departures and appointments. There are total of 15,708 director departures and total of 16,917 new director appointments during the period from 2003 to 2011.

[Insert Table 2.2]

Table 2.3 presents summary statistics on the firms, their boards, executives and directors. They provide several characteristics for 52,146 directors and executives from 7,627 companies from 2000 to 2010. Panel A of Table 2.3 provides univariate statistics on key variables.

On average, a director has approximately 372 external network connections to all other directors. The directors' external connections vary by types of directors. The median director has 213 external connections. An employee director has an average of 247 external network connections. The median employee director has 123 external connections. A grey director (an affiliated non-executive director)⁷ has an average of approximately 327 external network connections. The median grey director has 167 external connections. Independent directors have the biggest network connections, the mean (median) is approximately 418 (255) external network connections.

The average total assets of the firms in my sample are approximately \$9.3 billion. The median total assets are \$705 million. The average market-to-book asset ratio is 3.76, and the median market-to-book asset ratio is 1.85. The return on assets (ROA) is 0.024 on average, and the median is 0.030. The average stock return is 0.003, and the median is 0.004. The average tenure of a director is approximately 7.8 years, and the median is 5.7 years. Approximately 41

⁷ According to definitions stated in the Combined Code (2003), grey directors have personal or commercial ties with the firm or executives. Such ties are inferred where the non-executive is related to any of the firm's directors, advisors or senior employee, has served on the board for more than nine years, was formerly an employee of the company or group, has received additional remuneration apart from director's fee, has any material business relationships with the company, represents a significant shareholder, or interlocking directors.

percent of the directors have a social tie with the CEO of the firm for which the director serves. The average number of directors per firm is 8.67 directors. The median is 8. A firm has approximately 29 percent of inside directors on the board on average, and the median is 25 percent. The average tenure of CEOs is approximately 5.5 years, and the median is 3.6 years. Approximately 61 percent of the CEOs are also the chairperson of the board. Panel B of Table 2.3 provides a correlation matrix for some of the key variables in the analysis. Directors' external connections appear to bear a positive association with compensation, firm size, market-to-book, firm profitability, and board size.

[Insert Table 2.3]

2.4 EXTERNAL CONNECTIONS AND DIRECTOR COMPENSATION

2.4.1 Empirical Results

To examine the impact of external connections on director compensation, I estimate ordinary least squares (OLS) regressions of director compensation on directors' external connections. First, I investigate the relationship between directors' external connections and total compensation, and then analyze two compensation components, cash compensation and equity-based compensation separately. I use a natural logarithmic transformation to control for skewness in the directors' external connections, although the results are similar when this transformation is not used. In each case, my key explanatory variable is directors' external connections, and I include control variables for director characteristics such as tenure of directors, and an indicator variable for the types of director which equals one if the director is an

independent director, or equals zero if the director is a grey director in the conventional classification, and firm characteristics such as size, performance, growth opportunity, and risk. I also control for year and industry fixed effects.

I run both linear and log-linear (using the natural logarithm) specifications of director compensation models to examine both the dollar impact of directors' external connections and the elasticity of directors' external connections.

I start with outside directors' compensation. Table 2.3 reports my regression results on the relationship between outside directors' external connections and compensation. Panel A of Table 2.3 reports the linear specification where the dollar value of outside director compensation is regressed on various determinants. Panel B of Table 2.3 reports the log-linear specification where the natural logarithm of outside director compensation is regressed on various determinants (where several determinants are also transformed via the natural logarithm).

Panel A of Table 2.4 shows the results from regressing dollar value of compensation of outside directors on external connections. Column (1) report the relationship between outside directors' external connections and total compensation. I expect total compensation of outside directors to be positively related to the provision of resources by outside directors. Consistent with my expectation, the results show that the estimated coefficient of outside directors' external connections on total compensation is positively and statistically significant ($p < 0.01$), suggesting that directors' external connection is associated with higher compensation and additional 1% increase in connection is worth roughly \$346. Column (2) shows the results from regressing cash compensation of outside directors on external connections. The coefficient of outside directors' external connections on cash compensation is also positive and significant ($p < 0.01$), suggesting that cash compensation of outside directors with extensive connections is higher than that of

outside directors with limited connections. Column (3) reports the relationship between outside directors' external connections and equity-based compensation. The coefficient of outside directors' external connections on equity-based compensation is also positive, but marginally significant ($p < 0.1$), suggesting that cash compensation of outside directors with extensive connections is higher than that of outside directors with limited connections. Overall, my results imply outside directors' external connections are a significant determinant of pay for serving as a director, and the compensation of outside directors with extensive connections is higher than that of outside directors with limited connections.

Panel B of Table 2.4 reports the results from regressing the natural logarithm of compensation of outside director on external connections. Similar to the results in Panel A, the estimated coefficients of outside directors' external connections on total, cash, and equity-based compensation are positively and statistically significant ($p < 0.01$). The coefficients of outside directors' external connections on total, cash, and equity-based compensation are 0.112, 0.099, and 0.089 respectively. These suggest that a 10% increase in outside directors' external connections is associated with a 1.10%, 0.95%, and 0.85% increase in outside directors' total, cash, and equity-based compensation respectively. In other words, we expect about 1.1% higher in total compensation when outside directors have 10% more external connections. Interestingly, the coefficients of the indicator variable for independent directors on total, cash, and equity-based compensation are significant and negative, indicating that the compensation of independent directors is less than that of grey directors. This result is puzzling since the external connections of independent directors appear to be larger than those of grey directors on average. I ran the subsample analysis excluding grey directors who were former CEOs of the firm of which he or she sits on the board. Table 2.5 shows the results for the subsample analysis. Unlike

the results reported in Table 2.4, the coefficients of the indicator variable for independent directors on compensation are negative but statistically significant, indicating that after controlling for former CEO directors, the types of outside directors are not associated with director compensation. In sum, these findings suggest that outside directors with more extensive connections earn more than those with more limited connections, supporting the argument that director external connections are strategically valuable to firms, thus, directors should be paid for it.

[Insert Table 2.4]

[Insert Table 2.5]

Next, I look at employee directors' compensation. Table 2.6 reports my regression results on the relationship between employee directors' external connections and compensation. Panel A of Table 2.6 reports the linear specification where the dollar value of employee director compensation is regressed on various determinants. Panel B of Table 2.6 reports the log-linear specification where the natural logarithm of employee director compensation is regressed on various determinants (where several determinants are also transformed via the natural logarithm).

Panel A of Table 2.6 shows the results from regressing dollar value of compensation of employee director on external connections. Column (1) reports the relationship between employee director's external connections and total compensation. I also expect total compensation of employee director to be positively related to the provision of resources by employee directors. Consistent with the results in Table 2.4 and my expectation, the results show that employee directors' external connection is associated with higher compensation. The magnitude of the association is much higher than that of outside directors. The estimated coefficient of employee directors' external connections on total compensation is 2,157.64,

suggesting that an additional 1% increase in social network connections is worth roughly \$21,576 of total compensation of employee directors. Column (2) shows the results from regressing cash compensation of employee directors on external connections. The results show that external connections have an impact on employee directors' cash connections. The coefficient of outside directors' external connections on cash compensation is also positive and significant ($p < 0.01$), indicating that an additional 1% increase in social network connections is worth roughly \$3,236 of cash compensation of employee directors. Column (3) reports the relationship between employee director's external connections and equity-based compensation. The association between employee directors' equity-based compensation and the extent of external connections is positive and statistically significant. The results indicate that additional 1% increase in connection is worth roughly \$19,840 of equity-based compensation of employee directors. Overall, my results suggest that similar to outside directors, the compensation of employee directors with more extensive connections is higher than that of employee directors with more limited connections.

Panel B of Table 2.6 reports the results from regressing the natural logarithm of compensation of employee director on external connections. Similar to the results in Panel A, the estimated coefficients of employee directors' external connections on total, cash, and equity-based compensation are positive and statistically significant ($p < 0.01$). The coefficients of employee directors' external connections on total, cash, and equity-based compensation are 0.382, 0.258, and 0.399 respectively. These suggest that a 10% increase in employee directors' external connections is associated with a 3.71%, 2.49%, and 3.88% increase in employee directors' total, cash, and equity-based compensation respectively. In sum, my results suggest

that employee directors with more extensive connections earn more than those with more limited connections.

[Insert Table 2.6]

Taken together, there is strong and consistence evidence that directors' external connections have significant impact on his or her compensation. Directors with more extensive connections earn more than those with more limited connections. It adds to the empirical results reported in Engelberg, Gao, and Parsons (2013) that only consider CEO's compensation.

2.4.2 Robustness Tests

Section 2.4.2 presents the main results of the paper concerning the impact of external connections on director compensation. In this section, I consider several additional tests that assess the robustness to extra controls. There are several possible explanations for the positive relationship between external connections and director compensation. First, there is a possibility that the external connection variable is correlated with other determinants for directors' wage such as intelligence, skill, charisma, etc. (Engelberg, Gao, and Parsons 2013). I test this argument in Section 2.4.3.2. Second, Ryan and Wiggins (2004, p. 498) expect that "the party with bargaining advantage, either the director or the CEO, to influence the size and the structure of the compensation package in its own interest." I examine whether the association between the extent of external connections and director compensation is confounded by CEO and board related governance characteristics in Section 2.4.3.2. Finally, given the large difference between the mean and median of director compensation in my sample, I perform median regression of director compensation on external connections in Section 2.4.3.3.

2.4.2.1 Decomposition of Directors' External Connections

To control for some other directors' attributes which are potentially related with directors' compensation, I decompose the external connection variable into three individual components: *Professional*, *Educational*, and *Other* connections. I also control for other observable director personal characteristics such as industry experience, graduate degrees, and elite educations. *Industry experience* is a dummy variable that equals one if the director possesses the same industry experience and zero otherwise. *Graduate degrees* is a dummy variable that equals one if the director holds graduate degrees such as MBA, Masters, JD, MD, or PhD degree and zero otherwise. *Elite education* is a dummy variable that equals one if the director graduated from Ivy League undergraduate schools and zero otherwise. Specifications (1) to (3) include one of three individual components of the external connection measures; *Professional*, *Educational*, and *Other* connections, as a main explanatory variable, and Specification (4) includes three individual components of the external connection measures as main explanatory variables.

Table 2.7 reports that results from regressing outsider directors' total compensation on the individual components of the external connection measures. Panel A of Table 2.7 shows the results from regressing dollar value of total compensation of outside director on the external connection measures. Among three components, *Professional* connections are significantly associated with outside directors' total compensation, but the other two components are not significant. This finding is in contrast to Engelberg, Gao, and Parson (2013) that document that each of three components of CEOs' external connection variable "*Rolodex*" is individually significant, with *Educational* connections being about four times as valuable as either *Professional* or *Other* connections, suggesting that as shown in Chapter 1, directors' professional

connections may provide economic benefits to the firm the most; the firm considers the outside director's professional connection as the most important determinant of pay for serving as a director. However, as we expect, CEOs have a different role within the firm, so the firm considers the CEOs' educational connection as the most important determinant of pay for managing firms' day-to-day operation. The impact of other directors' personal characteristics on outside directors' compensation is also interesting. While the effect of *Industry experience* on outside director compensation is not statistically significant, *Graduate degrees* and *Elite education* increase outside directors' compensation. These associations still hold after controlling for year and industry fixed effects.

Panel B of Table 2.7 reports the results from regressing the natural logarithm of total compensation of outside director on the external connection measures. Similar to the results in Panel A of Table 2.6, *Professional* connections are significantly associated with outside directors' compensation, but the coefficients of *Educational* and *Other* connections are not significant. Outside directors holding graduate degree and graduated from Ivy League schools earn more, but the effect of *Industry experience* on outside directors' compensation is not significant.

[Insert Table 2.7]

Table 2.8 reports that results from regressing employee directors' total compensation on the individual components of the external connection variable. Panel A of Table 2.8 shows the results from regressing dollar value of total compensation of employee director on the external connection measures. Unlike the results in Table 2.7, not only *Professional* connections, but *Educational* connections are also significantly associated with employee directors' total compensation while *Professional* connections remain the most valuable connections among three

components. This finding indicates that in addition to the role of director, employee directors also play a role as executives who involve more in day-to-day activities within the firm, so the firm considers both professional and educational as the important determinant of pay for employee directors. Similar to the results with outside directors, while the effect of *Industry experience* on outside director compensation is not significant, *Graduate degree* and *Elite education* increase outside directors' compensation.

Panel B of Table 2.8 reports the results from regressing the natural logarithm of compensation of employee director on the external connection measures. Similar to the results in Panel A of Table 2.8, both *Professional* and *Educational* connections are significantly associated with employee directors' total compensation. Employee directors holding graduate degree and graduated from Ivy League schools earn more, but the effect of *Industry experience* on employee directors' compensation is not significant.

[Insert Table 2.8]

Taken together, the evidence in Table 2.7 and 2.8 suggest that directors' external connections, particularly past professional connections, are associated with director compensation.

2.4.2.2 Governance and Director Compensation

Following Ryan and Wiggins (2004), I add a set of control variables to the regression models presented in Table 2.4 and 2.6 to control for CEO and board related governance determinants of director compensation: the logarithm of board size, the proportion of insider directors on the board, the logarithm of CEO tenure, an indicator variable for CEO and board chair duality which equals one if the CEO holds the board chairman position and zero otherwise, an indicator variable for social connection to the CEO which equals one if the director has a

social connection to the CEO and zero otherwise, and an indicator variable for intra-board connections which equals one if the director has a social connection to other non-CEO board members and zero otherwise.

Table 2.9 repeats the analysis presented in Table 2.4. Panel A of Table 2.9 shows the results from regressing dollar value of compensation of outside director on external connections. The results show that directors' external connection is positively and significantly associated with total and cash compensation ($p < 0.01$). However, the equity-based compensation is not significant. Consistent with Ryan and Wiggins (2004), the effect of board size on outside directors' compensation is significant and negative ($p < 0.01$), suggesting that outside directors on larger boards receive less both cash and equity-based compensation. However, the effect of the proportion of inside directors is significant and negative only on outside directors' cash compensation, indicating that outside directors on boards with more insiders receive less equity-based compensation. The effect of CEO tenure and CEO/Chair duality is also significant and negative ($p < 0.01$), indicating that outside directors of firms with entrenched managers receive significantly smaller compensation. The social ties to CEO and among board members are positively and significantly associated with outside directors' compensation.

Panel B of Table 2.9 reports the results from regressing the natural logarithm of compensation of outside director on external connections. I obtain the similar results as the results reported in the results in Panel A of Table 2.9 except that the coefficient of external connections on equity-based compensation is significantly positive, suggesting that outside directors' external connection is associated with higher equity-based compensation, and the coefficient of proportion of inside directors on total compensation is significantly negative,

indicating that outside directors on firms with more inside directors receive less total compensation.

[Insert Table 2.9]

To assess robustness of the impact of external connections on employee director compensation, using employee director subsample, I repeat the analysis presented in Table 2.9. Panel A of Table 2.10 shows the results from regressing dollar value of compensation of employee director on external connections. Consistent with my finding in Panel A of Table 2.9, employee directors' external connection is positively and significantly associated with compensation ($p < 0.01$). There are small discrepancies between the results based on the outside directors subsample (shown in Panel A) and the results based on the employee directors subsample (shown in Panel B) in that the coefficients of external connections on employee directors' equity-based compensation is significantly positive and the coefficients of some control variables are not significant.

Panel B of Table 2.10 shows the results from regressing dollar value of compensation of employee director on external connections. I find the similar results as the results in Panel B of Table 2.9. The significance levels of the external connection variables are all comparable to those shown in Panel B of Table 2.9, suggesting that employee directors' external connection is positively and significantly associated with compensation ($p < 0.01$).

[Insert Table 2.10]

Overall, the above results are consistent with a significant impact of directors' external connections on director compensation. These results give me more confidence in my inferences that directors with more extensive external connections earn more than those with more limited connections.

2.4.2.3 Additional Test

There is the presence of large outliers and right skewness in director compensation data (as reported in Table 2.1). Following previous research (Hall and Liebman 1998; Aggarwal and Samwick 1999; Milbourn 2003), I repeat the analysis presented in Table 2.9 and 2.10 using median regression to reduce the influence of outliers. Table 2.11 and 2.12 presents the results of the median regression. My findings in the previous sections are robust to estimating median regression. I find that the estimated coefficients of the external connection variable are still positive and statistically significant under all specifications. The results of the median regression suggest that after controlling governance determinants of director compensation, there is still a positive relation between directors' external connections and director compensation.

[Insert Table 2.11]

[Insert Table 2.12]

2.5 EXTERNAL CONNECTIONS AND DIRECTOR APPOINTMENT

2.5.1 Empirical Results

My findings in Section 2.4 show a positive association between the extent of external connections and director compensation. In this section, I turn to the influence of external connection in another director labor market outcome, director appointments. I explore whether firms tend to appoint well-connected directors. I conduct tests to examine the determinants of director appointments.

I estimate a logit model to examine whether the likelihood of obtaining new directorship from other firms is a function of the exiting director's external connections. The dependent variable is an indicator variable which equals one if the exiting director has new director appointment and zero otherwise. My key explanatory variables are directors' external connections. I decompose the external connection variable into three individual components: *Professional*, *Educational*, and *Other* connections. I also include director specific characteristics variables such as an indicator variable for social connection to the CEO which equals one if the director has a social connection to the CEO and zero otherwise, and an indicator variable for other board connections which equals one if the director has a social connection to other non-CEO board members. As proxies for directors' qualifications, I include the aggregate number of directors' qualifications reported in BoardEx, an indicator variable for graduate degrees that equals one if the director holds graduate degrees such as MBA, Masters, MD, or PhD degree and zero otherwise, an indicator variable for professional certifications which equals one if the director has CFA, CPA, or JD as proxies for financial or legal expertise, and the number of other directorship which the director currently holds. I also include the directors' aggregate board experience. The aggregate board experience is defined as the sum of the cumulative years directors have served as a director. I include an indicator variable for big corporate board experience which equals one if the director has been on the board of S&P 500 companies and zero otherwise. I include director age, and an indicator variable for gender which equals one if the director is male, and zero if the director is female. I include the firm size and two performance measures, industry-adjusted ROA and industry-adjusted stock return of the firm on which the director previously served. I use total assets of the firm on which the director previously served as a proxy for firm size. I calculate prior two years average industry-adjusted

ROA and prior two years average industry-adjusted stock return of the firm on which the director previously served as performance measures. I include an indicator variable for the experience of financial restatement which equals one if the firm on which the director previously served had a financial restatement during the director's tenure at the firm and zero otherwise. I also control for industry, year, and firm fixed effects. Specifications (1) to (3) include each of the individual external connection measures, professional connections, educational connections, and other connections, as a main explanatory variable, and Specification (4) includes all of the three external connection measures as main explanatory variables. Specification (5) uses a firm fixed effects model.

Table 2.13 presents the results of logit regressions. Specification (1) through (3) shows that the coefficients of professional, educational, and other connections are significantly positive ($p < 0.01$, $p < 0.01$, and $p < 0.05$, respectively). Specification (4) shows that the coefficients of professional, educational, and other connections are also significantly positive individually, with the magnitude of the coefficient of professional connections (0.040) being higher than that of educational connections (0.002) and other connections (0.001). Specification (5) corresponds to Specification (4) but with firm fixed effects. The results indicate that, even after controlling for firm fixed effects, the coefficients of external connection variables remain positive and significant. These results indicate that my findings in Specification (4) are not all due to cross-sectional differences. The results suggest that having more extensive connections increases the likelihood of obtaining new directorship from other firms for the exiting directors and impact of professional connections on obtaining new directorship for the exiting directors is greater than educational and other connections.

The existence of a social connection between the exiting director and the CEO and other board members is associated with significantly higher possibility of obtaining new directorship. The coefficients of social tie to the CEO and connections to board members are significantly positive ($p < 0.01$). Having more qualifications, in general, increases the likelihood that the exiting director obtains a new directorship. The coefficients of the number of qualifications, graduate degrees, and professional certifications are all significant positive ($p < 0.01$). I also find that the number of other directorship which the exiting director currently holds increases the likelihood of obtaining a new director appointment. Director prior experience variables, aggregate board experience and big corporation board experience have a positive estimate, indicating that the exiting directors are more likely to obtain a new directorship if they have spent more time on board and served on the boards of more prominent firms. I find that older exiting directors are less likely to obtain a new director appointment, and all else being equal, gender is not associated with the likelihood of gaining a new director appointment. Previous directorship on a large firm also increases the likelihood of obtaining a new director appointment. While the coefficient of the prior two years average ROA is positive, but marginally significant ($p < 0.1$), the coefficient of the prior two year average stock return is positive, but not statistically significant. Consistent with prior literature (Srinivasan 2005; Fich and Shivdasani 2007), I find that directors served on the board of firms had financial restatements during their tenure are less likely to obtain a new directorship.

[Insert Table 2.13]

Taken together, the results provide evidence that directors' external connections are positively associated with the likelihood that the exiting directors obtain a new directorship from

other companies, suggesting that the more external connections directors have, the more likely they are to receive additional board seats.

2.5.2 Robustness Test

The sample used in my main analysis reported in Section 2.5.1 is the subsample of the exiting directors during the period from 2003 to 2010. Although it is an informed sample, it may be also a biased sample. To examine the robustness of the results presented in Section 2.5.1 to an alternative sample, I use all directors sample in BoardEx during the period from 2003 to 2010, and repeat the analysis presented in Table 2.13. There is also a caveat in this sample in that an individual currently sitting on the board of a company is not eligible for a board seat at that company, which slightly understates the results. The key difference between the analyses presented in Table 2.13 and the analysis in this section is that the dependent variable in the analysis in this section is an indicator variable which equals one if a director gains a board seat in the given year and zero otherwise.

Table 2.14 present the result of logit regressions based on the alternative sample. While the magnitude of coefficients of external connection variables is slightly less than that reported in Table 2.13, the coefficients of professional, educational, and other connections are positive and statistically significant. Collectively, these results remain unchanged and are statistically similar to the results reported in Table 2.13, which are based on the subsample of the exiting director sample.

[Insert Table 2.14]

2.6 CONCLUSIONS

In this chapter, I assess whether directors' external connections influence director labor market outcomes, director compensation and appointments. I find that directors with more extensive external connections earn more than those with more limited external connections, supporting the argument that directors' external connections are strategically valuable to firms, thus, directors should be paid for it (Geletkanycz and Hambrick 1997). My findings show that the directors' external connections are positively associated with the level of director compensation. This association holds after controlling for other directors' experience and educational attributes which are potentially related with director compensation. It also holds after controlling for firm specific fixed effects. I also find that the level of compensation of grey directors is not different from that of independent directors only when I control for grey directors who were former CEOs of the firm of which he or she sits on the board.

In further analysis, I find that professional connections are the most important determinant of pay for serving as a director for outside directors. However, I find that educational connections as well as professional connections are significantly associated with the level of compensation for employee directors. My robustness test shows that my primary results are unlikely to be confounded by CEO and board related governance characteristics. These results suggest that directors with more extensive connections earn more than those with more limited connections.

In addition, I find that external connections increase the likelihood of obtaining new directorships from other firms for the exiting directors, suggesting that directors' external connections play an important role in the director selection process.

The effects of control variables on director appointment are also interesting. I find that the existence of a social connection between the exiting director and other board members in the new firm, the number of qualifications, the number of other directorship which the exiting director currently holds, aggregate board experience, and big corporation board experience increase the likelihood of obtaining a new director appointment. Prior two years average ROA of the firm on which the director previously served is marginally associated with the likelihood of obtaining a new director appointment. However, prior two year average stock return of the firm on which the director previously served and gender of the exiting director are not associated with the likelihood of obtaining a new director appointment. Consistent with prior literature (Srinivasan 2005; Fich and Shivdasani 2007), I find that directors who served on the board of firms that had financial restatements during their tenure are less likely to obtain a new director appointment. I also find that older exiting directors are less likely to obtain a new director appointment. Overall, my findings indicate that even after controlling for directors' other characteristics, the more external connections directors have, the more likely they are to receive additional board seats.

My results in Section 2.5 are subject to some limitations. The sample I used for the main analysis is based on the subsample of the exiting directors and their future positions. While it is still informative in that large sample data on supply and demand in director labor market are not readily available, it may be also a biased sample. The ideal data on director appointments for the questions I pose in Section 2.5 would include the appointed directors and the candidates losing to the appointees for all firms in the sample. Future research could be specifically designed to handle this issue.

Although this chapter focused on the association between the extent of directors' external connections and the level of director compensation and provided evidence that directors with more extensive connections earn more and firms are willing to pay for the connections, it would be interesting to expand the questions I posed in this chapter by examining whether the way in which directors are compensated has to do with how to motivate directors to work hard as monitors and resource providers in the future research. Extending Hwang and Kim (2009), who find that firms whose boards are socially connected to the CEO award a significantly higher level of compensation to their CEOs and exhibit lower pay-performance sensitivity, by examining whether directors' excess compensation predict future poor performance of firms, is also interesting.

APPENDIX

How a Little Start-Up With No Revenue Attracted an All-Star Board

By Steven Lipin. Wall Street Journal, 14 Dec 1999: B, 1:2.⁸

For most start-up companies, simply finding qualified directors to fill the board is a struggle. Then there's FirstMark Communications International LLC, which has assembled the most prestigious, star-studded board of any start-up you never heard of.

Its directors include Nathan Myhrvold, chief technology officer at Microsoft; Bert Roberts, chairman of MCI WorldCom; Washington power broker Vernon Jordan and former Secretary of state Henry Kissinger; Sir Evelyn de Rothschild, chairman of N.M. Rothschild & Sons; and Michael Price, a former partner of Lazard Freres, who signed on as co-chief executive.

Why did all these business and political glitterati agree to join the board of an obscure company with no revenue? None of them were willing to say no to Lynn Forester, the wireless entrepreneur and New York socialite who founded the company.

Known in Democratic circles as a fund-raiser and pal of the Clintons, and in New York as a successful telecom investor and backer of Hillary Clinton's Senate bid, Ms. Forester until now has gotten more ink on the society pages than in the business pages. (Sir Evelyn is obtaining a divorce, and is now dating Ms. Forester, giving the gossip pages plenty to write about.)

But after studying at the knee of John Kluge, the legendary chief of Metromedia – whom Ms. Forester met when her ex-husband, former Manhattan Borough President Andrew Stein, was running for mayor – the ambitious networker set out to make her fortune using her connections, street smarts and entrepreneurial drive. And she has succeeded: Two home runs in the wireless area have swelled her personal net worth to an estimated \$100 million or more.

Now, Ms. Forester, 45 years old, is aiming even higher. FirstMark is one of a handful of U.S. upstarts that, along with many established American telecom concerns, are setting their sights on Europe in the global free-for-all to wire the world. To help carry out its strategy of building a network that would provide phone, Internet and video services, little-known FirstMark is

⁸ Retrieved from <http://search.proquest.com/docview/398691751?accountid=14709>

counting on its lineup of powerful and well-connected directors, all of whom are paid in closely held FirstMark stock.

The contacts have already helped win key licenses to build a so-called fixed wireless network, raised financing for the venture and helped find strategic partners. Ms. Forester “has an extraordinary network of friends from politics to society to CEOs and directors,” says Gerard Roche, senior chairman of Heidrick & Struggles, a top executive recruiter. “It’s very difficult to assemble a group like that. Kissinger doesn’t need another board.”

Like fixed wireless player Teligent Inc. in the U.S., FirstMark has been bidding in auctions in Europe for the spectrum that will enable it to transmit “the last mile,” from base stations to rooftop antennas via radio waves, and deliver voice, data, Internet and video. The move comes amid increasing demand for broadband in Europe, which many players hope to exploit. “Competing with an incumbent telephone company is a good business to be in,” says Ms. Forester. “There’s a great market opportunity, and we have the expertise to do it.”

Of course, succeeding won’t be easy. German utility giant Viag AG was the biggest winner in Germany, a formidable threat for an upstart. Teligent itself is making a push in Europe, and it is run by executives with hands-on operating experience in the fixed wireless business. For all their contacts, Ms. Forester and Mr. Price, the two CEOs, have limited operating experience.

Other risks include the possibility that financial markets will turn and the company won’t be able to raise the more than \$1 billion in financing it’s expecting to get in the next 18 months.

“The jury is still out on whether that alternative access technology is going to be successful or not,” says Keith Mallinson, managing director of the Yankee Group Europe. But, he adds, “people want more bandwidth, and as long as it’s cheap, there’s a good chance these businesses will do OK.”

FirstMark has set its sights on Germany as one of the key markets, persuading Helmut Werner, the former chief executive of Daimler-Benz AG, to join as chairman of the German subsidiary. After filing nearly seven tons of documents in three trucks (authorities asked for 20 copies of each application for each of the 262 coverage areas), FirstMark was the biggest foreign winner of German licenses this summer and the third-biggest winner overall, garnering more licenses than U.S. players Comcast Corp., Teligent and Winstar Communications Inc.

In addition to the German licenses, FirstMark has permanent licenses in Luxembourg and Portugal (with local partners) and provisional licenses in France and Belgium. FirstMark’s partners in Spain include such heavy hitters as Mexico’s Telefonos de Mexico SA and Grupo Prisa, the Spanish media company. By the end of this year, it will be operational in Germany, France and Belgium.

Most of the directors have used their own Rolodexes to advance FirstMark’s prospects. Mr. Jordan brought in Grupo Prisa. Knowing that Mr. Jordan was involved, Mr. Werner came on board.

“She has the ability to make you feel like this company cannot go forward without you,” says Mr. Jordan, who sits on the board of Dow Jones & Co., publisher of The Wall Street Journal, in explaining why he said yes to Ms. Forester.

FirstMark has tried to tap the expertise of each director to help it lay the groundwork for growth. Dr. Kissinger, whom Ms. Forester knew socially, helped greatly in Germany by opening doors and provided insights into the political landscape, though Dr. Kissinger deadpans that “I’m the technical expert.”

Bernard Smedley, another director, who was head of Motorola’s cellular business, has been integral in choosing vendors. Mr. Roberts, a veteran of MCI when it was an upstart, has aided the executives in expanding the company and serves as its chairman. Mr. Myhrvold, currently on leave from Microsoft, has helped FirstMark decide how to bundle various services the company will offer to prospective clients, and which services to bundle. Sir Evelyn has provided useful contacts and stressed the importance of being a European company.

FirstMark is a late 1990s version of a start-up. Its offices are in the same swank Madison Avenue building as the upscale retailer Barney’s. Its board meetings aren’t like those of publicly held corporate boards. At one meeting Sir Evelyn brought in chocolates for everyone. While there are agendas, there’s also plenty of improvisation.

Ms. Forester was an associate at Simpson Thacher & Bartlett when she joined Metromedia. Mr. Kluge told her cellular “would be bigger than radio and television,” she recalls. But when she left to strike out on her own, even Mr. Kluge hesitated to back her.

In the first deal Ms Forester put together after leaving Metromedia, she persuaded Motorola – with the help of Mr. Smedley – to back her in acquiring a small paging business in Puerto Rico. Motorola didn’t want control of a service company because it didn’t want to be seen as a competitor to its customers. As a result, she held a 60% stake in the company. When it was sold, she reaped a gain of more than \$25 million.

Her bigger financial success, however, was having the foresight in the early 1990s to apply for wireless spectrums that weren’t being used. Though she originally thought the licenses she obtained would be used for video on demand rather than telephony and Internet access, she picked up four major cities – New York, Boston, Los Angeles and San Francisco. She says she applied for only four licenses so as not to attract undue attention.

The licenses she acquired were purchased by Teligent for 5% of Teligent’s stock and \$10 million in cash before Teligent went public. Though Ms. Forester has sold some of her Teligent stock, Teligent shares have skyrocketed, fattening her coffers.

For his part, Mr. Price helped build Lazard’s telecom and technology practice, and advised the likes of SBC Communications. He was an early investor in other successful telecom start-ups. “I spent my whole life advising the best and the brightest, and kept looking at these people and said, ‘Why aren’t I doing it?’” he explains.

Ms. Forester says she persuaded Mr. Price to join her as an equal partner after he missed out on investing in her U.S. operations before Teligent's stock took off. When Ms. Forester set her sights on Europe, "he wanted in, and I said, 'Sorry. I don't need the money. I need a partner.'"

Mr. Price bought stock in FirstMark, became co-chief executive, and the two financed the first year of operation from their own pockets. So far the company has raised \$65 million in equity from WorldOnline International, a Dutch Internet service provider, and Sandler Capital, a communications and technology investment firm. Other investors include Credit Suisse First Boston.

But not everybody in Mr. Price's family appreciates his entrepreneurial zeal. When his daughter, Allie, had her bas mitzvah in March, his mother-in-law went up to his new partner and said, "So you're Lynn Forester. Ever since he met you, he hasn't had a paycheck."

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Table 1.1. Summary Statistics of Sample Firms

Fiscal Year	# of Firms	Total Assets (\$mn)		Sales (\$mn)	
		Mean	Median	Mean	Median
2000	1,287	10,012	1,575	4,305	1,073
2001	1,570	10,974	1,449	4,235	977
2002	1,618	11,509	1,507	4,154	961
2003	3,080	7,515	581	2,528	271
2004	3,664	7,360	480	2,484	235
2005	3,930	7,604	497	2,699	246
2006	4,079	8,449	560	2,956	279
2007	4,111	9,253	626	3,158	309
2008	3,823	9,461	667	3,382	324
2009	3,691	9,510	728	3,182	318
2010	3,458	12,316	826	3,780	408

Table 1.2. Summary Statistics of Directors' External Connection

Panel A: Directors' External Connections by Types of Directors					
Type of Director	N	Mean	Median	Max	StDev
Employee Directors	79,667	247.0	123	3038	315.2
Grey Directors	47,220	326.8	167	4563	419.1
Independent Directors	266,594	417.7	255	4688	477.7
Total	393,481	372.2	213	4688	447.9

Panel B: Directors' External Connections by Industry					
Industry	N	Mean	Median	Max	Stdev
Consumer Non-Durables	1,599	392.2	327	1,574	277.2
Consumer Durables	718	350.3	293	1,325	229.2
Manufacturing	3,230	385.9	339	1,541	255.6
Energy	1,489	324.6	271	1,389	228.6
Chemicals	827	457.8	424	1,623	299.6
Business Equipment	6,069	418.5	371	1,727	260.5
Telecommunication	885	382.5	329	1,249	239.2
Utilities	1,078	400.8	372	1,006	212.4
Wholesale and Retail,	3,028	346.6	306	1,206	210.7
Healthcare	3,685	391.2	331	1,481	259.1
Finance	7,835	291.3	226	1,665	244.6
Other*	4,414	350.2	293	1,641	232.2

*Other: Mines, Construction, Building Materials, Transportation, Business Services, Entertainment Industry

Table 1.3. Descriptive Statistics of Key Variables

Panel A: Univariate Statistics					
Variable	Mean	Median	StDev	Q1	Q3
External Connections	372.246	213.456	447.949	177.000	484.818
Professional Connections	247.385	208.833	183.635	109.778	332.111
Educational Connections	72.330	54.778	63.743	25.727	99.250
Other Connections	36.289	17.000	48.176	1.875	53.556
$\Delta ADEC$	0.020	0.000	0.201	-0.010	0.049
ΔAPC	0.027	0.000	0.216	-0.005	0.052
ΔAEC	0.006	0.000	0.359	-0.041	0.047
ΔAOC	0.008	0.000	0.620	-0.065	0.045
log(SALES)	5.863	5.963	2.289	4.326	7.428
log(ROA)	-3.248	-3.046	1.115	-3.925	-2.445
log(COGS/SALES)	-0.545	-0.467	0.667	-0.842	-0.247
log(SG&A/SALES)	-1.412	-1.344	0.902	-1.922	-0.941
log(Total Assets)	6.493	6.558	2.222	4.998	7.919
log(Market-to-Book)	0.703	0.642	0.863	0.213	1.156
Leverage	0.339	0.298	0.268	0.000	0.409
Firm Age (year)	20.685	18.244	16.875	3.77	51.05
Board Size	8.668	8.000	2.824	7.000	10.000
# of Independent Directors	6.230	6.000	2.579	4.000	8.000
% of Independent Directors	68.69	74.85	0.158	35	100
% of Busy Directors	17.28	18.22	18.08	0	50
CEO/Chair Duality (%)	61.25				
Intra-Board Ties	0.155	0.069	0.299	0.011	0.499
Tie to the CEO (%)	18.79	10.14	0.202	2.44	80.01
Industry Experience (%)	19.82	17.79	0.199	4.06	28.83
Board Experience (year)	14.677	9.110	12.059	3.554	17.782
Graduate Degree (%)	0.522	0.398	0.412	0.055	0.600
Elite Education (%)	0.304	0.000	0.332	0.000	0.518
No. of Observations	34,857				

Panel B: Pearson Correlations

Variables	1	2	3	4	5	6	7	8	9
1. External Connections	1								
2. log(SALES)	0.50***	1							
3. log(ROA)	0.03***	0.39***	1						
4. log(COGS/SALES)	-0.03***	-0.15***	-0.30***	1					
5. log(SG&A/SALES)	-0.05***	-0.54***	-0.38***	-0.34***	1				
6. log(Total Assets)	0.43***	0.85***	0.32***	-0.13***	-0.37***	1			
7. log(Market to Book)	0.19***	-0.01*	-0.03***	-0.04***	0.14***	-0.10***	1		
8. Leverage	0.52*	0.20***	-0.05***	0.18***	0.10***	0.20***	-0.06***	1	
9. Firm Age	0.20***	-0.05	0.18	0.03***	0.03***	0.01***	0.50***	0.01***	1
10. Board Size	0.24***	0.49***	0.15***	-0.06***	-0.16***	0.64***	-0.04***	0.21***	-0.01***
11. % Outside Directors	0.01*	-0.65***	-0.07***	-0.05***	-0.04***	-0.05***	0.02	-0.15***	0.01
12. Busy Directors	0.02**	-0.11***	-0.03	-0.02	-0.02	-0.03	0.06***	0.14***	0.01***
13. CEO/Chair Duality (%)	-0.01	0.45	-0.01	0.02	0.03	0.03	0.04***	0.06***	-0.26***
14. Intra-Board Ties	0.25***	0.05	0.14***	0.01***	0.02***	0.10***	0.01	0.01***	-0.01***
15. Tie to the CEO	-0.03	0.01	0.00	0.02	0.02	0.20***	0.05***	0.23***	-0.02***
16. Industry Experience	0.20***	0.15	0.04	-0.15***	-0.02***	0.30***	0.01***	-0.15***	0.01***
17. Board Experience	0.03***	0.01***	0.02***	0.01	0.02	0.20***	0.05***	-0.02***	0.13***
18. Graduate Degree	0.03***	0.20	0.03	0.01***	0.10***	0.33***	-0.03***	0.11***	-0.03***
19. Elite Education	0.01***	0.30	-0.01	-0.01***	0.01***	0.05***	0.01***	0.04***	0.01***

*, **, and *** indicate correlation is significant at 10%, 5%, and 1% level respectively.

Panel B: Pearson Correlations (Continued)

Variables	10	11	12	13	14	15	16	17	18
1. External Connections									
2. log(SALES)									
3. log(ROA)									
4. log(COGS/SALES)									
5. log(SG&A/SALES)									
6. log(Total Assets)									
7. log(Market to Book)									
8. Leverage									
9. Firm Age									
10. Board Size	1								
11. % Outside Directors	0.21***	1							
12. Busy Directors	0.28***	0.33***	1						
13. CEO/Chair Duality (%)	0.05***	0.11***	0.11***	1					
14. Intra-Board Ties	0.30***	0.02	0.24***	0.33***	1				
15. Tie to the CEO	0.20***	-0.15***	0.01***	0.10***	0.46***	1			
16. Industry Experience	0.30***	0.01***	0.44***	0.03***	0.36***	0.03***	1		
17. Board Experience	0.45***	0.03***	0.39***	0.03***	0.21***	0.01***	0.38***	1	
18. Graduate Degree	0.15***	0.01***	0.22***	0.15***	0.31***	0.47***	0.02***	0.65***	1
19. Elite Education	0.24***	0.03***	0.15***	0.02***	0.22***	0.05***	0.01	0.05***	0.19***

*, **, and *** indicate correlation is significant at 10%, 5%, and 1% level respectively.

Table 1.4. Relationship between Changes in Sales and Changes in Directors' External Connections

Panel A: All Directors				
	Dependent Variable: $\Delta SALES_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	0.082*** (7.30)	0.052*** (4.16)	0.076*** (6.79)	0.048*** (3.86)
$\Delta ADEC_{i,t-1}$		0.047*** (4.02)		0.040*** (3.45)
$\log(\text{Total Assets})_{i,t}$	0.005*** (3.58)	0.006*** (4.05)	0.005*** (3.64)	0.006*** (3.89)
$\log(\text{Market to Book})_{i,t}$	0.075*** (28.31)	0.070*** (26.38)	0.065*** (22.14)	0.061*** (19.95)
Leverage $_{i,t}$	2.255*** (4.62)	2.252*** (4.60)	2.042*** (4.04)	2.038*** (3.98)
Firm Age $_{i,t}$	-0.056*** (-5.12)	-0.054*** (-5.08)	-0.055*** (-5.04)	-0.051*** (-4.99)
Board Size $_{i,t}$	-0.003** (-2.51)	-0.002** (-2.50)	-0.003** (-2.58)	-0.002* (-2.47)
% Outside Directors $_{i,t}$	0.055*** (6.11)	0.052*** (6.10)	0.052*** (6.15)	0.048*** (6.10)
Busy Directors $_{i,t}$	0.008* (1.72)	0.007* (1.70)	0.007* (1.69)	0.006* (1.68)
CEO/Chair Duality $_{i,t}$	0.018 (0.68)	0.017 (0.66)	0.017 (0.66)	0.016 (0.64)
Intra-board Social Ties $_{i,t}$	0.125*** (5.11)	0.121*** (5.08)	0.131*** (5.12)	0.122*** (5.10)
Relationship with CEO $_{i,t}$	0.003*** (3.48)	0.003*** (3.44)	0.003*** (3.43)	0.002*** (3.42)
Industry Experience $_{i,t}$	0.111*** (4.10)	0.111*** (4.09)	0.108*** (4.02)	0.110*** (4.06)
Board Experience $_{i,t}$	0.911*** (4.62)	0.903*** (4.50)	0.909*** (4.54)	0.908*** (3.53)
Graduate Degree $_{i,t}$	0.042** (2.02)	0.039** (2.00)	0.040** (2.00)	0.038** (1.98)
Elite Education $_{i,t}$	0.033** (2.20)	0.032** (2.19)	0.030** (2.19)	0.029** (2.18)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	28,192	24,165	28,009	24,008
R ²	0.030	0.030	0.062	0.064

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1});$$

$$\Delta SALES_{i,t} = \ln(SALES_{i,t}) - \ln(SALES_{i,t-1}).$$

Panel B: Independent Directors

	Dependent Variable: $\Delta SALES_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	0.055*** (5.96)	0.040*** (3.94)	0.052*** (5.68)	0.040*** (3.95)
$\Delta ADEC_{i,t-1}$		0.034*** (3.56)		0.028*** (3.02)
$\log(\text{Total Assets})_{i,t}$	0.005*** (3.56)	0.006*** (4.02)	0.005*** (3.61)	0.006*** (3.86)
$\log(\text{Market to Book})_{i,t}$	0.075*** (28.23)	0.073*** (27.44)	0.065*** (25.00)	0.061*** (19.89)
Leverage $_{i,t}$	1.506*** (4.65)	1.471*** (4.64)	1.364*** (4.07)	1.361*** (4.03)
Firm Age $_{i,t}$	-0.037*** (-5.15)	-0.036*** (-5.11)	-0.037*** (-5.14)	-0.034*** (-5.08)
Board Size $_{i,t}$	-0.003** (-2.46)	-0.002** (-2.42)	-0.003** (-2.50)	-0.002** (-2.41)
% Outside Directors $_{i,t}$	0.037*** (6.14)	0.035*** (6.14)	0.035*** (6.15)	0.032*** (6.13)
Busy Directors $_{i,t}$	0.005* (1.75)	0.005* (1.73)	0.005* (1.72)	0.004* (1.71)
CEO/Chair Duality $_{i,t}$	0.012 (0.71)	0.011 (0.69)	0.011 (0.69)	0.011 (0.67)
Intra-board Social Ties $_{i,t}$	0.084*** (5.14)	0.083*** (5.12)	0.088*** (5.16)	0.088*** (5.16)
Relationship with CEO $_{i,t}$	0.002*** (3.51)	0.002*** (3.49)	0.002*** (3.49)	0.001*** (3.44)
Industry Experience $_{i,t}$	0.074*** (4.14)	0.075*** (4.17)	0.072*** (4.10)	0.073*** (4.12)
Board Experience $_{i,t}$	0.609*** (4.65)	0.603*** (4.61)	0.607*** (4.62)	0.607*** (4.62)
Graduate Degree $_{i,t}$	0.028** (2.05)	0.026** (2.02)	0.027** (2.04)	0.025** (2.01)
Elite Education $_{i,t}$	0.022** (2.24)	0.022** (2.23)	0.021** (2.22)	0.020** (2.21)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	28,116	24,101	27,936	23,947
R ²	0.029	0.030	0.062	0.064

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1});$$

$$\Delta SALES_{i,t} = \ln(SALES_{i,t}) - \ln(SALES_{i,t-1}).$$

Table 1.5. Relationship between Changes in ROA and Changes in Directors' External Connections

Panel A: All Directors				
	Dependent Variable: $\Delta ROA_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	0.024*** (2.84)	0.015* (1.66)	0.025*** (2.92)	0.016* (1.69)
$\Delta ADEC_{i,t-1}$		0.003 (0.33)		0.003 (0.31)
$\log(\text{Total Assets})_{i,t}$	0.003*** (3.02)	0.003*** (2.90)	0.002** (2.31)	0.002** (2.30)
$\log(\text{Market to Book})_{i,t}$	0.020*** (10.26)	0.021*** (10.26)	0.020*** (9.98)	0.021*** (10.22)
Leverage $_{i,t}$	2.244*** (4.66)	2.268*** (4.91)	2.151*** (4.58)	2.263*** (4.82)
Firm Age $_{i,t}$	-0.056*** (-5.16)	-0.086*** (-5.92)	-0.053*** (-5.12)	-0.076*** (-5.83)
Board Size $_{i,t}$	-0.002* (-1.88)	-0.002* (-1.87)	-0.002* (-1.88)	-0.002* (-1.88)
% Outside Directors $_{i,t}$	0.055*** (6.15)	0.083*** (6.55)	0.050*** (6.11)	0.072*** (6.44)
Busy Directors $_{i,t}$	0.008* (1.76)	0.010* (1.79)	0.007* (1.74)	0.009* (1.77)
CEO/Chair Duality $_{i,t}$	0.018 (0.62)	0.027 (0.79)	0.016 (0.62)	0.024 (0.74)
Intra-board Social Ties $_{i,t}$	0.124*** (5.15)	0.121*** (5.12)	0.129*** (5.16)	0.124*** (5.14)
Relationship with CEO $_{i,t}$	0.003*** (3.52)	0.003*** (3.48)	0.003*** (3.47)	0.003*** (3.46)
Industry Experience $_{i,t}$	0.110*** (4.15)	0.109*** (4.13)	0.105*** (4.06)	0.101*** (4.04)
Board Experience $_{i,t}$	0.907*** (4.66)	1.009*** (4.98)	0.869*** (4.54)	1.356*** (5.92)
Graduate Degree $_{i,t}$	0.042** (2.06)	0.040** (2.05)	0.040** (2.05)	0.035** (2.02)
Elite Education $_{i,t}$	0.033** (2.25)	0.031** (2.23)	0.031** (2.23)	0.030** (2.22)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	27,469	23,756	27,273	23,587
R ²	0.004	0.005	0.017	0.018

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1});$$

$$\Delta ROA_{i,t} = \ln(ROA_{i,t}) - \ln(ROA_{i,t-1}).$$

Panel B: Independent Directors

	Dependent Variable: $\Delta ROA_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	0.022*** (3.24)	0.011 (1.42)	0.023*** (3.42)	0.012 (1.55)
$\Delta ADEC_{i,t-1}$		-0.004 (-0.6)		-0.005 (-0.64)
$\log(\text{Total Assets})_{i,t}$	0.003*** (2.85)	0.003*** (2.88)	0.002** (2.14)	0.002** (2.05)
$\log(\text{Market to Book})_{i,t}$	0.021*** (10.53)	0.020*** (9.98)	0.018*** (9.32)	0.015*** (8.59)
Leverage $_{i,t}$	2.077*** (4.67)	3.025*** (5.66)	2.006*** (4.09)	3.816*** (7.43)
Firm Age $_{i,t}$	-0.052*** (-5.17)	-0.080*** (-5.33)	-0.049*** (-5.12)	-0.070*** (-5.24)
Board Size $_{i,t}$	-0.001* (-1.77)	-0.003* (-1.84)	-0.003* (-1.84)	-0.003* (-1.85)
% Outside Directors $_{i,t}$	0.051*** (6.16)	0.057*** (6.16)	0.066*** (6.22)	0.066*** (6.21)
Busy Directors $_{i,t}$	0.007* (1.77)	0.006* (1.75)	0.006* (1.74)	0.006* (1.73)
CEO/Chair Duality $_{i,t}$	0.017 (0.73)	0.015 (0.71)	0.015 (0.71)	0.014 (0.69)
Intra-board Social Ties $_{i,t}$	0.115*** (5.16)	0.116*** (5.17)	0.116*** (5.17)	0.115*** (5.15)
Relationship with CEO $_{i,t}$	0.003*** (3.53)	0.004*** (3.59)	0.003*** (3.52)	0.003*** (3.52)
Industry Experience $_{i,t}$	0.102*** (4.16)	0.101*** (4.14)	0.096*** (4.07)	0.091*** (4.05)
Board Experience $_{i,t}$	0.839*** (4.67)	0.824*** (4.66)	0.704*** (4.09)	0.691*** (4.03)
Graduate Degree $_{i,t}$	0.039** (2.07)	0.037** (2.06)	0.035** (2.06)	0.032** (2.03)
Elite Education $_{i,t}$	0.030** (2.26)	0.029** (2.24)	0.028** (2.24)	0.027** (2.23)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	27,402	23,587	27,402	23,535
R ²	0.005	0.018	0.005	0.018

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1});$$

$$\Delta ROA_{i,t} = \ln(ROA_{i,t}) - \ln(ROA_{i,t-1}).$$

Table 1.6. Relationship between Changes in Cost of Goods Sold and Changes in Directors' External Connections

Panel A: All Directors				
	Dependent Variable: $\Delta COGS_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	-0.031*** (-2.59)	-0.023* (-1.71)	-0.031*** (-2.59)	-0.024* (-1.81)
$\Delta ADEC_{i,t-1}$		-0.012 (-0.93)		-0.015 (-1.15)
$\log(\text{Total Assets})_{i,t}$	0.002 (1.14)	0.003 (1.21)	0.002 (1.17)	0.005** (2.07)
$\log(\text{Market to Book})_{i,t}$	-0.035*** (-12.31)	-0.035*** (-11.69)	-0.032*** (-10.19)	-0.033*** (-9.67)
Leverage $_{i,t}$	2.252*** (4.66)	2.233*** (4.65)	2.039*** (4.18)	2.009*** (4.01)
Firm Age $_{i,t}$	-0.056*** (-5.16)	-0.051*** (-5.12)	-0.050*** (-5.08)	-0.048*** (-5.03)
Board Size $_{i,t}$	0.000 (0.03)	0.000 (0.03)	0.000 (-0.16)	-0.001 (-0.51)
% Outside Directors $_{i,t}$	0.055*** (6.15)	0.070*** (7.51)	0.059*** (6.19)	0.062*** (6.22)
Busy Directors $_{i,t}$	0.008* (1.76)	0.008* (1.74)	0.007* (1.73)	0.007* (1.72)
CEO/Chair Duality $_{i,t}$	0.018 (0.72)	0.023 (0.75)	0.017 (0.70)	0.021 (0.73)
Intra-board Social Ties $_{i,t}$	0.125*** (5.15)	0.170*** (5.42)	0.131*** (5.16)	0.170*** (5.44)
Relationship with CEO $_{i,t}$	0.003*** (3.52)	0.003*** (3.48)	0.003*** (3.47)	0.003*** (3.46)
Industry Experience $_{i,t}$	0.111*** (4.15)	0.110*** (4.13)	0.108*** (4.06)	0.105*** (4.04)
Board Experience $_{i,t}$	0.910*** (4.66)	1.216*** (5.65)	0.908*** (4.58)	1.171*** (5.51)
Graduate Degree $_{i,t}$	0.042** (2.06)	0.052** (2.08)	0.040** (2.05)	0.049** (2.06)
Elite Education $_{i,t}$	0.033** (2.25)	0.043** (2.33)	0.030** (2.23)	0.037** (2.30)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	28,140	24,123	27,958	23,967
R ²	0.006	0.006	0.014	0.016

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1}); \Delta COGS_{i,t} = \ln\left(\frac{COGS_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{COGS_{i,t-1}}{SALES_{i,t-1}}\right).$$

Panel B: Independent Directors

	Dependent Variable: $\Delta COGS_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	-0.011 (-1.12)	-0.002 (-0.14)	-0.012 (-1.18)	-0.004 (-0.32)
$\Delta ADEC_{i,t-1}$		-0.016 (-1.60)		-0.019 (-1.62)
$\log(\text{Total Assets})_{i,t}$	0.002 (1.24)	0.003 (1.81)	0.002 (1.64)	0.002 (1.62)
$\log(\text{Market to Book})_{i,t}$	-0.035*** (-12.5)	-0.035*** (-11.82)	-0.033*** (-10.36)	-0.033*** (-9.73)
Leverage $_{i,t}$	0.796*** (4.63)	0.977*** (5.62)	0.721*** (4.45)	0.929*** (5.24)
Firm Age $_{i,t}$	-0.020*** (-5.13)	-0.026*** (-5.39)	-0.019*** (-5.11)	-0.023*** (-5.29)
Board Size $_{i,t}$	0.000 (0.35)	0.000 (0.30)	0.000 (0.37)	0.001 (0.52)
% Outside Directors $_{i,t}$	0.019*** (6.12)	0.025*** (6.32)	0.018*** (6.11)	0.022*** (6.20)
Busy Directors $_{i,t}$	0.003* (1.73)	0.003* (1.71)	0.002* (1.70)	0.002* (1.69)
CEO/Chair Duality $_{i,t}$	0.006 (0.69)	0.007 (0.70)	0.006 (0.67)	0.007 (0.68)
Intra-board Social Ties $_{i,t}$	0.044*** (5.12)	0.060*** (5.39)	0.046*** (5.19)	0.060*** (5.38)
Relationship with CEO $_{i,t}$	0.001*** (3.49)	0.001*** (3.45)	0.001*** (3.44)	0.001*** (3.43)
Industry Experience $_{i,t}$	0.039*** (4.12)	0.053*** (4.31)	0.038*** (4.10)	0.050*** (4.22)
Board Experience $_{i,t}$	0.322*** (4.63)	0.430*** (4.99)	0.321*** (4.51)	0.414*** (4.75)
Graduate Degree $_{i,t}$	0.015** (2.03)	0.017** (2.06)	0.014** (2.02)	0.017** (2.05)
Elite Education $_{i,t}$	0.012** (2.22)	0.015** (2.32)	0.011** (2.22)	0.013** (2.29)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	28,068	24,062	27,889	23,909
R ²	0.006	0.006	0.014	0.016

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1}); \Delta COGS_{i,t} = \ln\left(\frac{COGS_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{COGS_{i,t-1}}{SALES_{i,t-1}}\right).$$

Table 1.7. Relationship between Changes in SG&A Expense and Changes in Directors' External Connections

Panel A: All Directors				
	Dependent Variable: $\Delta SG\&A_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	-0.005 (-0.6)	-0.018* (-1.88)	-0.006 (-0.67)	-0.016* (-1.70)
$\Delta ADEC_{i,t-1}$		-0.012 (-1.34)		-0.013 (-1.45)
$\log(\text{Total Assets})_{i,t}$	0.003*** (3.11)	0.003*** (3.13)	0.004*** (3.20)	0.004*** (3.21)
$\log(\text{Market to Book})_{i,t}$	-0.031*** (-14.79)	-0.029*** (-13.73)	-0.028*** (-12.17)	-0.025*** (-10.66)
Leverage $_{i,t}$	2.396*** (4.67)	2.366*** (4.61)	1.808*** (4.09)	1.787*** (4.07)
Firm Age $_{i,t}$	-0.059*** (-5.17)	-0.016*** (-3.13)	-0.049*** (-5.09)	-0.017*** (-3.24)
Board Size $_{i,t}$	0.000 (0.46)	0.000 (0.47)	0.000 (0.47)	0.000 (0.49)
% Outside Directors $_{i,t}$	0.058*** (6.16)	0.055*** (6.12)	0.046*** (6.05)	0.046*** (6.04)
Busy Directors $_{i,t}$	0.008* (1.77)	0.007* (1.75)	0.007* (1.74)	0.007* (1.73)
CEO/Chair Duality $_{i,t}$	0.019 (0.73)	0.015 (0.71)	0.015 (0.71)	0.014 (0.69)
Intra-board Social Ties $_{i,t}$	0.133*** (5.16)	0.137*** (5.23)	0.126*** (5.17)	0.134*** (5.15)
Relationship with CEO $_{i,t}$	0.003*** (3.53)	0.002*** (3.49)	0.003*** (3.48)	0.002*** (3.47)
Industry Experience $_{i,t}$	0.118*** (4.16)	0.133*** (4.24)	0.109*** (4.07)	0.105*** (4.05)
Board Experience $_{i,t}$	0.968*** (4.67)	0.966*** (4.66)	0.805*** (4.59)	0.801*** (4.53)
Graduate Degree $_{i,t}$	0.045** (2.07)	0.042** (2.06)	0.045** (2.06)	0.043** (2.03)
Elite Education $_{i,t}$	0.035** (2.26)	0.039** (2.34)	0.027** (2.24)	0.020** (2.21)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	23,187	19,909	23,022	19,765
R ²	0.010	0.010	0.025	0.025

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1}); \Delta SG\&A_{i,t} = \ln\left(\frac{SG\&A_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{SG\&A_{i,t-1}}{SALES_{i,t-1}}\right).$$

Panel B: Independent Directors

	Dependent Variable: $\Delta SG\&A_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	-0.003 (-0.47)	-0.017* (-1.79)	-0.002 (-0.22)	-0.014* (-1.75)
$\Delta ADEC_{i,t-1}$		-0.006 (-0.82)		-0.007 (-0.91)
$\log(\text{Total Assets})_{i,t}$	0.004*** (3.22)	0.003*** (3.11)	0.004*** (3.44)	0.003*** (3.43)
$\log(\text{Market to Book})_{i,t}$	-0.031*** (-14.77)	-0.029*** (-13.83)	-0.028*** (-12.17)	-0.026*** (-11.80)
Leverage $_{i,t}$	1.526*** (4.65)	1.386*** (4.38)	1.451*** (4.47)	1.431*** (4.41)
Firm Age $_{i,t}$	-0.038*** (-5.15)	-0.032*** (-5.10)	-0.031*** (-5.07)	-0.031*** (-5.02)
Board Size $_{i,t}$	0.000 (0.27)	0.000 (0.15)	0.000 (0.17)	0.000 (0.10)
% Outside Directors $_{i,t}$	0.037*** (6.14)	0.034*** (6.11)	0.029*** (6.02)	0.028*** (6.01)
Busy Directors $_{i,t}$	0.005* (1.75)	0.005* (1.73)	0.004* (1.72)	0.004* (1.71)
CEO/Chair Duality $_{i,t}$	0.012 (0.71)	0.012 (0.69)	0.012 (0.69)	0.011 (0.67)
Intra-board Social Ties $_{i,t}$	0.085*** (5.14)	0.074*** (4.89)	0.074*** (4.89)	0.059*** (4.64)
Relationship with CEO $_{i,t}$	0.002*** (3.51)	0.002*** (3.47)	0.002*** (3.46)	0.002*** (3.45)
Industry Experience $_{i,t}$	0.075*** (4.14)	0.071*** (4.12)	0.071*** (4.05)	0.070*** (4.03)
Board Experience $_{i,t}$	0.616*** (4.65)	0.670*** (5.64)	0.513*** (4.27)	0.692*** (6.01)
Graduate Degree $_{i,t}$	0.028** (2.12)	0.027** (2.09)	0.025** (2.04)	0.028** (2.11)
Elite Education $_{i,t}$	0.022** (2.24)	0.026** (2.29)	0.017** (2.10)	0.026** (2.28)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	23,121	19,852	22,959	19,711
R ²	0.010	0.010	0.025	0.026

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1}); \Delta SG\&A_{i,t} = \ln\left(\frac{SG\&A_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{SG\&A_{i,t-1}}{SALES_{i,t-1}}\right).$$

**Table 1.8. Relationship between Changes in Sales and Changes in Directors' External Connections
by Types of External Connections**

Panel A: All Directors

	Dependent Variable: $\Delta SALES_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta APC_{i,t}$	0.066*** (6.39)			0.027** (2.34)
$\Delta AEC_{i,t}$		0.021*** (3.31)		0.017** (2.19)
$\Delta AOC_{i,t}$			0.005* (1.65)	0.004 (1.01)
$\log(\text{Total Assets})_{i,t}$	0.005*** (3.66)	0.005*** (3.69)	0.005*** (3.61)	0.003** (3.31)
$\log(\text{Market to Book})_{i,t}$	0.065*** (22.17)	0.065*** (21.95)	0.059*** (20.45)	0.061*** (20.64)
Leverage $_{i,t}$	1.828*** (4.69)	2.623*** (5.68)	1.786*** (4.36)	2.822*** (6.05)
Firm Age $_{i,t}$	-0.045*** (-5.19)	-0.069*** (-6.15)	-0.048*** (-5.28)	-0.071*** (-6.26)
Board Size $_{i,t}$	-0.004*** (-2.89)	-0.003*** (-2.78)	-0.002 (-1.56)	-0.001 (-1.36)
% Outside Directors $_{i,t}$	0.045*** (6.18)	0.066*** (6.28)	0.045*** (6.20)	0.066*** (6.27)
Busy Directors $_{i,t}$	0.006* (1.79)	0.005* (1.77)	0.006* (1.76)	0.005* (1.75)
CEO/Chair Duality $_{i,t}$	0.015 (0.75)	0.022 (0.83)	0.015 (0.73)	0.022 (0.81)
Intra-board Social Ties $_{i,t}$	0.101*** (5.18)	0.161*** (6.15)	0.115*** (5.29)	0.183*** (6.27)
Relationship with CEO $_{i,t}$	0.002*** (3.55)	0.004*** (3.71)	0.003*** (3.60)	0.003*** (3.65)
Industry Experience $_{i,t}$	0.090*** (4.18)	0.143*** (5.16)	0.094*** (4.29)	0.152*** (5.27)
Board Experience $_{i,t}$	0.739*** (4.69)	1.154*** (6.68)	0.795*** (4.98)	1.257*** (6.98)
Graduate Degree $_{i,t}$	0.034** (2.09)	0.030** (2.08)	0.035** (2.08)	0.033** (2.07)
Elite Education $_{i,t}$	0.027** (2.28)	0.031** (2.36)	0.026** (2.26)	0.030** (2.30)
Observations	23,969	23,969	23,969	23,969
R ²	0.062	0.061	0.057	0.062

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$\Delta APC_{i,t} = \ln(APC_{i,t}) - \ln(APC_{i,t-1})$; $\Delta AEC_{i,t} = \ln(AEC_{i,t}) - \ln(AEC_{i,t-1})$;

$\Delta AOC_{i,t} = \ln(AOC_{i,t}) - \ln(AOC_{i,t-1})$; $\Delta SALES_{i,t} = \ln(SALES_{i,t}) - \ln(SALES_{i,t-1})$.

Panel B: Independent Directors

	Dependent Variable: $\Delta SALES_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta APC_{i,t}$	0.043*** (4.93)			0.026* (1.75)
$\Delta AEC_{i,t}$		0.021*** (3.81)		0.009* (1.67)
$\Delta AOC_{i,t}$			0.003 (0.15)	0.003 (0.11)
$\log(\text{Total Assets})_{i,t}$	0.005*** (3.60)	0.005*** (3.30)	0.003** (2.36)	0.002 (1.55)
$\log(\text{Market to Book})_{i,t}$	0.065*** (22.02)	0.066*** (22.40)	0.059*** (20.13)	0.062*** (20.18)
Leverage $_{i,t}$	1.181*** (4.67)	1.695*** (6.16)	1.154*** (4.59)	1.824*** (7.03)
Firm Age $_{i,t}$	-0.029*** (-5.17)	-0.045*** (-6.13)	-0.031*** (-5.29)	-0.046*** (-6.24)
Board Size $_{i,t}$	-0.003** (-2.52)	-0.003** (-2.55)	-0.001 (-1.23)	-0.001 (-1.26)
% Outside Directors $_{i,t}$	0.029*** (6.16)	0.033*** (6.16)	0.029*** (6.20)	0.033*** (6.15)
Busy Directors $_{i,t}$	0.004* (1.77)	0.006* (1.75)	0.004* (1.74)	0.005* (1.73)
CEO/Chair Duality $_{i,t}$	0.009 (0.73)	0.010 (0.71)	0.010 (0.71)	0.010 (0.70)
Intra-board Social Ties $_{i,t}$	0.065*** (5.16)	0.104*** (7.13)	0.074*** (5.84)	0.118*** (8.15)
Relationship with CEO $_{i,t}$	0.002*** (3.53)	0.002*** (3.49)	0.002*** (3.48)	0.002*** (3.47)
Industry Experience $_{i,t}$	0.058*** (4.16)	0.093*** (6.14)	0.061*** (4.37)	0.098*** (6.35)
Board Experience $_{i,t}$	0.477*** (4.67)	0.746*** (4.66)	0.514*** (4.09)	0.813*** (4.03)
Graduate Degree $_{i,t}$	0.022** (2.07)	0.022** (2.06)	0.023** (2.06)	0.024** (2.13)
Elite Education $_{i,t}$	0.017** (2.26)	0.016** (2.24)	0.017** (2.24)	0.016** (2.23)
Observations	22,347	22,347	22,347	22,347
R ²	0.063	0.062	0.062	0.064

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$\Delta APC_{i,t} = \ln(APC_{i,t}) - \ln(APC_{i,t-1})$; $\Delta AEC_{i,t} = \ln(AEC_{i,t}) - \ln(AEC_{i,t-1})$;

$\Delta AOC_{i,t} = \ln(AOC_{i,t}) - \ln(AOC_{i,t-1})$; $\Delta SALES_{i,t} = \ln(SALES_{i,t}) - \ln(SALES_{i,t-1})$.

**Table 1.9. Relationship between Changes in ROA and Changes in Directors' External Connections
by Types of External Connections**

	Dependent Variable: $\Delta ROA_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta APC_{i,t}$	0.020** (2.20)			0.007* (1.65)
$\Delta AEC_{i,t}$		0.010** (2.09)		0.008 (1.36)
$\Delta AOC_{i,t}$			0.002 (1.62)	-0.004 (-1.37)
$\log(\text{Total Assets})_{i,t}$	0.002** (2.29)	0.002** (2.24)	0.001 (1.17)	0.001 (1.17)
$\log(\text{Market to Book})_{i,t}$	0.020*** (9.08)	0.021*** (9.49)	0.019*** (8.60)	0.019*** (8.49)
Leverage $_{i,t}$	0.547*** (4.70)	0.784*** (4.69)	0.534*** (4.12)	0.744*** (4.56)
Firm Age $_{i,t}$	-0.014*** (-5.20)	-0.021*** (-5.36)	-0.014*** (-5.22)	-0.021*** (-5.37)
Board Size $_{i,t}$	-0.002 (-1.24)	-0.002 (-1.28)	-0.001 (-1.53)	-0.002 (-1.54)
% Outside Directors $_{i,t}$	0.013*** (6.19)	0.020*** (6.29)	0.014*** (6.23)	0.020*** (6.28)
Busy Directors $_{i,t}$	0.002* (1.80)	0.002* (1.78)	0.002* (1.77)	0.002* (1.76)
CEO/Chair Duality $_{i,t}$	0.004 (0.76)	0.006 (0.77)	0.004 (0.74)	0.007 (0.78)
Intra-board Social Ties $_{i,t}$	0.030*** (5.19)	0.048*** (5.26)	0.034*** (5.22)	0.055*** (5.98)
Relationship with CEO $_{i,t}$	0.001*** (3.56)	0.001*** (3.52)	0.001*** (3.51)	0.001*** (3.50)
Industry Experience $_{i,t}$	0.027*** (4.19)	0.023*** (4.17)	0.028*** (4.20)	0.026*** (4.28)
Board Experience $_{i,t}$	0.221*** (4.70)	0.245*** (4.91)	0.238*** (4.77)	0.276*** (5.06)
Graduate Degree $_{i,t}$	0.010** (2.10)	0.015** (2.19)	0.010** (2.09)	0.016** (2.22)
Elite Education $_{i,t}$	0.008** (2.29)	0.012** (2.37)	0.008** (2.27)	0.012** (2.36)
Observations	23,275	23,275	23,275	23,275
R ²	0.032	0.031	0.037	0.032

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$\Delta APC_{i,t} = \ln(APC_{i,t}) - \ln(APC_{i,t-1})$; $\Delta AEC_{i,t} = \ln(AEC_{i,t}) - \ln(AEC_{i,t-1})$;

$\Delta AOC_{i,t} = \ln(AOC_{i,t}) - \ln(AOC_{i,t-1})$; $\Delta ROA_{i,t} = \ln(ROA_{i,t}) - \ln(ROA_{i,t-1})$.

Panel B: Independent Directors

	Dependent Variable: $\Delta ROA_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta APC_{i,t}$	0.019*** (2.99)			0.017** (2.22)
$\Delta AEC_{i,t}$		0.006 (1.54)		0.011** (2.06)
$\Delta AOC_{i,t}$			0.002 (1.59)	0.008* (1.94)
$\log(\text{Total Assets})_{i,t}$	0.002** (2.13)	0.002* (1.66)	0.002 (1.32)	0.001 (1.19)
$\log(\text{Market to Book})_{i,t}$	0.021*** (9.33)	0.022*** (9.61)	0.019*** (8.28)	0.020*** (8.58)
Leverage $_{i,t}$	0.534*** (4.71)	0.566*** (4.80)	0.521*** (4.63)	0.524*** (4.67)
Firm Age $_{i,t}$	-0.013*** (-5.21)	-0.020*** (-5.37)	-0.014*** (-5.23)	-0.021*** (-5.38)
Board Size $_{i,t}$	-0.002* (-1.84)	-0.001* (-1.74)	-0.001 (-1.40)	-0.002* (-1.76)
% Outside Directors $_{i,t}$	0.013*** (6.12)	0.019*** (6.25)	0.013*** (6.11)	0.019*** (6.26)
Busy Directors $_{i,t}$	0.002* (1.81)	0.003* (1.79)	0.002* (1.78)	0.002* (1.77)
CEO/Chair Duality $_{i,t}$	0.004 (0.77)	0.006 (0.79)	0.004 (0.76)	0.006 (0.78)
Intra-board Social Ties $_{i,t}$	0.030*** (5.20)	0.047*** (5.37)	0.033*** (5.21)	0.053*** (5.99)
Relationship with CEO $_{i,t}$	0.001*** (3.57)	0.001*** (3.53)	0.001*** (3.52)	0.001*** (3.51)
Industry Experience $_{i,t}$	0.026*** (4.20)	0.042*** (5.18)	0.028*** (4.29)	0.044*** (5.19)
Board Experience $_{i,t}$	0.216*** (4.71)	0.337*** (6.70)	0.232*** (4.93)	0.367*** (6.97)
Graduate Degree $_{i,t}$	0.010** (2.11)	0.011** (2.12)	0.010** (2.10)	0.012** (2.27)
Elite Education $_{i,t}$	0.008** (2.30)	0.012** (2.38)	0.008** (2.28)	0.012** (2.37)
Observations	21,702	21,702	21,702	21,702
R ²	0.015	0.015	0.015	0.017

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$\Delta APC_{i,t} = \ln(APC_{i,t}) - \ln(APC_{i,t-1})$; $\Delta AEC_{i,t} = \ln(AEC_{i,t}) - \ln(AEC_{i,t-1})$;

$\Delta AOC_{i,t} = \ln(AOC_{i,t}) - \ln(AOC_{i,t-1})$; $\Delta ROA_{i,t} = \ln(ROA_{i,t}) - \ln(ROA_{i,t-1})$.

Table 1.10. Relationship between Changes in Cost of Goods Sold and Changes in Directors' External Connections
by Types of External Connections

Panel A: All Directors				
	Dependent Variable: $\Delta COGS_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta APC_{i,t}$	-0.081*** (-4.93)			-0.080*** (-4.02)
$\Delta AEC_{i,t}$		-0.027*** (-4.08)		-0.028*** (-3.61)
$\Delta AOC_{i,t}$			0.002 (1.11)	0.003 (0.87)
$\log(\text{Total Assets})_{i,t}$	0.002 (1.57)	0.002 (1.46)	0.001 (0.71)	0.001 (0.87)
$\log(\text{Market to Book})_{i,t}$	-0.032*** (-10.20)	-0.033*** (-10.22)	-0.029*** (-9.83)	-0.031*** (-9.76)
Leverage $_{i,t}$	5.982*** (4.66)	5.837*** (4.65)	5.417*** (4.08)	5.383*** (4.02)
Firm Age $_{i,t}$	-0.149*** (-5.16)	-0.143*** (-5.02)	-0.146*** (-5.08)	-0.145*** (-5.03)
Board Size $_{i,t}$	0.000 (-0.16)	0.000 (-0.18)	0.000 (-0.13)	0.000 (-0.11)
% Outside Directors $_{i,t}$	0.146*** (6.15)	0.186*** (6.25)	0.138*** (6.12)	0.184*** (6.24)
Busy Directors $_{i,t}$	0.021* (1.76)	0.020* (1.74)	0.019* (1.73)	0.019* (1.72)
CEO/Chair Duality $_{i,t}$	0.048 (0.72)	0.047 (0.70)	0.045 (0.70)	0.045 (0.69)
Intra-board Social Ties $_{i,t}$	0.332*** (5.15)	0.350*** (5.22)	0.347*** (5.26)	0.352*** (5.24)
Relationship with CEO $_{i,t}$	0.008*** (3.52)	0.011*** (3.81)	0.008*** (3.47)	0.007*** (3.46)
Industry Experience $_{i,t}$	0.294*** (4.15)	0.300*** (4.63)	0.286*** (4.06)	0.307*** (4.84)
Board Experience $_{i,t}$	2.417*** (4.66)	3.229*** (5.65)	2.411*** (4.48)	3.111*** (5.42)
Graduate Degree $_{i,t}$	0.111** (2.06)	0.119** (2.15)	0.106** (2.04)	0.113** (2.12)
Elite Education $_{i,t}$	0.088** (2.25)	0.082** (2.23)	0.080** (2.20)	0.089** (2.27)
Observations	23,934	23,934	23,934	23,934
R ²	0.032	0.031	0.033	0.032

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$$\Delta APC_{i,t} = \ln(APC_{i,t}) - \ln(APC_{i,t-1}); \Delta AEC_{i,t} = \ln(AEC_{i,t}) - \ln(AEC_{i,t-1});$$

$$\Delta AOC_{i,t} = \ln(AOC_{i,t}) - \ln(AOC_{i,t-1}); \Delta COGS_{i,t} = \ln\left(\frac{COGS_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{COGS_{i,t-1}}{SALES_{i,t-1}}\right).$$

Panel B: Independent Directors

	Dependent Variable: $\Delta COGS_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta APC_{i,t}$	-0.009 (-0.94)			-0.009 (-0.74)
$\Delta AEC_{i,t}$		-0.012** (-2.08)		-0.015** (-2.06)
$\Delta AOC_{i,t}$			0.001 (1.26)	0.006 (1.41)
$\log(\text{Total Assets})_{i,t}$	0.003 (1.64)	0.002 (1.13)	0.002 (1.27)	0.001 (0.56)
$\log(\text{Market to Book})_{i,t}$	-0.033*** (-10.36)	-0.034*** (-10.51)	-0.030*** (-9.72)	-0.033*** (-9.85)
Leverage $_{i,t}$	0.643*** (4.67)	0.788*** (4.86)	0.582*** (4.49)	0.750*** (4.73)
Firm Age $_{i,t}$	-0.016*** (-5.17)	-0.021*** (-5.33)	-0.016*** (-5.19)	-0.019*** (-5.32)
Board Size $_{i,t}$	0.000 (-0.07)	0.000 (-0.04)	0.001 (-0.15)	0.000 (-0.06)
% Outside Directors $_{i,t}$	0.016*** (6.16)	0.020*** (6.36)	0.015*** (6.15)	0.018*** (6.25)
Busy Directors $_{i,t}$	0.002* (1.77)	0.002* (1.75)	0.002* (1.74)	0.002* (1.73)
CEO/Chair Duality $_{i,t}$	0.005 (0.73)	0.007 (0.81)	0.005 (0.71)	0.006 (0.79)
Intra-board Social Ties $_{i,t}$	0.036*** (5.16)	0.048*** (5.43)	0.037*** (5.17)	0.049*** (5.45)
Relationship with CEO $_{i,t}$	0.001*** (3.53)	0.001*** (3.59)	0.001*** (3.58)	0.001*** (3.57)
Industry Experience $_{i,t}$	0.032*** (4.16)	0.043*** (4.34)	0.031*** (4.15)	0.041*** (4.31)
Board Experience $_{i,t}$	0.260*** (4.67)	0.247*** (4.56)	0.259*** (4.65)	0.234*** (4.43)
Graduate Degree $_{i,t}$	0.012** (2.07)	0.012** (2.06)	0.011** (2.06)	0.011** (2.03)
Elite Education $_{i,t}$	0.009** (2.26)	0.009** (2.24)	0.008** (2.24)	0.008** (2.23)
Observations	22,318	22,318	22,318	22,318
R ²	0.014	0.014	0.014	0.015

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$$\Delta APC_{i,t} = \ln(APC_{i,t}) - \ln(APC_{i,t-1}); \Delta AEC_{i,t} = \ln(AEC_{i,t}) - \ln(AEC_{i,t-1});$$

$$\Delta AOC_{i,t} = \ln(AOC_{i,t}) - \ln(AOC_{i,t-1}); \Delta COGS_{i,t} = \ln\left(\frac{COGS_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{COGS_{i,t-1}}{SALES_{i,t-1}}\right).$$

Table 1.11. Relationship between Changes in SG&A Expense and Changes in Directors' External Connections
by Types of External Connections

Panel A: All Directors

	Dependent Variable: $\Delta SG\&A_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta APC_{i,t}$	-0.006 (-0.71)			-0.002 (-0.26)
$\Delta AEC_{i,t}$		-0.003 (-0.66)		-0.007 (-1.34)
$\Delta AOC_{i,t}$			0.001 (1.30)	0.001 (0.39)
$\log(\text{Total Assets})_{i,t}$	0.004*** (3.30)	0.004*** (3.27)	0.004*** (3.77)	0.004*** (3.87)
$\log(\text{Market to Book})_{i,t}$	-0.028*** (-12.17)	-0.028*** (-11.94)	-0.026*** (-11.29)	-0.027*** (-11.71)
Leverage $_{i,t}$	2.611*** (4.69)	2.660*** (4.78)	2.970*** (5.11)	2.966*** (5.05)
Firm Age $_{i,t}$	-0.065*** (-5.19)	-0.057*** (-5.15)	-0.053*** (-5.11)	-0.049*** (-5.06)
Board Size $_{i,t}$	0.000 (0.17)	0.000 (0.15)	0.000 (0.20)	0.000 (0.26)
% Outside Directors $_{i,t}$	0.064*** (6.18)	0.057*** (6.18)	0.070*** (6.22)	0.056*** (6.17)
Busy Directors $_{i,t}$	0.009* (1.79)	0.010* (1.82)	0.007* (1.76)	0.011* (1.85)
CEO/Chair Duality $_{i,t}$	0.021 (0.75)	0.025 (0.83)	0.026 (0.83)	0.025 (0.81)
Intra-board Social Ties $_{i,t}$	0.145*** (5.18)	0.141*** (5.15)	0.126*** (5.10)	0.127*** (5.11)
Relationship with CEO $_{i,t}$	0.003*** (3.55)	0.002*** (3.31)	0.003*** (3.50)	0.002*** (3.39)
Industry Experience $_{i,t}$	0.129*** (4.18)	0.136*** (4.26)	0.124*** (4.14)	0.136*** (4.27)
Board Experience $_{i,t}$	1.055*** (4.69)	1.090*** (4.78)	1.077*** (4.87)	1.087*** (4.75)
Graduate Degree $_{i,t}$	0.049** (2.09)	0.043** (2.08)	0.049** (2.08)	0.047** (2.07)
Elite Education $_{i,t}$	0.038** (2.28)	0.030** (2.20)	0.039** (2.28)	0.038** (2.27)
Observations	8,807	7,671	8,736	7,608
R ²	0.047	0.043	0.118	0.120

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$\Delta APC_{i,t} = \ln(APC_{i,t}) - \ln(APC_{i,t-1})$; $\Delta AEC_{i,t} = \ln(AEC_{i,t}) - \ln(AEC_{i,t-1})$;

$\Delta AOC_{i,t} = \ln(AOC_{i,t}) - \ln(AOC_{i,t-1})$; $\Delta SG\&A_{i,t} = \ln\left(\frac{SG\&A_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{SG\&A_{i,t-1}}{SALES_{i,t-1}}\right)$.

Panel B: Independent Directors

	Dependent Variable: $\Delta SG\&A_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta APC_{i,t}$	-0.004 (-0.58)			-0.008 (-0.95)
$\Delta AEC_{i,t}$		-0.001 (-0.32)		-0.003 (-0.59)
$\Delta AOC_{i,t}$			-0.001 (-1.04)	-0.001 (-0.51)
$\log(\text{Total Assets})_{i,t}$	0.004*** (3.45)	0.004*** (3.54)	0.004*** (3.46)	0.004*** (3.81)
$\log(\text{Market to Book})_{i,t}$	-0.028*** (-12.17)	-0.029*** (-12.64)	-0.026*** (-11.19)	-0.026*** (-11.06)
Leverage $_{i,t}$	1.812*** (4.63)	1.458*** (4.22)	1.367*** (4.15)	1.365*** (4.09)
Firm Age $_{i,t}$	-0.045*** (-5.13)	-0.042*** (-5.09)	-0.047*** (-5.15)	-0.044*** (-5.11)
Board Size $_{i,t}$	0.000 (-0.07)	0.000 (-0.01)	0.000 (0.03)	0.000 (-0.04)
% Outside Directors $_{i,t}$	0.044*** (6.12)	0.042*** (6.10)	0.035*** (6.06)	0.032*** (6.01)
Busy Directors $_{i,t}$	0.006* (1.73)	0.005* (1.71)	0.005* (1.70)	0.004* (1.69)
CEO/Chair Duality $_{i,t}$	0.014 (0.69)	0.014 (0.67)	0.011 (0.63)	0.011 (0.63)
Intra-board Social Ties $_{i,t}$	0.100*** (5.12)	0.128*** (5.29)	0.188*** (5.93)	0.188*** (5.91)
Relationship with CEO $_{i,t}$	0.002*** (3.49)	0.002*** (3.45)	0.002*** (3.44)	0.002*** (3.43)
Industry Experience $_{i,t}$	0.089*** (4.12)	0.085*** (4.10)	0.072*** (4.03)	0.074*** (4.07)
Board Experience $_{i,t}$	0.732*** (4.63)	0.702*** (4.52)	0.609*** (4.35)	0.608*** (4.33)
Graduate Degree $_{i,t}$	0.034** (2.03)	0.039** (2.05)	0.037** (2.04)	0.035** (2.03)
Elite Education $_{i,t}$	0.027** (2.22)	0.027** (2.22)	0.022** (2.20)	0.020** (2.19)
Observations	18,004	18,004	18,004	18,004
R ²	0.025	0.025	0.022	0.026

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$$\Delta APC_{i,t} = \ln(APC_{i,t}) - \ln(APC_{i,t-1}); \Delta AEC_{i,t} = \ln(AEC_{i,t}) - \ln(AEC_{i,t-1});$$

$$\Delta AOC_{i,t} = \ln(AOC_{i,t}) - \ln(AOC_{i,t-1}); \Delta SG\&A_{i,t} = \ln\left(\frac{SG\&A_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{SG\&A_{i,t-1}}{SALES_{i,t-1}}\right).$$

Table 1.12. Relationship between Changes in Firm Operating Performances and Changes in Directors' External Connections by Industry

Industry	Dependent Variables			
	$\Delta SALES_{i,t}$	$\Delta ROA_{i,t}$	$\Delta COGS_{i,t}$	$\Delta SG\&A_{i,t}$
Consumer Non-Durables	0.050 *	0.004	0.003	-0.026
	(1.84)	(1.16)	(0.18)	(-1.36)
Consumer Durables	0.059	0.032	-0.036	-0.066 *
	(1.29)	(0.89)	(-0.97)	(-1.73)
Manufacturing	0.090 ***	0.020	-0.005	-0.041 *
	(3.06)	(1.20)	(-0.38)	(-1.83)
Energy	-0.003	0.147 ***	0.017	0.131
	(-0.04)	(2.97)	(0.19)	(1.62)
Chemicals	0.006	-0.002	0.010	0.060
	(0.08)	(-0.26)	(0.20)	(1.05)
Business Equipment	0.052 **	-0.008	-0.027	-0.016
	(2.41)	(-0.34)	(-1.16)	(-0.95)
Telecommunication	0.085	0.071	-0.077	0.154 **
	(1.31)	(1.39)	(-1.44)	(2.25)
Utilities	0.268 ***	-0.003	-0.014	0.193
	(4.13)	(-0.17)	(-0.42)	(0.66)
Wholesale and Retail,	0.012	0.022	-0.006	0.014
	(0.75)	(1.56)	(-0.92)	(1.09)
Healthcare, Medical Equipment, and Drugs	0.117 *	0.069	-0.103	0.002
	(1.73)	(1.50)	(-1.25)	(0.05)
Finance	0.110 ***	0.030 ***	-0.059 ***	0.024
	(5.53)	(4.26)	(-2.72)	(1.54)
Other*	0.122 ***	-0.025	-0.018	-0.071 **
	(3.84)	(-0.99)	(-0.62)	(-2.22)

*Other: Mines, Construction, Building Materials, Transportation, Business Services, Entertainment Industry

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$$\Delta SALES_{i,t} = \ln(SALES_{i,t}) - \ln(SALES_{i,t-1}); \Delta ROA_{i,t} = \ln(ROA_{i,t}) - \ln(ROA_{i,t-1});$$

$$\Delta COGS_{i,t} = \ln\left(\frac{COGS_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{COGS_{i,t-1}}{SALES_{i,t-1}}\right); \Delta SG\&A_{i,t} = \ln\left(\frac{SG\&A_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{SG\&A_{i,t-1}}{SALES_{i,t-1}}\right).$$

Table 1.13. DuPont Analysis I: Relationship between Changes in Asset Turnover and Changes in Directors' External Connections

	Dependent Variable: $\Delta ATO_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	0.027*	0.027*	0.024**	0.024**
	(1.75)	(1.73)	(2.01)	(1.99)
$\Delta ADEC_{i,t-1}$		0.013		0.014
		(1.13)		(1.22)
$\log(\text{Total Assets})_{i,t}$	-0.010***	-0.011***	-0.009***	-0.010***
	(-7.37)	(-7.91)	(-6.23)	(-6.75)
$\log(\text{Market to Book})_{i,t}$	0.019***	0.019***	0.019***	0.018***
	(7.22)	(6.80)	(6.42)	(5.78)
Leverage $_{i,t}$	2.579***	2.754***	2.342***	2.496***
	(4.68)	(4.87)	(4.30)	(4.44)
Firm Age $_{i,t}$	-0.064***	-0.069***	-0.060***	-0.067***
	(-5.18)	(-5.29)	(-5.10)	(-5.25)
Board Size $_{i,t}$	0.002*	0.002*	0.002*	0.002*
	(1.84)	(1.85)	(1.87)	(1.92)
% Outside Directors $_{i,t}$	0.063***	0.065***	0.067***	0.062***
	(6.17)	(6.17)	(6.21)	(6.16)
Busy Directors $_{i,t}$	0.019*	0.013*	0.012*	0.010*
	(1.78)	(1.76)	(1.75)	(1.74)
CEO/Chair Duality $_{i,t}$	0.021	0.021	0.019	0.020
	(0.74)	(0.72)	(0.70)	(0.71)
Intra-board Social Ties $_{i,t}$	0.143***	0.131***	0.144***	0.126***
	(5.17)	(5.14)	(5.18)	(5.11)
Relationship with CEO $_{i,t}$	0.003***	0.003***	0.003***	0.003***
	(3.54)	(3.50)	(3.49)	(3.48)
Industry Experience $_{i,t}$	0.127***	0.105***	0.119***	0.109***
	(4.17)	(4.05)	(4.12)	(4.07)
Board Experience $_{i,t}$	1.042***	1.052***	0.998***	1.057***
	(4.68)	(4.77)	(4.40)	(4.84)
Graduate Degree $_{i,t}$	0.048**	0.041**	0.044**	0.045**
	(2.10)	(2.02)	(2.07)	(2.08)
Elite Education $_{i,t}$	0.038**	0.039**	0.033**	0.030**
	(2.27)	(2.28)	(2.15)	(2.11)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	28,192	24,165	28,009	24,008
R ²	0.005	0.005	0.020	0.023

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1});$$

$$\Delta ATO_{i,t} = \ln\left(\frac{Sales_{i,t}}{Average\ Total\ Assets_{i,t}}\right) - \ln\left(\frac{Sales_{i,t-1}}{Average\ Total\ Assets_{i,t-1}}\right).$$

Table 1.14. DuPont Analysis II: Relationship between Changes in Profit Margin and Changes in Directors' External Connections

	Dependent Variable: $\Delta PM_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	0.029 (0.87)	0.004 (0.10)	0.026 (0.78)	0.001 (0.02)
$\Delta ADEC_{i,t-1}$		0.041 (1.41)		0.042 (1.42)
$\log(\text{Total Assets})_{i,t}$	0.004 (1.03)	0.009* (2.15)	0.000 (-0.12)	0.003 (0.7)
$\log(\text{Market to Book})_{i,t}$	0.126*** (15.29)	0.126*** (14.62)	0.117*** (12.85)	0.115*** (12.00)
Leverage $_{i,t}$	2.709*** (4.71)	2.645*** (4.50)	2.355*** (4.13)	2.673*** (4.60)
Firm Age $_{i,t}$	-0.067*** (-5.21)	-0.054*** (-5.07)	-0.063*** (-5.13)	-0.052*** (-5.02)
Board Size $_{i,t}$	-0.005* (-1.73)	-0.004 (-1.42)	-0.002 (-0.58)	-0.001 (-0.35)
% Outside Directors $_{i,t}$	0.066*** (6.40)	0.060*** (6.20)	0.060*** (6.21)	0.087*** (6.83)
Busy Directors $_{i,t}$	0.010* (1.81)	0.010* (1.79)	0.008* (1.78)	0.010* (1.79)
CEO/Chair Duality $_{i,t}$	0.022 (0.77)	0.023 (0.77)	0.020 (0.75)	0.029 (0.83)
Intra-board Social Ties $_{i,t}$	0.150*** (5.20)	0.142*** (5.17)	0.151*** (5.21)	0.138*** (5.11)
Relationship with CEO $_{i,t}$	0.004*** (3.57)	0.006*** (3.73)	0.003*** (3.52)	0.004*** (3.55)
Industry Experience $_{i,t}$	0.133*** (4.12)	0.115*** (3.89)	0.125*** (4.09)	0.118*** (3.98)
Board Experience $_{i,t}$	1.095*** (4.71)	1.066*** (4.50)	1.058*** (4.46)	1.036*** (4.27)
Graduate Degree $_{i,t}$	0.050** (2.11)	0.050** (2.10)	0.046** (2.05)	0.048** (2.09)
Elite Education $_{i,t}$	0.040** (2.23)	0.042** (2.28)	0.035** (2.12)	0.042** (2.27)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	17,743	15,525	17,628	15,427
R ²	0.013	0.014	0.036	0.037

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms; t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1});$$

$$\Delta PM_{i,t} = \ln\left(\frac{\text{Net Income}_{i,t}}{\text{Sales}_{i,t}}\right) - \ln\left(\frac{\text{Net Income}_{i,t-1}}{\text{Sales}_{i,t-1}}\right).$$

Table 1.15. Relationship between Changes in Sales and Changes in Directors' External Connections:

Alternative Samples

	Dependent Variable: $\Delta SALES_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	0.038** (2.13)	0.029** (2.08)	0.034** (1.97)	0.025** (2.02)
$\Delta ADEC_{i,t-1}$		0.072*** (3.54)		0.067*** (3.39)
$\log(\text{Total Assets})_{i,t}$	0.029*** (13.11)	0.026*** (11.31)	0.027*** (11.49)	0.025*** (10.17)
$\log(\text{Market to Book})_{i,t}$	-0.013*** (-3.07)	-0.013*** (-2.88)	0.009* (1.89)	0.010** (2.03)
Leverage $_{i,t}$	1.052*** (4.65)	1.049*** (4.54)	1.028*** (4.27)	1.024*** (4.19)
Firm Age $_{i,t}$	-0.026*** (-5.15)	-0.020*** (-5.01)	-0.028*** (-5.07)	-0.021*** (-5.02)
Board Size $_{i,t}$	0.005*** (2.82)	0.005*** (2.75)	0.002 (1.14)	0.002 (1.29)
% Outside Directors $_{i,t}$	0.026*** (6.14)	0.028*** (6.19)	0.026*** (6.18)	0.028*** (6.19)
Busy Directors $_{i,t}$	0.004* (1.75)	0.005* (1.75)	0.004* (1.72)	0.005* (1.75)
CEO/Chair Duality $_{i,t}$	0.008 (0.71)	0.013 (0.79)	0.009 (0.69)	0.013 (0.78)
Intra-board Social Ties $_{i,t}$	0.058*** (5.14)	0.053*** (5.09)	0.066*** (5.25)	0.055*** (5.11)
Relationship with CEO $_{i,t}$	0.001*** (3.51)	0.001*** (3.47)	0.001*** (3.46)	0.001*** (3.45)
Industry Experience $_{i,t}$	0.052*** (4.14)	0.052*** (4.14)	0.054*** (4.15)	0.058*** (4.23)
Board Experience $_{i,t}$	0.415*** (4.65)	0.434*** (4.84)	0.428*** (4.77)	0.424*** (4.71)
Graduate Degree $_{i,t}$	0.020** (2.05)	0.020** (2.04)	0.020** (2.04)	0.020** (2.01)
Elite Education $_{i,t}$	0.015** (2.24)	0.014** (2.22)	0.015** (2.23)	0.014** (2.22)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	8,807	7,671	8,736	7,608
R ²	0.047	0.043	0.118	0.120

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1});$$

$$\Delta SALES_{i,t} = \ln(SALES_{i,t}) - \ln(SALES_{i,t-1}).$$

Panel B: Firms with ROA Decrease Before Director Appointments

	Dependent Variable: $\Delta SALES_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	0.049*** (3.11)	0.034** (2.43)	0.045*** (2.88)	0.030** (2.21)
$\Delta ADEC_{i,t-1}$		0.068*** (4.15)		0.057*** (3.49)
$\log(\text{Total Assets})_{i,t}$	0.013*** (7.07)	0.014*** (7.08)	0.014*** (7.08)	0.015*** (7.10)
$\log(\text{Market to Book})_{i,t}$	0.057*** (15.83)	0.056*** (14.79)	0.049*** (11.99)	0.046*** (10.92)
Leverage $_{i,t}$	1.350*** (4.65)	1.338*** (4.64)	1.319*** (4.07)	1.305*** (4.01)
Firm Age $_{i,t}$	-0.034*** (-5.15)	-0.031*** (-5.11)	-0.036*** (-5.17)	-0.032*** (-5.12)
Board Size $_{i,t}$	0.001 (0.51)	0.001 (0.49)	0.001 (0.45)	0.000 (0.25)
% Outside Directors $_{i,t}$	0.033*** (6.14)	0.039*** (6.24)	0.034*** (6.18)	0.039*** (6.23)
Busy Directors $_{i,t}$	0.005* (1.75)	0.007* (1.83)	0.005* (1.72)	0.006* (1.81)
CEO/Chair Duality $_{i,t}$	0.011 (0.71)	0.011 (0.69)	0.011 (0.69)	0.010 (0.67)
Intra-board Social Ties $_{i,t}$	0.075*** (5.14)	0.069*** (5.11)	0.085*** (5.25)	0.065*** (5.08)
Relationship with CEO $_{i,t}$	0.002*** (3.51)	0.002*** (3.47)	0.002*** (3.46)	0.002*** (3.45)
Industry Experience $_{i,t}$	0.066*** (4.14)	0.060*** (4.02)	0.070*** (4.25)	0.063*** (4.09)
Board Experience $_{i,t}$	0.546*** (4.65)	0.553*** (4.68)	0.587*** (4.97)	0.529*** (4.31)
Graduate Degree $_{i,t}$	0.025** (2.05)	0.027** (2.08)	0.026** (2.07)	0.029** (2.11)
Elite Education $_{i,t}$	0.020** (2.24)	0.020** (2.22)	0.019** (2.22)	0.020** (2.21)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	13,744	11,854	13,652	11,776
R ²	0.024	0.026	0.068	0.078

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1});$$

$$\Delta SALES_{i,t} = \ln(SALES_{i,t}) - \ln(SALES_{i,t-1}).$$

Table 1.16. Relationship between Changes in ROA and Changes in Directors' External Connections:

Alternative Samples

	Dependent Variable: $\Delta ROA_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	0.032** (2.06)	0.027** (2.00)	0.032** (2.04)	0.025** (1.98)
$\Delta ADEC_{i,t-1}$		0.001 (0.03)		-0.007 (-0.32)
$\log(\text{Total Assets})_{i,t}$	0.018*** (7.30)	0.017*** (7.28)	0.015*** (7.26)	0.013*** (7.25)
$\log(\text{Market to Book})_{i,t}$	-0.001 (-0.28)	-0.001 (-0.25)	-0.001 (-0.25)	-0.000 (-0.16)
Leverage $_{i,t}$	2.992*** (4.66)	2.987*** (4.65)	2.601*** (4.38)	2.656*** (4.42)
Firm Age $_{i,t}$	-0.074*** (-5.16)	-0.075*** (-5.17)	-0.070*** (-5.08)	-0.072*** (-5.13)
Board Size $_{i,t}$	-0.003 (-1.57)	-0.003 (-1.60)	-0.004* (-1.81)	-0.004* (-1.78)
% Outside Directors $_{i,t}$	0.073*** (6.15)	0.070*** (6.11)	0.066*** (6.09)	0.066*** (6.08)
Busy Directors $_{i,t}$	0.011* (1.76)	0.011* (1.74)	0.009* (1.73)	0.012* (1.79)
CEO/Chair Duality $_{i,t}$	0.024 (0.72)	0.026 (0.74)	0.022 (0.70)	0.022 (0.70)
Intra-board Social Ties $_{i,t}$	0.166*** (5.15)	0.168*** (5.19)	0.167*** (5.16)	0.163*** (5.11)
Relationship with CEO $_{i,t}$	0.004*** (3.52)	0.004*** (3.48)	0.004*** (3.47)	0.004*** (3.46)
Industry Experience $_{i,t}$	0.147*** (4.15)	0.138*** (4.07)	0.138*** (4.06)	0.119*** (3.84)
Board Experience $_{i,t}$	1.209*** (4.66)	1.217*** (4.75)	1.158*** (4.38)	1.207*** (4.70)
Graduate Degree $_{i,t}$	0.056** (2.06)	0.053** (2.02)	0.051** (2.00)	0.056** (2.07)
Elite Education $_{i,t}$	0.044** (2.25)	0.048** (2.33)	0.038** (2.18)	0.048** (2.33)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	8,385	7,366	8,310	7,300
R ²	0.009	0.008	0.034	0.034

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1});$$

$$\Delta ROA_{i,t} = \ln(ROA_{i,t}) - \ln(ROA_{i,t-1}).$$

Panel B: Firms with ROA Decrease Before Director Appointments

	Dependent Variable: $\Delta ROA_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	0.040*** (3.64)	0.036*** (2.98)	0.033*** (3.10)	0.029*** (2.42)
$\Delta ADEC_{i,t-1}$		0.030*** (2.61)		0.020* (1.73)
$\log(\text{Total Assets})_{i,t}$	0.036*** (27.04)	0.035*** (25.24)	0.033*** (23.61)	0.032*** (21.74)
$\log(\text{Market to Book})_{i,t}$	-0.015*** (-5.93)	-0.012*** (-5.11)	-0.012*** (-5.12)	-0.009*** (-4.84)
Leverage $_{i,t}$	3.755*** (4.62)	3.668*** (4.51)	3.265*** (4.04)	3.291*** (4.11)
Firm Age $_{i,t}$	-0.093*** (-5.12)	-0.084*** (-5.00)	-0.088*** (-5.04)	-0.084*** (-4.99)
Board Size $_{i,t}$	-0.003*** (-2.75)	-0.003*** (-2.84)	-0.003*** (-2.74)	-0.003*** (-2.74)
% Outside Directors $_{i,t}$	0.092*** (6.11)	0.089*** (6.08)	0.083*** (6.01)	0.083*** (6.01)
Busy Directors $_{i,t}$	0.013* (1.72)	0.013* (1.73)	0.011* (1.69)	0.011* (1.63)
CEO/Chair Duality $_{i,t}$	0.030 (0.68)	0.035 (0.76)	0.027 (0.62)	0.030 (0.68)
Intra-board Social Ties $_{i,t}$	0.208*** (5.11)	0.236*** (5.58)	0.209*** (5.12)	0.230*** (5.51)
Relationship with CEO $_{i,t}$	0.005*** (3.48)	0.005*** (3.44)	0.005*** (3.43)	0.005*** (3.42)
Industry Experience $_{i,t}$	0.185*** (4.11)	0.198*** (4.49)	0.173*** (4.02)	0.175*** (4.05)
Board Experience $_{i,t}$	1.517*** (4.32)	1.406*** (4.21)	1.453*** (4.24)	1.468*** (4.28)
Graduate Degree $_{i,t}$	0.070** (2.02)	0.104** (2.11)	0.064** (2.01)	0.095** (2.08)
Elite Education $_{i,t}$	0.055** (2.21)	0.055** (2.20)	0.048** (2.16)	0.052** (2.19)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	13,679	11,790	13,582	11,707
R ²	0.078	0.076	0.125	0.123

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1});$$

$$\Delta ROA_{i,t} = \ln(ROA_{i,t}) - \ln(ROA_{i,t-1}).$$

Table 1.17. Relationship between Changes in Cost of Goods Sold and Changes in Directors' External Connections:

Alternative Samples

	Dependent Variable: $\Delta COGS_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	-0.043*	-0.045*	-0.039*	-0.039*
	(-1.94)	(-1.82)	(-1.80)	(-1.65)
$\Delta ADEC_{i,t-1}$		-0.054**		-0.041*
		(-2.15)		(-1.69)
$\log(\text{Total Assets})_{i,t}$	-0.018***	-0.016***	-0.010***	-0.009***
	(-6.68)	(-5.42)	(-3.45)	(-2.81)
$\log(\text{Market to Book})_{i,t}$	0.011**	0.028***	0.013**	0.012**
	(2.20)	(3.48)	(2.22)	(2.21)
Leverage $_{i,t}$	3.152***	3.265***	2.999***	3.279***
	(3.97)	(4.27)	(3.84)	(4.34)
Firm Age $_{i,t}$	-0.078***	-0.078***	-0.077***	-0.078***
	(-5.18)	(-5.14)	(-5.10)	(-5.15)
Board Size $_{i,t}$	-0.003	-0.004	-0.003	-0.004
	(-1.37)	(-1.42)	(-1.34)	(-1.48)
% Outside Directors $_{i,t}$	0.077***	0.088***	0.073***	0.087***
	(6.17)	(6.37)	(6.14)	(6.36)
Busy Directors $_{i,t}$	0.011*	0.011*	0.010*	0.011*
	(1.78)	(1.76)	(1.75)	(1.74)
CEO/Chair Duality $_{i,t}$	0.025	0.022	0.024	0.029
	(0.74)	(0.72)	(0.72)	(0.87)
Intra-board Social Ties $_{i,t}$	0.175***	0.237***	0.183***	0.238***
	(5.17)	(6.14)	(5.18)	(6.16)
Relationship with CEO $_{i,t}$	0.004***	0.004***	0.004***	0.004***
	(3.54)	(3.56)	(3.49)	(3.48)
Industry Experience $_{i,t}$	0.155***	0.211***	0.151***	0.199***
	(4.17)	(4.55)	(4.08)	(4.46)
Board Experience $_{i,t}$	1.273***	1.201***	1.270***	1.239***
	(4.68)	(3.87)	(4.66)	(4.09)
Graduate Degree $_{i,t}$	0.059**	0.058**	0.056**	0.056**
	(2.08)	(2.07)	(2.07)	(2.07)
Elite Education $_{i,t}$	0.046**	0.054**	0.042**	0.052**
	(2.27)	(2.30)	(2.25)	(2.28)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	8,786	7,656	8,715	7,593
R ²	0.013	0.012	0.090	0.089

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1}); \Delta COGS_{i,t} = \ln\left(\frac{COGS_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{COGS_{i,t-1}}{SALES_{i,t-1}}\right).$$

Panel B: Firms with ROA Decrease Before Director Appointments

	Dependent Variable: $\Delta COGS_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	-0.042*	-0.042*	-0.043*	-0.046*
	(-1.68)	(-1.85)	(-1.67)	(-1.86)
$\Delta ADEC_{i,t-1}$		-0.059**		-0.062**
		(-2.20)		(-2.39)
$\log(\text{Total Assets})_{i,t}$	-0.003	-0.002	-0.002	-0.004
	(-1.38)	(-1.38)	(-1.39)	(-1.54)
$\log(\text{Market to Book})_{i,t}$	-0.032***	-0.030***	-0.023***	-0.022***
	(-8.10)	(-7.45)	(-5.15)	(-4.78)
Leverage $_{i,t}$	1.582***	1.940***	1.433***	1.847***
	(4.68)	(5.67)	(4.10)	(5.34)
Firm Age $_{i,t}$	-0.039***	-0.051***	-0.039***	-0.046***
	(-5.18)	(-6.14)	(-5.10)	(-6.05)
Board Size $_{i,t}$	0.003	0.003***	0.001	0.001
	(1.64)	(1.51)	(1.11)	(1.05)
% Outside Directors $_{i,t}$	0.039***	0.049***	0.036***	0.043***
	(6.17)	(6.27)	(6.15)	(6.21)
Busy Directors $_{i,t}$	0.006*	0.006*	0.005*	0.005*
	(1.78)	(1.76)	(1.75)	(1.74)
CEO/Chair Duality $_{i,t}$	0.013	0.015	0.012	0.014
	(0.74)	(0.77)	(0.72)	(0.75)
Intra-board Social Ties $_{i,t}$	0.088***	0.119***	0.092***	0.120***
	(5.17)	(6.14)	(5.18)	(6.16)
Relationship with CEO $_{i,t}$	0.002***	0.003***	0.002***	0.002***
	(3.50)	(3.81)	(3.49)	(3.78)
Industry Experience $_{i,t}$	0.078***	0.106***	0.076***	0.100***
	(4.07)	(5.15)	(4.01)	(5.14)
Board Experience $_{i,t}$	0.639***	0.854***	0.638***	0.823***
	(4.68)	(5.97)	(4.68)	(5.90)
Graduate Degree $_{i,t}$	0.029**	0.037**	0.028**	0.034**
	(2.08)	(2.38)	(2.07)	(2.34)
Elite Education $_{i,t}$	0.023**	0.028**	0.021**	0.026**
	(2.22)	(2.29)	(2.20)	(2.25)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	13,721	11,835	13,630	11,758
R ²	0.005	0.005	0.027	0.030

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1}); \Delta COGS_{i,t} = \ln\left(\frac{COGS_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{COGS_{i,t-1}}{SALES_{i,t-1}}\right).$$

Table 1.18. Relationship between Changes in SG&A Expense and Changes in Directors' External Connections:

Alternative Samples

	Dependent Variable: $\Delta SG\&A_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	-0.014 (-1.20)	-0.021 (-1.43)	-0.010 (-0.85)	-0.025 (-1.58)
$\Delta ADEC_{i,t-1}$		-0.039* (-1.69)		-0.038* (-1.68)
$\log(\text{Total Assets})_{i,t}$	-0.013*** (-6.18)	-0.011*** (-5.09)	-0.015*** (-6.96)	-0.014*** (-6.18)
$\log(\text{Market to Book})_{i,t}$	0.011*** (2.86)	0.010*** (2.80)	0.011*** (2.86)	0.010* (2.79)
Leverage $_{i,t}$	8.580*** (4.66)	8.169*** (4.45)	6.475*** (4.08)	8.423*** (4.52)
Firm Age $_{i,t}$	-0.213*** (-5.16)	-0.057*** (-3.12)	-0.174*** (-5.08)	-0.061*** (-3.13)
Board Size $_{i,t}$	-0.004* (-1.86)	-0.003* (-1.85)	-0.003* (-1.86)	-0.002* (-1.85)
% Outside Directors $_{i,t}$	0.209*** (6.15)	0.255*** (6.65)	0.205*** (6.10)	0.257*** (6.68)
Busy Directors $_{i,t}$	0.030* (1.76)	0.031* (1.77)	0.031* (1.77)	0.030* (1.76)
CEO/Chair Duality $_{i,t}$	0.068 (0.73)	0.058 (0.67)	0.054 (0.61)	0.059 (0.69)
Intra-board Social Ties $_{i,t}$	0.476*** (5.55)	0.433*** (5.10)	0.415*** (4.89)	0.437*** (5.14)
Relationship with CEO $_{i,t}$	0.011*** (3.52)	0.013*** (3.68)	0.010*** (3.47)	0.012*** (3.66)
Industry Experience $_{i,t}$	0.422*** (4.15)	0.418*** (4.13)	0.342*** (4.06)	0.331*** (4.01)
Board Experience $_{i,t}$	3.466*** (4.66)	2.954*** (4.25)	2.882*** (4.18)	2.480*** (4.01)
Graduate Degree $_{i,t}$	0.160** (2.06)	0.141** (1.92)	0.157** (2.05)	0.141** (1.91)
Elite Education $_{i,t}$	0.126** (2.25)	0.134** (2.27)	0.125** (2.25)	0.134** (2.26)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	7,226	6,289	7,161	6,230
R ²	0.017	0.014	0.086	0.101

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1}); \Delta SG\&A_{i,t} = \ln\left(\frac{SG\&A_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{SG\&A_{i,t-1}}{SALES_{i,t-1}}\right).$$

Panel B: Firms with ROA Decrease Before Director Appointments

	Dependent Variable: $\Delta SG\&A_{i,t}$			
	(1)	(2)	(3)	(4)
$\Delta ADEC_{i,t}$	-0.002 (-0.16)	-0.013 (-1.01)	-0.003 (-0.29)	-0.009 (-0.75)
$\Delta ADEC_{i,t-1}$		-0.026* (-1.90)		-0.025* (-1.88)
$\log(\text{Total Assets})_{i,t}$	-0.007*** (-4.33)	-0.007*** (-4.75)	-0.007*** (-4.55)	-0.008*** (-4.68)
$\log(\text{Market to Book})_{i,t}$	-0.011*** (-3.94)	-0.013*** (-4.68)	-0.010*** (-3.18)	-0.012*** (-3.55)
Leverage $_{i,t}$	0.843*** (4.69)	0.813*** (4.58)	0.636*** (3.11)	0.638*** (3.15)
Firm Age $_{i,t}$	-0.021*** (-5.19)	-0.026*** (-5.25)	-0.017*** (-5.10)	-0.026*** (-5.26)
Board Size $_{i,t}$	-0.005*** (-3.95)	-0.004*** (-3.25)	-0.003** (-2.12)	-0.002* (-1.65)
% Outside Directors $_{i,t}$	0.021*** (6.18)	0.015*** (6.08)	0.016*** (6.12)	0.016*** (6.12)
Busy Directors $_{i,t}$	0.003* (1.79)	0.003* (1.77)	0.003* (1.76)	0.003* (1.75)
CEO/Chair Duality $_{i,t}$	0.007 (0.75)	0.007 (0.73)	0.007 (0.73)	0.007 (0.71)
Intra-board Social Ties $_{i,t}$	0.047*** (5.18)	0.043*** (5.10)	0.043*** (5.10)	0.045*** (5.16)
Relationship with CEO $_{i,t}$	0.009*** (3.55)	0.009*** (3.51)	0.009*** (3.50)	0.008*** (3.49)
Industry Experience $_{i,t}$	0.041*** (4.18)	0.042*** (4.20)	0.044*** (4.29)	0.043*** (4.27)
Board Experience $_{i,t}$	0.341*** (4.69)	0.394*** (5.68)	0.383*** (5.11)	0.366*** (5.05)
Graduate Degree $_{i,t}$	0.016** (2.09)	0.014** (2.08)	0.012** (2.08)	0.014** (2.08)
Elite Education $_{i,t}$	0.012** (2.25)	0.013** (2.26)	0.019** (2.29)	0.019** (2.29)
Year Fixed Effect	No	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	Yes
Observations	11,160	9,684	11,077	9,613
R ²	0.010	0.012	0.035	0.038

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

i = index for firms;

t = index for fiscal years;

$$\Delta ADEC_{i,t} = \ln(ADEC_{i,t}) - \ln(ADEC_{i,t-1}); \Delta SG\&A_{i,t} = \ln\left(\frac{SG\&A_{i,t}}{SALES_{i,t}}\right) - \ln\left(\frac{SG\&A_{i,t-1}}{SALES_{i,t-1}}\right).$$

Table 2.1. Summary Statistics of Director Compensations

Panel A: Outside Directors Compensation

	N	Total Compensation (\$1000s)			Cash Compensation (\$1000s)			Equity-based Compensation (\$1000s)		
		Mean	Median	Stdev	Mean	Median	Stdev	Mean	Median	Stdev
2000	5,997	183	45	1,036	36	25	181	147	12	990
2001	7,172	176	50	2,463	36	25	150	140	14	2,442
2002	7,409	142	50	1,390	39	25	203	103	14	1,341
2003	8,049	171	63	3,033	37	30	94	134	29	3,024
2004	8,223	208	93	2,841	43	30	159	165	55	2,825
2005	8,120	206	120	577	48	35	179	159	75	507
2006	7,178	256	159	978	65	55	144	191	90	933
2007	6,288	230	167	674	71	68	68	159	91	643
2008	5,365	216	166	401	76	74	79	140	87	368
2009	5,061	270	212	809	81	78	103	189	127	778
2010	4,845	285	221	1,391	87	84	175	197	129	1,349

Total Compensation = Cash Compensation + Equity-Based Compensation + All Other Compensation

Cash compensation = Fees Earned in Cash

Equity-based Compensation = Stock Awards + Option Awards

Panel B: Grey Directors Compensation

	N	Total Compensation (\$1000s)			Cash Compensation (\$1000s)			Equity-based Compensation (\$1000s)		
		Mean	Median	Stdev	Mean	Median	Stdev	Mean	Median	Stdev
2000	2,034	247	45	1,654	54	25	299	192	5	1,576
2001	2,009	343	43	4,635	60	25	279	283	0	4,596
2002	1,493	309	45	3,063	80	28	444	229	0	2,956
2003	1,031	526	48	8,446	73	30	245	454	0	8,426
2004	714	382	80	1,693	128	32	523	254	35	1,374
2005	619	363	100	1,549	131	35	627	232	43	1,213
2006	489	669	135	2,912	157	50	520	512	74	2,709
2007	374	652	150	2,632	113	60	204	539	73	2,505
2008	294	495	142	1,376	135	65	262	360	64	1,221
2009	268	703	196	3,340	131	70	380	571	126	3,209
2010	242	877	217	6,127	161	76	732	716	128	5,943

Total Compensation = Cash Compensation + Equity-Based Compensation + All Other Compensation

Cash compensation = Fees Earned in Cash

Equity-based Compensation = Stock Awards + Option Awards

Panel C: Independent Directors Compensation

	N	Total Compensation (\$1000s)			Cash Compensation (\$1000s)			Equity-based Compensation (\$1000s)		
		Mean	Median	Stdev	Mean	Median	Stdev	Mean	Median	Stdev
2000	3,963	150	45	465	27	25	61	123	13	454
2001	5,163	111	50	234	27	25	22	85	20	234
2002	5,916	100	50	214	29	25	39	71	18	207
2003	7,018	119	65	237	32	30	34	87	34	229
2004	7,509	191	94	2,926	35	30	30	156	56	2,926
2005	7,501	193	120	400	41	35	41	153	75	395
2006	6,689	226	160	628	59	56	44	168	91	625
2007	5,914	204	168	186	68	68	47	135	92	184
2008	5,071	200	167	236	73	75	49	127	88	233
2009	4,793	246	213	243	78	78	55	168	127	239
2010	4,603	254	221	229	84	84	62	170	129	226

Total Compensation = Cash Compensation + Equity-Based Compensation + All Other Compensation

Cash compensation = Fees Earned in Cash

Equity-based Compensation = Stock Awards + Option Awards

Panel D: Employee Directors Compensation

	N	Total Compensation (\$1000s)			Cash Compensation (\$1000s)			Equity-based Compensation (\$1000s)		
		Mean	Median	Stdev	Mean	Median	Stdev	Mean	Median	Stdev
2000	1,544	13,714	3,477	102,873	1,476	908	2,979	12,239	2,240	102,163
2001	1,771	7,686	3,362	13,945	1,337	879	2,494	6,349	2,233	13,386
2002	1,741	5,796	2,705	8,847	1,348	923	1,580	4,448	1,550	8,102
2003	1,698	6,631	3,081	11,012	1,542	1,009	1,898	5,088	1,845	10,157
2004	1,585	7,205	3,523	11,918	1,753	1,175	1,926	5,452	2,114	11,002
2005	1,473	8,167	4,167	14,609	1,963	1,345	2,395	6,204	2,496	13,854
2006	1,282	10,328	5,322	19,646	1,594	925	2,879	8,734	4,101	19,016
2007	1,026	11,507	6,533	20,930	1,366	900	2,559	10,141	5,404	20,179
2008	846	10,963	6,050	19,311	1,443	951	3,828	9,520	4,994	18,560
2009	740	12,114	7,905	14,460	1,210	978	1,445	10,904	6,990	14,026
2010	699	13,049	9,121	17,771	1,384	1,000	1,899	11,665	7,752	17,465

Total Compensation = Cash Compensation + Equity-Based Compensation + All Other Compensation

Cash compensation = Salary + Bonus

Equity-based Compensation = Option Pay

Panel E: Employee Directors Compensation (Excluding CEO)

	N	Total Compensation (\$1000s)			Cash Compensation (\$1000s)			Equity-based Compensation (\$1000s)		
		Mean	Median	Stdev	Mean	Median	Stdev	Mean	Median	Stdev
2000	702	6,033	2,306	11,436	1,189	737	1,962	4,844	1,443	10,706
2001	778	5,103	2,164	9,051	1,145	725	2,987	3,959	1,304	8,217
2002	719	3,847	1,925	6,066	1,117	735	1,698	2,730	956	4,993
2003	650	4,353	2,001	6,877	1,302	807	2,080	3,051	999	5,466
2004	548	4,657	2,422	7,294	1,400	911	1,728	3,257	1,158	6,370
2005	479	5,409	2,586	9,130	1,675	973	2,422	3,733	1,059	8,014
2006	426	6,665	3,093	11,584	1,487	700	3,176	5,178	2,026	10,628
2007	315	7,763	3,674	14,534	1,230	700	2,660	6,533	2,861	13,398
2008	252	6,828	2,992	14,105	1,247	653	2,868	5,581	2,020	13,213
2009	201	7,061	3,585	12,268	928	703	1,216	6,133	2,863	11,915
2010	173	8,926	4,092	20,347	1,192	750	2,210	7,734	3,139	20,137

Total Compensation = Cash Compensation + Equity-Based Compensation + All Other Compensation

Cash compensation = Salary + Bonus

Equity-based Compensation = Option Pay

Table 2.2. Summary Statistics of Director Departures and Appointments

Year	Firms	Directors	Departures	Appointments
2003	3,998	15,247	34	12
2004	4,206	16,357	277	380
2005	4,990	16,963	1,131	1,131
2006	5,015	17,254	1,922	2,151
2007	5,411	17,882	2,401	2,738
2008	5,822	18,315	2,499	2,876
2009	5,934	18,852	2,818	2,790
2010	6,142	19,240	2,657	2,693
2011	6,058	19,562	1,968	2,199
Mean	5,286	17,741	1,745	1,886
Total	47,576	159,672	15,707	16,970

Table 2.3. Summary Statistics of Firms, Boards, Executives and Directors Characteristics

Panel A: Univariate Statistics

Variable	Mean	Median	StDev	Q1	Q3
Log(External connections)	5.626	5.732	0.795	5.176	6.184
Log(Professional connections)	5.215	5.342	0.836	4.698	5.805
Log(Educational connections)	3.847	4.023	1.123	3.288	4.610
Log(Other connections)	2.769	3.166	1.764	1.792	4.115
Log(Total compensation)	5.179	4.977	1.802	4.025	5.717
Log(Cash compensation)	4.239	3.912	1.488	3.332	4.605
Log(Equity-based compensation)	5.192	4.787	1.849	4.094	5.790
Log(Total assets)	9.039	9.377	1.671	8.004	9.946
Log(Market to book)	0.609	0.654	0.986	0.017	1.254
ROA	0.024	0.030	0.373	0.002	0.073
Stock return	0.003	0.004	0.080	-0.021	0.031
Director tenure (year)	7.785	5.700	7.293	2.600	10.800
Percentage of tie to the CEO	40.7%	0.0%	49.1%	0.0%	100.0%
Log(Board size)	2.348	2.398	0.287	2.197	2.565
Percentage of inside directors	29.0%	25.0%	18.5%	14.3%	40.0%
CEO tenure (years)	5.485	3.600	60.021	1.000	6.045
Percentage of dual CEO/Chair	61.3%				

Panel B: Pearson Correlations

Variables	1	2	3	4	5	6
1. Log(External connections)						
2. Log(Total compensation)	0.075***					
3. Log(Cash compensation)	0.030***	0.864***				
4. Log(Equity-Based compensation)	0.013***	0.972***	0.768***			
5. Log(Total assets)	0.249***	0.072***	0.099***	0.029***		
6. Log(Market to book)	0.198***	0.131***	0.080***	0.110***	-0.268***	
7. ROA	0.029***	0.034***	0.043***	0.022***	0.087***	0.206***
8. Stock return	-0.002	0.027***	-0.001	0.050***	-0.003	0.229***
9. Director tenure (year)	-0.154***	0.060***	0.106***	0.026***	-0.006*	0.044***
10. Percentage of tie to the CEO	0.110***	0.055***	0.089***	0.051***	0.084***	-0.054***
11. Log(Board Size)	0.173***	-0.005	0.047***	-0.050***	0.462***	0.106***
12. Percentage of Inside Directors	-0.193***	-0.075***	-0.022***	0.062***	-0.108***	-0.138***
13. Dual CEO/Chair	0.084***	0.032***	0.033***	0.032***	0.138***	0.068***

*, **, and *** indicate correlation is significant at 10%, 5%, and 1% level respectively.

Panel B: Pearson Correlations (Continued)

Variables	7	8	9	10	11	12
1. Log(External connections)						
2. Log(Total compensation)						
3. Log(Cash compensation)						
4. Log(Equity-based compensation)						
5. Log(Total assets)						
6. Log(Market to book)						
7. ROA						
8. Stock return	0.146***					
9. Director tenure (year)	0.053***	0.002				
10. Percentage of tie to the CEO	-0.022***	-0.021***	0.021***			
11. Log(Board size)	0.058***	0.024***	0.020***	0.136***		
12. Proportion of inside directors	-0.030***	0.019***	-0.001	0.030***	-0.020***	
13. Dual CEO/Chair	0.030***	0.031***	0.063***	0.023***	0.126***	0.007**

*, **, and *** indicate correlation is significant at 10%, 5%, and 1% level respectively.

Table 2.4. The Relationship between External Connections of Outside Directors and Compensation

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Panel A: Dollar Value of Outside Directors' Compensation			
Log(External connections)	34.587 *** (5.41)	4.627 *** (8.52)	6.620 * (1.71)
Log(Total assets)	33.561 *** (4.12)	7.515 *** (9.92)	22.156 *** (2.66)
Log(Market to book)	52.501 *** (4.32)	4.511 *** (4.89)	56.221 *** (3.42)
ROA _{t-1}	99.223 (1.55)	15.178 *** (3.99)	135.231 (1.33)
Stock Return _{t-1}	143.251 (1.42)	-6.547 (-0.65)	210.368 (1.01)
Director tenure	0.059 (0.09)	0.844 *** (9.44)	-1.022 (-0.81)
Independent director	-342.211 *** (-11.12)	-51.423 *** (-27.89)	-455.121 *** (-11.78)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	64,528	68,583	48,243
R ²	0.0530	0.0374	0.0640
Panel B: Natural Logarithm of Outside Directors' Compensation			
Log(External connections)	0.112 *** (25.12)	0.099 *** (20.75)	0.089 *** (6.47)
Log(Total assets)	0.212 *** (42.41)	0.212 *** (48.69)	0.241 *** (36.92)
Log(Market to book)	0.259 *** (29.17)	0.098 *** (10.00)	0.368 *** (34.24)
ROA _{t-1}	0.344 *** (8.78)	0.294 *** (9.14)	0.457 *** (8.47)
Stock Return _{t-1}	0.753 *** (8.38)	-0.068 (-1.02)	1.579 *** (16.83)
Director tenure	0.013 *** (16.19)	0.026 *** (36.77)	0.005 (0.87)
Independent director	-0.166 *** (-12.73)	-0.240 *** (-23.22)	-0.274 *** (-14.5)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	64,456	59,352	48,205
R ²	0.2945	0.3933	0.1823

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Table 2.5. Connections and Outside Directors' Compensation: Subsample Analysis

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Panel A: Dollar Value of Outside Directors' Compensation			
Log(External connections)	31.195 *** (5.26)	4.216 *** (8.01)	6.698 * (1.73)
Log(Total assets)	29.278 *** (4.39)	7.621 *** (10.05)	22.547 *** (2.69)
Log(Market to book)	54.691 *** (4.56)	4.651 *** (5.01)	56.004 *** (3.19)
ROA _{t-1}	90.724 (1.45)	15.040 *** (3.74)	133.890 (1.28)
Stock Return _{t-1}	140.657 (1.38)	-5.890 (-0.51)	200.126 (0.98)
Director tenure	0.051 (0.11)	0.801 *** (9.81)	-1.125 (-0.98)
Independent director	-46.235 (-1.12)	-12.897 (-1.28)	-56.984 (-1.15)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	56,697	50,214	42,589
R ²	0.0559	0.0497	0.0741
Panel B: Natural Logarithm of Outside Directors' Compensation			
Log(External connections)	0.107 *** (24.04)	0.074 *** (18.25)	0.094 *** (8.04)
Log(Total assets)	0.227 *** (44.69)	0.258 *** (49.14)	0.232 *** (34.52)
Log(Market to book)	0.269 *** (29.98)	0.087 *** (9.45)	0.351 *** (32.98)
ROA _{t-1}	0.414 *** (8.51)	0.201 *** (7.99)	0.482 *** (9.04)
Stock Return _{t-1}	0.863 *** (8.56)	-0.056 (-0.99)	1.781 *** (18.56)
Director tenure	0.025 *** (17.00)	0.029 *** (37.05)	0.004 (0.75)
Independent director	-0.045 (-1.13)	-0.062 (-1.30)	-0.057 (-1.28)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	56,004	49,997	41,874
R ²	0.3167	0.4021	0.1983

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Table 2.6. The Relationship between External Connections of Employee Directors and Compensation

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Panel A: Dollar Value of Employee Directors' Compensation			
Log(External connections)	2157.635 *** (6.55)	323.681 *** (16.12)	1984.005 *** (5.01)
Log(Total assets)	3145.247 *** (10.45)	382.578 *** (21.35)	2805.201 *** (8.15)
Log(Market to book)	2972.275 *** (6.85)	286.254 *** (9.83)	2512.526 *** (3.83)
ROA _{t-1}	2001.965 (0.98)	-65.241 (-0.55)	2387.496 (0.97)
Stock Return _{t-1}	20251.478 *** (3.99)	801.025 *** (2.73)	28101.502 *** (4.81)
Director tenure	-30.014 (-0.89)	3.005 (1.59)	-3.562 (-0.10)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	12,604	13,754	10,773
R ²	0.0349	0.1286	0.0310
Panel B: Natural Logarithm of Employee Directors' Compensation			
Log(External connections)	0.382 *** (24.17)	0.258 *** (18.11)	0.399 *** (22.63)
Log(Total assets)	0.391 *** (35.27)	0.225 *** (28.20)	0.436 *** (34.22)
Log(Market to book)	0.451 *** (19.01)	0.265 *** (15.02)	0.532 *** (18.65)
ROA _{t-1}	0.526 *** (4.72)	0.518 *** (8.83)	0.211 ** (2.48)
Stock Return _{t-1}	0.291 (1.63)	0.413 ** (2.56)	0.728 *** (2.92)
Director tenure	-0.020 *** (-8.93)	0.006 *** (4.20)	-0.008 *** (-4.97)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	12,521	12,461	10,768
R ²	0.3458	0.2672	0.34

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Table 2.7. The Relationship between External Connections of Outside Directors and Compensation
by Types of External Connections

Panel A: Dollar Value of Outside Directors' Total Compensation

	Dependent Variables: Total Compensation			
	(1)	(2)	(3)	(4)
Log(Professional connections)	24.582 ** (2.53)			22.481 ** (1.99)
Log(Educational connections)		0.240 (0.05)		4.211 (0.53)
Log(Other connections)			6.831 (0.96)	7.525 (1.18)
Log(Total assets)	20.216 *** (2.95)	26.454 *** (4.09)	20.081 * (1.70)	35.643 *** (3.28)
Log(Market to book)	45.087 *** (3.68)	53.544 *** (4.49)	44.674 ** (2.07)	58.708 *** (3.09)
ROA _{t-1}	96.663 (1.41)	75.519 (1.11)	155.344 (1.16)	100.213 (0.87)
Stock Return _{t-1}	126.737 (0.88)	157.088 (1.10)	128.188 (0.44)	166.917 (0.66)
Director tenure	0.076 (0.07)	-0.363 (-0.32)	-1.316 (-0.66)	-1.976 (-1.11)
Independent director	-334.107 *** (-12.97)	-392.975 *** (-14.96)	-417.002 *** (-8.87)	-437.538 *** (-10.55)
Industry experience	100.340 (1.16)	14.566 (1.27)	51.120 ** (2.15)	55.342 (1.53)
Graduate degrees	60.120 ** (2.48)	10.566 ** (2.46)	42.310 ** (2.57)	37.665 ** (2.50)
Elite education	70.156 *** (2.78)	9.742 *** (2.65)	51.120 *** (2.78)	43.673 *** (2.74)
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Observations	55,060	55,060	55,060	55,060
R ²	0.0706	0.0700	0.0690	0.0876

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Panel B: Natural Logarithm of Outside Directors' Total Compensation

	Dependent Variables: Total Compensation			
	(1)	(2)	(3)	(4)
Log(Professional connections)	0.101 *** (24.19)			0.075 *** (11.53)
Log(Educational connections)		0.002 (0.76)		0.003 (0.98)
Log(Other connections)			0.002 (0.92)	0.006 (1.64)
Log(Total assets)	0.133 *** (39.15)	0.151 *** (43.21)	0.151 *** (34.62)	0.137 *** (28.93)
Log(Market to book)	0.146 *** (24.11)	0.168 *** (25.92)	0.163 *** (20.60)	0.148 *** (17.93)
ROA _{t-1}	0.260 *** (7.62)	0.219 *** (5.91)	0.278 *** (5.63)	0.256 *** (5.09)
Stock Return _{t-1}	0.558 *** (7.85)	0.558 *** (7.19)	0.782 *** (7.38)	0.869 *** (7.91)
Director tenure	0.008 *** (14.20)	0.008 *** (13.40)	0.008 *** (10.96)	0.009 *** (11.12)
Independent director	-0.144 *** (-11.31)	-0.155 *** (-10.90)	-0.132 *** (-7.61)	-0.145 *** (-8.04)
Industry experience	0.413 (1.16)	0.060 (1.28)	0.211 ** (2.16)	0.228 (1.53)
Graduate degrees	0.249 ** (2.49)	0.044 ** (2.47)	0.176 *** (2.59)	0.156 ** (2.52)
Elite education	0.289 *** (2.80)	0.040 *** (2.67)	0.212 *** (2.80)	0.180 *** (2.75)
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Observations	55,060	55,060	55,060	55,060
R ²	0.2945	0.2951	0.2945	0.4147

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Table 2.8. The Relationship between External Connections of Employee Directors and Compensation
by Types of External Connections

Panel A: Dollar Value of Employee Directors' Total Compensation

	Dependent Variables: Total Compensation			
	(1)	(2)	(3)	(4)
Log(Professional connections)	2208.1 *** (5.54)			3028.2 ** (2.56)
Log(Educational connections)		695.3 ** (2.49)		667.6 ** (2.01)
Log(Other connections)			454.6 (1.14)	41.3 (0.09)
Log(Total assets)	2640.5 *** (8.72)	3015.9 *** (9.39)	3295.1 *** (5.43)	2602.1 *** (3.72)
Log(Market to book)	2117.2 *** (4.08)	2140.1 *** (3.70)	2054.3 ** (1.98)	1470.8 (1.29)
ROA _{t-1}	1870.2 (0.76)	-376.0 (-0.14)	-1433.6 (-0.27)	-1272.1 (-0.23)
Stock Return _{t-1}	18035.1 *** (3.23)	20253.6 *** (3.12)	52948.5 *** (3.86)	58515.7 *** (3.98)
Director tenure	-21.2 (-0.51)	-115.7 ** (-2.39)	-180.0 ** (-2.15)	-178.3 ** (-1.96)
Industry experience	1007.5 (1.17)	304.2 (1.27)	208.0 ** (2.16)	506.6 (1.53)
Graduate degree	604.9 ** (2.49)	181.5 ** (2.46)	124.4 ** (2.57)	303.6 ** (2.51)
Elite education	705.8 *** (2.79)	212.2 *** (2.67)	145.3 *** (2.79)	354.5 *** (2.75)
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Observations	12,587	12,587	12,587	12,587
R ²	0.0349	0.1286	0.0310	0.0768

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Panel B: Natural Logarithm of Employee Directors' Total Compensation

	Dependent Variables: Total Compensation			
	(1)	(2)	(3)	(4)
Log(Professional connections)	0.299 *** (24.64)			0.328 *** (13.11)
Log(Educational connections)		0.048 *** (6.05)		0.011 *** (2.94)
Log(Other connections)			0.042 *** (4.70)	0.005 (0.47)
Log(Total assets)	0.256 *** (27.81)	0.316 *** (33.15)	0.306 *** (22.49)	0.222 *** (15.01)
Log(Market to book)	0.265 *** (16.79)	0.299 *** (17.38)	0.283 *** (12.14)	0.230 *** (9.55)
ROA _{t-1}	0.308 *** (4.08)	0.255 *** (3.11)	0.311 *** (2.65)	0.320 *** (2.74)
Stock Return _{t-1}	0.278 (1.63)	0.084 (0.43)	0.403 (1.31)	0.682 ** (2.19)
Director tenure	-0.009 *** (-7.03)	-0.016 *** (-11.04)	-0.016 *** (-8.74)	-0.015 *** (-7.89)
Industry experience	0.137 (1.17)	0.041 (1.27)	0.028 ** (2.16)	0.069 (1.54)
Graduate degree	0.082 ** (2.49)	0.025 ** (2.47)	0.017 *** (2.60)	0.041 ** (2.52)
Elite education	0.097 *** (2.81)	0.029 *** (2.69)	0.020 *** (2.82)	0.048 *** (2.77)
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Observations	12,587	12,587	12,587	12,587
R ²	0.2963	0.2954	0.2957	0.4158

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Table 2.9. The Relationship between External Connections of Outside Directors and Compensation
after controlling for Governance Characteristics

Panel A: Dollar Value of Outside Directors' Compensation

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Log(External connections)	15.362 *** (2.63)	2.343 *** (4.13)	4.728 (0.42)
Log(Total assets)	20.807 *** (3.05)	4.158 *** (8.75)	19.800 ** (2.13)
Log(Market to book)	45.699 *** (3.73)	3.696 *** (4.31)	48.199 *** (2.95)
ROA _{t-1}	95.365 (1.39)	13.178 *** (3.05)	141.189 (1.36)
Stock Return _{t-1}	123.715 (0.86)	-7.122 (-0.75)	221.234 (1.05)
Director tenure	0.039 (0.04)	0.601 *** (7.72)	-1.244 (-0.84)
CEO Connections	45.887 *** (2.90)	5.112 *** (4.57)	59.276 *** (2.83)
Intra-board connections	19.245 *** (2.88)	2.348 *** (3.55)	36.472 *** (3.02)
Independent director	-334.571 *** (-12.98)	-44.346 *** (-25.17)	-471.317 *** (-12.62)
Industry experience	80.145 (1.11)	12.001 (1.21)	88.621 (1.16)
Graduate degrees	40.123 ** (2.46)	9.225 ** (2.35)	32.697 ** (2.48)
Elite education	49.174 *** (2.69)	9.789 *** (2.58)	36.471 *** (2.64)
Log(Board size)	-76.196 ** (-2.20)	12.112 *** (5.04)	-134.100 *** (-2.73)
Proportion of inside directors	-93.811 (-1.54)	-25.020 *** (-5.96)	28.624 (0.32)
Log(CEO tenure)	-98.726 *** (-5.43)	-17.146 *** (-6.33)	-55.147 *** (-4.69)
Dual CEO/Chair	-49.802 *** (-2.70)	-11.219 *** (-8.70)	-52.999 ** (-2.16)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	64,528	68,583	48,243
R ²	0.0530	0.0374	0.0640

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Panel B: Natural Logarithm of Outside Directors' Compensation

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Log(External connections)	0.086 *** (21.37)	0.053 *** (18.89)	0.028 *** (5.31)
Log(Total assets)	0.137 *** (40.49)	0.109 *** (45.16)	0.150 *** (34.86)
Log(Market to book)	0.151 *** (24.83)	0.036 *** (8.35)	0.244 *** (32.38)
ROA _{t-1}	0.251 *** (7.35)	0.174 *** (7.08)	0.310 *** (6.45)
Stock Return _{t-1}	0.537 *** (7.55)	-0.055 (-1.07)	1.334 *** (13.76)
Director tenure	0.007 *** (13.71)	0.013 *** (33.69)	0.000 (0.55)
CEO Connections	0.000 (0.01)	0.047 *** (8.45)	-0.017 * (-1.81)
Intra-board connections	0.012 *** (2.90)	0.006 *** (3.56)	0.023 *** (3.05)
Independent director	-0.147 *** (-11.54)	-0.190 *** (-21.10)	-0.201 *** (-11.70)
Industry experience	0.050 (1.12)	0.030 (1.21)	0.058 (1.16)
Graduate degrees	0.0251 ** (2.46)	0.02337 ** (2.37)	0.021 ** (2.50)
Elite education	0.030 *** (2.70)	0.02485 *** (2.59)	0.023 *** (2.65)
Log(Board size)	-0.193 *** (-11.20)	0.191 *** (15.70)	-0.656 *** (-28.92)
Proportion of inside directors	-0.345 *** (-11.45)	-0.104 *** (-4.90)	0.016 (0.39)
Log(CEO tenure)	-0.064 *** (-5.43)	-0.045 *** (-6.34)	-0.036 *** (-4.71)
Dual CEO/Chair	-0.038 *** (-4.21)	-0.078 *** (-11.93)	-0.018 ** (-1.71)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	64,456	59,352	48,205
R ²	0.2945	0.3933	0.1823

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Table 2.10. The Relationship between External Connections of Employee Directors and Compensation
after controlling for Governance Characteristics

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Log(External connections)	1828.797 *** (4.92)	223.411 *** (11.04)	1843.802 *** (4.14)
Log(Total assets)	2781.236 *** (9.34)	309.244 *** (19.16)	2730.140 *** (7.76)
Log(Market to book)	2216.394 *** (4.29)	238.493 *** (8.54)	2080.200 *** (3.42)
ROA _{t-1}	1862.939 (0.75)	-67.147 (-0.52)	2387.496 (0.82)
Stock Return _{t-1}	17681.353 *** (3.17)	783.442 *** (2.61)	24290.480 *** (3.46)
Director tenure	-32.501 (-0.78)	3.569 (1.62)	-3.267 (-0.06)
CEO Connections	910.559 (1.31)	128.684 *** (3.36)	1038.592 (1.28)
Intra-board connections	255.319 *** (2.90)	24.879 *** (3.58)	1593.161 *** (3.02)
Industry experience	1060.084 (1.12)	128.052 (1.22)	3863.442 (1.16)
Graduate degrees	535.486 ** (2.48)	97.943 ** (2.35)	1421.178 ** (2.48)
Elite education	653.680 *** (2.69)	104.035 *** (2.59)	1591.537 *** (2.65)
Log(Board size)	609.409 (0.43)	334.145 *** (4.33)	-961.186 (-0.57)
Proportion of inside directors	-2484.021 (-1.04)	-63.220 (-0.49)	-1851.608 (-0.65)
Log(CEO tenure)	-1307.162 *** (-5.45)	-182.223 *** (-6.35)	-2399.360 *** (-4.69)
Dual CEO/Chair	1130.946 (1.25)	185.366 *** (3.72)	1237.666 (1.18)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	12,604	13,754	10,773
R ²	0.0349	0.1286	0.0310

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Panel B: Natural Logarithm of Employee Directors' Compensation

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Log(External connections)	0.245 *** (21.50)	0.137 *** (17.08)	0.267 *** (19.50)
Log(Total assets)	0.276 *** (30.32)	0.168 *** (26.13)	0.339 *** (31.24)
Log(Market to book)	0.279 *** (17.65)	0.141 *** (12.56)	0.321 *** (17.12)
ROA _{t-1}	0.305 *** (4.02)	0.382 *** (7.13)	0.202 ** (2.26)
Stock Return _{t-1}	0.228 (1.33)	0.291 ** (2.41)	0.619 *** (2.86)
Director tenure	-0.010 *** (-8.25)	0.004 *** (3.99)	-0.007 *** (-4.52)
CEO Connections	0.018 (0.83)	0.050 *** (3.32)	0.025 (1.02)
Intra-board connections	0.034 *** (2.90)	0.003 *** (3.56)	0.214 *** (3.05)
Industry experience	0.141 (1.12)	0.017 (1.23)	0.521 (1.17)
Graduate degrees	0.071 ** (2.48)	0.013 ** (2.36)	0.189 ** (2.50)
Elite education	0.087 *** (2.69)	0.014 *** (2.59)	0.211 *** (2.66)
Log(Board size)	0.330 *** (7.63)	0.408 *** (13.37)	0.070 (1.33)
Proportion of inside directors	-0.908 *** (-12.42)	-0.293 *** (-5.66)	-0.977 *** (-11.12)
Log(CEO tenure)	-0.176 *** (-5.47)	-0.024 *** (-6.38)	-0.323 *** (-4.7)
Dual CEO/Chair	0.104 *** (3.78)	0.103 *** (5.27)	0.088 *** (2.75)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	12,521	12,461	10,768
R ²	0.3458	0.2672	0.34

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Table 2.11. The Relationship between External Connections of Outside Directors and Compensation:**Median Regression****Panel A: Dollar Value of Outside Directors' Compensation**

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Log(External connections)	9.763 *** (23.17)	2.277 *** (20.03)	5.310 *** (9.55)
Log(Total assets)	15.867 *** (51.70)	4.725 *** (48.26)	12.649 *** (38.41)
Log(Market to book)	23.602 *** (39.02)	5.872 *** (38.07)	19.922 *** (30.34)
ROA _{t-1}	44.594 *** (8.28)	12.942 *** (8.02)	34.156 *** (6.62)
Stock Return _{t-1}	-30.092 *** (-3.79)	-25.214 *** (-14.91)	23.048 *** (2.78)
Director tenure	0.611 *** (10.24)	0.435 *** (19.63)	0.158 ** (2.27)
CEO Connections	-8.637 *** (-9.96)	-0.982 *** (-3.38)	-10.088 *** (-10.14)
Intra-board connections	1.367 *** (2.89)	0.254 *** (3.59)	4.593 *** (3.03)
Independent director	-4.424 *** (-3.19)	0.083 (0.23)	-1.546 (-0.77)
Industry experience	5.693 (1.12)	1.299 (1.21)	11.160 (1.16)
Graduate degrees	2.850 ** (2.47)	1.005 ** (2.36)	4.093 ** (2.49)
Elite education	3.486 *** (2.71)	1.063 *** (2.58)	4.566 *** (2.64)
Log(Board size)	-28.950 *** (-15.51)	9.266 *** (16.51)	-69.071 *** (-31.22)
Proportion of inside directors	-159.002 *** (-63.83)	-47.011 *** (-66.11)	-35.361 *** (-9.85)
Log(CEO tenure)	-7.034 *** (-5.44)	-1.868 *** (-6.34)	-6.910 *** (-4.73)
Dual CEO/Chair	-17.573 *** (-18.25)	-3.503 *** (-10.32)	-10.304 *** (-10.24)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	64,951	69,115	48,613

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Panel B: Natural Logarithm of Outside Directors' Compensation

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Log(External connections)	0.105 *** (22.38)	0.063 *** (18.96)	0.060 *** (10.87)
Log(Total assets)	0.136 *** (40.05)	0.126 *** (51.11)	0.139 *** (44.03)
Log(Market to book)	0.199 *** (30.26)	0.146 *** (37.9)	0.210 *** (33.94)
ROA _{t-1}	0.586 *** (8.12)	0.650 *** (12.14)	0.540 *** (7.06)
Stock Return _{t-1}	-0.085 (-0.89)	-0.875 *** (-14.32)	0.392 *** (4.62)
Director tenure	0.007 *** (11.59)	0.010 *** (22.51)	0.002 ** (2.28)
CEO Connections	-0.083 *** (-10.16)	-0.024 *** (-3.83)	-0.115 *** (-11.84)
Intra-board connections	0.002 *** (2.90)	0.001 *** (3.59)	0.006 *** (3.03)
Independent director	-0.005 (-0.27)	-0.057 *** (-6.05)	-0.021 (-0.88)
Industry experience	0.007 (1.13)	0.004 (1.21)	0.014 (1.17)
Graduate degrees	0.003 ** (2.47)	0.003 ** (2.37)	0.005 ** (2.50)
Elite education	0.004 *** (2.71)	0.003 *** (2.60)	0.006 *** (2.68)
Log(Board size)	-0.285 *** (-13.35)	0.216 *** (15.25)	-0.753 *** (-36.72)
Proportion of inside directors	-1.980 *** (-70.26)	-1.344 *** (-62.90)	-0.445 *** (-10.42)
Log(CEO tenure)	-0.008 *** (-5.48)	-0.006 *** (-6.39)	-0.009 *** (-4.73)
Dual CEO/Chair	-0.151 *** (-15.38)	-0.164 *** (-19.95)	-0.113 *** (-9.01)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	64,946	58,814	48,575

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Table 2.12. The Relationship between External Connections of Employee Directors and Compensation:**Median Regression****Panel A: Dollar Value of Employee Directors' Compensation**

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Log(External connections)	963.893 *** (20.65)	124.265 (136.19)	946.443 *** (21.09)
Log(Total assets)	1386.321 *** (39.63)	94.317 (103.21)	1358.539 *** (37.87)
Log(Market to book)	2172.262 *** (29.74)	92.671 (109.75)	2035.570 *** (28.70)
ROA _{t-1}	271.935 (0.51)	129.293 (170.87)	712.229 (1.29)
Stock Return _{t-1}	-2508.230 *** (-3.70)	190.164 (355.30)	-3354.650 *** (-4.29)
Director tenure	-32.151 *** (-7.04)	0.199 (2.00)	-12.439 * (-1.85)
CEO Connections	11.331 (0.11)	43.882 (68.14)	69.815 (0.71)
Intra-board connections	15.012 *** (2.91)	1.556 *** (3.58)	90.957 *** (3.06)
Industry experience	62.330 (1.13)	7.906 (1.23)	222.112 (1.17)
Graduate degrees	31.516 ** (2.50)	6.053 ** (2.37)	81.541 ** (2.49)
Elite education	38.511 *** (2.71)	6.468 *** (2.59)	90.954 *** (2.67)
Log(Board size)	925.239 *** (5.50)	284.644 (328.02)	-113.344 (-0.71)
Proportion of inside directors	-4728.660 *** (-20.27)	-352.482 *** (-292.67)	-3954.570 *** (-15.33)
Log(CEO tenure)	-77.241 *** (-5.47)	-11.352 *** (-6.38)	-137.667 *** (-4.77)
Dual CEO/Chair	186.506 ** (2.07)	104.712 (130.45)	119.913 (1.03)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	12,707	13,925	10,835

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Panel B: Natural Logarithm of Employee Directors' Compensation

	Dependent Variable		
	Total Compensation	Cash Compensation	Equity-Based Compensation
Log(External connections)	0.281 *** (23.04)	0.130 *** (14.81)	0.303 *** (20.02)
Log(Total assets)	0.255 *** (28.77)	0.118 *** (19.41)	0.296 *** (29.06)
Log(Market to book)	0.369 *** (27.69)	0.111 *** (12.24)	0.416 *** (21.86)
ROA _{t-1}	0.540 *** (3.18)	0.260 *** (5.23)	0.352 *** (3.31)
Stock Return _{t-1}	-0.021 (-0.12)	0.487 *** (4.34)	-0.073 (-0.28)
Director tenure	-0.007 *** (-7.20)	0.003 *** (3.66)	-0.002 (-1.18)
CEO Connections	-0.016 (-0.72)	0.032 ** (2.24)	-0.034 (-1.42)
Intra-board connections	0.004 *** (2.92)	0.000 *** (3.59)	0.027 *** (3.09)
Industry experience	0.018 (1.13)	0.002 (1.23)	0.064 (1.16)
Graduate degrees	0.009 ** (2.49)	0.002 ** (2.38)	0.024 ** (2.51)
Elite education	0.011 *** (2.74)	0.002 *** (2.61)	0.027 *** (2.69)
Log(Board size)	0.262 *** (5.63)	0.414 *** (13.89)	-0.064 (-1.22)
Proportion of inside directors	-1.374 *** (-23.08)	-0.202 *** (-5.18)	-1.254 *** (-15.35)
Log(CEO tenure)	-0.023 *** (-5.52)	-0.003 *** (-6.37)	-0.040 *** (-4.75)
Dual CEO/Chair	0.097 *** (3.30)	0.161 *** (10.11)	0.058 ** (2.01)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Observations	12,690	12,564	10,830

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Table 2.13. Logit Regression Analysis of Director Appointments

	Dependent Variable:				
	1: Obtaining a new director appointment of the exiting director 0: Obtaining no new director appointment of the exiting director				
	(1)	(2)	(3)	(4)	(5)
Professional connections	0.052*** (17.14)			0.040*** (15.69)	0.024*** (13.25)
Educational connections		0.003*** (4.21)		0.002*** (4.36)	0.001*** (3.02)
Other connections			0.001** (2.46)	0.001** (2.54)	0.001** (2.11)
Social tie to the CEO	23.317*** (4.08)	22.127*** (3.98)	21.124*** (3.63)	19.875*** (3.52)	20.698*** (4.02)
Connections to board members	17.852*** (3.46)	17.145*** (3.22)	17.725*** (3.31)	16.411*** (3.15)	18.115*** (3.69)
Number of qualifications	0.365*** (5.01)	0.145*** (4.25)	0.158*** (4.32)	0.116*** (4.10)	0.134*** (4.58)
Graduate degrees	0.112*** (4.98)	0.039*** (4.64)	0.033*** (4.49)	0.024*** (4.16)	0.056*** (6.54)
Professional certifications	0.121*** (5.58)	0.054*** (4.79)	0.042*** (4.76)	0.039*** (4.71)	0.013*** (3.54)
No. of current other directorships	6.104*** (6.86)	1.537*** (5.95)	1.562*** (6.23)	1.423*** (6.11)	1.410*** (5.58)
Aggregate board experience	0.548*** (4.14)	0.146*** (4.31)	0.171*** (4.76)	0.155*** (4.54)	0.325*** (7.98)
Big corporate board experience	0.167*** (5.74)	0.087*** (5.96)	0.055*** (5.83)	0.048*** (5.13)	0.133*** (9.74)
Age	-0.124*** (-9.82)	-0.069*** (-8.98)	-0.059*** (-8.41)	-0.057*** (-8.39)	-0.023*** (-7.93)
Gender	0.362 (1.10)	0.116 (1.06)	0.110 (0.98)	0.112 (1.03)	0.116 (1.10)
Firm size	0.123*** (5.03)	0.032*** (4.77)	0.029*** (4.32)	0.026*** (4.25)	0.035*** (5.21)
Prior two year average ROA	0.131* (1.76)	0.031 (1.55)	0.038 (1.55)	0.032* (1.65)	0.029 (1.60)
Previous year stock return	0.144 (0.76)	0.041 (0.70)	0.048 (0.77)	0.039 (0.76)	0.046 (0.99)
Restatements	-0.198*** (-6.57)	-0.124*** (-5.95)	-0.120*** (-5.91)	-0.121*** (-5.93)	-0.119*** (-5.89)
Firm Fixed Effect	No	No	No	No	Yes
Observations	15,267	15,267	15,267	15,267	15,267
Chi Square	286.22	265.89	262.09	342.08	681.29
Prob of Chi Square	0.0000	0.0000	0.0000	0.0000	0.0000

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.

Table 2.14. Logit Regression Analysis of Director Appointments: Alternative Samples

	Dependent Variable:				
	1: Obtaining a new director appointment 0: Obtaining no new director appointment				
	(1)	(2)	(3)	(4)	(5)
Professional connections	0.018*** (5.35)			0.017*** (5.34)	0.011*** (4.98)
Educational connections		0.002* (1.88)		0.001* (1.86)	0.001* (1.77)
Other connections			0.000 (0.91)	0.000 (0.88)	0.000 (0.68)
Social tie to the CEO	11.046*** (3.44)	10.985*** (3.32)	10.542*** (3.05)	10.435*** (2.99)	14.351*** (4.62)
Connections to board members	15.671 (3.78)	7.674*** (3.21)	7.464*** (2.95)	14.216*** (3.60)	18.215*** (4.45)
Number of qualifications	0.224*** (4.42)	0.136*** (4.14)	0.125*** (4.03)	0.219*** (4.40)	0.298*** (5.27)
Graduate degrees	0.051*** (4.47)	0.022*** (4.35)	0.020*** (4.31)	0.048*** (4.45)	0.071*** (5.25)
Professional certifications	0.052*** (4.77)	0.022*** (4.24)	0.023*** (4.25)	0.048*** (4.73)	0.059*** (4.68)
No. of current other directorships	2.615*** (6.23)	1.572*** (5.02)	1.541*** (4.98)	2.511*** (6.01)	2.883*** (6.22)
Aggregate board experience	0.274*** (4.61)	0.208*** (4.01)	0.212*** (4.10)	0.233*** (4.22)	0.301*** (4.91)
Big corporate board experience	0.055*** (4.20)	0.025*** (3.15)	0.027*** (3.16)	0.041*** (3.89)	0.088*** (5.40)
Age	-0.050*** (-8.51)	-0.012*** (-5.33)	-0.012*** (-5.34)	-0.041*** (-7.86)	-0.057*** (-8.11)
Gender	0.199 (0.95)	0.142 (0.89)	0.149 (0.90)	0.201 (1.00)	0.209 (1.03)
Firm size	0.059*** (3.90)	0.023*** (3.32)	0.027*** (3.30)	0.049*** (3.77)	0.059*** (4.43)
Prior two year average ROA	0.053 (1.54)	0.034 (1.21)	0.034 (1.22)	0.051 (1.54)	0.079* (1.67)
Previous year stock return	0.068 (0.67)	0.037 (0.46)	0.039 (0.47)	0.060 (0.66)	0.089 (0.74)
Restatements	-0.254*** (-8.41)	-0.261*** (-8.62)	-0.249*** (-8.32)	-0.252*** (-8.38)	-0.235*** (-8.22)
Firm Fixed Effect	No	No	No	No	Yes
Observations	159,672	159,672	159,672	159,672	159,672
Chi Square	167.63	159.21	158.49	166.09	342.88
Prob of Chi Square	0.0000	0.0000	0.0000	0.0000	0.0000

***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed), respectively.