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Boards of directors, ownership, and regulation

James R. Booth ^a, Marcia Millon Cornett ^{b,*},
Hassan Tehranian ^c

^a College of Business, Arizona State University, Tempe, AZ 85287, USA

^b Department of Finance, College of Business and Administration, Southern Illinois University,
Carbondale, IL 62901, USA

^c Wallace E. Carroll School of Management, Boston College, Chestnut Hill, MA 02167, USA

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Abstract

In this paper we examine whether regulation can be used to substitute for internal monitoring mechanisms (percentage of outside directors, officer and director common stock ownership, and CEO/Chair duality) to control for agency conflicts in a firm. We find that, in general, the percentage of outside directors is negatively related to insider stock ownership, but is not affected by CEO/Chair duality. CEO/Chair duality is, however, less likely when insider stock ownership increases. We find these internal monitoring mechanisms to be significantly less related with regulated firms (banks and utilities). We conclude that to the extent that regulations reduce the impact of managerial decisions on shareholder wealth, effective internal monitoring of managers becomes less important in controlling agency conflicts.

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1. Introduction

Research on the role of the board of directors in the modern corporation has focused on board effectiveness in monitoring management (Fama and Jensen, 1983a,b). The benefit of management monitoring by the board is related to the degree to which the incentives of managers and shareholders diverge. It is argued that to be

* Corresponding author. Tel.: +1-618-453-2459; fax: +1-618-453-5626.

E-mail address: mcornett@cba.siu.edu (M.M. Cornett).

effective monitors boards must be independent. Proposals calling for the reform of boards of directors have focused on two measures of independence: the percentage of outside directors on the board and whether the CEO also serves as the board chair. Discussion of board independence has focused on the role of outside directors in limiting the potential for agency costs when decision making and decision control are separated. It is argued that by monitoring management, outside directors can limit the exercise of managerial discretion, thus lowering contracting costs between shareholders and management (see Fama, 1980; Fama and Jensen, 1983a,b; Williamson, 1981, 1984). More recently the duality of CEO and board chair has come into consideration (see Brickley et al., 1997). Specifically, when the CEO also serves as board chair, the organization concentrates management's power and board leadership in one person's hands. Because this concentration of power can exacerbate potential conflicts of interest, it may result in agency problems and increase the need for an independent board.

In addition to outside directors and CEO/Chair duality, Jensen and Meckling (1976) note that as manager stock ownership increases, the interests of managers and outsiders become more closely aligned. That is, when directors have considerable holdings in a company's stock, their decisions impact their own wealth. Presumably, these directors are less likely to take actions that would reduce shareholder wealth regardless of the extent to which they are independent.

In contrast to internal monitoring mechanisms, there are some industries (depository institutions and public utilities) in which regulators limit the amount of managerial discretion and thus, its effect on shareholder wealth. In these industries, managerial decisions are monitored by regulators. To the extent that regulations reduce the impact of managerial decisions on shareholders wealth, effective monitoring by the (independent) board members, inside director stock ownership, and CEO/Chair separation may be less essential in controlling potential agency conflicts in regulated industries.

Given that each of these four mechanisms for monitoring (i.e., percentage of outside directors, CEO/Chair duality, manager stock ownership, and regulation) serve to control or reduce agency conflicts, it seems reasonable that if one mechanism is present in a firm or industry the other methods of monitoring should be less necessary. In this paper we examine these four different mechanisms as substitutes for monitoring the divergence of interest between managers and stockholders.¹ Previous research has looked for and found tradeoffs between various internal monitoring

¹ Denis and Sarin (1998) conduct a longitudinal study of firms' boards of directors to identify sequences of events (e.g., large-scale asset changes) that cause changes in ownership and/or board structure. They find that large changes in ownership and/or board structure are typically preceded by fundamental changes in the business conditions facing the firm and followed by large-scale asset restructuring. Moreover, among those firms having large changes in ownership and board structure in the same year, they find that, typically, ownership changes precede changes in the top management team and in board structure. In contrast to Denis and Sarin's work on the causes of ownership and board structure changes, we look at the nature of the tradeoff between these monitoring mechanisms, as well as CEO/Chair duality. Further, we also consider the degree to which regulators serve as an alternate monitoring mechanism.

mechanisms (see, for example, Agrawal and Knoeber, 1996; Bathala and Rao, 1995). We focus on whether regulation (an exogenous factor) also serves as a substitute for internal monitoring mechanisms to control for agency conflicts in a firm.² Kole and Lehn (1999) examine the impact of the relaxation of regulations on governance structure in the airline industry. They find that, after deregulation, governance structures gravitate toward the system of governance mechanisms used by unregulated firms. For example, after deregulation they find that equity ownership is more concentrated and stock option grants to CEOs increases.

The results in this paper confirm that there are indeed tradeoffs between monitoring mechanisms used to control agency conflicts. Specifically, we find that, in general, the percentage of outside directors on the board is negatively related to officer and director common stock ownership but is not affected by CEO/Chair duality. CEO/Chair duality is, however, less likely when officer and director stock ownership is high. We find that these relations are significantly weaker in regulated firms (banks and utilities). We conclude that in the presence of regulators, who limit managerial discretion, the need for internal monitoring mechanisms to control agency conflicts is less critical. That is, monitoring by regulators provides an alternative to monitoring by independent board members, high director stock ownership, and separation of the CEO and board chair.

The rest of the paper is organized as follows. Section 2 summarizes the four monitoring mechanisms examined in the paper. Section 3 presents information on the data and methodology used in the study. Section 4 summarizes the results and Section 5 concludes the paper.

2. Mechanisms for monitoring management decisions, agency conflict and board independence

2.1. Percentage of outside directors

Those who consider the board of directors an important element of corporate governance argue that boards dominated by outsiders are in a better position to monitor and control managers (Dunn, 1987). Fama and Jensen (1983b) argue that outside directors have an incentive to act as monitors of management because they want to protect their reputations as effective, independent decision makers. In his

² John and Senbet (1998) survey the empirical and theoretical literature on corporate boards of directors and their role in ameliorating various classes of agency problems arising from conflicts of interest. In addition to inside versus outside directors on the board, insider ownership and CEO/Chair duality, John and Senbet point out that board size and committee structure can alter board effectiveness. We limit our analysis to measures of board independence as they impact monitoring effectiveness in regulated versus unregulated industries rather than factors related to board composition. Shleifer and Vishny (1997) also review the corporate governance literature with special attention to the importance of legal protection of investors and of ownership concentration in corporate governance systems around the world.

study, Weisbach (1988) shows that outside-dominated boards are, in fact, more likely than inside dominated boards to respond to poor performance by replacing the CEO. Empirical evidence also finds that firm performance is linked to board independence. A number of studies relate the proportion of outside directors to financial performance of firms in general, and to shareholder wealth in particular.³ These studies consistently find a positive relation between the abnormal returns associated with specific firm events and outside board membership (see, for example, Byrd and Hickman, 1992).⁴

Overall, findings generally support the view that outside directors are important for both monitoring management and providing relevant complementary knowledge. Additionally, they support the notion that the potential for agency problems between the management and the shareholders plays a role in the motivation for adding outside directors. The results from previous research on the role of outside directors in monitoring management and controlling agency problems suggests that relatively large percentages of independent directors serve as a substitute for other types of monitoring mechanisms.

2.2. Officer and board ownership

Several studies argue that stock ownership by officers and board members gives them an incentive to ensure that the firm is run efficiently and to monitor managers carefully (see, for example, Brickley et al., 1988). When officers and board members have considerable holdings in a company's stock (either direct holdings of stocks or options on the firm's stock), their decisions impact their own wealth. Further, the impact of the directors' decisions on their wealth is compounded when the receipt of stock or options is a component of their compensation package. Consequently, they are less likely to take actions that would reduce shareholder wealth. Thus, the independence of the board and other monitoring mechanisms become less important as a way of controlling agency problems.

2.3. CEO/Chair duality

In about 80% of companies in the US, the CEO and the Chairman of the board are the same person (see Lorsch and MacIver, 1978). Such an organization concentrates management's power and board leadership in one person's hands (see Jensen, 1993a). Because this concentration of power can exacerbate potential conflicts of interest, decreasing the effectiveness of monitoring, it can be considered an agency problem. CEO/Chair duality allows the CEO to exert more power over the decisions and practices of the board, potentially making disagreement on the part of outsiders

³ See Baysinger and Butler (1985), Brickley and James (1987), Byrd and Hickman (1992), Lee et al. (1992), Mayers et al. (1997), Rosenstein and Wyatt (1990) and Shivdasani (1993).

⁴ Hermalin and Weisbach (1991), however, find no relation between the percentage of outside directors and the general level of firm performance as measured by Tobin's *q*.

costlier. The dual office structure also permits the CEO to effectively control information available to other board members (see Jensen, 1993a). This CEO/Chair duality results in less effective monitoring of the CEO. Given the decreased monitoring of the CEO, the potential agency costs of managerial decision making are exacerbated. Thus, board independence and other monitoring mechanisms become more important mechanisms in the control of agency problems.

2.4. Regulation

Regulation plays a major role in the monitoring of managers' actions. Indeed, regulators are charged with ensuring the safety and soundness of the regulated firm and therefore directly affect the linkage of the interests of management and shareholders regardless of the board's independence. Our sample includes two industries that face an enhanced level of regulatory influence: banks and public utilities. While the two industries face substantially different forms of regulation, both will influence the degree to which agency conflicts exist.

2.4.1. Utilities

Public utilities face some of the most restrictive regulation related to managerial decision making. In analyzing the public utility industry, Demsetz (1983) suggests that regulation may reduce the need to link manager and owner interests for these firms. He argues that by setting the rate of return to shareholders, public utility commissions (regulators) limit either the amount of managerial discretion or its effect on shareholder wealth. Baysinger and Zardkoohi (1986) expand on this to suggest that differences will exist between the boards of public utilities and industrial firms in general. They find the boards of public utilities have more symbolic directors than boards of less regulated firms. They interpret these findings as evidence that boards are a more important governance structure in less regulated firms than in public utilities. In terms of our analysis, if regulation governing managerial decision making in public utilities reduces agency conflicts, the independence of the board and other internal monitoring mechanisms play a less important governance role. Thus, regulation may serve as a substitute for internal monitoring mechanisms.

In addition to the monitoring function performed by outside directors, these directors also perform other functions related to product market differences, liability concerns, or even regulatory concerns that might lead to differences in board composition from industrial firms. For example, Agrawal and Knoeber (2001) find that outside directors play a political role by providing advice and insight into the workings of government or by acting to influence the government directly. Such skills can come from: (i) prior participation in government and thus knowledge of procedures as well as friendships with important decision-makers, or (ii) experience dealing with government as an adversary in administrative or legal proceedings. For those industries in which politics is most important, they find that directors with political experience are most important. Specifically, they find that during the 1990s, relative to manufacturing firms, the boards of electric utilities contained increasingly more politically experienced outside directors. Outside directors, adept at politics, can aid in

the political dealings of a firm by using their skills to predict government actions. Thus, rather than service intended to reduce agency conflicts, these outside directors are selected based on their political usefulness. Again, regulation may substitute for the reduced role in internal monitoring performed by these outside directors.

2.4.2. Banks

Banks face a different type of regulatory structure: one that focuses on reducing losses associated with bank failure as well as fair lending. In return for access to federal deposit insurance, banks face regulation related to such areas as safety and soundness, fair lending practices, and consumer protection. Flannery (1994) notes that because of the structure in the banking industry and the high degree of leverage with which banks operate, the impact of managerial actions on shareholder wealth is magnified. It is frequently argued that deposit insurance that is not priced to fully reflect the risk of the institution provides owners and managers with additional incentives to enhance risk-taking behavior. Saunders et al. (1990) find evidence that ownership structure affects the amount of risk-taking in banking firms. This suggests an increased need for the monitoring of management to insure that decisions are consistent with shareholder wealth maximization. Additionally, the virtual absence of hostile takeovers in this market suggests that this form of discipline for managers is weakened. These factors related to corporate governance in banks suggest that the benefit to aligning the incentives of managers and shareholders is equally, if not more, important in banking firms as in less regulated industrial firms.

One of the centerpieces of commercial bank regulation during the 1990s was prompt corrective action. That is, regulators have been charged with taking actions to ensure the safety and soundness of banks at the first sign of financial and/or managerial weakness. Thus, managerial decisions, and their impact on the safety and soundness of the bank, are monitored closely by regulators. To the extent that management monitoring by regulators limits the amount of managerial discretion, and thus its effects on shareholder wealth, monitoring by outside directors, inside stockholders, or a separate CEO and board chair becomes less important. The monitoring by regulators and the threat of actions taken by regulators as they follow prompt corrective action mandates provides the incentive to managers to operate soundly. Thus, while regulations in the banking industry are not directly concerned with shareholder wealth maximization, to the extent that regulations limit the amount of managerial discretion in decision making. They also limit the impact of these decisions on shareholder wealth (i.e., they limit agency conflicts).

2.5. Hypothesis

In the previous sections we described four alternative mechanisms for controlling agency conflicts between a firm's managers and its owners: three of which were internal to the firm and one (regulation) external. Given that each of the four methods offers a way to control agency conflicts, a firm that successfully employs one method should have less of a need for the others. For example, a firm that has a high percentage of independent directors on the board effectively monitoring management activ-

ities would have less of a need for high board ownership or the separation of the CEO and chair. Similarly, a public utility should have less of a need for an independent board, high board ownership, CEO/Chair separation, etc. Accordingly, the hypothesis to be tested in this paper is

H₀: Trade offs between alternative monitoring mechanisms do not exist.

H_a: Trade offs between alternative monitoring mechanisms exist. That is, firms with heavy use of one mechanism will use smaller levels of the other types of monitoring mechanisms.

The focus of this paper is internal monitoring mechanisms, i.e., officer and director ownership, insider versus outsiders on the board, and CEO/Chair duality. That is, we focus on governance mechanism decisions made by parties inside the firm and how these decisions are affected by the existence of regulation. We do not include external-monitoring mechanisms, i.e., outside blockholder ownership or institutional ownership. The reason is twofold. First, the conclusions regarding the importance of these external monitoring mechanisms is mixed.⁵ Second and more importantly, previous research has shown that external control mechanisms are more effective at controlling agency conflicts when swift action is needed, for example, during a crisis (see Jensen, 1993b; Gilson, 1996). In contrast, as stated by Kole and Lehn (1999), internal mechanisms collectively define a firm's corporate culture. Employees acclimate their behavior to the incentives embodied by these rules. On average, firms select cultures that are appropriate to their respective business environments, e.g., regulated versus non-regulated. It is these internal decisions on which we focus.

3. Data and methodology

3.1. Data

We examine the empirical hypothesis developed above using a cross section of data for firms obtained from Fortune's website Custom Ranking feature. Fortune's Custom Ranking feature identifies firms based on several characteristics (e.g., revenues, assets, shareholders equity) and by industry. Firms can be identified based on one or a combination of characteristics and industries. We selected the "assets" attribute to identify the 100 largest firms (in total assets as of year-end 1999) in the various industries: commercial banking, utilities, and industrials. Thus, the commercial

⁵ Shleifer and Vishny (1986) find that large shareholders (with large amounts of wealth at stake) may have a greater incentive to monitor managers than the board of directors who may have little wealth invested in the firm. McConnell and Servaes (1990) find evidence consistent with this hypothesis. Thus, the existence of large blockholders who actively monitor managers' actions would reduce the need for pay-performance based compensation contracts. However, Hubbard and Palia (1995) find that block ownership of the bidders' common stock had no effect on announcement period abnormal returns for manufacturing industry acquisitions. Further, the inclusion of this variable did not change the impact of managerial ownership on abnormal returns.

bank sample analyzed in this paper consists of the 100 largest banks. For utilities the sample contains the 100 largest gas and electric, telecommunications, and energy firms. Finally, the 100 largest firms from industries other than the commercial banks or utilities industries are included in the industrial firms sample.

Board of director data is taken from the proxy statements released closest to year-end 1999. In all but a few cases, this is a proxy released in the first four months of 2000. Because data in these statements is most representative of the firm at year-end 1999, we call these the 1999 proxy statements throughout the rest of the paper.

In analyzing the independence of the board of directors, we employ the relationship procedures developed by the Investor Responsibility Research Center (IRRC).⁶ That is directors are classified as management (inside), affiliated outsider or independent outsider, depending on their relationship to the firm as described in the 1999 proxy statements. Appendix A shows the IRRC classification of director affiliation. Current employees of the firm are considered inside directors. Affiliated directors are a complex category and are assigned to one or more of the categories listed in Panel B of Appendix A, as defined by IRRC. Independent directors are defined as those who are not employees of the company and who are not affiliated with the company in a significant way other than in their role as directors. Because of the conflicting role of affiliated outside directors, we analyze the sample using independent outside directors and all outside directors separately.

Board of director data collected from 1999 proxy statements include the percentage of inside directors and affiliated and independent outside directors (as defined in Appendix A), whether the CEO also serves as the chairman of the board, CEO tenure, and the number of directors on the board (board size). Insider common stock ownership (common stock owned directly or beneficially by the officers and directors (insider and outsider) of the firm) is also collected from these proxy statements. We also collect information on whether the directors' compensation packages include options on the firm's stock from proxy statements. Financial statement data on individual companies are collected from the 10-k reports for year-end 1999. These data include book value of assets, net income, book value of preferred stock, and book value of total debt. Firm value (i.e., market value of equity plus book value of preferred stock plus book value of total debt) utilizes the year-end 1999 common stock market price. Descriptive statistics for the full sample of 300 firms are presented in Table 1.

From Table 1, the market value of equity for the firms averaged \$42,319 million, while the book value of assets averaged \$36,179 million. The net income of the sample-firms ranged from -\$1,338 million to \$8,159 million. Officers and inside board members owned an average of 5.6% of the firm's common stock, with a minimum of 0.1% ownership and a maximum of 79.2%. The percentage of independent outside directors ranged from 0.0% to 93.8%, and averaged 59.1%. CEOs in the sample firms had from 1 to 43 years of tenure as CEO: the average tenure was 9.0 years.

⁶ The classification adopted from the IRRC method differs slightly from that used in other studies based on Byrd and Hickman (1992). The difference relates to classifying significant shareholders on the board as "affiliated". Byrd and Hickman classify this group as independent outsiders.

Table 1
Descriptive statistics on full sample of 300 firms

	Mean	Median	S.D.	Range	
				Mini- mum	Maxi- mum
Firm value ^a (in millions of dollars)	\$42,319	\$10,232	\$89,420	\$143	\$826,674
Assets ^b (in millions of dollars)	\$36,179	\$10,884	\$60,057	\$1,090	\$716,937
Profits ^c (in millions of dollars)	\$624	\$149	\$1242	–\$1,338	\$8,159
Common stock owned by insiders ^d	5.6%	2.1%	10.3%	0.1%	79.2%
Percentage of independent outside directors ^e	59.1%	63.4%	17.1%	0.0%	93.8%
CEO tenure ^f (in years)	9.0	8.0	7.4	1.0	43.0

The data presented are for the full sample of firms studied as of 1999. Board data are taken from 1999 proxy statements, financial statement data are taken from 10-k reports for year-end 1999, and market prices are for year-end 1999.

^a Firm value is the market value of equity plus book value of preferred stock plus book value of debt as of year-end 1999.

^b Book value of assets taken from year-end 1999 10-k reports.

^c Net income taken from year-end 1999 10-k reports.

^d Taken from 1999 proxy statements. Insider ownership is the percentage of common stock owned by the officers and inside directors of the firm.

^e Taken from 1999 proxy statements. Independent outside directors is defined in Appendix A.

^f CEO tenure is the number of years the CEO has held the CEO position as reported in the 1999 proxy statements.

Table 2 lists board of director characteristics for the subsamples of industrial firms, banks and utilities. Notice from Panel A of Table 2 that officers and inside directors own significantly more common stock in the industrial firms, 8.97%, than either the banks or utilities, 5.77% and 1.79%, respectively. This finding is consistent with our hypothesis that monitoring mechanisms may serve as substitutes in controlling agency conflicts. In regulated firm's regulators perform a monitoring function. As a result, these firms do not need to rely as heavily on officer and director ownership to control management activities. Rather than service intended to reduce agency conflicts, directors in the utilities industry may be selected to perform other functions, e.g., political roles. Further, the lack of alignment between managers and shareholders in the banking industry due to the heavily debt laden financial structure, the lack of complete risk-basing in assigning deposit insurance fees, or the absence of an active hostile takeover market becomes less critical. These results are also consistent with Kole and Lehn (1999) who find that deregulated firms in the airline industry rely more heavily on governance mechanisms to control agency conflicts.

Table 2 also reports that industrial firms have a significantly smaller percentage of independent outside directors, 50.60%, compared to banks and public utilities, 58.00% and 68.70%, respectively. The same relations hold true for all outside directors. Outsiders on the boards of industrial firms average 71.80%; significantly less (at

Table 2

Characteristics of the Board of Directors and ownership structure for subsamples of 100 industrial firms, 100 banks^a and 100 public utilities^b

	Mean	Median	S.D.	Range	
				Minimum	Maximum
<i>Panel A: Common stock owned by officers and inside directors (%)</i>					
Industrial	8.97	4.20	13.60	1.0	82.0
Bank	5.77 ^c	2.46	10.43	0.1	75.1
Utility	1.79 ^c	0.56	6.40	0.0	52.9
Percentage of independent outside directors (%)					
Industrial	50.60	55.40	17.40	0.0	93.4
Bank	58.00 ^c	59.20	17.10	10.0	92.9
Utility	68.70 ^c	75.00	22.50	0.0	93.8
Percentage of outside directors (%)					
Industrial	71.80	73.00	12.11	24.0	93.0
Bank	81.29 ^c	83.10	6.87	28.6	96.0
Utility	80.52 ^c	83.30	11.74	33.3	94.0
Board size					
Industrial	11.79	12.00	2.94	6.0	21.0
Bank	16.37 ^c	16.00	5.01	6.0	28.0
Utilities	11.46	11.00	2.74	5.0	20.0
<i>Panel B: Relation between CEO and Board Chair</i>					
Percentage of firms where CEO serves as Chairman of the Board (%)					
Industrial	70				
Bank	80 ^c				
Utility	79 ^c				

Board data is taken from 1999 proxy statements. Inside and independent outside director is determined using the classifications in Appendix A.

^a Includes the 100 largest commercial banks at year-end 1999 using Fortune's website Custom Ranking feature.

^b Includes the 100 largest gas and electric, telecommunications, and energy firms at year-end 1999 using Fortune's website Custom Ranking feature.

^c Difference in means is statistically significant at better than the 0.05 level compared to the subsample of industrial firms.

the 0.05 level) than that for banks (81.29%) and utilities (80.52%). These results are contrary to expected, particularly for utilities. The regulated firms (those monitored by regulators) have significantly more independent directors (also serving a monitoring function). As suggested by Agrawal and Knoeber (2001), however, it is possible that these outside directors may be performing other functions (other than monitoring) related to product market differences, liability concerns, or regulatory concerns. It should also be noted that these regulated firms (as mentioned above) have fewer inside director stockholders monitoring. There could be some confounding effects that can not be identified, but may be affecting the univariate tests reported in Table 2.

Finally, notice from Panel A in Table 2 that commercial banks maintain significantly larger boards of directors (16.37 members) than industrial firms (11.79 mem-

bers). Previous research has found that firms with large boards are less effective than firms with small boards. For example, Yermack (1996) finds that firms with small boards have increased quality of monitoring and decision making by the board of directors. As a result, firms with small boards have higher market values, have stronger financial ratios, and provide stronger CEO performance incentives from compensation and threat of dismissal than firms with larger boards. We find that commercial banks have these larger (less effective) boards. Regulators, however, may provide a substitute for the loss of internal monitoring mechanisms. The difference in the board size of utilities (11.46 members) is not significantly different than that of industrial firms.

Panel B of Table 2 lists the percentage of firms in which the CEO also serves as the chairman of the board as 70%, 80%, and 79%, respectively, for industrial, bank, and utility firms. The difference in this percentage between industrial and banking firms is significant at the 0.05% level. The percentage is also significantly larger for utilities compared to industrial firms. These results are also consistent with our hypothesis. Specifically, banks and utilities firms are monitored by regulators. Thus, the need for increased monitoring by a separate CEO and chairman of the board is not as critical in controlling agency conflicts.

Overall the evidence related to sub-sample averages indicates that monitoring mechanisms do serve as substitutes for each other. We next consider the tradeoff and interaction of board composition, CEO/Chair duality, officer and director ownership, and regulatory structure across the sub-group of sample firms.

3.2. Methodology

The hypothesis we examine in this study are tested using OLS and probit regression analyses. Specifically, we test various forms of the following regressions:

$$\begin{aligned} \%INDDIR_i = & \alpha_i + \beta_1 \text{Log}(\text{Assets})_i + \beta_2 \text{Log}(\text{Debt}/\text{TotalAssets})_i \\ & + \beta_3 \text{Log}(\text{Market Value})_i + \beta_4 \text{Log}(\text{Profits})_i \\ & + \beta_5 \text{CAR}_i + \beta_6 \text{Options}_i + \beta_7 \text{CEO}/\text{Chair}_i \\ & + \beta_8 \text{Log}(\text{Insider Ownership})_i + \beta_9 \text{Bank}_i \\ & + \beta_{10} \text{Bank and Log}(\text{Insider Ownership})_i + \beta_{11} \text{Utility}_i \\ & + \beta_{12} \text{Utility Log}(\text{Insider Ownership})_i + e_i, \end{aligned}$$

$$\begin{aligned} P(\text{CEO} = \text{Chair})_i = & F(\alpha_i + \beta_1 \text{Log}(\text{Assets})_i + \beta_2 \text{Log}(\text{Debt}/\text{Total Assets})_i \\ & + \beta_3 \text{Log}(\text{Market Value})_i + \beta_4 \text{Log}(\text{Profits})_i + \beta_5 \text{CAR}_i \\ & + \beta_6 \text{Options}_i + \beta_7 \text{Log}(\text{Insider Ownership})_i \\ & + \beta_8 \%INDDIR_i + \beta_9 \text{CEO Tenure}_i + \beta_{10} \text{Bank}_i \\ & + \beta_{11} \text{Bank and Log}(\text{Insider Ownership})_i + \beta_{12} \text{Utility}_i \\ & + \beta_{13} \text{Utility and Log}(\text{Insider Ownership})_i + e_i), \end{aligned}$$

where %INDDIR_{*i*} is the proportion of outside directors (all or independent) in firm *i*; ⁷ Log (Assets)_{*i*} the natural log of total assets of firm *i* at year-end 1999; Log (Debt/Total Assets)_{*i*} the natural log of the ratio of total liabilities to total assets of firm *i* at year-end 1999; Log (Market Value)_{*i*} the natural log of the market value of firm *i* at year-end 1999; Log (Profits)_{*i*} the natural log of net income of firm *i* at year-end 1999; CAR_{*i*} the cumulative holding period return for firm *i* minus the CRSP equally weighted index from 1997 to 1999, Options_{*i*} dummy variable equal to 1 if director's compensation includes options on the stock of firm *i* and 0 otherwise; CEO/Chair_{*i*} dummy variable equal to 1 if the CEO is also the chairman of the board for firm *i* and 0 otherwise; Log (Insider Ownership)_{*i*} natural log of the percentage of common stock owned by officers and inside directors of firm *i*; Bank_{*i*} dummy variable equal to 1 if firm *i* is a bank and 0 otherwise; Bank and Log (Insider Ownership)_{*i*} an interaction term equal to officer and inside director ownership if firm *i* is a bank and 0 otherwise; Utility_{*i*} dummy variable equal to 1 if firm *i* is a utility and 0 otherwise; Utility and Log (Insider Ownership)_{*i*} an interaction term equal to officer and inside director ownership if firm *i* is a utility and 0 otherwise; and CEO Tenure_{*i*} number of years the CEO of firm *i* has been in office.

As mentioned earlier, previous research has found, that trade-offs exist between various internal monitoring mechanisms. The regression model examined here not only allows us to reexamine some of these trade-offs, but also allows us to examine the impact of regulation on the substitution between two of these monitoring mechanisms (the proportion inside versus outside directors and insider versus outsider stock ownership). Specifically, we examine whether the degree of substitution is affected by the existence of regulations. Thus, the regression analysis in this paper allows us to reexamine previous findings as well as to see if an exogenous influence (regulation) causes the relationship between monitoring mechanisms to change.

We include the independent variables total assets, total debt to total assets, market value, profits, and abnormal stock returns (CAR) in the regressions to control for firm specific characteristics that might affect board independence, officer and director ownership, etc. For example, total assets, market value, and profit are various measures of firm size. Larger, more diversified firms may need more monitoring, such as monitoring by outside directors, to control agency conflicts. Thus, we expect these variables to be positively related to the various monitoring mechanisms. Net income is also a measure of firm performance. Thus, this variable, along with abnormal stock returns (CAR), are expected to be positively related to the various monitoring mechanisms. That is, the stronger the monitoring by various methods, such as outside directors, the better the performance of the firm should be. Because the variables total assets, total debt to total assets, market value, and profits are not normally distributed, we use the natural log of these variables in our regression equations.

⁷ We also ran the regressions using $\text{Log}(p/(1-p))$ as the dependent variable. The results are not materially different.

The total debt to total assets ratio is included to measure the degree of leverage and thus agency conflict. The larger this ratio, the less equity the firm uses and the greater the opportunity for agency conflict to exist. Thus, monitoring mechanisms, such as monitoring by outside directors, should be more important in controlling agency conflicts. Thus, we expect the debt ratio to be positively related to the use of various monitoring mechanisms.

To allow for a difference in the relation between officer and director ownership in regulated versus non-regulated industries, we include the interaction variables Bank and Log (Insider Ownership) and Utility and Log (Insider Ownership) in some regressions. Specifically, the coefficients on these interaction variables will allow us to identify any differential impact officer and inside director ownership may have on the percentage of independent directors in regulated versus non-regulated firms. Because Insider Ownership is not normally distributed, we use the natural log of this variable in our regression equations. We conducted a Breusch Pagan chi-square test for heteroscedasticity and found it to be a slight problem. Accordingly, standard errors are adjusted for the presence of heteroscedasticity using the procedure described by White (1980).

4. Regression results

4.1. OLS regressions using independent outside directors

Table 3 presents regression results using the proportion of independent outside directors as the dependent variable. Three regressions are presented. The first includes the various internal monitoring mechanisms and control variables only. The second regression introduces industry dummy variables and the third regression adds two interaction variables for the regulated industries.

Notice first that the control variables, Log (Assets) and Log (Market Value), are significant at better than the 0.01 levels, and Log (Profits) and CAR are significant at the 0.05 level. The significant positive coefficient on Log (Assets) suggests that larger firms use more independent outside directors. The significant positive coefficients on Log (Market Value) and Log (Profits) imply that the higher the market value and net income of the firm, respectively, the greater the percentage of independent outside directors on the board. Thus, three different size measures show that bigger firms tend to have more independent outside directors. Finally, the significant positive coefficient on CAR implies that firms with a higher percentage of outside directors also have higher cumulative abnormal stock returns. These results are consistent across all of the OLS regressions.

Regression 1 in Table 3 also isolates the relation between the percent of independent outside directors to two other monitoring mechanisms: insider ownership and CEO/Chair duality. The coefficient on insider ownership is negative (-7.04) and significant ($t = -11.11$) suggesting that for firms where the percentage of stock ownership by the directors and officers of the firm is higher, the percentage of independent outside directors is lower. The increase in stock ownership by officers and directors

Table 3

OLS regression estimates of the impact of regulation on the proportion of independent outside directors on the Board of 300 sample firms (*t*-statistic in parentheses)

Variable	Percentage of independent outside directors		
	1	2	3
Intercept	0.82 (6.42)*	0.79 (6.06)*	0.84 (6.51)*
Log (Assets)	1.41 (2.96)*	1.72 (3.10)*	1.75 (3.12)*
Log (Debt/Total Assets)	-0.62 (-1.12)	-0.75 (-1.21)	-0.80 (-1.25)
Log (Market Value)	1.95 (2.75)*	1.89 (2.69)*	1.90 (2.72)*
Log (Profits)	1.25 (2.07)**	1.22 (2.02)**	1.27 (2.10)**
CAR	2.05 (2.49)**	1.97 (2.34)**	1.82 (2.30)**
Options	-2.17 (-2.89)*	-2.07 (-2.69)*	-2.02 (-2.62)*
CEO/Chair	0.96 (1.20)	1.01 (1.22)	1.04 (1.27)
Log (Insider Ownership)	-7.04 (-11.11)*	-7.11 (-10.71)*	-7.09 (-11.67)*
Bank		1.24 (2.04)**	1.31 (2.10)**
Bank and Log (Insider Ownership)			1.28 (2.15)**
Utility		1.63 (2.15)**	1.59 (2.07)**
Utility and Log (Insider Ownership)			1.42 (1.96)***
R ² (%)	26.11	27.21	27.30
F-value	25.16*	24.41*	23.19*

The dependent variable is the percentage of *independent* outside directors on the board. Log (Assets) is the natural log of total assets of the firm at the end of 1999. Log (Debt/Total Assets) is the natural log of the ratio of total debt to total assets for the firm at the end of 1999. Log (Market Value) is the natural log of the market value of the firm at the end of 1999. Log (Profits) is the natural log of net income of the firm for 1999. CAR is the cumulative holding period return on the firm's stock during the period from 1997 to 1999. Options is a dummy variable equal to 1 if the director's compensation includes options on the firm's stock and 0 otherwise. CEO/Chair is a dummy variable equal to 1 if the CEO is also the chairman of the board and 0 otherwise. Log (Insider Ownership) is the natural log of the percentage of the common stock owned by the officers and inside directors of the firm. Bank is a dummy variable equal to 1 for a bank and 0 otherwise. Utility is a dummy variable equal to 1 for a utility and 0 otherwise. Bank and Log (Insider Ownership) and Utility and Log (Insider Ownership) are interaction variables combining the industry dummy variable and the percentage of insider ownership.

* Statistically significant at the 0.01 level.

** Statistically significant at the 0.05 level.

*** Statistically significant at the 0.10 level.

(and the potential impact on their wealth from bad decisions) aligns the interests of managers and shareholders, thus reducing agency conflicts. As a result, monitoring

by independent outside directors is less important or necessary. The monitoring mechanisms serve as substitutes for each other.

Similarly, the coefficient on options is negative and significant indicating that when director's compensation includes options on the firm's stock the percentage of independent outsiders on the board is significantly smaller. Options on the firm's stock, like stock, serve to align board members with the stockholders of the firm. Thus, monitoring by independent outside directors becomes less important in controlling agency conflicts.

The positive coefficient on the variable CEO/Chair (0.96, $t = 1.20$) is insignificant suggesting that the percentage of independent outside directors is unrelated to CEO/Chair duality. These two monitoring mechanisms do not, therefore, appear to serve as substitute solutions to controlling for agency costs. One interpretation of this result, consistent with Hermalin and Weisbach's (1998) finding, is that given that independent outside directors serve as effective monitors controlling agency conflicts between management and shareholders, it does not matter if the CEO and board chair positions are separated or held by the same individual.

The results in column 1 of Table 3 lead us to the conclusion that the alternate monitoring mechanisms, percentage of independent outside directors and insider ownership, do indeed act as substitutes; consistent with our alternate hypothesis. Firms that choose to monitor management actions by increasing officer and director ownership do not extensively use or need to use independent outsiders to monitor management and control agency conflicts. CEO/Chair duality, however, does not appear to serve as a substitute for independent outside director monitoring.

Having established the general trends in the tradeoff among internal monitoring mechanisms, in column 2 of Table 3 we examine the impact of regulation as an alternate monitoring mechanism as we present regression results when industry dummy variables are introduced into the regression. Specifically, column 2 in Table 3 includes dummy variables for both the bank and utility firms in the sample. Notice in this regression the coefficients on the Bank and utility dummy variables are positive and significant at the 0.05% level. These results imply that the percentage of independent outside directors on the boards of banks and utilities (regulated firms) is significantly higher than that for non-regulated firms in the sample. This is consistent with the univariate results in Table 2.

In regression 3 of Table 3 we introduce two interaction variables for the regulated industries: Bank and Log (Insider Ownership) and Utility and Log (Insider Ownership). These interactive terms allow for differences in the relation between board independence and officer and director ownership in the regulated bank and utility firms versus the non-regulated firms. The coefficient on the interactive term for banks, 1.28, is significant, at the 0.05% level, while the coefficient on the interactive term for utilities, 1.42, is significant at the 0.10% level. These results indicate that the negative relation between insider ownership and the percentage of independent outsiders is significantly less negative for bank and utility firms and suggest that the presence of regulations governing these industries acts as a substitute for internal monitoring mechanisms to control agency conflicts. Thus, directors can be selected to serve other functions (e.g., political roles). Also, the lack of complete risk-basing in deposit

insurance fees or the absence of a hostile takeover market in the banking industry to align managers and stockholders is less important.

4.2. OLS regressions by industry

Table 4 reports regression results when the sample is evaluated by industry: industrial firms, banks, and utility companies. Dividing the sample in this manner allows us another way to examine the regulated industries in isolation and thus, examine any unique relation between monitoring mechanisms and control variables in these

Table 4
OLS regression estimates of the impact of regulation on the proportion of independent outside directors on the Board of 100 industrial firms, 100 banks, and 100 utility companies

Variable	Percentage of independent outside directors		
	Industrial firms	Banks	Utilities
Intercept	0.75 (6.95)*	0.87 (7.11)*	0.88 (6.17)*
Log (Assets)	1.71 (3.19)*	1.47 (3.11)*	1.37 (2.99)*
Log (Debt/Total Assets)	-0.75 (-1.22)	-0.81 (-1.34)	-0.67 (-1.15)
Log (Market Value)	2.16 (2.89)*	2.24 (3.07)*	2.11 (2.71)*
Log (Profits)	1.36 (2.40)**	1.21 (1.74)***	1.09 (1.26)
CAR	2.55 (3.51)*	1.51 (1.67)***	1.45 (1.49)
Options	-2.32 (-3.07)*	-2.18 (-2.78)*	-1.85 (-2.19)**
CEO/Chair	0.81 (1.01)	1.01 (1.36)	0.97 (1.25)
Log (Insider Ownership)	-7.92 (-12.15)*	-4.63 (-5.71)*	-2.97 (-3.72)*
R ² (%)	27.19	25.24	25.71
F-Value	22.11*	19.41*	19.12*

The dependent variable is the percentage of *independent* outside directors on the board. Log (Assets) is the natural log of total assets of the firm at the end of 1999. Log (Debt/Total Assets) is the natural log of the ratio of total debt to total assets for the firm at the end of 1999. Log (Market Value) is the natural log of the market value of the firm at the end of 1999. Log (Profits) is the natural log of net income of the firm for 1999. CAR is the cumulative holding period return on the firm's stock during the period 1997–1999. Options is a dummy variable equal to 1 if the director's compensation includes options on the firm's stock and 0 otherwise. CEO/Chair is a dummy variable equal to 1 if the CEO is also the chairman of the board and 0 otherwise. Log (Insider Ownership) is the natural log of the percentage of the common stock owned by the officers and inside directors of the firm.

* Statistically significant at the 0.01 level.

** Statistically significant at the 0.05 level.

*** Statistically significant at the 0.10 level.

industries. The independent variable used in these regressions is the percentage of independent outside directors (like Table 3).

The results for industrial firms are similar to those for the full sample reported in column 1 of Table 3 and lead to identical conclusions. Differences exist, however, for both regulated industries (banks and utilities). First, profit, which was positive and significantly related to the percentage of independent outside directors for industrial firms, is less significant (at the 0.05% level) for banks and is insignificant for utilities. Second, CAR, which was positive and significant for industrial firms, is less significant for banks and is insignificant for utilities. Thus, two measures of performance found to be positively related to the percentage of independent outside directors (a sign of increased monitoring) are unrelated in banks and utilities (industries monitored by regulators). The differences in these coefficients across industries is significant at the 0.01 level.

Third, while the coefficient on Log (Insider Ownership) is negative and significant for all three regressions, the relation is much weaker for banks ($t = -5.71$) and utilities ($t = -3.72$) than for industrial firms ($t = -12.15$). The differences in these coefficients across industries is significant at the 0.01 level. Similarly, the coefficient on Options is weaker for banks ($t = -2.78$) and utilities ($t = -2.19$) than industrial firms ($t = -3.07$). Thus, the trade off between stock ownership (direct or through options) by inside directors and the percentage of independent outside directors is not as strong in those industries governed (monitored) by regulators as those with no such regulatory oversight. Regulation in these industries serves as a substitute for internal monitoring by independent outside directors to control agency conflicts when inside ownership is low. Thus, the need for the trade off between independent outside directors and insider stock ownership becomes less important.

4.3. OLS regressions using all outside directors

Table 5 presents OLS regression results using both affiliated and independent outside directors (as defined in Appendix A) as the dependent variable. The set up of Table 5 is identical to Table 3. Column 1 in Table 5 includes only the firm specific monitoring mechanisms and control variables. The results for this regression are similar to those in column 1 of Table 3 and lead to identical conclusions. That is, the proportion of all outside directors appears to act as a substitute monitoring mechanism to officer and director ownership, but is not related to the CEO/Chair duality monitoring mechanism.

Columns 2 and 3 in Table 5 add the regulated industry variables. Column 2 results and conclusions are similar to those found when the proportion of independent outside directors is used as the dependent variable. That is, column 2 results imply that regulated industries are different from industrials in their use of affiliated and independent outside directors. Column 3 presents results when the interaction terms are added. Notice the coefficient on Bank and Log (Insider Ownership), 1.89, is positive and significant at the 0.05 level and the coefficient on Utility and Log (Insider Ownership), 1.65, is positive and significant at the 0.10 level, while the coefficient on

Table 5

OLS Regression estimates of the proportion of outside directors on the Board of 300 sample firms (*t*-statistics in parentheses)

Variable	Percentage of affiliated and independent outside directors		
	1	2	3
Intercept	0.91 (7.06)*	0.86 (7.24)*	0.83 (7.18)*
Log (Assets)	1.17 (2.75)*	1.25 (2.85)*	1.35 (2.99)*
Log (Debt/Total Assets)	-0.84 (-1.25)	-0.93 (-1.33)	-0.98 (-1.46)
Log (Market Value)	2.15 (2.88)*	2.10 (2.76)*	2.14 (2.83)*
Log Profits	1.34 (2.17)**	1.37 (2.21)**	1.40 (2.37)**
CAR	1.99 (2.67)*	1.91 (2.60)**	1.90 (2.58)**
Options	-2.38 (-2.94)*	-2.47 (-3.09)*	-2.50 (-3.14)*
CEO/Chair	1.17 (1.24)	1.25 (1.37)	1.22 (1.30)
Log (Insider Ownership)	-7.24 (-11.94)*	-7.05 (-11.14)*	-7.13 (-11.71)*
Bank		1.53 (2.11)**	1.48 (2.07)**
Bank and Log (Insider Ownership)			1.89 (2.36)**
Utility		1.74 (2.09)**	1.96 (2.34)**
Utility and Log (Insider Ownership)			1.65 (1.85)***
R ² (%)	25.17	26.29	27.75
F-value	20.41*	20.79*	20.62*

The dependent variable is the percentage of affiliated and independent outside directors on the board. Log (Assets) is the natural log of total assets of the firm at the end of 1999. Log (Debt/Total Assets) is the natural log of the ratio of total debt to total assets for the firm at the end of 1999. Log (Market Value) is the natural log of the market value of the firm at the end of 1999. Log (Profits) is the natural log of net income of the firm for 1999. CAR is the cumulative holding period return on the firm's stock during the period 1997–1999. Options is a dummy variable equal to 1 if the director's compensation includes options on the firm's stock and 0 otherwise. CEO/Chair is a dummy variable equal to 1 if the CEO is also the chairman of the board and 0 otherwise. Log (Insider Ownership) is the natural log of the percentage of the common stock owned by the officers and inside directors of the firm. Bank is a dummy variable equal to 1 for a bank and 0 otherwise. Utility is a dummy variable equal to 1 for a utility and 0 otherwise. Bank and Log (Insider Ownership) and Utility and Log (Insider Ownership) are interaction variables combining the industry dummy variable and the percentage of insider ownership.

* Statistically significant at the 0.01 level.

** Statistically significant at the 0.05 level.

*** Statistically significant at the 0.10 level.

Log (Insider Ownership) is -7.30 ($t = -11.71$). Thus, while insider director ownership is, in general, negatively related to the percentage of affiliated and independent

directors, it is significantly less negative for banks and utilities. Given that regulators serve as a substitute monitoring mechanism, the trade off between insider ownership and outside directors becomes less important in controlling agency conflicts. That is, even as insider ownership decreases (reducing the monitoring activities of manager owners) it is less critical that affiliated and independent outside directors also monitor management activities in banks and utilities because regulators are serving this purpose.

The coefficient on the dummy variables for banks and utilities in column 3 are 1.48 ($t = 2.07$) and 1.96 ($t = 2.34$), respectively, implying that banks and utilities have more affiliated and independent outside directors. One possible explanation, along the lines of Baysinger and Zardkoohi (1986), is that these are the symbolic directors frequently appointed to boards of directors, or along the lines of Agrawal and Knoeber (2001) these directors serve functions other than monitoring such as performing a political role.

4.4. Probit regressions

In Table 6 we present results from probit regressions using CEO/Chair duality. Specifically, we estimate the probability that the CEO and chairman of the board positions are held by the same individual and identify the monitoring mechanisms that may be related to this probability. As noted in Table 2 over three-quarters of the CEOs in our sample also hold board chairmanship. We add an additional control variable in this regression; CEO tenure.

Column 1 reports results when control variables and monitoring mechanisms alone are included. Column 2 adds dummy variables for banks and utilities and column 3 adds the interaction terms. For all three regressions the coefficients on Log (Assets) is positive and significant (at the 0.10 level or better), indicating that larger firms are more likely to have one person serving as both the CEO and board chair. Further, the coefficient on CAR is negative and significant in all three regressions indicating that firms with CEO/Chair duality (and less monitoring) underperform those in which the CEO and board chair are different people. Finally, the coefficient on CEO Tenure is positive and significant in all three regressions. Thus, the longer the CEO is in place the more likely he/she is also the board chair.

The coefficient on %INDDIR is insignificant in all three regressions in Table 6 indicating that the percentage of independent outside directors is unrelated to CEO/Chair duality (consistent with the results in Tables 3–5). Thus, these monitoring mechanisms do not appear to serve as substitutes. However, the coefficient on Log (Insider Ownership) is positive and significant in all three regressions as is the coefficient on Options. Thus, as inside director's stock ownership increases (either through direct stock ownership or options) agency conflicts are reduced and the separation of the CEO and board chair becomes less important as a monitoring mechanism. Thus, there appears to be a substitution effect in these monitoring mechanisms.

Table 6

Probit analysis of factors determining when the CEO also serves as Chairman of the Board (*t*-value in parentheses)

Variable	1	2	3
Intercept	-0.12 (0.45)	-0.08 (0.24)	0.14 (0.51)
Log (Assets)	0.36 (1.95)***	0.32 (1.89)***	0.38 (2.06)**
Log (Debt/Total Assets)	0.20 (0.51)	0.25 (0.55)	0.24 (0.52)
Log (Market Value)	0.27 (0.49)	0.25 (0.43)	0.25 (0.44)
Log (Profits)	0.19 (0.49)	0.15 (0.45)	0.17 (0.47)
CAR	-0.51 (-2.06)**	-0.57 (-2.11)**	-0.60 (-2.17)**
Options	0.23 (2.18)**	0.25 (2.20)**	0.26 (2.22)**
CEO Tenure	0.34 (3.25)*	0.30 (3.11)*	0.32 (3.12)*
Log (Insider Ownership)	0.24 (2.41)**	0.27 (2.52)**	0.26 (2.49)**
%INDDIR	0.11 (0.29)	0.14 (0.31)	0.17 (0.36)
Bank		0.65 (2.07)**	0.67 (2.12)**
Bank and Log (Insider Ownership)			0.40 (1.46)
Utility		0.43 (2.12)**	0.45 (2.15)**
Utility and Log (Insider Ownership)			0.16 (1.29)
<i>N</i>	300	300	300
Log-likelihood ratio	-165.32	-162.11	-160.15

Log (Assets) is the natural log of total assets of the firm at the end of 1999. Log (Debt/Total Assets) is the natural log of the ratio of total debt to total assets for the firm at the end of 1999. Log (Market Value) is the natural log of the market value of the firm at the end of 1999. Log (Profits) is the natural log of net income of the firm for 1999. CAR is the cumulative holding period return on the firm's stock during the period 1997–1999. Options is a dummy variable equal to 1 if the director's compensation includes options on the firm's stock and 0 otherwise. %INDDIR is the $\text{Log}(p/1-p)$ where p is the percentage of *independent* outside directors on the board. Log (Insider Ownership) is the percentage of the common stock owned by the officers and inside directors of the firm. Bank is a dummy variable equal to 1 for a bank and 0 otherwise. Utility is a dummy variable equal to 1 for a utility and 0 otherwise. Bank and Log (Insider Ownership) and Utility and Log (Insider Ownership) are interaction variables combining the industry dummy variable and the percentage of insider ownership.

* Statistically significant at the 0.01 level.

** Statistically significant at the 0.05 level.

*** Statistically significant at the 0.10 level.

When the regulation related variables are added in Columns 2 and 3 the coefficients on both Bank and Utility are significant indicating that the CEO and board

chair are more likely to be the same person in banks and utility companies than other firms. The high degree of regulation in these industries is a monitoring mechanism that makes the separation of the CEO and board chair less important in controlling agency conflicts.

5. Conclusion

The role of the board of directors as monitors of management activities has been extensively examined in the finance literature. Three internal mechanisms of monitoring have been previously debated: percentage of independent directors on the board, common stock ownership by the firms' officers and directors, and CEO/Chair duality. Regulations imposed on some industries present an additional source of monitoring of managers' actions. In this paper we examine whether regulation can be used to substitute for internal monitoring mechanisms to control for agency conflicts when decision making and decision control are separated.

We find that there are indeed trade offs in the use of monitoring mechanisms. Specifically, we find that monitoring by independent outside directors acts as a substitute for officer and director ownership. Further, for firms in which officer and director stock ownership is high, the percentage of independent outside directors on the board is smaller. We also find that banks and utilities, where regulations limit managerial discretion in decision making, do not see the substitution of insider owners and outside directors to the same degree as industrials. Rather, regulators act as a substitute for the monitoring of other constituents. Thus, to the extent that regulations reduce the impact of managerial decisions on shareholder wealth, effective monitoring by outside board members, inside director stock ownership, and CEO/Chair separation become less important in controlling agency conflicts. Thus, rather than service intended to reduce agency conflicts, directors in regulated industries may be selected to perform other functions (e.g., political roles). Further, the lack of alignment between managers and shareholders in the banking industry due to the heavily debt laden financial structure, the lack of a complete risk-bearing scheme in assigning deposit insurance fees, or the absence of an active hostile takeover market become less critical.

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Appendix A. Classification procedure of directors into insiders, affiliated outsiders and independent outsiders

Panel A: Inside director:

- Senior Management
- Junior Management
- Employee of common stock ownership plan (ESOP)

Panel B: Outside directors affiliated with the firm:

- Member of an inside stockholders' group or significant shareholder not employed by the firm (where insider group includes those with stakes of 10% or more of the company's total voting shares).
- Part of an interlocking directorship (defined here as directors sitting on each others boards, e.g. two CEOs sitting on each others boards).
- Former employees of the firm.
- Related to an officer of the company (first cousin or closer).
- Member of a professional firm providing services to the company (e.g. law firm, consulting firm, investment bank, commercial bank, etc.).
- Officer of a firm that has a significant supplier/customer relationship to the company (significant is defined as 1% or more of the suppliers annual sales).
- Derives personal benefit from the company (individual consultant to the company, non-employee chairman or vice-chairman of the board who earns over \$100,000 per year from the position or is involved in transactions with the company valued at \$100,000 or more).
- Director who is affiliated with a non-profit institution that received more than \$100,000 from the company in 1989.

Panel C: Independent outside director:

- All other outside directors.
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