

## **Does Management Involvement in the Board Affect Analysts' Coverage and Institutional Holdings?**

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*This paper explores the relationships among analysts forecasting, institutional investors and management involvement. I use an index constructed by important 8 variables related to corporate governance to proxy for the level of management involvement. I find that the high degree of management involvement is attractive to analysts' following. On the contrary, Institutions prefer to follow firms with less management involvement in the board (more independent board) controlled by other factors. Finally, institutions can convey the information of analysts' forecasting accuracy, especially for pre-SOX period.*

### **INTRODUCTION**

The publicly traded firms have widely dispersed ownership in American. Thus, shareholders designate firm managers to operate the company. The primary goal of management is to maximize shareholder wealth. Manager can expropriate shareholders by entrenching themselves and staying on the job even if they are no longer competent or qualified to operate the firm (Shleifer and Vishny (1989)). It creates agency problems while the divergence in the interests of managers and shareholders causes managers to take actions that are costly to shareholders. Because shareholders do not take part in corporate activities in time, shareholders need governance mechanisms to assist in monitoring management actions, protecting their interests and reducing agency problems. The corporate governance mechanisms can be decomposed into two parts: those internal to firms and those external to firms. The structure of board of directors has an important role regarding about internal governance mechanisms, while the analyst forecasting and institutional holdings comprise the basics of internal governance.

A board of directors has two roles in the firm. Because of agency problems, managers prefer projects that are to his advantage rather than projects that are to stockholders' advantage. Therefore, due to the stockholders' benefits, the board has to examine and verify important corporate decisions (such as capital budgeting decisions and financing decisions)<sup>1</sup>, and to approve corporate strategies and objectives. This is the monitoring role of the board. Moreover, the board plays an advisory role. The members of the board have their expertise in the relevant industry and experience in management. They can provide suggestions that are able to help managers to make appropriate decisions and solve problems. However, directors have their full time jobs in other firms, and thus, they do not have much time to gather information. Management can provide sufficient and accurate information that supports directors in making good suggestions. The quality of the board's advice is dependent on relevant firm information provided by the management. Therefore, it has to discuss whether the management can help directors as good monitoring or not. Recent works about investigations of conflicts of interest among shareholders, management, and boards of directors have increasingly focused on the independence of the board.

In practice, directors are determined by managers rather than stockholders. This selection process has a long-standing criticism. According to the criticism, even though the board includes independent directors, the agency problem may not be reduced. Therefore, there are different conclusions in the relationship between the independence of the board and the firm performance. That the corporate governance mechanisms have to exercise the monitoring function has been explored<sup>2</sup>. Nevertheless, the monitored entities become a part of the governance mechanisms in practice. For example, the board is usually composed of inside directors and outside directors. Inside directors, who are related to the firm, are key employees or former employees of the firm. They generally are not independent of the CEO, since the success of their careers is often determined by the CEO's success. Outside directors who are typically CEOs from other firms or experts in the specific fields are not related to the firm. When outsiders are less comparable to insiders who are generally assumed to act in the best interests of management or the CEO rather than of the shareholders, it may diminish the board's effectiveness in its monitoring role. Hermalin and Weisbach (2003) find evidence consistent with this argument. Bhojraj and Sengupta (2003) posit that firms with a larger proportion of outside directors on the board provide better monitoring of management actions. Even the independence of board exists on the surface, the management eventually participates the selection process of independent directors. This situation will destroy the effect of the independence of board on monitoring management function of independent directors.

On the contrary, some empirical research supports that inside directors on corporate board have significant contribution to firm performance. For example, Klein (1998) finds a positive association between firm performance and the percentage of inside directors on finance and investment committees. Bhagat and Black (2002) find that firms with more independent boards are not more profitable than firms with less independent boards. Lastly, in a survey of corporate directors, Mace (1986) reports that outside directors frequently use inside information from insiders. There are some theoretical research supports the contribution of inside directors to the board. These studies<sup>3</sup> indicate that insiders can make it less costly for boards to elicit the private information. Furthermore, inside directors can help boards to exercise the dual monitoring and advising role through their experience and knowledge about the firm. Drymiotes (2007) constructs a model to examine the monitoring role of inside directors. He finds that less independent boards can sometimes be more effective at monitoring. Fully independent boards have incentives to shirk monitoring ex post, after the agents' productive inputs are sunk, if the boards cannot commit ex ante to monitoring.

Inside directors can also improve it while they destroy the monitoring function of the boards. Insiders are usually the management of the firm. And the involvement of management in the board is more, the board is less independent. In practice, the CEO can affect the board selection. Hermalin and Weisbach (2003) show that ten percent of directors do not fall into inside or outside directors. They who are usually referred to as "affiliated" or "gray" directors have a long-standing relationship with the firm. Shivdasani and Yermack (1999) find that CEO involvement in board selection will create a greater proportion of gray and a lower proportion of outside director appointments. Because CEO understands the requirements of directors who are suitable, his involvement in selection process of directors is favorable to the firm performance. According to previous discussion about the board independence, management involvement in the board affect the firm performance since it is associated with the dual monitoring and advising function of the board.

Security analysts play an important role of information intermediaries between firms and investors. Analysts routinely collect and process an enormous amount of information from corporate managers and subsequently convey this information to investors. Jensen and Meckling (1976) suggest that the security analysis activities may mitigate the agency costs that result from the conflicts between managers and stockholders. They realize that the security analysis activities are positively associated with the capitalized value of the ownership claims to corporations. Merton (1987) constructs a model to predict that the market value of a firm is an increasing function of the breadth of investor cognizance. The breadth of investor cognizance is positively related to the number of analyst following the given firm. Since efficiency and effectiveness of monitoring increases with the number of analysts, Chung and Jo

(1996) expect that the market value of a firm is positively associated with the number of analysts following that firm. Analysts who sever the same role as directors perform monitoring function.

Otherwise, some studies exploring the link between institutional investors and a firm's disclosure policy emphasizes in the relationship between analysts' disclosure ratings and institutional ownership. Healy, Hutton, and Palepu (1999) suggest that firms which have sustained increases in disclosure (as proxied by analyst ratings) are accompanied by an increase in institutional ownership. Bushee and Noe (2000) also find an association between analysts' disclosure ratings and institutional ownership. Ajinkya, Bhojraj, and Sengupta (2005) extend the prior research on institutional ownership by focusing on the association between institutional ownership and various types of management forecasts. They use management earnings forecasts as a purer measure of voluntary disclosure of private information rather than analysts' scores. They find that firms with more outside directors and greater institutional ownership are more frequently to issue a forecast. In addition, these forecasts are toward to be more unique, accurate and less biased. Therefore, institutional holdings are positively associated with the level of firm's disclosure, while they can assist in monitoring management actions.

In summary, securities analysts reduce agency costs by monitoring corporate management and providing information about firms to the market. With regard to institutional investor monitoring, Hartzell and Starks (2003) suggest that concentrated institutional ownership moderates executive compensation. Gillan (2007) summarizes recent evidence on the monitoring role of institutional investors, and then focuses on the role of blockholders. Bethel et al. (1998) report that active blockholders such as institutional investors lead to enhanced shareholder value. Holderness (2003), in a survey of the literature, concludes that while blockholders have incentives to monitor management, they might also consume corporate resources. Securities analysts and institutional investors are the same as the function of monitoring management. In other words, the management involvement in the board will affect the monitoring and advising function of directors. If analyst's coverage and institution holdings really have the function of monitoring management, thus the following issues are very important to outsider investors based on corporate governance.

Do institutional holdings convey the information about institutions' perceptions of a firm's management involvement in the board, while this involvement is related the efficiency of the function of the board?

Does the decision to provide coverage contain information about an analyst's perception of a firm's management involvement in the board?

Prior works of corporate governance seldom explore the relationships among analysts forecasting, institutional investors and management involvement. In this article, this paper addresses the two questions.

The new governance rules of 2002 came after a series of corporate scandals which related to the change in requirements of corporate governance. These changes in corporate governance result from the event of the energy company Enron. Following the collapse of Enron, congress passed the Sarbanes–Oxley Act of 2002 (SOX). In addition, based on SOX, the Securities Exchange Commission (SEC) asks a stricter set of exchange listing requirements for publicly traded firms. A key feature of SOX is that the monitoring function of outside directors is increased by regulations. For example, the essential provisions of the new exchange listing include: (1) a majority of independent directors on boards; (2) stricter requirements of independence; (3) existence of independent audit, nomination and compensation committees; (4) board sessions without insiders. While SOX does not specifically require firms to have a majority of independent directors, this situation is also likely to increase outsiders who participate in the board. That is, the motivation for much of these new regulations appears to be the belief that a board of directors dominated by outside directors is uniformly good for all firms. Therefore, the decrease in inside directors in the board can improve the board's function of monitoring management. Finally, this paper will discuss how SOX affect the relationships among analysts forecasting, institutional investors and management involvement.

## HYPOTHESES DEVELOPMENT

Analysts routinely collect and gather an enormous amount of information from corporate insiders/managers and subsequently convey this information to investors. Thousands of security analysts who are employed by brokerage houses provide their recommendations about a large population of companies. Indeed, for many investors, both individual and institutional, their investment decisions are relied on the information offered by financial analysts. Previous works have already found that the forecasting and coverage of financial analysts have significant effect on investor behavior. Managers realize that analysts are as one of the most important groups affecting the share price of their corporations (Graham, Harvey, and Rajgopal (2005)). On the one hand, analysts can be regarded as external monitors of managers (Jensen and Meckling (1976); Healy and Palepu (2001)). Since analysts have strong background knowledge in finance and substantial industry, they can track corporate financial statements on a regular basis. They usually interact directly with management and raise questions on different aspects of earnings numbers through earnings release conferences.

The Board of Directors, at the top of internal control systems, takes charge of advising and monitoring management and assumes the responsibility of hiring, firing, and compensating the senior management team (Jensen (1993)). While board size and the independence of the board from corporate management (Rosenstein and Wyatt (1990); Yermack (1996)), board activity (Vafeas (1999)), and the structure and activity of board subcommittees (Klein (1998, 2002); and Deli and Gillan (2000)) play important roles in the research of corporate governance. Besides, several papers examine the role of CEO duality that the CEO is also chairman of the board (Baliga et al.(1996); Brickley et al.(1997); and Goyal and Park (2002)). Hermalin and Weisbach (1988) and more recent work by Warther (1998), Adams and Ferreria (2003), Gillette, Noe, and Rebello (2003), Harris and Raviv (2005), and Raheja (2005) organize theoretical model of board structure to explain the effect on corporate governance. In general, these papers model boards and their roles as monitors of, and advisors to, corporate management. These studies have two conclusions about the relationship between the function of board of directors and management team. That is, management participation in the board can improve the advising function of the board<sup>4</sup>, while it can also reduce the monitoring function of the board<sup>5</sup>. In summary, the link between financial analysts and corporate governance is natural because analysts, as outsiders, play an important role as informational intermediaries between the firm and the market. If a firm's management involvement in the board creates the increase in advising function of directors, analysts will follow this firm. If a firm's management involvement in the board has negative effect on monitoring function of directors, analysts do not have the motivation of following this firm. Thus, the previous can deduce the following hypothesis:

**H<sub>1</sub>:** The analysts' coverage is associated with the level of firm's management involvement in the board<sup>6</sup>.

The second hypothesis in this paper examines the relationship between institutional ownership and management involvement in the board. The blockholdings of institutional investors induce them to perform monitoring activities because their voting power provides them to affect management decisions (Schleifer and Vishny, (1988)). Bhojraj and Sengupta (2003) find that firms with larger institutional ownership have lower bond yields and higher debt ratings. These results are consistent with the monitoring effect of institutional blockholders. Thus, monitoring function of the board can be replaced by monitoring function of the institutions. Wintoki (2007) indicate that the ownership structure of a firm will influence the relative costs and benefits which result from having outside directors on the board. If CEO has more ownership, it serves to more closely align the CEO interests with those of other shareholders, thus it can reduce the benefits of outside monitoring. More outside director ownership and institutional ownership can be considered as constraints that limit the CEO's tendency to destroy other stockholders' interest in order to pursue their interest. Gillan (2007) finds that certain types of institutional investors are associated with better acquisitions or the withdrawal of bad bids. Therefore, institutional investors can assist in monitoring management actions. If a firm's management involvement in the board creates the increase in advising function of directors, analysts will follow this firm. To match with the previous

descriptions about management participation in the board, I can predict: if a firm's management involvement in the board has negative effect on monitoring function of directors, institutions do not have the motivation of holding this firm's stock; if a firm's management involvement in the board creates the increase in advising function of directors, institutions prefer to hold this firm's stock. Thus the following hypothesis can be deduced:

**H<sub>2</sub>:** The institutional holdings are associated with the level of firm's management involvement in the board<sup>7</sup>.

Who play a major role of information intermediaries in corporate governance? Yu (2008) finds that analysts affect the managers' earnings management decisions. Do analysts serve as external governance mechanism to monitor managers' actions, or do they put excessive pressure on managers to give inside information to them? Using multiple measures of earnings management, he finds that firms which have the larger number of covering analysts manipulate their earnings less. At the same time, analysts from top brokers and more experienced analysts lead that the firm's managers do less earnings management. Because analysts aggressively take part in the information distribution processing, the decisions that managers disclose the financial statements can be affected by the intensity of analyst coverage. When Graham, Harvey, and Rajgopal (2005) make a survey of 401 financial executives, about 90% of financial executives realize that analysts are either the most important group in respect of setting company stock price or the second most important group next to institutional investors. In a word, a firm's stock with more analysts' followings has more information transparency. Thus, the analysts' forecasting errors will be minimized.

On the other hand, to account for the effect of institutional investor, institutional holdings are positively correlated with analyst coverage (O' Brien and Bhushan, (1990)). Since some costs of gathering and analyzing information are fixed, there will be economies of scale in monitoring technology. Thus, institutions with more stocks take less fixed cost of monitoring. In fact, because large institutions are easy to access to management and the board, large institutional holdings can mitigate the total costs of monitoring. Carleton, Nelson, and Weisbach (1998) show that institutions with large ownership often have access to board members and senior managers. Brickley, Lease, and Smith (1988) suggest that some institutional investors (e.g., insurance companies and banks through their trust departments) might want to protect good business relationships with firms and they have more willing to follow management decisions. The previous content has described that institutional investors play an important role of external corporate governance. If institutions are less willing to challenge managers, do institutional holdings still serve as the indicator of information transparency? Therefore, I use the analysts' forecasting error as the proxy variable for information transparency. I try to explore that a firm's stock with more institutional holdings has more information transparency, even though the situation described by Brickley, Lease, and Smith (1988) exists. To summarize, based on the information transparency, a firm's stock with more institutional holdings have more information transparency and less forecasting errors from analysts after controlling for management involvement and characteristics of the firm. The third hypothesis is deduced:

**H<sub>3</sub>:** The institutional holdings are negatively associated with analysts' forecasting errors after controlling management involvement and other firm's characteristics.

## **RESEARCH DESIGN**

This section presents a discussion of (i) the proxy index I use for management involvement in the board, (ii) variables related to annual analysts' forecasting properties, (iii) variables related to institutional holdings, (iv) control variables, and (v) data, (vi) the empirical models.

### **Proxy Index for Management Involvement in the Board**

A board of directors serves as the function of monitoring and advising the managers of a public firm. Directors who are voted by stockholders in the annual meeting have the obligation to protect

stockholders' interest. Because of agency problems resulted from conflicts between managers and stockholders, directors are entrusted to selecting, evaluating, and compensating managers. Although directors are selected by stockholders based on the firm's charter, CEO (or management team) has authority in selecting candidates<sup>8</sup>. Shivdasani and Yermack (1999) study whether CEO participating in the selection of new directors influences the nature of appointments to the board. Callahan et al. (2003) include 10 governance variables, statistically combined to form an index of management participation in director selection. In fact, variables used to measure CEO involvement in the selection of directors can be proxies for CEO involvement in the board. A large number of variables, and many measures for conceptually similar variables, have been used in the literature of examining management influence. Rather than select one or two variables to proxy for a large number of factors, I include 8 variables which make reference to Shivdasani and Yermack (1999), and Callahan et al. (2003) to construct an index of management involvement in the board. These variables are defined as follows.

(1) *Percent of independent outside directors on the board* (Outsider ratio) is the percentage only of those board members who are independent to the firm. Boards dominated by outsiders are in a better position to monitor and control managers. Outside directors are likely to be more independent of the firm's managers, and to bring more experience to the firm. Thus, outsider ratio is predicted to vary negatively with the management involvement in board.

(2) *Insider ratio* is the percentage only of those board members who are also corporate employees (i.e. active employees but not retirees of the corporation and their relatives). Insider ratio is predicted to vary positively with the management participation.

(3) *Interlocking ratio* is defined as the percentage only of those board members who are retirees of the firm or relatives of employees. These directors are independent to the firm on the surface. But, in fact, they are related to this firm. They are usually controlled by the active firm's management. At the same time, the candidates of interlocking directors are decided by the management team, especially for CEO. Thus, Interlocking ratio is predicted to vary positively with the management participation.

(4) *Insiders sitting on the Nominating Committee* is the percentage only of those board members actually involved in the nominating process who are also corporate insiders (i.e. active employees or retirees of the corporation and their relatives). The directors who participate in the nominating process are the members of the nominating committee or any committee that is given the nominating responsibility. This ratio is predicted to vary positively with the management participation.

(5) *Outside CEO sits on the Nominating Committee* is the percentage of outside nominating committee members who are active CEOs of other corporations. The definition of this variable is the same as the definition of Callahan et al. (2003). According to Gilson and Kraakman (1991), they realize that directors who are other firms' CEO have serious standards to monitor managers because they believe they are unlikely to monitor more energetically than they should be monitored by their own boards. However, Rosenstein and Wyatt (1990) find no evidence to support this entrench management hypothesis. In this paper, I include this variable into the index of management involvement, and I do not have an a priori prediction on the direction of this relationship.

(6) *Dummy variable of Nominating Committee* is a binary variable which indicate the formal existence of this specialized subset of the board. Its existence indicates lower management participation because this committee can often restrict the relationship between inside directors and outside directors.

(7) *Duality* is categorized a firm as having a "dual CEO" when one person occupies both board chair and CEO positions. We define this variable to take the value 1 when there is CEO duality and as 0 otherwise. In about 80% of U.S. companies, the CEO is also the chairman of the board (Brickley, Coles, and Jarrell, (1997)). CEO/Chair duality concentrates power in the CEO's position, potentially allowing for more management discretion. The dual office structure also permits the CEO to effectively control information available to other board members and thus may impede effective monitoring (Jensen (1993)). Thus, this dummy variable is predicted to vary positively with the management participation. Brickley et al. (1997) summarize the costs of separating the CEO and chairman titles. Choosing an outside director as the chairman of the board can reduce the agency costs of controlling the CEO whose primary objective is to maximize the shareholders' wealth. In the contrary, Adams and Ferreira (2007) suggest if the CEO also

serves as board chairman and there are more seats occupied by management team, the management team is more willing to provide accurate information to the management-friendly board.

(8) *Percent of directors whose tenures are shorter than the tenures of firms' CEOs*: Hermalin and Weisbach (1988) report that CEOs with longer tenures are more likely to nominate insiders as directors, which is consistent with the hypothesis that CEOs get more powerful over time. Therefore, I include this variable that is negatively associated with the management involvement.

The eight factors represent the level of management involvement in the firm's board. In practice, these factors will tend to be highly correlated with one another. Each factor may have different weight to explain the management involvement, but it cannot directly observable. Agrawal and Knoeber (1996) find interdependence among seven mechanisms to control agency problems between managers and stockholders. The existence of this multicollinearity makes it to be difficult to use statistical inference. Callahan et al. (2003) construct a single composite index of the underlying factors to provide a solution to this problem.

Callahan et al. use the principal component analysis technique to obtain a composite variable when the component variables have a combined economic interpretation. This paper imitates the method of Callahan et al. to construct an index as measure of management involvement<sup>9</sup>. "In the behavioral sciences, especially in economics, we are frequently compelled to summarize a highly complex numerical aggregate in the form of an index-number, forcing a p-dimensional system ( p=8 in this study) into one dimension" (Kendall (1980). Although the principal component analysis can withdraw several principal components, the best linear function of the variables that gathers the variation is the first principal component. The method for extracting the components makes the first principal component capture the largest proportion of the variance in the underlying data. When factor scores from the principal component analysis are obtained, these principal components estimated by these factor scores provide the original data that are not perfectly collinear. This study forms an index according to a unique combination of the governance variables, associated with the management involvement. This index is positively associated with the management involvement. Moreover, this index is used as an independent variable in the regression model to test the hypotheses.

### **Variables Related to Annual Analysts' Forecast Properties**

The hypotheses concern the relationships among analysts forecasting, institutional investors and management involvement. Three variables related to analysts' forecasting used in this study are defined as follows.

(1) *Analyst coverage* is defined as the average number of analysts that provide annual earnings forecasts before the end of fiscal year t. I require each firm to have at least four analysts coverage for the annual earnings forecasts separately because some of my regression variables cannot be defined or are unreliable for thinly covered stocks. In order to match with the magnitude of other variables, the logarithm of (1+ analyst coverage) is used in the regression model.

(2) *Forecasting accuracy* is defined as the average of analyst forecasting errors. The average forecasting errors of analysts is measured by the average absolute value of difference between actual annual EPS and predicted annual EPS<sup>10</sup> before the end of fiscal year t deflated by price per share at the end of fiscal year t-1. The analyst data comes from I/B/E/S. It presents as follows.

$$Accuracy = \frac{\left( \sum_{j=1}^n |AEPS_{iit} - PEPS_{ijt}| \right) / n}{P_{i,t-1}}$$

*AEPS* : the actual EPS for firm *i* at the fiscal year *t*

*j* : the month before the end of fiscal year *t*, from month 1 to month *n*

*PEPS<sub>ijt</sub>* : the analysts' predicted EPS for *i* firm on the *j* month before the end of fiscal year *t*

*P<sub>i,t-1</sub>* : price for stock *i* at the end of fiscal year *t* - 1

(3) Dispersion in analyst earnings forecasts is measured by the average standard deviation of analysts' annual forecasting EPS before the end of fiscal year *t* deflated by price per share at the end of fiscal year *t*-1. It presents as follows.

$$Dispersion_{it} = \frac{\left( \sum_{j=1}^n Std_{ijt} \right) / n}{P_{i,t-1}}$$

*j* : the month before the end of fiscal year *t*, from month 1 to month *n*

*Std<sub>ijt</sub>* : the standard deviation of analysts forecasting EPS for firm *i* on the *j* month before the end of fiscal year *t*

### Variables Related to Institutional Holdings

I use the percentage of shares outstanding owned by all institutional investors for each firm as a variable. I gather institutional holdings information from CDA/Spectrum Institutional 13(f) filings that investment companies and professional money managers are required to file with the SEC on a quarterly basis. These filings contain quarterly holdings of institutions with over \$100 million under their control. For each firm, the ratio of average holdings of four quarters for the sum of all annual institutions to outstanding shares in the end of the corresponding year are used to measure institutional ownership.

### Control Variables

Analyst coverage is associated with many factors, such as firm size, past performance, growth, and cash flow volatility. To reduce the model error problem, I control for firm profitability, growth rate, and cash flow volatility, and firm size. These variables which are also be used by Das, Guo, and Zhang (2006) and Yu (2008) to analyze issues related to analysts' following are defined as follows.

(1) *Firm size (SIZE)* is measured by market value at the end of previous fiscal year (*t*-1).

(2) *Firm profitability (ROA)* is measured by lagged return on assets (net income before extraordinary items / total assets).

(3) *Growth (GROWTH)* is measured by growth rate of total assets.

(4) *Cash flow volatility (CHVOL)* is measured is measured by standard deviation of cash flow of a firm in the total sample period.

Due to examining the effect of SOX on my hypotheses, I add a dummy variable to control the effect of SOX. This variable is defined as follows.

(5) Dummy variable of SOX is that equals 1 for post-SOX years from 2003 to 2006, and 0 otherwise.

## Data

The major population for this study is publicly traded corporations, namely the S&P 1500 including S&P 500, S&P MidCap 400, and S&P SmallCap 600. In order to collect the sufficient data and consider the size effect Due to the onerous nature of the data collection, especially with regard to the management participation variables that require a detailed information from RiskMetrics (IRRC) Database, I just choose the firm-year observations of S&P 1500. I delete firms that are missing values for market value of equity, total assets, net income before extraordinary items, cash flow, and related management involvement variables, and firms from the financial industry.

I begin my sample-selection process by identifying sufficient variables related management involvement as reported in the RiskMetrics (IRRC) Database. At the same time, this study wants to discuss the influence of SOX<sup>11</sup> on the relationships among management involvement, analysts' coverage, and institutional holdings. The effect of SOX on firms is occurred after 2002. Thus, the sample of this study covers the period from 2000 to 2006.

According data resources, first, I collect data related management including 8 variables (to see 3.1) involvement from RiskMetrics (IRRC) Database. In order to construct a proxy index through the principal component method, all variables are available during the sample period. Thus, I drop firm-year observations with unavailable data on RiskMetrics (IRRC) Database. Second, data on analyst forecasting are obtained from the Institutional Broker Estimate System (IBES) detail files. Due to considering the unreliability of few analysts' coverage and dispersion<sup>12</sup>, I exclude firm-month<sup>13</sup> observations that have less than four analysts' coverage. Third, I gather institutional holdings information from CDA/Spectrum Institutional 13(f) filings. I withdraw firm-quarterly<sup>14</sup> observations that the total holdings of institutions are greater than one hundred percent. Finally, the data related control variables such as total assets, net income before extraordinary items, and cash flow comes from Compustate Database, and data of stock price and capitalization comes from CRSP. The 7 years (from 2000 to 2006) of data for each firm in the panel thus implies 7,311 total firm-year observations for the purposes of analysis. Summary statistics of the sample firms are reported in Table 1.

As Panel A in Table 1 shows full sample descriptive statistics for the major variables, average analysts' coverage is 11.78 while the maximum and minimum are 4.0 and 43.92, respectively. The dispersion of numbers of analyst's coverage for each firm-year observations is very significant. The mean of percentage ownership for the sum of all institutions is 70% while the maximum and minimum are 7% and 97%, respectively. Recent work suggests that institutional investors execute profitable trades based on private information. The descriptive statistics for institutional holdings is consistent with previous empirical results, that is, institutional investors have their special investment target. The average board has 76 % of members who are unaffiliated with the firm (outside directors), while the maximum and minimum are 9% and 100%, respectively. The composition of the board of directors varies with the firm's characteristics. According to insider directors, they are divided into two groups, directors who are current employees (insiders) and directors who are retirees or relatives of employees (interlockers). The means of insider ration and interlocking ratio are 11.86% and 12.56%, respectively. In general, the composition of the board of directors have more outside directors than inside directors for publicly held firms in American. The mean of the percentage of insiders sit on the nominating committee is 15.14%. Then, on average, insiders do not directly control the nominating committee, and management involvement in the board will be restricted, especially for sample result after SOX. The average dummy variable of nominating committee is 0.8372 for all firm-year observations. It presents that almost 84% of total sample have a nominating committee in the board. This result is related to the regulation of SOX<sup>15</sup>. The mean of dummy variable of duality is 0.6258. Thus, 63% of my firm-year observations have duality governance structures. This ratio is greater than the ratios of Xie et al. (2003) (85%) and Brickley et al. (1997) (81%), because of different type of sample firms and sample period<sup>16</sup>. Finally, the average percent of directors whose tenures are shorter than the tenures of firms' CEOs is close to 40%. On average, above 50% of directors have longer tenures than CEO for total firm-year observations. Therefore, the situation that CEOs get more powerful over time is not very seriously.

**TABLE 1**  
**SUMMARY STATISTICS**

	Mean	Std Dev	Minimum	Maximum	Index weight
Panel A: Full Sample Period (From 2000 to 2006)					
Dependent variables and control variables					
Analyst coverage	11.7811	6.7074	4.0000	43.9167	
Institutional holdings	0.7023	0.1694	0.0706	0.9798	
SIZE	7.8624	1.4606	3.4419	13.1389	
Lagged ROA	0.0480	0.0846	-0.9772	0.4295	
GROWTH	0.1441	0.3396	-0.8489	6.9921	
CHVOL	0.0625	0.0942	0.0000	2.7987	
Involvement index components					
Outsider ratio	0.7557	0.2204	0.0909	1.0000	-0.5014
Insider ratio	0.1187	0.1198	0.0000	0.7500	0.4026
Interlocking ratio	0.1256	0.1327	0.0000	0.7894	0.4700
Insiders sitting on Nominating	0.1145	0.2056	0.0000	1.0000	0.4001
Outside CEO sitting on Nominating	0.4444	0.0794	0.0000	0.5455	0.3918
Dummy of Nominating committee	0.8372	0.3692	0.0000	1.0000	-0.0209
Duality	0.6258	0.4840	0.0000	1.0000	-0.2763
Tenures of directors < CEO tenures	0.3699	0.2551	0.0000	0.9375	-0.3147
Firm-year observations	7311				
Panel B: Before SOX (From 2000 to 2002)					
Dependent variables and control variables					
Analyst coverage	11.5447	6.6135	4.0000	40.9167	
Institutional holdings	0.6434	0.1724	0.0706	0.9761	
SIZE	7.7608	1.4939	3.4419	13.1389	
Lagged ROA	0.0475	0.0905	-0.9329	0.4199	
GROWTH	0.1544	0.4164	-0.8489	6.9921	
CHVOL	0.0779	0.1270	0.0000	2.7987	
Involvement index components					
Outsider ratio	0.7167	0.2375	0.0909	1.0000	
Insider ratio	0.1401	0.1330	0.0000	0.7500	
Interlocking ratio	0.1432	0.1425	0.0000	0.7895	
Insiders sitting on Nominating	0.1514	0.2369	0.0000	1.0000	
Outside CEO sitting on Nominating	0.0581	0.0917	0.0000	0.5455	
Dummy of Nominating committee	0.6698	0.4704	0.0000	1.0000	
Duality	0.6685	0.4708	0.0000	1.0000	
Tenures of directors < CEO tenures	0.3479	0.2557	0.0000	0.9286	
Firm-year observations	3086				

The Panel B and Panel C in Table 1 report pre-SOX sample and post-SOX sample descriptive statistics for the major variables, respectively. The patterns in Panel B and Panel C are the same as the pattern in Panel A for full-sample. In comparison, the outsider ratio increases from about 72% to about 78% from before to after SOX. The cases of duality governance structures have a decline after SOX. The percentage of insiders sitting on the nominating committee decreases from 15.14% to 8.77% from before to after SOX. At the same time, 95% of firm-year observations have nominating committee after SOX. Results related to nominating are consistent with the regulating of SOX. To summarize, board independence increase with the exercise of SOX.

## The Empirical Models

### The Regression Model

The first hypothesis examines the effect of the firm's management involvement in board on analysts' coverage. The unrestricted form of the pooled cross-sectional time-series model involving the control variables and an index constructed by 8 variables related to the management participation can be written as follows:

$$COV_{it} = \beta_0 + \beta_1 SIZE_{it-1} + \beta_2 (ROA)_{it-1} + \beta_3 (GROWTH)_{it} + \beta_4 (CHVOL)_i + \gamma (INDEX)_{it} + DUM_{sox} + \varepsilon \dots\dots\dots(1)$$

$COV_{it}$  : the log arithm of (1 + analyst coverage) for firm i in the fiscal year t

$SIZE_{it-1}$  : Capitalization for firm i in the end of fiscal year t-1

$ROA_{it-1}$  : Return on assets for firm i in the end of fiscal year t-1

$GROWTH_{i,t}$  : Growth rate of total assets for firm i in the fiscal year t

$CHVOL_i$  : Standard deviation of cash flow for firm i

$Index_{i,t}$  : The composite variable index

constructed by management involvement variables (To see 3.6.2)

$DUM$  : It is equal to 1 for post-SOX year from 2003 to 2006, and 0 otherwise.

The second hypothesis examines the effect of the firm's management involvement in board on institutional holdings. The empirical model presents as follows:

$$INSOWN_{it} = \beta_0 + \beta_1 SIZE_{it-1} + \beta_2 (ROA)_{it-1} + \beta_3 (GROWTH)_{it} + \beta_4 (CHVOL)_i + \gamma (INDEX)_{it} + DUM_{sox} + DIROWN_{i,t} + \varepsilon \dots\dots\dots(2)$$

$INSTOWN_{it}$  : The average holdings of four quarters for the sum of all institutions for firm i in the end of year t

$SIZE, ROA, GROWTH, CHVOL,$  and  $DUM$  : These definitions are the same as equation (1).

$DIROWN_{i,t}$  : Directors ownership for firm i in the fiscal year t

Wintoki (2007) suggests that higher outside director ownership and institutional ownership can be constructed as constraints on the CEO's tendency to pursue private benefits. Therefore, director ownership is added into the second equation which dependent variable is institutional ownership.

The third hypothesis examines the effect of the firm's management involvement in board on forecasting accuracy. The empirical model presents as follows:

$$Accuracy_{it} = \beta_0 + \beta_1 SIZE_{it-1} + \beta_2 (ROA)_{it-1} + \beta_3 (GROWTH)_{it} + \beta_4 (CHVOL)_i + \gamma (INDEX)_{it} + DUM_{sox} + \varepsilon \dots\dots\dots(3)$$

$Accuracy_{it}$  : The average absolute value of difference between actual annual EPS and analysts' forecasting EPS (To see 3.2)

The definitions of other variables are the same as the equation (1)

### *Index Model*

The composite variable Index that proxy for the management participation is based on the linear combination of the 8 governance variables.

$$Index_{it} = \sum_{f=1}^8 \varphi_f Y_{ft} \dots\dots\dots(4)$$

$Y_{ft}$  : governance variables related to management involvement (To see 3.1)

The  $\varphi_f$  in the definition of Index was obtained from the principal component analysis of the eight management involvement variables. They comprise the characteristic vector associated with the largest characteristic root of the cross-products matrix of the management involvement variables. In fact, according to principal component analysis, eight components can be constructed. The method for extracting the components makes the first principal component capture the largest proportion of the variance in the underlying data. The first component of this study can explain about 50% of variance resulted from eight management involvement variables. Therefore, I just use the first component to construct an index. The Panel A in Table 1 shows the index weights of  $\varphi_f$  based on the first principal component.

## **EMPIRICAL RESULTS**

### **Index**

The components of the Index with their index weights<sup>17</sup> are reported in Table 1. The absolute value indicates the magnitude of the effect of component's contribution on the Index and the sign shows whether the effect is positive or negative. For example, outsider ratio has a negative weight (-0.5014) indicating a negative effect on management involvement. Average insider ratio, interlocking ratio, insiders sitting on the nominating committee, and outside CEO sitting on the nominating committee are positively related to index while they have positive index weights. Outsider ratio, dummy of nominating committee, duality, and tenures of directors are negatively related to index while they have negative index weights. The index is positively associated with management involvement in the board. In fact, there are eight principal components. The four components can explain above 85% of the variance in the underlying data. To check index weights of four components, I find the variables with the largest index weight from the first component to the fourth component are outsider ratio, dummy variable of nominating committee, duality, and percent of directors whose tenures are shorter than the tenures of firms' CEOs, respectively. Therefore, I use the four variables to do a robust test.

### **The Impact of Management Involvement on Analysts' Coverage**

Table 2 report my major results related to the effect of management involvement in the board on analysts' coverage. As Panel A shows the results based on the measure of management involvement as INDEX, the coefficient of INDEX involvement is always positive regardless of sample period. The coefficient of INDEX from full sample, pre-SOX sample, and post-SOX sample is 0.0053, 0.0032, and 0.0075, respectively. It indicates that there is positive relationship between management involvement and analysts' coverage. Analysts prefer to follow firms with more management involvement in the board (less independent board) controlled by other factors. This result is consistent with Klein (1998), Bhagat and Black (2002), and Drymiotis (2007). They find that the independence of board is negatively associated with firm performance because of inefficiency of monitoring. On the other hand, Adams and Ferreira (2007) develop a model that indicates the board has a dual role — to monitor and to advise. In order to play an effective monitoring role, the board needs managers to provide accurate information. An informed board can advise the company better than an uninformed board. Therefore, the CEO and management team that are involved in the board can supply sufficient information to directors that enables them to make appropriate suggestions. The empirical results in Table 2 can deeply support the previous work that

realizes the less independent board may not harmful for firms or stockholders. Therefore, the first hypothesis (H1) is supported. The high degree of management involvement is attractive to analysts' following.

**TABLE 2**  
**THE EFFECT OF MANAGEMENT INVOLVEMENT IN THE BOARD ON**  
**ANALYST'S COVERAGE**

Sample	Dependent variable: Analysts' Coverage			
	Full Sample	All Sample with Dummy of SOX	Pre-SOX Sample	Post-SOX Sample
<b>Panel A: Index regression</b>				
Intercept	0.4374 (18.559) ***	0.4374 (18.20) ***	0.4474 (13.42) ***	0.3535 (10.38) ***
INDEX	0.0053 (2.31) *	0.0053 (2.27) *	0.0032 (1.00)	0.0075 (2.28) *
SIZE	0.2513 (8.23) ***	0.2513 (8.21) ***	0.2516 (6.81) ***	0.2578 (6.92) ***
ROA	-0.3190 (-6.35) ***	-0.3190 (-6.35) ***	-0.2267 (-3.28) **	-0.4449 (-6.20) ***
GROWTH	0.0197 (1.50)	0.0197 (1.50)	0.0091 (0.55)	0.0507 (2.38) *
CHVOL	0.2904 (6.01) ***	0.2904 (5.95) ***	0.1037 (1.90) *	0.9727 (9.58) ***
Dummy of SOX		0.0001 (0.00)		
Firm-year observation	7,311	7,311	3,086	4,243
Adjusted R <sup>2</sup>	0.5082	0.5078	0.5452	0.4892
<b>Panel B: regression of individual variables related to management involvement</b>				
Intercept	0.4427 (15.98) ***	0.4437 (16.01) ***	0.4422 (11.58) ***	0.3382 (7.47) ***
Outsider ratio	-0.0822 (-4.09) ***	-0.0806 (-4.00) ***	-0.0373 (-1.34)	-0.1211 (-4.22) ***
Dummy of nominating committee	0.0252 (2.14) *	0.0302 (2.40) *	0.0084 (0.61)	0.0714 (2.54)
Duality	0.0015 (0.17)	0.0002 (0.03)	0.0182 (1.31)	-0.0063 (-0.53)
Insiders sitting on nominating	0.0919 (5.19) ***	0.0937 (5.27) ***	0.0565 (2.13) *	0.1108 (4.68) ***
SIZE	0.2514 (8.06) ***	0.2514 (8.06) ***	0.2511 (6.61) ***	0.2581 (6.84) ***
ROA	-0.3194 (-6.37) ***	-0.3188 (-6.36) ***	-0.2265 (-3.27) **	-0.4485 (-6.26) ***
GROWTH	0.0167 (1.27)	0.0172 (1.30)	0.0082 (0.50)	0.0430 (2.02) *
CHVOL	0.2993 (6.12) ***	0.2939 (5.98) ***	0.1046 (1.89) *	0.9660 (9.48) ***
Dummy of SOX		-0.0103 (-1.11)		
Firm-year observation	7,311	7,311	3,086	4,232
Adjusted R <sup>2</sup>	0.5104	0.5105	0.5464	0.4929

Statistical significance at the 10,1, and 0.1% level is indicated by \*, \*\*, and \*\*\*, respectively.

According to control variables, the coefficient of SIZE is always positive regardless of sample period. The coefficient of SIZE from full sample, pre-SOX sample, and post-SOX sample is 0.2513, 0.2516, and 0.2578, respectively. All t-values are very high. Thus, it is very significant that analysts' coverage is dominated by firm size. Even though the size is controlled, the management involvement still affects analysts' coverage. In addition, the coefficient of GROWTH from full sample, pre-SOX sample, and post-SOX sample is 0.0197, 0.0091, and 0.0507, respectively. Thus, analysts prefer to follow firms with high growth rate which is consistent with the result of Yu (2008). In comparison, there is a big difference in coefficient of ROA between this study and Yu (2008). About this study, ROA is negatively related to analysts' coverage regardless of sample period. The result of Yu (2008) is contrary to this result. In this study, I add an important variable as management involvement to explain analysts' coverage. I presume this difference related to the independent variable of management involvement. From this comparison, the relationship between ROA and analysts' coverage is affected by the degree of management involvement. To summarize, a firm with low ROA, high growth rate, large size, and high level of management involvement will be followed by analysts. In this case, since management can provide sufficient and accurate information that supports directors in making good suggestions, the firm has good growth opportunities. Analysts will follow this firm even though it does not have good previous operating performance.

The Panel B reports the results based on the measure of management involvement as individual variables that have the largest index weight on four principal components. Outsider ratio is always negatively related to analysts' coverage, and the percent of insiders sitting on the nominating committee is always positively related to analysts' coverage, regardless of sample period. These results can deeply support the results in Panel A. Analysts realize that Insiders have positive contributions to the board. There is no difference in the explaining power of regressions between Panel and Panel B. The use of the Index in the regression analysis is equivalent to including the 4 individual variables of the index in the regression. Moreover, the coefficient of dummy variable of SOX is always insignificant in Panel A and Panel B. The pattern of all coefficients of all variables for pre-SOX sample is the same as it for post-SOX sample. Then SOX does not change the relationship between management involvement and analysts' coverage. In practice, the regulation of SOX can affect more predicting accuracy rather than coverage.

### **The Impact of Management Involvement on Institutional Holdings**

Table 3 report my major results related to the effect of management involvement in the board on institutional holdings. As Panel A shows the results based on the measure of management involvement as INDEX, the coefficient of INDEX involvement is always negative regardless of sample period. The coefficient of INDEX from full sample, pre-SOX sample, and post-SOX sample is -0.0106, -0.0057, and -0.0054, respectively. It indicates that there is negative relationship between management involvement and analysts' coverage. Institutions prefer to follow firms with less management involvement in the board (more independent board) controlled by other factors. This result is opposite with result from analysts' coverage, and is consistent with Hermalin and Weisbach (2003), and Sengupta (2003). They realize that the independence of board has positive contribution to monitoring management. Then, institutions prefer the investment target with the high degree of independent board and the low degree of management involvement. The second hypothesis that the management involvement in the board affects the institutional holdings is supported. On the other hand, since the coefficient of directors' ownership is always significantly negatively, there is negative association between institutional holdings and directors holdings. Institutions prefer to invest the target firm with less directors' ownership. The more the directors' ownership, the less the independence of board is. The negative coefficient of directors' ownership can further support the second hypothesis. According to control variables, average profitability (ROA) and growth rate (GROWTH) are positively related to institutional holdings, but firm size (SIZE) is negatively related to institutional holdings. Institution investors prefer the target firms with high growth rate, high profitability, but small size. The investment type of institutional investors is different to the type of analysts. From the report in Panel A of Table 3, we can find an interesting issue that there is a big difference in perception of management involvement between analysts and institutional investors.

**TABLE 3**  
**THE EFFECT OF MANAGEMENT INVOLVEMENT IN THE BOARD ON**  
**INSTITUTIONAL HOLDINGS**

Sample	Dependent variable: Institutional Holdings			
	Full Sample	All Sample with Dummy of SOX	Pre-SOX Sample	Post-SOX Sample
<b>Panel A: Index regression</b>				
Intercept	0.5139 (16.04) ***	0.4583 (15.41) ***	0.3838 (13.90) ***	0.5233 (14.80) ***
INDEX	-0.0106 (-5.30) ***	-0.0056 (-5.30) ***	-0.0057 (-3.53) ***	-0.0054 (-3.98) ***
Directors Ownership	-0.0014 (-11.30) ***	-0.0014 (-11.31) ***	-0.0019 (-9.49) ***	-0.0010 (-6.16) ***
SIZE	-0.0154 (-12.73) ***	-0.0165 (-12.73) ***	-0.0079 (-3.82) ***	-0.0211 (-12.69) ***
ROA	0.2484 (11.12) ***	0.2461 (11.12) ***	0.2441 (7.20) ***	0.2371 (8.17) ***
GROWTH	0.0174 (2.86) **	0.0132 (2.29) *	0.0077 (0.92)	0.0232 (2.70) **
CHVOL	0.1074 (4.82) ***	0.1872 (8.72) ***	0.1231 (4.59) ***	0.4269 (10.44) ***
Dummy of SOX		0.1031 (9.09) ***		
Firm-year observation	7,311	7,311	3,086	4,232
Adjusted R <sup>2</sup>	0.0662	0.1516	0.0646	0.1006
<b>Panel B: regression of individual variables related to management involvement</b>				
Intercept	0.5204 (14.62) ***	0.5408 (14.77) ***	0.3038 (11.25) ***	0.4524 (12.34) ***
Outsider ratio	0.0629 (6.57) ***	0.0433 (4.70) ***	0.0299 (2.10) *	0.0576 (4.81) ***
Dummy of nominating committee	0.0560 (10.17) ***	0.0051 (0.89)	0.0099 (1.43)	0.0258 (2.21) *
Duality	-0.0088 (-2.13) *	-0.0032 (0.82)	-0.0228 (3.36) ***	-0.0067 (-1.40)
Insiders sitting on nominating	0.0219 (2.69) **	0.0048 (0.61)	0.0062 (0.47)	0.0055 (0.57)
Directors Ownership	-0.0012 (-8.65) ***	-0.0014 (-10.45) ***	-0.0019 (-9.48) ***	-0.0008 (-5.04) ***
SIZE	-0.0164 (-11.99) ***	-0.0166 (-12.65) ***	-0.0083 (-3.91) ***	-0.0017 (-12.68) ***
ROA	0.2509 (10.88) ***	0.2463 (11.13) ***	0.2401 (7.08) ***	0.2343 (8.09) ***
GROWTH	0.0187 (3.10) **	0.0136 (2.35) *	0.0066 (0.82)	0.0240 (2.80) **
CHVOL	0.1348 (6.00) ***	0.1886 (8.71) ***	0.1256 (4.64) ***	0.4196 (10.21) ***
Dummy of SOX		0.1027 (8.92) ***		
Firm-year observation	7,311	7,311	3,086	3,086
Adjusted R <sup>2</sup>	0.0786	0.1516	0.0665	0.1043

Statistical significance at the 10,1, and 0.1% level is indicated by \*, \*\*, and \*\*\*, respectively.

The Panel B reports the results based on the measure of management involvement as individual variables that have the largest index weight on four principal components. Outsider ratio and dummy of nominating committee are always positively related to institutional holdings, and the percent of insiders sitting on the nominating committee and duality is usually negatively related to analysts' coverage, regardless of sample period. These results can deeply support the results in Panel A. Institutions realize that insiders have negative contributions to the board. Moreover, the coefficient of dummy variable of SOX is always significantly positively in Panel A and Panel B. It indicates that there is an increase in institutional holdings after SOX. But there is no difference in the pattern of coefficients of independent variables and control variables between pre-SOX period and post-SOX period. Thus, the increase in institutional holdings is not relevant to the effect of SOX on management involvement in the board.

### **The Institutional Holdings and Analysts' Forecasting Accuracy**

Are the analysts and institutions the information intermediaries? The third hypothesis explains that a firm's stock with more institutional holdings has more information transparency controlled by other factors. The results are provided in Table 4. In Panel A, the coefficient of institutional holdings from full sample, and pre-SOX sample are -0.0423, and -0.0557, respectively. Both coefficients are significantly negatively. Firms with more institutional holdings have less analysts' forecasting errors or more forecasting accuracy for full sample and pre-SOX sample. The coefficient for post-SOX sample is always negative but insignificant. Therefore, institutions play a role of conveying analysts' forecasting accuracy. This function will be declined after SOX due to increasing in information transparency. The coefficients of SIZE, GROWTH, and ROA are always significantly negatively regardless of sample period. This result can deduce that the firm size, growth opportunity, and profitability determine the accuracy of analysts' forecasting. The coefficients of INDEX are always positive but insignificant. The management involvement just has minor effect on forecasting accuracy after controlling other variables. The findings in Panel B are the same as findings in Panel A.

To summarize, institutions can convey the information of analysts' forecasting accuracy, especially for pre-SOX period. The accuracy of analysts' forecasting is determined by firm size, growth rate, and profitability regardless of sample period.

## **CONCLUSIONS**

Prior works of corporate governance seldom explore the relationships among analysts forecasting, institutional investors and management involvement. This paper addresses this article. I use an index constructed by important 8 variables related to corporate governance to proxy for the level of management involvement.

There are three important findings. First, there is positive relationship between management involvement and analysts' coverage. Analysts prefer to follow firms with more management involvement in the board (less independent board) controlled by other factors. The high degree of management involvement is attractive to analysts' following. Second, Institutions prefer to follow firms with less management involvement in the board (more independent board) controlled by other factors. Institution investors prefer the target firms with high growth rate, high profitability, but small size. The investment type of institutional investors is different to the type of analysts. Finally, institutions can convey the information of analysts' forecasting accuracy, especially for pre-SOX period. The accuracy of analysts' forecasting is determined by firm size, growth rate, and profitability regardless of sample period.

**TABLE 4**  
**THE INSTITUTIONAL HOLDINGS AND ANALYSTS' FORECAST ACCURACY**

Sample	Dependent variable: analysts' forecasting accuracy			
	Full Sample	All Sample with Dummy of SOX	Pre-SOX Sample	Post-SOX Sample
<b>Panel A: Index regression</b>				
Intercept	0.0828 (4.91) ***	0.0805 (4.76) ***	0.1122 (3.10) **	0.0248 (8.76) ***
INDEX	0.0016 (1.28)	0.0010 (0.81)	0.0021 (0.75)	-0.0001 (-0.32)
Institutional holdings	-0.0423 (-3.06) **	-0.0286 (-1.98) *	-0.0557 (-1.74) *	-0.0026 (-1.41)
SIZE	-0.0040 (-2.47) *	-0.0036 (-2.25) *	-0.0051 (-1.38)	-0.0017 (-8.29) ***
ROA	-0.0759 (-2.74) **	-0.0788 (-2.84) **	-0.1313 (-2.15) *	-0.0371 (-10.53) ***
GROWTH	-0.0211 (-2.92) **	-0.0207 (-2.87) **	-0.0302 (-2.10) *	-0.0050 (-4.83) ***
CHVOL	0.0031 (0.12)	-0.0103 (-0.38)	-0.0032 (-0.07)	0.0047 (0.95)
Dummy of SOX		-0.0156 (-3.14) **		
Firm-year observation	7,311	7,311	3,086	4,232
Adjusted R <sup>2</sup>	0.0065	0.0083	0.0071	0.0066
<b>Panel B: regression of individual variables related to management involvement</b>				
Intercept	0.1008 (5.63) ***	0.0966 (5.35) ***	0.1367 (3.53) ***	0.0255 (9.62) ***
Outsider ratio	-0.0051 (-0.46)	-0.0041 (-0.37)	-0.0050 (-0.20)	-0.0001 (-0.32)
Dummy of nominating committee	-0.0239 (-3.66) ***	-0.0194 (-2.80) **	-0.256 (-2.11) *	0.0003 (0.74)
Duality	0.0020 (0.40)	0.0008 (0.16)	0.0050 (0.41)	0.0001 (0.17)
Insiders sitting on nominating	-0.0150 (-1.54)	-0.0133 (-1.37)	-0.0367 (-1.57)	0.0001 (0.22)
Institutional holdings	-0.0343 (-2.46) *	-0.0266 (-1.83) *	-0.0548 (-1.71) *	-0.0018 (-3.70) ***
SIZE	-0.0033 (-1.99) *	-0.0031 (-1.92) *	-0.0042 (-1.11)	-0.0005 (-6.69) ***
ROA	-0.0801 (-2.89) **	-0.0813 (-2.93) **	-0.1377 (-2.25) *	-0.0191 (-9.88) ***
GROWTH	-0.0214 (-2.96) **	-0.0211 (-2.91) **	-0.0315 (-2.18) *	-0.0007 (-2.76) **
CHVOL	-0.0102 (-0.38)	-0.0166 (-0.61)	-0.0098 (-0.20)	0.0028 (2.21) *
Dummy of SOX		-0.0103 (-1.95) *		
Firm-year observation	7,311	7,311	3,086	4,232
Adjusted R <sup>2</sup>	0.0071	0.0085	0.0074	0.0100

## ENDNOTES

1. To see e.g., Fama and Jensen (1983), Grinstein and Tolkowsky (2004).
2. To see, e.g., Jensen (1986); Hermalin and Weisbach (2003); Shleifer and Vishny (1997).
3. To see, e.g., Adams and Ferreira (2007); Almazan and Suarez (2003); Raheja (2005).
4. To see e.g., Klein (1998); Hermalin and Weisbach (1991); Gilson and Kraakman (1991); and Callahan et al. (2003).
5. To see e.g., Baysinger and Butler (1985); Byrd and Hickman (1992a,b); and Brickley et al. (1994).
6. Because of the competing effects, I do not have an a priori prediction on the direction of this relationship.
7. To be the same as the first hypothesis, I do not have an a priori prediction on the direction of this relationship.
8. Mace (1971) discusses result of CEO's selecting candidates for the board, in effect of nominees by hand-picked. Lorsch and MacIver (1989) make a survey that indicates CEO widely affect the selection process of new board members.
9. There are some differences in factors between this paper and study of Callahan et al.
10. The actual earnings numbers, as well as the forecasts, are both derived from I/B/E/S to ensure consistency across the two numbers.
11. Between December 2001 and April 2002, the Senate Committee on Banking, Housing, and Urban Affairs and the House Committee on Financial Services held numerous hearings about the fraud of Enron and related accounting and investor protection issues. These hearings and the corporate scandals that followed Enron create the passage of the SOX. The Senate and the House reached consensus on the act on July 24 and voted almost unanimously for the act on July 25, 2002. President George W. Bush signed the bill into law on July 30, 2002. (Chhaochharia and Grinstein (2007))
12. I use the standard deviation of analysts' forecasting EPS as a measure of forecasting dispersion. If few analysts provide forecasting numbers, the standard deviation of these forecasting numbers are biased and unreliable.
13. The analysts' forecasting EPS is monthly data. This study uses the average monthly data as the proxy for annual data.
14. These filings provide quarterly holdings of institutions. This study uses the average quarterly holding data as the proxy for annual holding data.
15. The new rules include several requirements related to board and committee independence. For example, the NYSE requires boards to have a majority of independent directors, an independent audit committee, an independent nominating committee, and an independent compensation committee, and other exchanges have adopted similar requirements. (Chhaochharia and Grinstein (2007))
16. Brickley et al. (1997) just use a sample firms from 1989 Forbes for the 1988 fiscal year. Xie et al. (2003) use a sample of S&P 500 for 1992, 1994, and 1996.
17. The results provide the eigenvalue of each variable on each component. These index weights are the eigenvalue of each variable on the first component.

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