UNDERSTANDING THE AGENCY RELATIONSHIP BETWEEN BOARDS OF DIRECTORS AND CEOS: THE ROLE OF INFORMATION ASYMMETRY

by

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(Under the direction of Dr. Ann K. Buchholtz)

ABSTRACT

Corporate governance scholars have employed agency theory extensively to examine the relationship between boards of directors and CEOs. In corporations, principals (owners) relinquish control to an agent (CEO) who is hired to run the firm. The responsibility of the board of directors is to ensure that the agent (the CEO) acts in the best interest of the principals (the shareholders). Agency problems arise in large part because information is distributed asymmetrically between agents and principals. Typically, agents possess much more information than principals do. It is therefore difficult for principals to ensure that agents are acting on their behalf. Thus, information asymmetry between the board of directors and the CEO is a primary impediment preventing boards from fulfilling their functions effectively. In spite of the central role of information asymmetry in agency theory, and calls from scholars to explore its role in agency relationships, relatively little research has focused on this issue. Using data from 145 firms, this dissertation fills this gap by examining the relationship between traditional measures of board effectiveness and boards' information gathering behavior. In addition, this dissertation examines the relationship between boards' information gathering behavior and the control mechanisms used to ensure the CEO acts in the best interests of stockholders. The findings of this study provide mixed support for agency theory predictions, as the majority of the hypotheses were not supported. Perhaps the most interesting finding is that even when boards possess information, they still employ traditional CEO control mechanisms. Thus, the findings of this study suggest that information is not a substitute for traditional governance mechanisms.

INDEX WORDS: Boards of Directors, Information Asymmetry, Agency Theory

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

Agency theory is one of the most heavily utilized theories in the social sciences. While agency theory was originally developed in the economics literature (Berle and Means 1932; Jensen and Meckling 1976; Fama 1980; Fama and Jensen 1983), scholars from diverse fields such as marketing (Kirmani and Rao 2000), management information systems (Bhattacherjee 1998), and management (Eisenhardt 1989) have all benefited from its use. Despite the theory's widespread use, the underlying logic has changed little since its earliest conceptualization.

Agency theory focuses on the problems associated with the separation of ownership and control found in modern corporations (Berle and Means 1932). In corporations, principals (owners) relinquish control to an agent (manager) who is hired to run the firm. Agency theory assumes that agents are self-interested and that they have different goals from principals. As a result, agents may pursue their own interests at the expense of principals.

Information asymmetry is a central construct in agency theory and is largely responsible for the problems that may arise when ownership and control are separated. Typically, agents possess much more information than principals do. It is therefore difficult for principals to ensure that agents are acting on their behalf. As a result, agents may pursue their own interests at the expense of the principal (Jensen and Meckling 1976; Fama 1980; Levinthal 1988; Eisenhardt 1989). Thus, agency problems can be viewed as resulting in large part from information asymmetry between principals and agents.

Several scholars have addressed the concept of information asymmetry. In an ideal situation, principals possess complete information and are therefore able to prevent the agent from acting opportunistically. This “first-best solution” (Harris and Raviv, 1979, p. 231) is unlikely to occur in most organizations. Instead, principals often lack the information necessary to assess the agent’s behavior and agency problems are likely to occur. While additional information can be purchased, it is often considered prohibitively expensive to gather. As a result, the vast majority of agency theory studies ignore information asymmetry and focus instead on the design of contracts that attempt to curb agent opportunism (Jensen and Meckling 1976; Eisenhardt 1989). The first contribution of this study is that it answers a call made by Eisenhardt (1989) for research that specifically examines the impact of information on the relationship between boards and CEOs.

The second contribution of this study is that it looks into the “black box” of board functioning. In order to assess the effectiveness of boards in carrying out their duties, researchers have primarily relied on examining the characteristics of boards and investors. For example, board effectiveness is commonly measured by examining the number of board members who are not employees of the firm, the tenure of the board relative to the CEO, and the amount of stock held by the board and institutional investors. A number of studies have shown a relationship between board and investor characteristics and important governance issues such as CEO pay (Finkelstein and Hambrick 1988; Hill and Phan 1991; Tosi and Gomez-Mejia 1994) and CEO succession

(Salancik and Pfeffer 1980; Boeker and Goodstein 1991; Ocasio 1999). Overall, however, support for such relationships is inconsistent (Zahra and Pearce 1989). One of the major problems with research that utilizes board and investor characteristics as measures of board effectiveness is that these studies are not identifying the behaviors exhibited by effective boards. As Finkelstein and Hambrick state: "…although board composition is often used as a measure of board vigilance, it is an indirect measure based on an assumption about the relationship between vigilance and composition that has not been tested" (1996 p.226). Measures such as board composition are perhaps better considered determinants of behaviors exhibited by effective boards. Because scholars have almost exclusively relied on proxy measures such as board composition, tenure, and stockholdings, little is known about how the characteristics of boards and investors impact the actual behavior of boards. In other words, while prior research indicates that certain types of boards are more effective than others, we do not know what types of behaviors these boards exhibit.

As stated earlier, agency theory is the primary theoretical framework utilized by corporate governance researchers. Agency theory's emphasis on the importance of information asymmetry points out an important set of behaviors that effective boards are likely to exhibit. Thus, as agency theory suggests, overcoming information asymmetry is a key behavior likely to be exhibited by effective boards of directors.

In addition, the information gathering behavior of boards is likely to impact the control mechanisms boards use to prevent the CEO from acting opportunistically. Boards can utilize several types of CEO control mechanisms. First, boards use the CEO's compensation contract as a tool to control CEO behavior. Prior research indicates that boards employ a variety of compensation packages in order to control CEOs (Finkelstein and Hambrick 1996). This study examines the relationship between boards' information gathering behavior and the type of compensation contract employed by the board. Second, boards may alter the amount of freedom given to CEOs. Prior research indicates that in some organizations CEOs possess a great deal of freedom in carrying out their duties while in other firms CEOs must frequently seek the board's approval when making decisions (Hambrick and Finkelstein 1995). The concept of formalization is employed in this study in order to describe the extent to which the CEO is independent from the board. To date, the rationale behind the board's choice of controls remains an area in need of further examination (Zahra and Pearce 1989; Finkelstein and Hambrick 1996).

This dissertation addresses these issues by focusing on the role of information asymmetry in corporate governance. As stated earlier, agency theory is the primary theoretical framework employed in corporate governance research, and information asymmetry is a central characteristic in the relationship between boards of directors and CEOs. If boards are effective, it is likely that they have taken steps to overcome their lack of information. Thus, this dissertation opens what has to date been a black box by examining how board and investor characteristics impact boards' information gathering behavior, and by examining how boards' information gathering behavior affect boards' choices of CEO control mechanisms.

Research Questions

This dissertation examines the agency relationship between boards and CEOs from two perspectives (see Figure One): 1. How do the characteristics of boards of directors and investors relate to boards' information gathering behavior? and 2. How does boards' information gathering behavior relate to the CEO control mechanisms used to protect the interests of stockholders? The following two research questions address the nature of board information gathering:

1. How do the characteristics of the board of directors affect the information gathering behavior of the board?
2. How does the presence of institutional investors affect the information gathering behavior of the board?

The final two research questions address the relationship between boards' information gathering behavior and the controls employed in their relationship with CEOs. This is accomplished by asking the following questions:

3. How does the information gathering behavior of the board impact the type of compensation contract used to control the CEO?
4. How does the information gathering behavior of the board impact the degree of formalization in the relationship between the board and the CEO?

Structure of the Dissertation

This dissertation examines the relationship between board and investor characteristics, boards' information gathering behavior, and the CEO control mechanisms employed by boards. In order to do so, it is broken into several sections. Each of the sections is briefly reviewed below.

Chapter Two

Chapter two builds the theoretical framework used in the dissertation. First, agency theory is reviewed. Particular attention is paid to the concept of information asymmetry because it is a central concept in agency theory and is likely to impact the behavior of boards of directors. Second, the literature related to agency theory and corporate governance is reviewed. Third, the literature related to boards and information is reviewed. Fourth, the different types of CEO control mechanisms available to boards are reviewed. Finally, several hypotheses are developed that synthesize this diverse literature and allow for the testing of expected relationships between board and investor characteristics, boards' information gathering behavior, and the CEO control mechanisms employed by boards.

Chapter Three

This chapter describes the research methodology used to test each of the hypotheses. This dissertation uses a sample of diverse industries in order to increase the generalizability of the findings. The measures of each of the constructs are also detailed. In order to assess several constructs, a survey was distributed to the Chairman of the Board of each firm. This dissertation used multiple regression to test the hypothesized relationships between variables as well as the overall model.

Chapter Four

Chapter four examines the results related to the research questions posed by this study. First, the survey information collected from board chairs is examined in order to assess its validity. Second, the hypothesis tests for each set of variables are examined. The results indicate that most of the hypotheses were not supported, however, a number of the relationships were significant in the direction opposite than expected.

Chapter Five

This chapter examines each set of hypotheses in further depth and attempts to explain the possible rationale underlying each finding. In addition, a number of post hoc tests were run in order to examine the possibility of interaction and curvilinear relationships between variables. Finally, the limitations of the study are examined, the implications for practitioners and future researchers are offered, and several summary remarks are provided.

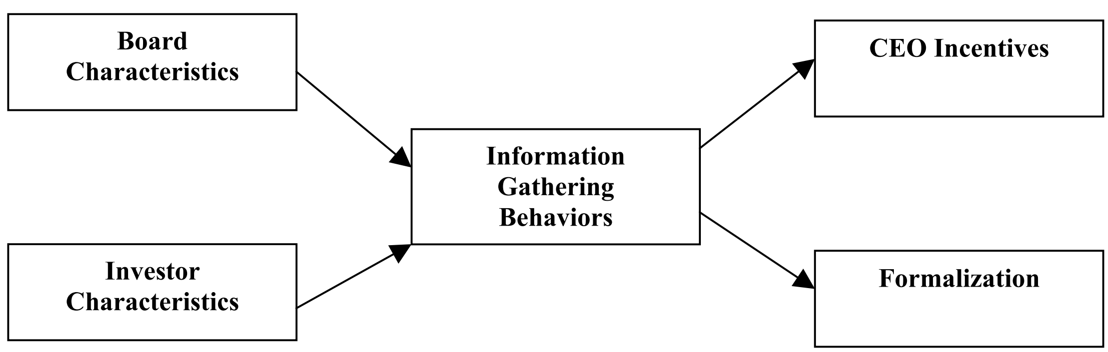

Figure 1.

The role of information in the board/CEO Relationship

CHAPTER TWO

THEORETICAL FRAMEWORK

Agency Theory

Agency theory stems from the earliest descriptions of the corporation (Berle and Means 1932). Within corporations, owners (principals) turn over control of their property to professional managers (agents) hired to run the organization. Thus, principals are passive owners who enjoy the gains made on their investment without taking part in the management of the firm. Agents, on the other hand, are responsible for the administration of the firm, yet share in little or none of the resulting gains. Agency theory details the problems that may arise when ownership is separated from control. In particular, the risk sharing problem and the agency problem are prominent in the agency theory literature (Levinthal 1988).

First, the risk sharing problem arises because principals and agents differ in their attitudes toward risk. Typically, only a small portion of principals' capital is invested in any particular firm. Thus, the principal may desire that the firm pursue risky strategies if the potential payoff is high enough. If the firm should fold as a result, the principal would only lose their small investment in that particular firm. Agents, on the other hand, are much more risk averse and are therefore less likely to take the risky actions that principals desire. As employees, agents place their entire human capital in one firm. As a result, their welfare is tied closely with the welfare of the business. If the firm should fail, the agent loses not only their salary and benefits, but they also lose some of their value in the managerial labor market due to their association with the failed business (Fama 1980). Thus, agents tend to be more risk averse than principals and may not pursue strategies they perceive as risky even if it is in the principals' best interest to do so (Levinthal 1988; Eisenhardt 1989).

The second problem related to the separation of ownership and control is termed the agency problem. Two difficulties result from the agency problem. The first is termed moral hazard and refers to shirking on the part of the agent. For example, agents may invest in activities such as empire building (Amihud and Lev 1981), spending large amounts of money on executive perquisites, or simply exerting less than full effort (Jensen and Meckling 1976). These activities are not in the interests of shareholders because the firm's resources could instead be used to maximize shareholders' returns on their investment. The second problem associated with agency theory is termed adverse selection. Adverse selection refers to the inability of principals to verify claims made by agents. For example, a CEO may misrepresent their own abilities (Eisenhardt 1989), or may blame poor firm performance on external factors that are outside of their control (Levinthal 1988; Abrahamson and Park 1994).

Agency problems result from two characteristics of principals and agents. First, principals and agents are assumed to have different sets of goals. While principals prefer that firms take actions that maximize returns on their investment, agents prefer to take actions that maximize their personal outcomes. Second, agents are assumed to possess far more information about the organization and their own behavior than do principals. This situation is referred to as information asymmetry. As a result of information asymmetry, agents are free to pursue their own goals because principals lack the information necessary to effectively monitor agents' behavior (Jensen and Meckling 1976; Fama 1980).

It is important to note the relationship between these two characteristics of principals and agents. In the absence of information asymmetry, goal divergence and self interest may not result in agency problems. Even if agents wished to pursue their own interests at the expense of principals, they would be less able to do so because principals would learn of their behavior and take steps to correct it. This relationship is important because if information asymmetry can be overcome, agency problems are less likely occur (Eisenhardt 1985; Levinthal 1988). Thus, reducing information asymmetry is a vital step in overcoming agency problems (Harris and Raviv 1979).

While the vast majority of studies accept agency theory's assumptions, several important articles shed a critical eye on the treatment of risk sharing and agents' self interest. Agency theory's treatment of risk preferences has been criticized as oversimplified. As Wiseman and Gomez-Mejia state: "Despite the fundamental role risk plays in the calculus of agency theory, it is our contention that agency theory's formulation of risk has been too restrictive and naïve" (1998 p. 133). In addition, scholars have challenged agency theory's assumption that agents will act in their own self interest as being overly cynical and as painting an undernourished view of human nature (Perrow 1986). Such criticism of agency theory resulted in the creation of stewardship theory, which challenges many of agency theory's assumptions. Stewardship theory assumes that agents will act in the best interest of principals, and that contracts which attempt to control the agent's behavior may lead to dysfunctional results (Donaldson and Davis 1991; Davis, Schoorman, and Donaldson 1997). While agency theory's risk sharing, goal divergence, and self interest assumptions have been challenged, fewer scholars have examined agency theory's treatment of information. As stated earlier, information plays a key role in the logic of agency theory, and understanding how information impacts the agency relationship is an important step in further developing the theory. The next section provides an in depth examination of the concept of information asymmetry.

Information Asymmetry

Information asymmetry occurs when one party in an exchange possesses information that the other party does not (Xiao, Powell, and Dodgson 1998). According to agency theory, agents typically possess much more information than principals do. As a result, principals have difficulty monitoring agents in order to ensure that they are acting in the principals' best interest. Thus, information asymmetry between principals and agents may result in agency problems. While the information needed to effectively monitor the agent could be obtained, agency theory argues that gathering this information is often prohibitively expensive in all but the simplest relationships (Holmstrom 1979). Thus, the majority of studies take information asymmetry between principals and agents as a given (Levinthal 1988).

Information asymmetry is a central concept in agency theory because when information is balanced evenly between principals and agents, agency problems are less likely to arise (Harris 1979; Levinthal 1988). As Holmstrom indicates: "The source of this moral hazard or incentive problem is an asymmetry of information among individuals that results because individual actions cannot be observed and hence contracted upon." (1979 p. 74). Thus, overcoming the asymmetrical distribution of information is vital if principals wish to prevent agency problems.

Information asymmetry has implications for many types of relationships and has been used to examine buyer-supplier relations (Mishra, Heide, and Cort 1998; Kirmani and Rao 2000), job satisfaction (Chia 1995), and firm diversification (Nayyar 1990; Nayyar 1993). The majority of studies in the management literature, however, have focused on the agency relationship between boards of directors and CEOs (Zahra and Pearce 1989; Johnson, Daily, and Ellstrand 1996). The next section reviews the use of agency theory in corporate governance research.

Corporate Governance Research and Agency Theory

The focus of corporate governance scholars utilizing agency theory has been on the relationship between boards of directors and CEOs. The duty of the board is to protect the interests of stockholders (Fama and Jensen 1983). As a result, boards are viewed as representing the principal in the agency relationship. In order to serve the interests of stockholders, boards must be able to effectively monitor and discipline the CEO and become involved in the strategic management of the firm (Judge and Zeithaml 1992; Mallette and Fowler 1992). Governance scholars rely on the concepts of board vigilance and board involvement to describe the extent to which boards are effective (Finkelstein and Hambrick 1996).

Researchers have used the board vigilance construct to represent the extent to which boards are able to control the CEO. Board vigilance "…is at the center of agency theory and is defined as the extent to which boards effectively monitor and discipline top managers" (Finkelstein and Hambrick 1996 p. 221-222). If boards are not vigilant, CEOs are not held accountable for their actions and agency problems are increasingly likely to occur.

Board involvement relates to the degree to which boards of directors take part in the strategic decision making of the firm (Judge and Zeithaml 1992; Westphal 1999). For many years, boards were seldom involved in formulating strategy. Today, however, boards are increasingly being called upon to go beyond simply monitoring CEOs and are expected to become more involved in the actual administration of the firm (Judge and Zeithaml 1992).

Boards vary in the extent to which they effectively carry out their responsibilities. In some firms, boards are heavily involved in the administration of their firms, perhaps even acting as a type of "supra-top management team" (Finkelstein and Hambrick 1996 p. 245). In other firms, boards are little more than "rubber stamps" that exhibit little or no control over the CEO and have no involvement in formulating strategy. In order to determine the effectiveness of a board, corporate governance scholars have focused on the independence of the board from the CEO. The more independent the board is from the CEO, the more effective the board is assumed to be (Daily, Johnson, and Dalton 1999).

The effectiveness of a board has typically been inferred through the use of a number of proxy measures (see Figure 2). The most common measure compares the number of directors that are employed by the firm with the number of directors that are employed outside of the firm (Daily, Johnson, and Dalton 1999). The number of outside directors is typically divided by the total number of directors, and the higher the resulting ratio, the more effective the board is assumed to be. Other common proxy measures include relative board tenure (Westphal and Zajac 1994; Westphal 1999), the percentage of stock held by outsiders (Kosnik 1990; Mallette and Fowler 1992; Finkelstein and D'Aveni 1994), the absence of CEO duality (Kosnik 1987; Singh and Harianto 1989; Mallette and Fowler 1992), and the presence of institutional investors (Mallette and Fowler 1992; Johnson, Daily, and Ellstrand 1996). Each of these measures will be further examined in later sections.

Board Characteristics
- Board Composition
- Board Tenure
- Outside Director Stock

Investor Characteristics
- % of stock owned by institutional investors

Figure 2.

Traditional proxy measures of board effectiveness

Problems with traditional measures of board effectiveness

Board effectiveness is perhaps the most important construct in corporate governance research. As a result, it is critical that scholars fully understand the nature of board effectiveness and that quality measures exist for the construct. Each of the proxy measures reviewed above has value, and their widespread use has greatly advanced our understanding of corporate governance. However, these proxy measures do have several weaknesses.

One problem with proxy measures of board effectiveness is that they are indirect assessments of board effectiveness. Each of these measures serves as a proxy of board effectiveness rather than a direct measure of the behaviors of boards. In fact, measures such as board composition are actually determinants of board effectiveness rather than an assessment of the construct (Finkelstein and Hambrick 1996). Due in part to the reliance on the indirect measures outlined above, no study to date has examined the actual behaviors associated with boards that are highly effective. Zahra and Pearce's findings from 1989 remain true today: "There are countless lists of what boards should do. Yet, evidence on what boards actually do is not well documented" (1989 p. 325).

An additional problem with the use of proxy measures of board effectiveness is that research employing them has produced mixed results (Finkelstein and Hambrick 1996; Daily, Johnson, and Dalton 1999). This is in part due to scholars' reliance on assumptions about the relationship between proxy mechanisms and board effectiveness that have not yet been tested. Simply put, there is only limited evidence that boards with more outsiders, greater tenure, or higher levels of stock ownership are actually more effective than other types of boards. As Finkelstein and Hambrick state: "…although board composition is often used as a measure of board vigilance, it is an indirect measure based on an assumption about the relationship between vigilance and composition that has not been tested" (1996 p. 226). In fact, there is some evidence that insiders may actually be more effective board members because they are more knowledgeable and possess more information than outsiders (Hill and Snell 1988). Again, part of the reason for the mixed results associated with the use of proxy measures is that these measures have not been tied with any specific board behaviors. As scholars have repeatedly stated, in order to understand board effectiveness, researchers need to examine the actual behaviors associated with the construct (Zahra and Pearce 1989; Finkelstein and Hambrick 1996). This study attempts to fill this gap by examining the specific behaviors that effective boards exhibit. Agency theory, through its emphasis on the concept of information asymmetry, provides a great deal of insight into the behaviors likely to be exhibited by effective boards.

Boards' Information Gathering Behavior

Agency theory is the primary theoretical framework employed by scholars interested in studying the effectiveness of boards (Zahra and Pearce 1989; Johnson, Daily, and Ellstrand 1996). As stated earlier, a key to resolving agency problems lies in the ability of principals to overcome information asymmetry (Levinthal, 1988). The relationship between boards and CEOs is heavily impacted by the distribution of information between the two parties. In fact, one of the key sources of CEO power stems from the possession of information that other parties, such as the board of directors, do not possess (Finkelstein 1992). Furthermore, a key reason that many agency scholars recommend boards avoid combining the positions of CEO and Chairperson of the Board, a situation referred to as CEO duality, is because "…a board's chairperson establishes its agenda and gives outsiders most of their information about the organization…" (Mallette and Fowler 1992 p.1028). As agency theory suggests, CEOs gain considerable power in their relationship with the board when they possess private information. Thus, boards of directors that are effective are likely to take actions that reduce the level of information asymmetry present in their organization.

One way that boards can reduce information asymmetry is to increase their frequency of interaction with the firm and with each other. In some firms, the board may only meet a few times a year. Thus, boards suffer from a lack of information to some extent due to the lack of time that they actually spend in the firm (Lorsch and MacIver 1989; Finkelstein and Hambrick 1996). As Carver notes, “The board’s part-time status severely limits the time that can be spent on gathering and analyzing information…” (2000 p. 7). In order to gather more information, boards must take steps to increase their frequency of interaction with both the firm and with each other.

Another important factor related to boards’ information gathering behavior is the extent to which the board is proactive. A person that is proactive in their information gathering will independently seek out new information rather than relying solely upon that which is provided to them (Morrison 1993). A great deal of work related to proactive information seeking exists in the employee socialization literature (Ashford 1986; Morrison 1993; Chan and Schmitt 2000; Wanberg and Kammeyer-Mueller 2000). Proactive information seeking is particularly important for boards of directors because of the previously mentioned adverse selection problem, where CEOs intentionally misrepresent facts to the board (Levinthal 1988). In this case, an effective board may need to proactively collect additional information in order to verify claims made by the CEO. Thus, boards that are effective are also likely to be proactive in their information gathering.

The effectiveness of the board may also impact the quality of the information they gather. Not all information is equally useful to boards. Prior research indicates that the quality of the information available impacts the accuracy of decisions (Porat and Haas 1969; Streufert 1973). In addition, the quality of information has been shown to be one of the primary determinants of whether it will be utilized (O'Reilly 1982; Low and Mohr 2001). The quality of the information gathered by the board must therefore be taken into account. An effective board is likely to gather high quality information that will be useful to them in carrying out their duties to stockholders. Thus, not only must the amount of information gathered be taken into account, but also the perceived quality of the information.

Finally, boards may gather additional information by increasing the number of different sources of information used. As mentioned previously, little scholarly research has been conducted on boards' information gathering behaviors. However, a number of articles appearing in the practitioner literature indicate that effective boards utilize a large amount of information and that the sources of information utilized may directly impact their ability to carry out their duties (Horton 2000; Parmenter 2000). Prior research on information gathering behavior has focused on sources of information as a key variable (Ashford 1986; Saunders and Jones 1990; Morrison 1993; Choudhury and Sampler 1997; Cable, Aiman-Smith, Mulvey, and Edwards 2000). Thus, examining the sources of information utilized by boards is important in understanding boards' attempts to overcome information asymmetry.

Information Gathering Behaviors

- Usage of information sources
- Quality of information
- Proactive information gathering
- Frequency of interaction

Figure 3.

Board of directors' information gathering behaviors

CEO control mechanisms

Boards' information gathering behavior is likely to impact the types of controls used to manage the performance of the CEO. Corporate governance scholars have focused a great deal of attention on the different types of control mechanisms available to boards. CEO controls are employed by the board to align the interests of stockholders and CEOs and prevent CEOs from acting opportunistically (Walsh and Seward 1990). Boards have several options when attempting to control CEO behavior. First, boards may alter CEOs' compensation contracts in order to control CEOs' behavior. Second, boards may alter the amount of freedom CEOs possess by changing the amount of formalization in the board/CEO relationship. Each type of CEO control is briefly reviewed below.

CEO Compensation Contracts

CEOs' compensation contracts are of great interest to governance scholars and have been the subject of hundreds of empirical studies (Barkema and Gomez-Mejia 1998). The reason for such a large amount of scholarly interest is that CEOs' compensation contracts are perhaps the primary tool used by boards to control CEO behavior (Walsh and Seward 1990). According to agency theory, boards can align CEO and shareholder interests by tying large percentages of CEO compensation to firm performance (Jensen and Murphy 1990; Walsh and Seward 1990; Tosi and Gomez-Mejia 1994). When CEO pay is tied to firm performance, the CEO is less likely to act opportunistically. Thus, by altering CEOs' compensation contracts, boards are able to reduce the likelihood of agency problems arising.

The amount of information possessed by the board is likely to impact the type of compensation contract employed by the board. The reliance on compensation contracts that are tied to outcomes such as firm performance is largely due to the presence of information asymmetry between boards and CEOs. As Eisenhardt states: "When boards provide richer information, compensation is less likely to be based on firm performance." (1989 p. 65). Thus, the information gathering behavior of the board is likely to impact the CEO's compensation contract.

Formalization

In addition to altering CEOs' compensation contracts, boards may change the degree of formalization that exists in the governance relationship. Formalization refers to the extent to which an organization is characterized by the presence of written rules and procedures, formal controls, and task specialization (Miller 1987). In such organizations, the ability to make decisions is reduced and replaced by a set of rules. As Schminke, Ambrose, and Cropanzano state: "In highly formalized systems, little flexibility exists in how a decision is made or what outcomes are due in a given situation; procedures and rewards are dictated by the rules" (2000 p. 296).

The information gathering behavior of the board is likely to impact the degree of formalization that exists in boards' relationships with CEOs. When information asymmetry is reduced, the boards are more aware of CEOs' actions and there is less need to develop strict guidelines governing their behavior. Thus, when boards possess a great deal of information, they are likely to employ a less formalized relationship with CEOs.

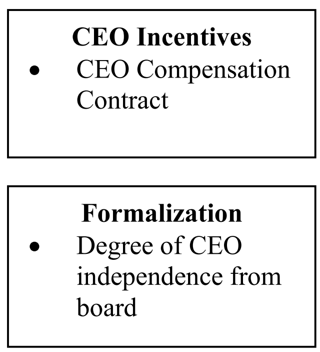

Figure 4.

CEO control mechanisms

Hypotheses

The seven hypotheses developed in this section are divided into two sections. The first five hypotheses indicate how the traditional proxy measures of board effectiveness relate to boards' information gathering behavior (See Figure 5.). As indicated earlier, these proxy measures that have traditionally been used to assess board effectiveness are actually determinants of board behavior. This study focuses on four information gathering behaviors: the sources of information used, information quality, proactivity of information gathering, and frequency of interaction. According to agency theory, the ability of the board to overcome information asymmetry is critical in order for boards to effectively carry out their duty to stockholders. Thus, the first five hypotheses attempt to assess the relationship between traditional proxy measures of board effectiveness and boards' information gathering behavior. The final two hypotheses examine the relationship between boards' information gathering behavior and the CEO control mechanisms implemented by the board (See Figure 6.). More specifically, the final two hypotheses examine the relationship between boards' information gathering behavior and the devices used by the board to control the CEO.

Relationship between proxy measures and boards' information gathering behavior

Board composition

The majority of studies examining board effectiveness focus on the composition of the board (Boyd 1994). Typically, researchers divide board members into categories representing their degree of independence from the CEO. The most common measure compares the number of directors who are also employees of the firm (termed inside directors) with the number of directors who are not employees of the firm (termed outside directors). Often, inside directors are top level executives such as CFOs or COOs who report directly to the CEO. As a result, inside directors are viewed as less independent from the CEO than outside directors, and are therefore thought to be less likely to monitor or discipline them. In addition, inside directors are considered to be less likely to question or make changes to the firm's strategy. As a result, the greater the percentage of outside directors a board has, the more effective the board is thought to be (Daily, Johnson, and Dalton 1999).

The composition of the board has been used by a number of researchers as a proxy measure representing the level of board effectiveness (Kosnik 1987; Judge and Zeithaml 1992; Mallette and Fowler 1992; Johnson, Hoskisson, and Hitt 1993). The percentage of outsiders on the board has been found to be associated with outcomes such as CEO pay (Main, O'Reilly, and Wade 1995) and the likelihood of CEO succession (Boeker 1992). Despite its widespread use, recent articles have begun to question the usefulness of the board composition measure. As Daily, Johnson, and Dalton (1999) indicate, there are no fewer than two dozen different variations on the board composition measure in the corporate governance literature. In addition, the authors find that the different operationalizations actually constitute different constructs related to board effectiveness. Thus, while board composition measures are widely used, the relationship between board composition and board effectiveness has not been clearly stated and is not well understood (Finkelstein and Hambrick 1996; Daily, Johnson, and Dalton 1999).

This lack of clarity may in part be due to the fact that the board composition measure has not been tied to any specific board behaviors. In other words, while prior research indicates that boards with certain compositions tend to be effective, we do not know what behaviors are associated with these types of boards. Agency theory, the predominant framework used in corporate governance research, indicates that information is likely to play a central role in the board/CEO relationship. According to agency theory, boards must overcome information asymmetry in order to be effective. Thus, the composition of the board is likely to impact the board's information gathering behavior. Boards that wish to effectively protect the interests of stockholders must overcome the lack of information that typically characterizes their relationship with the CEO. Thus, as the proportion of outsiders on the board increases, the information gathering behavior of the board is likely to increase.

H1a: The greater the proportion of outsiders on the board, the greater the board's usage of information sources will be.

H1b: The greater the proportion of outsiders on the board, the greater the quality of information gathered by the board will be.

H1c: The greater the proportion of outsiders on the board, the more proactive the board will be in gathering information.

H1d: The greater the proportion of outsiders on the board, the greater the frequency of board interaction will be.

Board tenure

Another popular measure used to assess board effectiveness is the relative tenure of the board compared with the CEO. This has been assessed in two ways. First, board members appointed after the CEO took office are thought to be less independent than board members appointed prior to the arrival of the CEO. Thus, the greater the proportion of the board appointed before the CEO, the greater the level of board effectiveness (Westphal and Zajac 1994; Westphal 1999). Similar to the board composition measure, the board tenure measures have not been tied with relevant board behaviors. Again, using an agency theory perspective, it is likely that effective boards are likely to focus on reducing information asymmetry in order to increase their ability to carry out their duties. Thus, as the number of outside directors appointed after the CEO increases, the information gathering behavior of the board is also likely to increase.

H2a: The greater the proportion of outsiders on the board that were appointed before the CEO, the greater the board's usage of information sources will be.

H2b: The greater the proportion of outsiders on the board that were appointed before the CEO, the greater the quality of information gathered by the board will be.

H2c: The greater the proportion of outsiders on the board that were appointed before the CEO, the more proactive the board will be in gathering information.

H2d: The greater the proportion of outsiders on the board that were appointed before the CEO, the greater the frequency of board interaction will be.

Second, the average tenure of the board has been used to represent the ability of the board to carry out its responsibilities. The higher the board's tenure relative to the

CEO, the more effective the board is considered to be. Boards with long relative tenures are therefore considered better able to serve stockholders' interests (Wade, O'Reilly, and Chandratat 1990; D'Aveni and Kesner 1993). Thus, boards that have long tenures relative to the CEO are likely to increasingly engage in the information gathering behaviors described above.

H3a: The greater the board's tenure relative to the CEO, the greater the board's usage of information sources will be.

H3b: The greater the board's tenure relative to the CEO, the greater the quality of information gathered by the board will be.

H3c: The greater the board's tenure relative to the CEO, the more proactive the board will be in gathering information.

H3d: The greater the board's tenure relative to the CEO, the greater the frequency of board interaction will be.

Outside directors' stockholdings

The percentage of stock held by outside board members has also been used as a proxy measure related to board effectiveness (Finkelstein and Hambrick 1989). Agency theory scholars argue that outside directors with significant levels of stockholdings are more likely to serve the interests of principals because they have a personal stake in maximizing shareholders' returns (Kosnik 1990; Mallette and Fowler 1992; Boyd 1994; Finkelstein and D'Aveni 1994). Boards with directors that own large amounts of stock are therefore considered more likely to be effective. As a result of their stockholdings, these boards are likely take actions designed to overcome the asymmetrical distribution of information common in many organizations. Thus, the greater the amount of stock held by outside board members, the greater the board's information gathering behavior is likely to be.

H4a: The greater the level of outsiders' stock holdings, the greater the board's usage of information sources will be.

H4b: The greater the level of outsiders' stock holdings, the greater the quality of information gathered by the board will be.

H4c: The greater the level of outsiders' stock holdings, the more proactive the board will be in gathering information.

H4b: The greater the level of outsiders' stock holdings, the greater the frequency of board interaction will be.

Institutional investors

Finally, the presence of a large equity holder has been used to represent the effectiveness of boards of directors. In recent years, the power of institutional investors such as mutual funds and pension funds has increased dramatically (Johnson, Daily, and Ellstrand 1996; Ryan 2000). In fact, institutional investors now own more than 50% of outstanding stock in many industries (Graves and Waddock 1990). The presence of institutional investors is thought to increase the level of board effectiveness because they have the power to elect directors and pressure boards to carry out their duties. As Mallette and Fowler indicate: "…if stock ownership is concentrated, it is much easier for shareholders to coordinate their actions and demand information from managers with which to assess their performance" (1992 p. 1015). In essence, institutional investors become the monitors of the board of directors, who are in turn the monitor of the CEO (Johnson, Daily, and Ellstrand 1996).

Again, the presence of a large stockholder is likely to affect the information gathering behavior of the board of directors. As institutional investors pressure the board to more effectively carry out their duties, the information gathering behaviors of the board will increase. Thus, the more stock owned by institutional investors, the more likely the board is to engage in the information gathering behaviors described above.

H5a: The greater the level of institutional holdings in a firm, the greater the board's usage of information sources will be.

H5b: The greater the level of institutional holdings in a firm, the greater the quality of information gathered by the board will be.

H5c: The greater the level of institutional holdings in a firm, the more proactive the board will be in gathering information.

H5d: The greater the level of institutional holdings in a firm, the greater the frequency of board interaction will be.

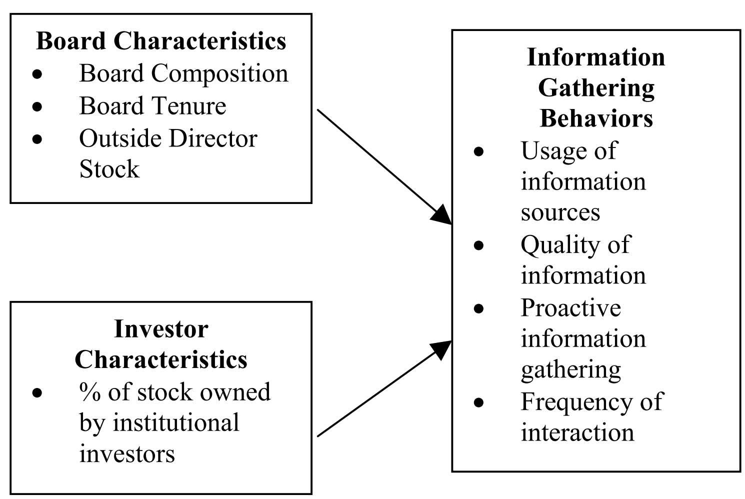

Figure 5.

Relationship between board and investor characteristics and board information gathering behaviors

Relationship between boards' information gathering behavior and CEO controls

CEO Incentives

As stated earlier, agency theorists have often focused on the role of contracts in overcoming agency problems. An important distinction is made between behavior based contracts and outcome based contracts. While behavior based contracts reward CEOs directly for their level of effort, outcome based contracts infer agents' behavior by tying rewards to outcomes such as firm performance. A key factor determining which type of contract is implemented is the amount of information principals possess regarding agents' behavior (Holmstrom 1979). As principals gain information, they increasingly utilize behavior based contracts and rely less on outcome based contracts (Eisenhardt 1989).

Corporate governance scholars have focused on CEO's compensation contracts as a primary method of controlling CEO behavior. It is common for boards to tie compensation to firm performance in order to minimize the likelihood of agency problems (Finkelstein and Hambrick 1988; Boyd 1994; Tosi and Gomez-Mejia 1994). As stated earlier, the reliance on outcome based compensation contracts is largely due to the presence of information asymmetry between boards and CEOs. As Eisenhardt states: "When boards provide richer information, compensation is less likely to be based on firm performance" (1989 p. 65). Thus, as boards of directors engage in the information gathering behaviors outlined above, their reliance on outcome based contracts is likely to decrease.

H6a: As the usage of information sources increases, the board of directors will rely less on outcome-based contracts.

H6b: As the quality of information gathered increases, the board of directors will rely less on outcome-based contracts.

H6c: As information gathering becomes increasingly proactive, the board of directors will rely less on outcome-based contracts.

H6d: As the frequency of board interaction increases, the board of directors will rely less on outcome-based contracts.

Formalization

Formalization refers to the extent to which an organization is characterized by the presence of written rules and procedures, formal controls, and task specialization (Miller 1987). In such organizations, the ability to make decisions is reduced and replaced by a set of rules governing decision making. As Schminke, Ambrose, and Cropanzano state: "In highly formalized systems, little flexibility exists in how a decision is made or what outcomes are due in a given situation; procedures and rewards are dictated by the rules" (2000 p. 296).

This concept can be extended to examine the relationship that exists between the board of directors and the CEO. In a highly formalized relationship, the CEO is given little freedom and might often be required to seek the board's approval when making important decisions. Prior research indicates that CEOs' latitude of action varies widely across organizations (Hambrick and Finkelstein 1987). The amount of information that the board possesses is likely to impact the degree of formalization between boards and CEOs. When information asymmetry is reduced, the board is more aware of the CEO's actions and there is less need to develop strict guidelines governing their behavior or to have them regularly seek approval from the board. When boards possess a great deal of information, they are likely to employ a less formalized relationship with the CEO. Thus, as boards exhibit the information gathering behaviors outlined above, the degree of formalization between the board and the CEO is likely to decrease.

H7a: As the usage of information sources increases, the degree of formalization between the board and the CEO will decrease.

H7b: As the quality of information gathered increases, the degree of formalization between the board and the CEO will decrease.

H7c: As information gathering becomes increasingly proactive, the degree of formalization between the board and the CEO will decrease.

H7d: As the frequency of board interaction increases, the degree of formalization between the board and the CEO will decrease.

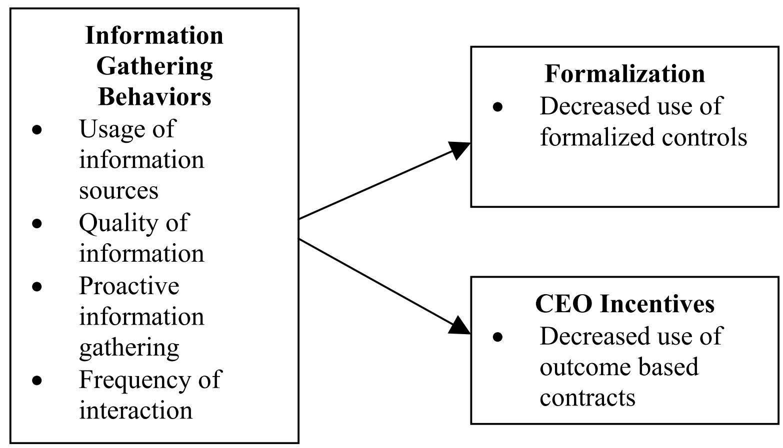

Figure 6.

Relationship between boards' information gathering behavior and CEO controls

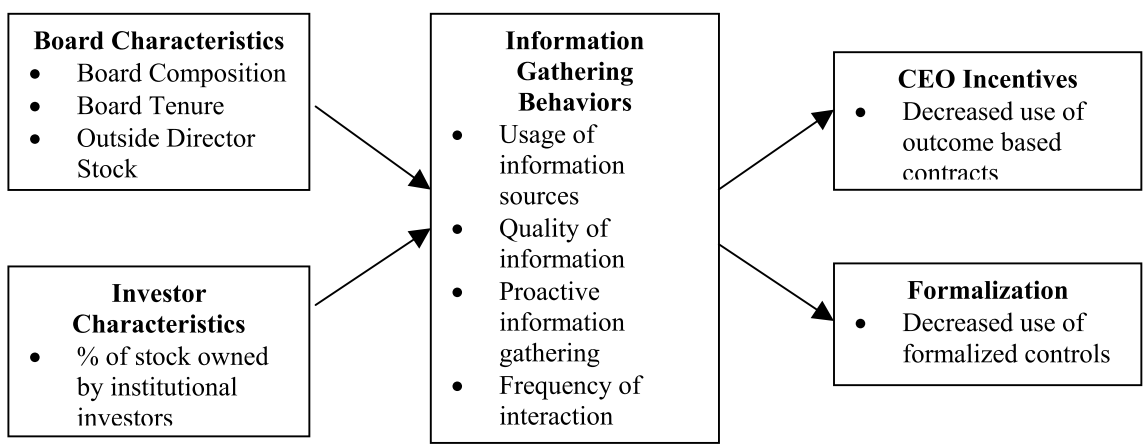

Figure 7.

Full model of the role of information in the board/CEO relationship

CHAPTER THREE

RESEARCH METHODOLOGY

Sample

This dissertation samples firms from three industries that vary with regard to several important characteristics. The industries chosen were chemicals (SIC 27), industrial machinery and equipment (SIC 28), and printing and publishing (SIC 35). According to Ward's Business Directory there are approximately 600 public firms in these three industries. These industries have been utilized in past corporate governance research (Finkelstein and D'Aveni 1994), and have been shown to vary dramatically in terms of their rates of environmental change and levels of board vigilance. Thus, these three industries provide an excellent opportunity to examine the effects of diverse industries on board behavior while still allowing the findings to be generalized to other settings.

The proposed sample design mitigates some of the problems encountered with other samples. For example, many corporate governance studies utilize Fortune 500 or Fortune 1000 firms as their sample (e.g., Wade, O'Reilly, and Chandratat 1990; Pearce and Zahra 1991; Ocasio 1999; Westphal 1999). Such samples are useful because they examine large, influential firms from a number of different industries, and are relatively generalizable to other firms. These samples, however, also possess some weaknesses. For example, Fortune 500 or 1000 samples obviously do not include the large number of small firms that represent the vast majority of organizations in most industries. In addition, it is more difficult to control for industry effects in samples using Fortune 500 or Fortune 1000 firms. Another possible sample design would utilize a single industry. Samples that utilize a single industry allow researchers to examine industry specific effects much more effectively. However, single industry samples suffer from a lack of generalizability (Finkelstein and D'Aveni 1994). The current sample design therefore overcomes some of the liabilities of each sample design by utilizing three industries that vary with regard to environmental dynamism and board effectiveness.

Survey Design

This dissertation utilizes a survey to assess the sources of board information, information quality, proactive information gathering, and formalization of the board/CEO relationship. The primary survey respondent is the Chairperson of the Board. While the vast majority of corporate governance studies use CEOs as their respondents (Pearce and Zahra 1991), the research questions posed by this dissertation are better suited to be answered by the chairperson. As Mallette and Fowler state, chairpersons "…give outsiders most of the information about the organization…" (1992 p. 1028). As a result of their position as their primary source of information for the board, chairpersons are best suited to respond to questions regarding the board's information gathering behaviors. Despite the prevalence of studies that survey CEOs, some studies have surveyed chairpersons (Henke 1986) or other board members (Judge and Zeithaml 1992; Westphal 1999). Due to this dissertation's research questions and the information intensive nature of the chair's job, the chairperson was chosen as primary respondent.

As will be discussed in the following sections, the survey involves a number of items that were modified in order to fit boards of directors. As a result, the validity of the survey items needed to be evaluated. This was carried out in two steps. First, three expert reviewers familiar with boards of directors examined the survey instruments. Each expert reviewer was provided with a description of each construct and asked to review each item and indicate whether they felt the items represented the construct of interest. As a result of the expert reviewers' comments, several minor adjustments were made to the survey to improve the validity of the instrument.

Second, ten doctoral students were provided with definitions of the constructs and asked to indicate which construct each item represented. The doctoral students were able to classify the survey items into the correct construct in every instance. This provides another indication of the validity of the survey items. The form that was given to each doctoral student is located in Appendix E.

The administration of the survey consisted of several steps in an attempt to increase the study's response rate. First, a letter of introduction and a survey were mailed to each chairperson. Each survey was coded in order to match each survey response with measures derived from secondary data. Second, a follow up survey was mailed to all chairpersons that did not respond to the initial mailing. The first and second letters to Chairpersons are located in Appendices A. and B., and the survey is located in Appendix C. Appendix D. shows each construct examined in this study and its associated items.

Measures

Board Composition

No fewer than two dozen different operationalizations of board composition exist in the corporate governance literature (Daily, Johnson, and Dalton 1999). These measures vary in the manner in which they classify directors into categories representing their independence from the CEO. Directors can be categorized as insider, outsider, family, or affiliated board members. Insiders are directors who are also employees of the firm. Relatives of the CEO or the firm's founder are categorized as family directors. Affiliated board members are directors that are retained by the firm in a professional capacity, or are employees of another organization that has large stockholdings in the firm. Family and affiliated directors are typically categorized as insiders (Johnson, Hoskisson, and Hitt 1993). Finally, outsiders are board members that are completely independent from the firm other than their service on the board. Outsiders are thought to be the most independent type of director, and thus a board with a large percentage of outsiders is considered to be more effective (Daily, Johnson, and Dalton 1999).

This dissertation utilizes the most frequently used measure of board composition by dividing the number of outside directors by the total number of directors. Family and affiliated directors are considered to be insiders. Outside directors are considered to be those board members with no obvious ties to the firm. As stated earlier, this measure is frequently used to represent the ability of the board to carry out its duties (e.g., Wade, O'Reilly, and Chandratat 1990; Judge and Zeithaml 1992; Mallette and Fowler 1992; Johnson, Hoskisson, and Hitt 1993; Sanders and Carpenter 1998; Ocasio 1999). Data on board composition was collected from each firm's proxy statement.

Board Tenure

As indicated earlier, board tenure has primarily been measured in one of two ways. The first measure of board tenure averages the number of years of service of all outside board members and compares it with the tenure of the CEO. The greater the board's tenure relative to the CEO's, the more effective the board is considered to be (Wade, O'Reilly, and Chandratat 1990; Mallette and Fowler 1992).

The second widely used measure of board tenure focuses on the proportion of outsiders elected to the board after the CEO took office. Outsiders that are elected after the CEO are considered less independent, and will therefore be less likely to effectively carry out their duties (Wade, O'Reilly, and Chandratat 1990; Westphal 1999). Thus, the greater the proportion of outsiders elected before the CEO, the more effective the board is considered to be.

This dissertation uses both proxy measures related to board tenure. While each measure has its proponents, both are widely used by governance researchers and no consensus has emerged as to which measure is superior. As a result, both are included in this study. All tenure information was collected from proxy statements.

Outside directors' stockholdings

The level of the board's stock holdings has typically focused on the percentage of stock held by outside directors. This percentage is calculated by dividing the shares of common stock held by outsiders by the total number of shares outstanding (Johnson, Hoskisson, and Hitt 1993; Finkelstein and D'Aveni 1994; Westphal 1999). The higher the percentage of stock owned by outsiders, the more effective the board is assumed to be

(Finkelstein and Hambrick 1989). This dissertation adopts this widely used measure. Information on outside board member's stock holdings was taken from proxy statements.

Institutional Investors

The impact of institutional investors has been measured in two ways. First, some scholars utilize a dichotomous variable representing the presence or absence of any equity holder with more than a 5% share of outstanding stock (Wade, O'Reilly, and Chandratat 1990; Tosi and Gomez-Mejia 1994; Hambrick and Finkelstein 1995). The presence of such a stockholder is normally coded with a 1, the absence of such a stockholder is coded with a 0.

Second, some scholars have recorded the actual percentage of stock held by institutional investors (Mallette and Fowler 1992; Westphal 1999). This measure provides more information about the nature of the institutional investor's ownership, and allows for greater variation. Similar to the board tenure variables, each measure of institutional investor stockholding is widely used, and no clear consensus has emerged regarding the best measure. This dissertation utilizes both proxy measures. Information regarding institutional investors was collected from proxy statements.

Usage of Information Sources

The usage of information sources by boards in their decision making was measured using items listed on the survey. In keeping with the literature related to sources of information (O'Reilly 1982; Ashford 1986; Morrison 1993; Cable, Aiman-Smith, Mulvey, and Edwards 2000), respondents were asked to indicate how frequently the board makes use of each information source using a seven point scale. In keeping with Ashford (1986), the scale varies from "very infrequently" to "very frequently".

To date, no study has examined the sources of board information. As a result, the sources of board information used in this study were derived from a number of articles. First, O'Reilly's (1982) study lists a number of information sources that managers utilize in making decisions. While O'Reilly was not examining boards of directors, some sources of information could be adopted to fit board members. More specifically, the first six sources of board information are direct adaptations of O'Reilly sources of information. Second, a number of practitioner articles discuss the sources of board information (Nussbaum 1998; Merrick 2000; Parmenter 2000). As a result of these practitioner articles, the Internet, a dedicated support staff, consultants, and the popular press were added to the list of board information sources. The sources of board information are listed below.

Board Reports
Other reports generated by your firm
Executives in your firm
Other members of your firm's board
Executives from other firms
Directors from other firms
The Internet
A dedicated support staff
Consultants
The popular press (newspapers and magazines)
Other sources of information

Quality of information

The quality of information available to the board was assessed using six survey items. These items were adapted from a study by Low and Mohr (2001) which examined the quality of information in marketing communications. In order to be used in this study, Low and Mohr's items were modified to fit boards of directors' perceptions of information quality. The original four items developed by Low and Mohr are listed below.

In general, the information available to me for assessing marketing communications productivity is very reliable.
The available marketing information is not relevant to my needs in assessing marketing communications productivity
The information available is very useful in making an assessment of marketing communications productivity for my product/service.
The information available to me is just what I need to make an evaluation

In addition, two items related to information quality were added that were derived from a study by O'Reilly (1982). These items are related to accuracy and timeliness, two aspects of information quality not assessed by Low and Mohr's (2001) study. These items also had to be adapted to fit boards of directors. The modified items that were used in this study appear below.

In general, the information available to the board is very reliable(Reliabl)
The information available to the board is accessible when needed, not at some later time (Timeliness)
It is necessary to go back and check on the accuracy of the information the board receives (Accuracy) (R)
The available information is relevant to the board's needs (Relevance)
The board receives information in a timely fashion
The information available is very useful in assessing organizational issues
The available information is just what the board needs to make effective decisions

Proactive information gathering

How proactive the board is in gathering information was assessed using five survey items. These items were adapted from a study by Boynton, Gales, and Blackburn (1993) which examined managerial search activity. Again, because no items exist to measure boards' information gathering behavior, these items had to be adapted to fit the questions posed in this study. Boynton, Gales, and Blackburn's original items are listed below.

When facing important decisions, how often do you actively search for job-related information?
In a typical week, to what extent do you actively search for job-related information?
About how much time do you spend searching for job-related information?

The modified items that were used in this study are listed below.

The board spends a great deal of time searching for information about issues facing the board
Board members actively search for information in order to address issues before the board
Board members make decisions based on the information provided to them without requesting additional information (R)
At a typical board meeting, the board actively probes for information necessary to carry out their duties

Frequency of board interaction

The frequency of board interaction was measured by examining the number of board meetings held during the year, and by counting the number of committees of the board of directors. The number of board meetings includes both face to face and telephone meetings. As Eisenhardt notes: "Operationally, the richness of board information can be measured in terms of characteristics such as frequency of board meetings, number of board subcommittees…" (1989 p. 65). Information on the number of board meetings and subcommittees was collected from proxy statements.

CEO Incentives

The CEO's compensation contract has been the object of a great deal of scholarly attention (Finkelstein and Hambrick 1988; Boyd 1994; Tosi and Gomez-Mejia 1994).

Agency scholars are particularly interested in CEO compensation because it is one of the primary tools boards use to control CEOs (Jensen and Murphy 1990; Walsh and Seward 1990; Tosi and Gomez-Mejia 1994). CEO pay consists of noncontingent pay, consisting of cash and other guaranteed compensation, and contingent pay, consisting of bonus, stock options, and long term incentive plans (Daily, Johnson, Ellstrand, and Dalton 1998). Contingent pay is tied to outcomes such as firm performance. Boards of directors that heavily utilize contingent pay are therefore relying on outcome based contracts in order to control the CEO. Boards relying on behavior based contracts, on the other hand, will rely to a larger extent on guaranteed cash based compensation. Thus, this dissertation examines the nature of CEO compensation by dividing the amount of salary and other cash compensation by total compensation. Thus, the higher the percentage of CEO compensation consisting of noncontingent pay, the more the board relies on behavior based contracts. This method of comparing the ratio of short term and long term compensation has been widely used in the CEO pay literature (Daily, Johnson, Ellstrand, and Dalton 1998).

There are two methods of valuing CEO stock options. The first utilizes some variant of the Black-Scholes options pricing model (David, Kochhar, and Levitas 1998). The second method multiplies the number of CEO stock options by 25% of their exercise price (Lambert, Larcker, and Weigelt 1993; Finkelstein and Boyd 1998). The latter method has been widely used in recent years. Thus, stock options will be valued by multiplying the number of options by 25% of their exercise price. Information regarding CEO compensation was collected from each firm's proxy statement.

Formalization

Formalization is assessed using five survey items. These items were adapted from a study by Schminke, Ambrose, and Cropanzano (2000). Again, because no items exist to measure the formalization of the board/CEO relationship, these items were modified for use in this study. Schminke, Ambrose, and Cropanzano's original items are listed below.

The organization has a large number of written rules and policies
A "rules and procedures" manual exists and is readily available within this organization
There is a complete written job description for most jobs in this organization
The organization keeps a written record of nearly everyone's job performance
There is a formal orientation program for most new members of the organization

The modified items used in this study appear below.

The CEO relies on formal policies as a guide when making decisions
The board explicitly reviews the CEO's performance
The CEO must receive approval from the board when making major decisions
The CEO makes his or her own rules on the job (R)
There are a large number of rules and regulations governing the conduct of the CEO
The board exerts a great amount of influence on the CEO as to the strategic direction of the company
There are formal policies and boundaries relative to the decision-making authority of the CEO

Controls

Research indicates that several variables are related to board behavior. First, prior firm performance may impact boards' behavior. If performance is particularly poor, there is a greater likelihood that boards may increase their involvement in the firm (Lorsch and MacIver 1989). Thus, prior firm performance was controlled for. Firm performance was measured using the average of the firm's ROA during the prior five years. While a number of performance measures exist, ROA has been used frequently in the governance literature (e.g., Judge and Zeithaml 1992; Johnson, Hoskisson, and Hitt 1993; Finkelstein and D'Aveni 1994; Ocasio 1999). Information on prior firm performance was collected from the Global Access database.

Second, firm size may impact board behavior. Consistent with much of the prior corporate governance literature, this study controls for firm size using the natural logarithm of firm sales (e.g., Mallette and Fowler 1992; D'Aveni and Kesner 1993; Boyd 1994; Finkelstein and D'Aveni 1994; Sanders and Carpenter 1998; Westphal 1999). Information related to firm size was collected from Dun and Bradstreet’s Million Dollar database.

Third, this study controls for CEO duality. CEO duality exists when the same person holds the titles of CEO and Chairperson of the Board. When one person holds both titles, boards are considered to be less effective. Given that some board chairs in the sample will also be CEOs, CEO duality was controlled for. In order to be consistent with prior research, CEO duality was coded as a 1, while the absence of duality was coded as a 0 (e.g., Boyd 1994; Finkelstein and D'Aveni 1994; Buchholtz, Young, and Powell 1998; Sanders and Carpenter 1998). Information regarding CEO duality was taken from each firm’s proxy statements.

Finally, the nature of the industry that a firm participates in may impact the nature of its corporate governance processes. As a result, dummy variables were created to help control for industry specific effects. Information regarding industry was taken from Dun and Bradstreet’s Million Dollar Database.

Analytical Procedures

This study utilizes multiple regression to test its hypotheses. The use of 7 point scales for each of the survey items facilitates the use of this statistical technique. Multiple regression is a widely used analytical technique in corporate governance research (Finkelstein and Hambrick 1989; Hambrick and Finkelstein 1995; Werner and Tosi 1995; David, Kochhar, and Levitas 1998).

CHAPTER FOUR

RESULTS

Survey Responses

Surveys were mailed to the Chairperson of the Board of every public company in the Printing and Publishing (SIC 27), Chemicals (SIC 28), and Industrial Machinery and Equipment (SIC 35) industries. The Dun and Bradstreet Million Dollar Database lists 69 firms in the Printing and Publishing industry, 232 firms in the Chemicals industry, and 306 firms in the Industrial Machinery and Equipment industry. Of the 607 firms that received surveys, 159 (26%) responded. Of these 159 responses, 14 firms indicated they were not willing to participate in the study. The usable response rate was therefore 145 firms out of 607, which corresponds to a 24% response rate.

In comparison with other corporate governance studies, this response rate is relatively high. In fact, one of the major concerns with corporate governance research is the low response rate experienced in many studies. This study may have benefited from its focus on Chairpersons rather than CEOs as the survey respondent. In addition, the brevity of the survey may have increased the response rate. In the cover letter, respondents were told that the survey would take less than five minutes of their time. Finally, the response rate in this study may have been increased because smaller firms were included in the sample. While a number of large, Fortune 500 firms responded to the survey, many smaller firms also responded. It is possible that smaller firms receive fewer requests to participate in survey research and may therefore be more willing to respond.

The participating firms are distributed throughout each of the three industries. In the chemicals industry, 66 of the 232 (32%) firms participated in the study. In the printing and publishing industry, 22 of the 69 (28%) firms agreed to participate. In the Industrial Machinery and Equipment industry, 58 of the 306 (19%) firms that were contacted participated in this study. Firms taking part in this study had average sales of $2,182 million, and these firms had an average of 7,848 employees.

As is the case with any study using survey methodology, the possibility of nonresponse bias is a concern. In order to assess whether the respondents were significantly different from nonrespondents, the means of each group's sales were compared. This analysis indicated that there was not a significant difference between respondents and nonrespondents in terms of size, as measured by sales ($t = .866$; $p = .387$). As a result there is reason to believe that the respondents are representative of the entire sample.

Common method bias is another potential problem related to the use of a survey methodology. This problem is a concern any time several variables are collected from the same respondent and the relationship between the variables is of interest. In this dissertation, common method bias is a concern because the usage of information sources, information quality, and proactiveness constructs are theoretically and empirically linked with the formalization construct. In addition, the data representing each construct was collected from the same respondent. As a result, any error related to the respondent's responses is repeated for both the independent and dependent variables. This is the crux of the common method variance problem, and if present, it can call the results of the study into question. In part, common method bias was controlled for through the design of the study by including variables derived from secondary data in each set of hypotheses. For example, the data for the frequency of interaction and CEO pay variables were collected from each firm's SEC filings. In an attempt to assess whether common method bias was a problem in this dissertation, Harman's one-factor test was utilized. According to Podsakoff and Organ (1986), if common method bias is present in a study, one factor will emerge that accounts for the majority of the variance in the items. Thus, an unrotated factor analysis was run and the resulting factor solution was examined for evidence of common method bias. Using the data from this study, 7 factors emerged and the largest factor accounted for only 22.21% of variance. As a result, it appears that common method bias is not a concern in this study.

Overall, the respondents in this study represent a broad variety of firms, ranging from relatively small entrepreneurial firms that are still controlled by their founders to some of the largest corporations in the nation. In addition, these firms participate in three industries that face very different environmental contingencies. It is hoped that the relatively high response rate and the diversity of respondents will improve the generalizability of the study's findings.

Analyzing the data

The means and standard deviations for each variable are listed in Appendix F. In addition, the bivariate correlations for each pair of variables are listed in Appendix H. By analyzing the correlations between variables, it is apparent that multicollinearity among independent variables is not an issue. The largest correlation among independent variables was .270. As an additional check for multicollinearity, tolerance values were computed for each variable. The smallest tolerance value was .627, which is well above the widely used cutoff value of .10 (Hair, Anderson, Tatham, and Black 1998). Thus, it does not appear that multicollinearity is a problem in this study.

Analyzing the survey items

The effectiveness of the survey items at measuring information quality, board proactiveness, and board/CEO formalization was assessed with factor analysis. Oblique rotation was used in this analysis because the quality construct and the proactiveness construct are theoretically linked with the formalization construct in this study. Oblique rotation is recommended when constructs are correlated with each other (Hair, Anderson, Tatham, and Black 1998). Items that loaded on one factor above .5 and loaded on other factors below .3 were retained in the factor analysis. Items that did not load on any factor above .5 were deleted, and any items that loaded significantly on more than one factor were deleted from the analysis. After deletion of these items, there were four items assessing quality, three items measuring proactiveness, and three items assessing formalization. The items that were deleted as a result of this analysis are listed in Appendix G. This solution results in three factors and the extracted factors explain 60% of total variance. The final pattern matrix is replicated below in Table 1. The item numbers listed in Table 1. correspond to the order in which they are listed on the survey instrument. The survey and the item numbers are presented in Appendix C. In addition, the reliability of this factor solution was assessed using Cronbach's alpha. The

Cronbach's alpha coefficient for each construct is above .60, a cutoff that is often utilized in exploratory research (Hair, Anderson, Tatham, and Black 1998). The reliability coefficients are listed below in Table 2.

Table 1.

Final Factor Analysis Solution Using Oblique Rotation

Pattern Matrix

	Factor 1	Factor 2	Factor 3
Item 17 (Quality)	0.805	-0.007	-0.077
Item 14 (Quality)	0.775	-0.126	0.063
Item 8 (Quality)	0.753	0.197	0.109
Item 2 (Quality)	0.707	-0.102	-0.127
Item 10 (Proactiveness)	-0.020	0.797	-0.106
Item 11 (Proactiveness)	-0.099	0.727	0.169
Item 5 (Proactiveness)	0.141	0.699	-0.250
Item 13 (Formalization)	-0.189	-0.032	-0.819
Item 18 (Formalization)	0.074	0.066	-0.740
Item 4 (Formalization)	0.174	0.049	-0.625

Table 2.

Cronbach's Alpha for Quality, Proactiveness, and Formalization

Construct	# of Items	Cronbach's Alpha
Quality of Information	4	.769
Board Proactiveness	3	.633
Formalization of Board/CEO Relationship	3	.626

Analyzing the hypotheses

Hypotheses 1a, 2a, 3a, 4a, and 5a

These hypotheses examine the relationship between several widely utilized measures of board vigilance and the usage of information sources by the board. The five measures of board vigilance are ratio of outside directors on the board, percentage of directors elected before the CEO took office, outsider tenure, outsider stock ownership, and level of institutional stockholdings. In order to test these hypotheses, the natural log of each firm's sales, the 5 year average of each firm's Return on Assets, CEO duality, and industry membership were included as control variables. After controlling for these variables, it was possible to examine the unique relationship between each corporate governance variable and the usage of information sources by the board. As indicated below in Table 3, firm sales are positively related ($\beta = .371$, $p < .001$) to the usage of information sources by boards.

Hypothesis 2a examines the relationship between the percentage of outsiders appointed before the CEO took office and the usage of information sources by the board. It was hypothesized that the more outside directors that were appointed before the CEO took office, the more sources the board would utilize in order to carry out its duties. The relationship is significant ($\beta = -.176$, $p < .05$), however, it is in the opposite direction than was predicted. This finding indicates that as the number of long standing board members increases, the usage of information sources decreases. This is an interesting finding, but because the relationship between these variables is negative rather than positive, hypothesis 2a was not supported.

Hypothesis 1a examines the relationship between the percentage of outside directors on the board and the usage of information sources by the board. As indicated below in Table 3., there was no relationship between the variables. Similarly, there was no relationship between outsider tenure and the usage of information sources (hypothesis 3a), outsider stockholdings and the usage of information sources (hypothesis 4a), or the percentage of institutional stockholdings and the usage of information sources (hypothesis 5a). In summary, hypotheses 1a, 3a, 4a, and 5a were not supported.

Table 3.

The relationship between traditional proxy variables and usage of information sources: Hypotheses 1a, 2a, 3a, 4a, 5a

	Controls	Full Model
	β	β
Duality	-.048	-.046
Sales	.348***	.371***
5 Year Avg. of ROA	-.076	-.059
Industry Control Variable 1	.052	.046
Industry Control Variable 2	.020	.004
% of outside directors on board		.057
% of outsiders elected before CEO		-.176*
Relative tenure of outside directors		.062
Outsider stock ownership		.055
% of institutional stock ownership		.056
F Value	3.558**	2.269*
Adjusted R^2	.115	.147

Dependent Variable = Usage of information sources
†p<.1;*p<.05; **p<.01;***p<.001

Hypotheses 1b, 2b, 3b, 4b, and 5b

This set of hypotheses examines the relationship between the traditional board vigilance measures discussed above and the quality of information possessed by the board. As Table 4 indicates, the sales and industry control variables are significantly related to information quality. Although no hypotheses were made regarding these variables, it is interesting to note that larger firms appear to collect higher quality information, and firms in certain industries seem to collect higher quality information.

Hypothesis 1b stated that the percentage of outsiders on a board would be positively related to the quality of information possessed by the board. This relationship is positive and significant ($\beta = .155$, $p < .05$). This indicates that the more outsiders on a firm's board, the higher the quality of information the board will gather. This is consistent with agency theory predictions, and is suggestive that overcoming information asymmetry is vital to boards effectively carrying out their duties. Thus, hypothesis 1b was supported.

The percentage of directors appointed before the CEO took office, outsider tenure, outsider stockholdings, and institutional stockholdings are not significantly related to the quality of information possessed by the board. In summary, hypotheses 2b, 3b, 4b, and 5b were not supported.

Table 4.

The relationship between traditional proxy variables and quality of board information: Hypotheses 1b, 2b, 3b, 4b, 5b

	Controls	Full Model
	β	β
Duality	.098	.090
Sales	.265**	.197*
5 Year Avg. of ROA	-.096	-.099
Industry Control Variable 1	.196*	.236*
Industry Control Variable 2	.109	.134
% of outside directors on board		.155*
% of outsiders elected before CEO		.042
Relative tenure of outside directors		-.101
Outsider stock ownership		-.094
% of institutional stock ownership		-.031
F Value	3.062*	2.072*
Adjusted R^2	.101	.136

Dependent Variable = Quality of Information
†p<.1;*p<.05; **p<.01;***p<.001

Hypotheses 1c, 2c, 3c, 4c, and 5c

These five hypotheses examine the relationship between traditional governance measures and the proactiveness of the board of directors. As Table 5 indicates below, the overall regression model associated with these hypotheses is not significant. As a result, all five hypotheses are not supported.

Although it is difficult to interpret individual variables in regression models that are not significant, it is interesting to note that the percentage of directors elected before the CEO took office and the amount of outsider stockholdings are marginally related to the proactiveness of the board. Contrary to this study's predictions, however, the percentage of directors elected before the CEO took office was negatively related to board proactiveness. This suggests that directors that have been members of their boards for relatively long periods of time tend to be less proactive than newer boards. This would be consistent with the findings related to hypothesis 2a, which indicated that higher tenure directors use information sources less than newer directors. Finally, as expected the amount of outsider stockholdings was positively related to board proactiveness. However, while these relationships are interesting, the regression coefficients can not be meaningfully interpreted when the overall regression model is not significant.

Table 5.

The relationship between traditional proxy variables and board proactiveness: Hypotheses 1c, 2c, 3c, 4c, 5c

	Controls	Full Model
	β	β
Duality	-.011	-.006
Sales	.073	.159
5 Year Avg. of ROA	-.108	-.088
Industry Control Variable 1	.089	.076
Industry Control Variable 2	.096	.053
% of outside directors on board		-.090
% of outsiders elected before CEO		-.134†
Relative tenure of outside directors		-.096
Outsider stock ownership		.115†
% of institutional stock ownership		.089
F Value	.596	1.138
Adjusted R^2	-.014	.010

Dependent Variable = Board Proactiveness
†p<.1;*p<.05; **p<.01;***p<.001

Hypotheses 1d, 2d, 3d, 4d, and 5d

This set of hypotheses examines the relationship between traditional corporate governance measures and the frequency of board interaction. As mentioned previously, Eisenhardt (1989) indicates that examining both the number of meetings and the number of committees formed by the board may be an effective way of assessing board interaction. Accordingly, Table 6 examines the impact of the traditional board vigilance measures on the number of board meetings held. Table 7 examines the impact of board vigilance measures on the number of committees of the board.

As indicated in Table 6, the overall regression model examining the number of board meetings was not significant. Similar to the hypotheses examining proactiveness, all five of the hypotheses examining the number of board meetings are therefore not supported.

It is interesting to note that had the overall model been significant, hypothesis 1d would have been supported. This hypothesis examines the relationship between outsider ratio and the number of meetings held by the board. The positive relationship between these variables indicates that the more outsiders that are on a board, the more meetings the board will hold. Similar to hypothesis 1b, this result suggests the possibility that boards with large percentages of outsiders take steps to overcome their lack of information. However, the individual regression coefficients can not be meaningfully interpreted and therefore no conclusions can be drawn regarding the number of meetings held by the board.

Table 6.

The relationship between traditional proxy variables and frequency of board interaction: Hypotheses 1d, 2d, 3d, 4d, 5d

	Controls	Full Model
	β	β
Duality	-.051	-.055
Sales	.182*	.101
5 Year Avg. of ROA	-.018	-.019
Industry Control Variable 1	.120	.151
Industry Control Variable 2	.110	.131
% of outside directors on board		.204*
% of outsiders elected before CEO		-.020
Relative tenure of outside directors		-.007
Outsider stock ownership		-.056
% of institutional stock ownership		.034
F Value	1.365	1.259
Adjusted R^2	.013	.018

Dependent Variable = Number of Meetings
†p<.1;*p<.05; **p<.01;***p<.001

As indicated in Table 7 below, the regression model using the number of committees as the measure of frequency of interaction had highly significant results. As with each of the prior regression analyses, firm size has a major impact on the dependent variable. In this case, larger firms appear to have more board committees.

Hypothesis 2d states that the greater the percentage of directors elected to the board prior to the appointment of the CEO, the greater the level of board interaction. The results listed below indicate that the greater the percentage of long term outside directors, the more committees the board will form ($\beta = .187$, $p < .05$) This provides evidence that board composition is related the frequency of board interaction. Thus, using the number of committees as the measure of frequency of board interaction, hypothesis 2d was supported.

Table 7.

The relationship between traditional proxy variables and frequency of board interaction: Hypotheses 1d, 2d, 3d, 4d, 5d

	Controls	Full Model
	β	β
Duality	.030	.033
Sales	.566***	.492***
5 Year Avg. of ROA	-.027	-.048
Industry Control Variable 1	.062	.067
Industry Control Variable 2	-.058	-.040
% of outside directors on board		.026
% of outsiders elected before CEO		.187*
Relative tenure of outside directors		-.020
Outsider stock ownership		-.014
% of institutional stock ownership		.063
F Value	12.016***	6.752***
Adjusted R^2	.281	.290

Dependent Variable = Number of Committees
†p<.1;*p<.05; **p<.01;***p<.001

Hypotheses 6a, 6b, 6c, and 6d

Hypotheses 6a, 6b, 6c, and 6d examine the relationship between boards' information gathering behavior and the amount of CEO compensation composed of incentive pay. Each hypothesis predicts that as boards' information gathering behavior increases, the level of CEO pay composed of incentive pay decreases.

Hypothesis 6d examines the relationship between the frequency of interaction and the amount of CEO compensation composed of incentive pay. Hypothesis 6d states that the more frequently the board interacts, the smaller the percentage of CEO compensation that will be composed of incentive pay. Contrary to expectations, the higher the level of board interaction, the greater the percentage of CEO compensation composed of long term, nonguaranteed pay such as stock options ($\beta = .332$, $p < .001$). Thus, hypothesis 6d was not supported. It is also interesting to note that only the number of meetings held was significantly related to CEO pay. The number of committees was not significantly related to CEO compensation.

The other four hypotheses, which examined the impact of boards' usage of information sources, the quality of boards' information, and board proactiveness on CEO compensation, were not significant. Thus, hypotheses 6a, 6b, and 6c were not supported.

Table 8.

The relationship between board information gathering behavior and CEO compensation: Hypotheses 6a, 6b, 6c, 6d

	Controls	Full Model
	β	β
Duality	-.110	-.104
Sales	.541***	.473***
5 Year Avg. of ROA	-.140*	-.133*
Industry Control Variable 1	.046	-.005
Industry Control Variable 2	.104	.060
Usage of Information Sources		-.040
Quality of Information		.080
Board Proactiveness		-.018
Number of Meetings		.332***
Number of Committees		.007
F Value	12.082***	9.391***
Adjusted R^2	.304	.414

Dependent Variable = % of CEO pay at risk
†p<.1;*p<.05; **p<.01;***p<.001

Hypotheses 7a, 7b, 7c, and 7d

These hypotheses examine the relationship between boards' information gathering behavior and the degree of formalization that exists between the board and the CEO. Each of these hypotheses predicts that as the quality of boards' information gathering behavior increases, the need for formalized rules and regulations will decrease. Although none of the four hypotheses were supported, the results are significant in the opposite direction from that which was expected.

Hypothesis 7a states that as boards' usage of information sources increases, the degree of formalization between boards and CEOs will decrease. As Table 9 indicates, boards' usage of different information sources is positively related to the degree of formalization in the board/CEO relationship. Hypothesis 7a is therefore not supported.

Hypotheses 7b examines the relationship between the quality of information possessed by the board and the degree of formalization between the CEO and the board. This hypothesis states that as the quality of information increases, the degree of formalization between boards and CEOs will decrease. This relationship is marginally significant ($\beta = .120$, $p < .10$), and contrary to expectations, the relationship between quality of board information and board/CEO formalization is positive. This suggests that boards with higher quality information develop more rules and regulations to govern CEO behavior.

Similarly, hypothesis 7c states that as the board becomes increasingly proactive in gathering information, the degree of formalization will decrease. Although the findings for this hypothesis are significant ($\beta = .195$, $p < .01$), the relationship between these variables is positive. This indicates that more proactive boards put more rules and regulations in place to govern the behavior of CEOs. Thus, hypothesis 7c is not supported.

Finally, hypothesis 7d examines the relationship between the frequency of board interaction and the degree of formalization in the board/CEO relationship. As mentioned earlier, this study follows Eisenhardt's (1989) suggestion and measures frequency of interaction as both the number of meetings held by the board and the number of committees formed by the board. The number of meetings was not significantly related to formalization. The second measure of board interaction, the number of committees formed by the board, is significantly related to formalization, however, the relationship between these variables is in the direction opposite of that which was predicted. Thus, hypothesis 7d was not supported using either measure of frequency of interaction.

Taken together, hypotheses 7a, 7b, 7c, and 7d indicate that as boards' information gathering behavior increases, boards will also increase the degree of formalization governing CEO behavior. While this is contrary to agency theory predictions, it is an interesting finding and will be discussed further in the following chapter.

Table 9.

The relationship between board information gathering behavior and degree of formalization: Hypotheses 7a, 7b, 7c, 7d

	Controls	Full Model
	β	β
Duality	.028	.027
Sales	.304***	.096
5 Year Avg. of ROA	-.149†	-.095
Industry Control Variable 1	.226**	.158†
Industry Control Variable 2	-.024	-.060
Usage of Information Sources		.172*
Quality of Information		.120†
Board Proactiveness		.195**
Number of Meetings		.055
Number of Committees		.157*
F Value	4.195**	4.632***
Adjusted R^2	.100	.203

Dependent Variable = Degree of Formalization
†p<.1;*p<.05; **p<.01;***p<.001

Table 10.

Summary of Hypotheses and Results

Hyp	Independent Variable	Dependent Variable	Hypothesized Relationship	Finding
1a.	% of outsiders on board	# of sources	Positive	None
1b.	% of outsiders on board	Quality of info	Positive	Positive
1c.	% of outsiders on board	Board proactiveness	Positive	None
1d.	% of outsiders on board	Frequency of interaction	Positive	Positive
2a.	% of existing directors	# of sources	Positive	Negative
2b.	% of existing directors	Quality of info	Positive	None
2c.	% of existing directors	Board proactiveness	Positive	Negative
2d.	% of existing directors	Frequency of interaction	Positive	Positive
3a.	Outsider tenure	# of sources	Positive	None
3b.	Outsider tenure	Quality of info	Positive	None
3c.	Outsider tenure	Board proactiveness	Positive	None
3d.	Outsider tenure	Frequency of interaction	Positive	None
4a.	Outsider stock holding	# of sources	Positive	None
4b.	Outsider stock holding	Quality of info	Positive	None
4c.	Outsider stock holding	Board proactiveness	Positive	Positive
4d.	Outsider stock holding	Frequency of interaction	Positive	None
5a.	Institutional Investor %	# of sources	Negative	None
5b.	Institutional Investor %	Quality of info	Negative	None
5c.	Institutional Investor %	Board proactiveness	Negative	None
5d.	Institutional Investor %	Frequency of interaction	Negative	None
6a.	# of sources	% of pay at risk	Negative	None
6b.	Quality of info	% of pay at risk	Negative	None
6c.	Board proactiveness	% of pay at risk	Negative	None
6d.	Frequency of interaction	% of pay at risk	Negative	Positive
7a.	# of sources	Degree of Formalization	Negative	Positive
7b.	Quality of info	Degree of Formalization	Negative	Positive
7c.	Board proactiveness	Degree of Formalization	Negative	Positive
7d.	Frequency of interaction	Degree of Formalization	Negative	Positive

CHAPTER FIVE

DISCUSSION AND CONCLUSION

Agency theory is the dominant paradigm in corporate governance research (Finkelstein and Hambrick 1996). According to agency theory, information asymmetry is a primary reason that boards of directors are unable to fulfill their duties to stockholders (Jensen and Meckling 1976; Fama 1980). Although agency theory and the concept of information asymmetry are well known, no study to date has directly examined the role that information plays in corporate governance. In fact, scholars have noted that the impact of information on corporate governance is as an area that needs to be examined (Eisenhardt 1989).

This study addresses this important topic by specifically examining the information gathering behaviors of boards. In particular, this study examines how traditional proxy measures of board effectiveness such as outsider ratio, outsider tenure, outsider stock ownership, and institutional stock ownership impact boards' information gathering behaviors. In addition, this study breaks new ground by examining the relationship between boards' information gathering behaviors and the control mechanisms used to influence CEO behavior.

As indicated in Chapter 4, only two of the hypothesized relationships were supported. Although the majority of the hypotheses were not supported, there are a number of significant and interesting findings related to information and corporate governance that were in the opposite direction than was expected. It should be noted that the strength of the relationship between size and nearly every dependent variable provides additional evidence that the results are valid. This chapter reviews the major findings of this study and addresses the limitations of the research and its implications for practitioners and future researchers.

Hypotheses 1a, 2a, 3a, 4a, and 5a

This set of hypotheses examines the relationship between several widely used proxy measures of board effectiveness and boards' usage of information sources. According to agency theory, directors that are outsiders, have relatively long tenure in the organization, and/or own large amounts of stock are considered to be relatively independent of the CEO and are therefore considered more likely to monitor and discipline the chief executive. In addition, the presence of an institutional investor is thought to increase the vigilance and strategic involvement of the board. Of these five hypotheses, only hypothesis 2a, which examined the percentage of outside directors appointed to the board before the CEO took office, was significant. Unexpectedly, the relationship between the two variables was negative. Thus, boards with a large number of long standing directors use a smaller set of information sources, and may not take advantage of the wide variety of information sources available to them.

While this finding is contrary to the original hypothesis developed in this study, there is some precedence to explain the finding. Hambrick and Fukutomi (1991) indicate that executive behavior changes over time, and that long tenured CEOs may eventually become locked into established patterns of behavior which eventually result in poor organizational performance. Although this study was conceptual, the authors suggest that part of the reason CEOs become poor managers is that at the end of their careers they tend to focus on a few, highly filtered sources of information. Finkelstein and Hambrick (1990) made similar arguments when examining executive's level of strategic persistence over time. They found that executives with long tenures become increasingly committed to their chosen course of action, and will resist attempts to deviate from their established strategies. In a separate study, Miller (1991) found that CEOs tend to become "stale in the saddle" as tenure increases and have a tendency to adhere to existing strategies even when performance begins to deteriorate.

Although none of this earlier work focused on boards of directors, the findings of this study indicate that a similar process may occur with director tenure. Board members that have been in their position for many years appear to develop a small set of information sources that have proven useful to them over the course of their tenure on the board. Thus, even though directors that were elected to the board prior to the election of the CEO may be more independent of the CEO than newer members, they may not take advantage of the numerous sources of information available to them. This is particularly interesting given the development of powerful information technologies that are now available to these board members. Although no scholarly research exists examining boards' usage of IT, a number of practitioner articles indicate that these newly developed technologies can be an important source of information for directors (Nussbaum 1998; Parmenter 2000). This study's findings are important because they indicate that directors that have been in their position for long periods of time are unlikely to take advantage of such sources of information.

Hypotheses 1b, 2b, 3b, 4b, and 5b

These hypotheses examined the relationship between traditional proxy measures of board effectiveness and the quality of information possessed by the board. Hypothesis 2a, which examined the relationship between the percentage of outsiders on a firm's board and the quality of information possessed by the board, was significant and was in the direction that was expected. Thus, hypothesis 2a was supported.

This finding is interesting because it is one of two hypotheses that received support in this study. This finding is in accordance with agency theory predictions. Outside directors are not reliant on the firm as their source of employment and are therefore considered to be more likely to monitor and discipline the CEO and become involved in strategy formulation (Zahra and Pearce 1989; Johnson, Daily, and Ellstrand 1996). Agency theory indicates that to effectively carry out their duties, boards must overcome the information asymmetry that typically characterizes the board/CEO relationship. The results of this study support agency predictions by finding that the more outsiders that serve on a board, the better the quality of information gathered will be.

It is also possible that boards with large number of outsiders gather higher quality information because outside directors are less knowledgeable about their firm's operations and therefore need more information in order to become involved in the administration of the firm. The difficulty outsiders have in becoming knowledgeable about their firm's operations has been noted as a reason that inside directors may be better able to review the strategy of their organizations (Finkelstein and Hambrick, 1996).

It is important to note, however, that the other four hypotheses examining the quality of boards' information were not significant. This is somewhat surprising because the same agency theory logic used to develop hypothesis 2b also applies to each of these hypotheses. The results do indicate that larger firms tend to gather higher quality information and that there are differences between firms based on industry membership as well. Although no hypotheses were developed regarding size or industry membership, it is possible that larger firms may have more sophisticated and established information gathering mechanisms that generate higher quality information. In addition, the need to gather quality information may be more important in industries that are rapidly changing compared with industries that are relatively stable.

Hypotheses 1c, 2c, 3c, 4c, and 5c

The regression models were not significant for these hypotheses, and as a result it is difficult to interpret any relationships between the proxy measures and board proactiveness. Interestingly, even firm sales, which is positively related to the dependent variable in almost every other regression model, is not significantly related to board proactiveness.

While it is difficult to assess the reasons behind the lack of findings for board proactiveness, several possibilities are worth noting. First, it is possible that board and investor characteristics are not important determinants of the extent to which boards are proactive in gathering information. Although this study included a variety of control variables, perhaps there are other environmental contingencies that impact boards' levels of proactiveness. Second, it is also possible that the measure developed in this study to assess board proactiveness was problematic. The reliability coefficient for the three proactiveness items was above .60, a cutoff which has been suggested for exploratory research (Hair, Anderson, Tatham, and Black 1998), however, this level of reliability indicates that there is a notable amount of unexplained error associated with the measure. This is perhaps indicated by the adjusted R-squared for the overall regression model, which shows that the control and independent variables in the regression equation only account for about 1% of the variance in proactiveness.

Hypotheses 1d, 2d, 3d, 4d, and 5d

Each of these hypotheses is concerned with the relationship between traditional proxy measures of board effectiveness and the frequency of board interaction. As indicated earlier, frequency of interaction was assessed by examining both the number of meetings held by the board and the number of committees formed by the board (Eisenhardt 1989). The regression models examining the number of board meetings were not significant. As a result, it is difficult to interpret the individual relationships between variables. It is interesting to note, however, that had the overall model been significant, hypothesis 1d would have been supported. It is also interesting that firm performance had no relationship with the number of meetings held by the board. Conventional wisdom suggests that poor firm performance would spur boards to meet more frequently, however, the findings of this study indicate that there is no relationship between these variables.

The regression model examining the impact of the traditional corporate governance variables and the number of committees formed by the board of directors is significant and provides an interesting finding. The percentage of outside directors elected to the board prior to the appointment of the CEO is positively related to the number of committees formed by the board, suggesting that boards with long standing outside directors tend to interact more frequently. This is consistent with agency theory predictions, and therefore provides support for hypothesis 2d.

It is important to note that the size of the firm has a major impact on the number of committees formed by the board. This seems logical since larger firms are typically more complex and have more sophisticated structures. This appears to be true of boards of directors as well, as the boards of larger firms tend to create more committees to help govern the firm. The fact that the relationship between outside directors and number of committees was significant despite the strong relationship with sales provides additional evidence that the findings are valid.

It is also interesting to note that by examining the correlation matrix, there does not appear to be a direct relationship between the number of meetings held by a board and the number of committees formed. As mentioned earlier, Eisenhardt (1989) suggests that both measures can be utilized to represent frequency of board interaction. This study indicates that there does not appear to be a simple relationship between these two variables. An interesting area of future research may be to examine the connection underlying these two measures.

Hypotheses 6a, 6b, 6c, and 6d

These hypotheses examine the impact of boards' information gathering behavior on the CEO's compensation contract. More specifically, these hypotheses state that as boards' information gathering behavior increases, the amount of CEO pay composed of performance incentives will decrease. Contrary to expectations, the relationship between the number of meetings held by the board of directors and the amount of CEO compensation composed of incentive pay was positive. Thus, as boards meet and exchange information more frequently, they increasingly rely on incentive pay to ensure CEOs are motivated to maximize firm performance. Thus the findings are contrary to hypothesis 6d, which states that as the frequency of board interaction increases, the amount of CEO pay at risk will decrease.

This is an interesting finding because agency theory predicts a negative relationship between these variables. From an agency perspective, executive compensation is used as a mechanism to align the interests of stockholders and CEOs (Jensen and Murphy 1990; Walsh and Seward 1990; Tosi and Gomez-Mejia 1994). Interests are aligned when large percentages of CEO pay consist of incentives that are tied to firm performance. As information asymmetry is reduced, agency theory suggests that boards will rely less on incentive pay and will instead pay CEOs based directly on their behavior. This study indicates that this is not always the case. As boards increase their frequency of interaction, they also increase the amount of CEO pay composed of performance incentives.

Hypotheses 7a, 7b, 7c, and 7d

These hypotheses examine the relationship between boards' information gathering behavior and the degree of formalization that exists in the board/CEO relationship. These hypotheses provide the most interesting findings in this study. With the exception of the number of board meetings, every other information gathering behavior is significantly related to formalization, with the quality of information only marginally significant.

Although each relationship is significant, they are all in the opposite direction than expected. The hypotheses stated that as boards gathered increasing amounts of information, the need for rules and regulations governing CEO behavior would decrease. The findings of this study indicate that exactly the opposite case appears to be true.

The potential reasons behind these findings are interesting to consider. Agency theory indicates that boards implement CEO controls because they lack the information necessary to adequately assess executive behavior. Thus, according to agency theory, boards implement highly formalized rules and procedures as a substitute for information about the behavior of the CEO. In other words, boards have difficulty monitoring CEO behavior and therefore must develop rules to prevent the chief executives from abusing their power.

The findings of this study indicate that this may not always be the case. In this study, boards that engage heavily in information gathering behaviors also implement a highly formalized relationship to govern executive behavior. Thus, instead of substituting rules for information, boards that actively gather information also limit the ability of CEOs' to operate independently by putting in place a number of rules and policies.

One reason for this finding may be that boards' information gathering behavior and boards' implementation of CEO controls are both associated with board effectiveness. In other words, boards that are effective will take several steps to carry out their duties. They will use many different information sources, gather quality information, be proactive, and interact frequently, and they will also establish a body of rules and regulations concerning the behavior of the CEO. While this is not consistent with agency theory predictions, it appears that boards will not loosen the controls placed on CEOs simply because they have increased the amount of information they possess. The findings of this set of hypotheses is also consistent with hypothesis 6d, which found that boards that meet frequently tie large percentages of CEO pay to firm performance. Taken together, these results indicate that possession of information is no substitute for other CEO control mechanisms. Thus, board effectiveness appears to be manifested in a variety of ways.

Post hoc analyses

Due to the large number of hypotheses that were not supported, several post hoc analyses were performed in order to further explore the relationships that exist between the variables included in this study. First, the interactions between independent variables were examined in order to assess whether the combined effects of variables are related to board behavior. Each of the seven regression models were rerun with the interactions of the independent variables included. No consistent pattern emerged from these regressions. Although a few isolated interaction variables were significantly related to dependent variables, the vast majority were not significant and did not increase the quality of the overall regression models.

Second, the possibility of curvilinear relationships was examined by squaring the values of the independent variables. Similar to the regression models examining interaction effects, there were no consistent findings associated with these variables. In fact, not one squared variable was significantly related to a dependent variable. Thus, these post hoc analyses did not shed much light on the reasons for the lack of findings in this study.

Third, the relationships between the traditional proxy measures of board vigilance and the CEO control mechanisms were examined. Many previous studies have found relationships between these two sets of variables, and it is interesting to attempt to replicate these earlier findings. The results of these regression analyses are listed in the tables below. Consistent with prior research, the relationship between the percentage of outsiders and the degree of formalization is significant and positive. This indicates that the more outsiders on a board, the more rules and regulations imposed on the CEO. Given that the data in this study replicates earlier results, this finding provides some evidence that the somewhat surprising findings related to the hypotheses are valid.

Table 11.

The relationship between the traditional proxy measures of board vigilance and CEO pay

	Controls	Full Model
	β	β
Duality	-.118†	-.117†
Sales	.554***	.553***
5 Year Avg. of ROA	-.155*	-.147*
Industry Control Variable 1	.072	.061
Industry Control Variable 2	.129†	.135†
% of outside directors on board		.096
% of outsiders elected before CEO		..075
Relative tenure of outside directors		.101†
Outsider stock ownership		.019
% of institutional stock ownership		-.089
F Value	12.625***	6.772***
Adjusted R^2	.294	.292

Dependent Variable = % of CEO pay at risk
†p<.1;*p<.05; **p<.01;***p<.001

Table 12.

The relationship between the traditional proxy measures of board vigilance and the degree of formalization

	Controls	Full Model
	β	β
Duality	.029	.028
Sales	.290***	.233***
5 Year Avg. of ROA	-.141†	-.139†
Industry Control Variable 1	.216**	.234*
Industry Control Variable 2	-.056	-.052
% of outside directors on board		.142*
% of outsiders elected before CEO		-.009
Relative tenure of outside directors		-.068
Outsider stock ownership		.015
% of institutional stock ownership		.079
F Value	3.859**	2.377*
Adjusted R^2	.093	.090

Dependent Variable = Degree of Formalization
†p<.1;*p<.05; **p<.01;***p<.001

Limitations of the study

As is the case with all research, this study has several limitations. One limitation of this research stems from one of its strengths: It is one of the first studies to directly examine the information gathering behavior of boards of directors. As such, the measures used to assess board behavior are newly developed. The survey items assessing the quality of board information, board proactiveness, and formalization constructs were taken from earlier studies that focused on CEOs or other organizational members, and therefore had to be adapted to fit boards of directors. Not surprisingly, a number of these items turned out to be poor measures of their relevant constructs and were dropped from the analysis. Even after these problematic items were removed, the reliability of the items measuring the proactiveness and formalization constructs did not exceed .70, a common cutoff used to assess reliability. The lack of established measures for board information gathering behavior, and the resulting need to develop new measures, may be part of the reason that the findings of this study were not as consistent as expected.

Another limitation of this study is the cross sectional nature of the research design. It is likely that boards' information gathering behavior changes as new contingencies arise. Although the cross sectional nature of this dissertation allows for the examination of relationships concerning board behavior at one point in time, it does not allow the examination of how these behaviors change over time. It is therefore difficult to indicate cause and effect between constructs.

Finally, the response rate in this study is a limitation. Although a 25% response rate is relatively high in comparison with many other corporate governance studies, there are still a large number of organizations that did not participate in the study. A higher return rate would increase the generalizability of the findings and provide additional evidence regarding the validity of the survey instrument.

Implications for practice

Considering that this study is one of the first to examine board behavior, and is therefore somewhat exploratory in nature, any implications for practitioners should be interpreted with caution. Perhaps the most interesting finding of this study is that information does not appear to be a substitute for other forms of board vigilance. For example, much of the theory regarding boards indicates that boards utilize CEO control mechanisms such as CEO pay because they lack the information necessary to directly assess CEO behavior. The findings of this study, however, indicate that boards tie large portions of CEO pay to incentives even when they possess a great deal of information.

These results suggest that boards engage in a number of behaviors in order to govern their organizations. The boards in this study that used many different sources, were proactive information gatherers, collected high quality information, and interacted frequently still tied CEO pay to firm performance and limited the decision making authority of the chief executive. This suggests that information is not necessarily a substitute for CEO controls, and that boards take a variety of actions to carry out their duties to stockholders.

This study also has an implication for the structuring of boards. Similar to the articles noted earlier that examined CEO tenure, this dissertation indicates that board members may become locked into set patterns as their tenure on the board increases. Thus, even though most experts agree that outside directors with relatively long tenures are more likely to monitor and discipline the CEO, these long standing members of the board may tend to be less active than newer directors.

Implications for future research

This study suggests that directly examining the behavior of boards of directors has great promise as an area for future research. To date, most scholarly research has focused on structural characteristics such as the proportion of outsiders that serve on a firm's board in order to assess the effectiveness of that organization's governance. As a result, relatively little is known about the processes boards go through to effectively govern organizations. In fact, the large number of findings in this study that were not significant may in part be a result of the lack of scholarly research on board behavior.

Although the majority of the findings in this study are contradictory to expectations, there is support for the idea that information plays an important role in corporate governance. Additional research on this topic would shed light on these relationships by examining other types of information related behaviors. In addition, future research on this topic may result in the refinement of the measurements developed in this study.

Given the recent development of powerful information technologies that allow executives to readily analyze vast amounts of information, it would be interesting to examine whether these new sources of information are being utilized by directors. If these new technologies are capable of providing firms with a competitive advantage over rival firms, it seems plausible that they would also be useful to boards in carrying out their governance responsibilities. The finding in this study that directors with long tenures tend to focus on a few established sources of information also raises an interesting research question. Are there relationships between directors' characteristics and the likelihood that they will utilize these newly developed technologies? Future research is needed to address these questions.

Finally, it would be interesting to examine the relationship between board behavior and firm performance. One area of research could focus on the impact that past organizational performance has on the behavior of boards. Prior research indicates that boards modify their level of strategic involvement as performance changes (Johnson, Daily, and Ellstrand 1996), but no study to date has begun to assess the actual behaviors triggered by firm performance. Another interesting research opportunity would be to examine the impact that board behavior has on future performance. It would be worthwhile to investigate whether board behavior has an impact on the overall performance of the organization. While corporate governance scholars assume that there is a connection between boards and firm performance, the relationships are not well understood.

Conclusion

This study is notable because it breaks new ground in corporate governance research by examining the actual behaviors exhibited by boards. As has been noted throughout this dissertation, prior governance studies have relied almost exclusively upon proxy measures to assess the extent to which boards are effective. While these studies have been informative and have had a major impact on the way boards are structured, there is a strong need for research that gets inside the black box of board functioning. Although many of the hypotheses in this dissertation were not supported, there are enough findings to draw some interesting conclusions regarding the role of information in corporate governance.

The first five hypotheses examining the relationship between the traditional corporate governance proxy measures and boards' information gathering behavior are notable due to their lack of support. These proxy measures have been used in hundreds of studies and are generally utilized as surrogates for board behaviors. The majority of these studies employ an agency logic, and therefore assume that boards with certain structural characteristics, such as large percentages of outsiders, will exhibit the types of information gathering behaviors assessed in this study. The results of this dissertation are important because they indicate that the relationship between these widely used proxy measures and board behavior may not be as clear as widely believed. It is possible that certain types of boards are more effective than others, but it is not yet clear what behaviors are associated with board effectiveness. Thus, this study indicates that more research is needed into the relationship between board structure and board behavior.

The findings related to the second set of hypotheses are also interesting. These results indicate that agency theory's predictions regarding the role of information in corporate governance may not always hold. It appears that rather than substituting information for CEO control mechanisms, as agency theory predicts, boards that actively gather information also increasingly rely on CEO pay and formalization in order to limit the discretion of executives. This is contrary to agency theory's predictions, and indicates that further research is needed to fully understand the complex relationships between information related behaviors and the CEO control mechanisms employed by boards.

Overall, this dissertation suggests that information plays a key role in the governance of today's organizations. While the majority of the findings in this study were contrary to agency theory's predictions, it is apparent that boards' information related behavior impacts how directors carry out their duties. However, these relationships appear to be more complex than previously thought. As a result, this study should serve as an initial foray into an important and interesting research area.

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APPENDICES

Appendix A: Introductory Letter

October 31, 2001

Name
Title
Firm
Address
City, State, Zip

Dear :

I am a fifth year doctoral student at the University of Georgia. I am currently completing work on my dissertation, which examines the information gathering behavior of boards of directors. As the Chairperson of your firm, I am asking for your help in completing a short survey related to the functioning of your board.

If you agree to participate, all you need to do is complete the brief survey that is attached to this letter. This should take no more than five minutes, and would help to further academic research on corporate governance.

Your answers will only be seen by me and will be kept strictly confidential. If you are interested in the results of the study, I will be glad to send you a copy of any research papers that stem from the administration of this survey.

Again, I hope that you will choose to participate in this study. If you have any questions, you can contact me at (706) 546-4758 or at m_ruther@bellsouth.net.

Sincerely,

Matthew A. Rutherford
Ph.D. Candidate
University of Georgia

Appendix B: Follow-up Letter

January 24, 2002

Name
Title
Firm
Address
City, State, Zip

Dear . :

I am a fifth year doctoral student at the University of Georgia, and am completing work on my dissertation, which examines the role of information in corporate governance. I am writing to follow up on the survey I sent to you about a month ago. To date, over 100 Chairmen and CEOs have responded. As a result of the large number of participants, this study promises to generate some very interesting findings.

I am writing to ask you to participate in this study by completing the short survey attached to this letter. This should take than a few minutes, and would help to further academic research on corporate governance.

Your answers will be by me and will be kept strictly confidential. If you are interested in the results of the study, I will be glad to send you a copy of the summarized results, which will preserve the confidentiality of all participants.

Again, I hope that you will choose to participate in this study. If you have any questions, please contact me at (706) 546-4758 or at m_ruther@bellsouth.net.

Sincerely,

Matthew A. Rutherford
Ph.D. Candidate
University of Georgia

Appendix C: Survey

To what extent does the board use the following sources of information?

	Not at all						To a great extent
Board Reports	1	2	3	4	5	6	7
Other reports generated by your firm	1	2	3	4	5	6	7
Executives in your firm	1	2	3	4	5	6	7
Other members of your firm's board	1	2	3	4	5	6	7
Executives from other firms	1	2	3	4	5	6	7
Directors from other firms	1	2	3	4	5	6	7
The Internet	1	2	3	4	5	6	7
The board's support staff	1	2	3	4	5	6	7
Consultants hired by the board	1	2	3	4	5	6	7
The popular press (newspapers and magazines)	1	2	3	4	5	6	7
Other sources of information	1	2	3	4	5	6	7

Please indicate the extent to which you agree that the following statements describe the situation facing your board of directors.

	Strongly disagree						strongly agree
Item 1. The CEO relies on formal policies as a guide when making decisions	1	2	3	4	5	6	7
Item 2. In general, the information available to the board is very reliable	1	2	3	4	5	6	7
Item 3. The information available to the board is accessible when needed, not at some later time	1	2	3	4	5	6	7
Item 4. The board explicitly reviews the CEO's performance	1	2	3	4	5	6	7
Item 5. The board spends a great deal of time searching for information about issues facing the board	1	2	3	4	5	6	7
Item 6. It is necessary to go back and check on the accuracy of the information the board receives	1	2	3	4	5	6	7
Item 7. The CEO must receive approval from the board when making major decisions	1	2	3	4	5	6	7
Item 8. The available information is relevant to the board's needs	1	2	3	4	5	6	7
Item 9. The CEO makes his or her own rules on the job	1	2	3	4	5	6	7
Board members actively search for information in order to address issues before the board	1	2	3	4	5	6	7
Item 10. Board members make decisions based on the information provided to them without requesting additional information	1	2	3	4	5	6	7
Item 11. The information available is very useful in assessing organizational issues	1	2	3	4	5	6	7
Item 12. There are a large number of rules and regulations governing the conduct of the CEO	1	2	3	4	5	6	7
Item 13. The available information is just what the board needs to make effective decisions	1	2	3	4	5	6	7
Item 14. At a typical board meeting, the board actively probes for information necessary to carry out their duties	1	2	3	4	5	6	7
Item 15. The board exerts a great amount of influence on the CEO as to the strategic direction of the company	1	2	3	4	5	6	7
Item 16. The board receives information in a timely fashion	1	2	3	4	5	6	7
Item 17. There are formal policies and boundaries relative to the decision-making authority of the CEO	1	2	3	4	5	6	7

Thank you for your participation! Please provide any comments on the back of this form.

Appendix D: Constructs and Items

To what extent does the board use the following sources of information?

Board Reports	1	2	3	4	5	6	7
Other reports generated by your firm	1	2	3	4	5	6	7
Executives in your firm	1	2	3	4	5	6	7
Other members of your firm's board	1	2	3	4	5	6	7
Executives from other firms	1	2	3	4	5	6	7
Directors from other firms	1	2	3	4	5	6	7
The Internet	1	2	3	4	5	6	7
The board's support staff	1	2	3	4	5	6	7
Consultants hired by the board	1	2	3	4	5	6	7
The popular press (newspapers and magazines)	1	2	3	4	5	6	7
Other sources of information	1	2	3	4	5	6	7

Formalization

The CEO relies on formal policies as a guide when making decisions	1	2	3	4	5	6	7
The board explicitly reviews the CEO's performance	1	2	3	4	5	6	7
The CEO must receive approval from the board when making major decisions	1	2	3	4	5	6	7
The CEO makes his or her own rules on the job (R)	1	2	3	4	5	6	7
There are a large number of rules and regulations governing the conduct of the CEO	1	2	3	4	5	6	7
The board exerts a great amount of influence on the CEO as to the strategic direction of the company	1	2	3	4	5	6	7
There are formal policies and boundaries relative to the decision-making authority of the CEO	1	2	3	4	5	6	7

Quality of Info

In general, the information available to the board is very reliable(Reliabl)	1	2	3	4	5	6	7
The information available to the board is accessible when needed, not at some later time (Timeliness)	1	2	3	4	5	6	7
It is necessary to go back and check on the accuracy of the information the board receives (Accuracy) (R)	1	2	3	4	5	6	7
The available information is relevant to the board's needs (Relevance)	1	2	3	4	5	6	7
The board receives information in a timely fashion	1	2	3	4	5	6	7
The information available is very useful in assessing organizational issues	1	2	3	4	5	6	7
The available information is just what the board needs to make effective decisions	1	2	3	4	5	6	7

Proactiveness

The board spends a great deal of time searching for information about issues facing the board	1	2	3	4	5	6	7
Board members actively search for information in order to address issues before the board	1	2	3	4	5	6	7
Board members make decisions based on the information provided to them without requesting additional information (R)	1	2	3	4	5	6	7
At a typical board meeting, the board actively probes for information necessary to carry out their duties	1	2	3	4	5	6	7

Appendix E: Content Analysis

Instructions: Please read the three construct definitions closely. Next, read each statement and decide which construct the item best represents. Finally, please put the number of the construct in the box to the right of the statement. It is not necessary to match an equal amount of items to each construct

Constructs:

1. **Information Quality**: Information quality refers to the extent to which the information a decision maker possesses is accurate, timely, relevant, reliable and useful.
2. **Proactive Information Seeking**: Boards that are proactive will independently seek out new information rather than relying solely upon that which is provided to them
3. **Formalization of the board/CEO relationship**: Formalization refers to the degree to which a formal, structured relationship exists between boards of directors and CEOs. In a highly formalized relationship, CEOs have little flexibility in their decision making, and a large number of rules and policies govern CEO's actions. In addition, when a highly formalized relationship exists, boards exercise a great deal of influence over the CEO.
4. **Other**: The statement does not represent any of the constructs.

	Construct #
The CEO relies on formal policies as a guide when making decisions	
In general, the information available to the board is very reliable	
The information available to the board is accessible when needed, not at some later time	
The board explicitly reviews the CEO's performance	
The board spends a great deal of time searching for information about issues facing the board	
It is necessary to go back and check on the accuracy of the information the board receives	
The CEO must receive approval from the board when making major decisions	
The available information is relevant to the board's needs	
The CEO makes his or her own rules on the job	
Board members actively search for information in order to address issues before the board	
Board members make decisions based on the information provided to them without requesting additional information	
The information available is very useful in assessing organizational issues	
There are a large number of rules and regulations governing the conduct of the CEO	
The available information is just what the board needs to make effective decisions	
At a typical board meeting, the board actively probes for information necessary to carry out their duties	
The board exerts a great amount of influence on the CEO as to the strategic direction of the company	
The board receives information in a timely fashion	
There are formal policies and boundaries relative to the decision-making authority of the CEO	

Appendix F: Descriptive Statistics

Variable	Mean	Std. Deviation
1.Duality	.76	.431
2.% Outsiders	.695	.175
3.Outsider Tenure	1.603	2.374
4.Outsider Stock	.050	.107
5.Inst. Stock	.187	.178
6.Log of # of Meetings	1.826	.445
7.# of Committees	2.98	1.309
8.5 Year ROA	-5.116	59.069
9.Quality	5.819	.814
10.Proactiveness	3.855	1.107
11.Log of Sales	18.44	2.499
12.Formalization	4.501	1.220
13.Industry 1	.451	.499
14.Industry 2	.146	.354
15.CEO pay	.415	.307
16.# old directors	.409	.367
17.# of sources	40.972	8.731

Appendix G: Deleted Items Resulting From Factor Analysis

Formalization

The CEO relies on formal policies as a guide when making decisions	1	2	3	4	5	6	7
The board explicitly reviews the CEO's performance	1	2	3	4	5	6	7
The CEO must receive approval from the board when making major decisions	1	2	3	4	5	6	7
The CEO makes his or her own rules on the job	1	2	3	4	5	6	7
There are a large number of rules and regulations governing the conduct of the CEO	1	2	3	4	5	6	7
The board exerts a great amount of influence on the CEO as to the strategic direction of the company	1	2	3	4	5	6	7
There are formal policies and boundaries relative to the decision-making authority of the CEO	1	2	3	4	5	6	7

Quality of Info

In general, the information available to the board is very reliable	1	2	3	4	5	6	7
The information available to the board is accessible when needed, not at some later time	1	2	3	4	5	6	7
It is necessary to go back and check on the accuracy of the information the board receives	1	2	3	4	5	6	7
The available information is relevant to the board's needs	1	2	3	4	5	6	7
The board receives information in a timely fashion	1	2	3	4	5	6	7
The information available is very useful in assessing organizational issues	1	2	3	4	5	6	7
The available information is just what the board needs to make effective decisions	1	2	3	4	5	6	7

Proactiveness

The board spends a great deal of time searching for information about issues facing the board	1	2	3	4	5	6	7
Board members actively search for information in order to address issues before the board	1	2	3	4	5	6	7
Board members make decisions based on the information provided to them without requesting additional information	1	2	3	4	5	6	7
At a typical board meeting, the board actively probes for information necessary to carry out their duties	1	2	3	4	5	6	7

Note: Deleted Items are shaded.

Appendix H.
Correlation Matrix

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1.Duality																
2.% Outsiders	.009															
3.Outsider Tenure	-.030	.090														
4.Outsider Stock	-.015	.005	.092													
5.Inst. Stock	-.042	.165*	.003	-.038												
6.# Meetings	-.044	.212*	.010	-.045	.094											
7.# Committees	.028	.270**	.126	-.110	.176*	.118										
8.5 Year ROA	-.041	.016	.058	-.088	.074	.036	.070									
9.Quality	.088	.248**	-.037	-.080	.013	.053	.263**	-.053								
10.Proactiveness	.004	-.053	-.138	.087	.097	.148	-.092	-.078	.075							
11.Sales	.027	.389**	.107	-.229**	.212**	.170*	.558**	.185*	.256**	.052						
12.Formalization	.025	.242**	-.002	.003	.111	.152	.271**	-.097	.270**	.269**	.248**					
13.Industry 1	-.039	-.063	.116	.184*	-.075	.046	-.004	.012	.117	.062	-.132	.200*				
14.Industry 2	.051	-.002	-.073	.050	.058	.101	-.009	.093	.062	.021	.102	-.114	-.375**			
15.CEO pay	-.095	.265**	.132	-.057	.043	.415**	.308**	-.028	.214**	.061	.522**	-.198*	-.060	.142		
16.# old directors	-.014	.166*	.446**	-.023	.044	.033	.319**	.149	.061	-.160	.288**	.043	.016	-.048	.146	
17.# of sources	.046	.210*	.041	-.006	.128	.105	.287**	-.015	.237**	.325**	.347**	.342**	.006	.028	.182*	-.039

N=145
*p<.05;**p<.01