LARGE SHAREHOLDER TURNOVER AND CEO COMPENSATION

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Abstract

The corporate governance literature generally assumes that shareholders' incentives to monitor management depend on how much of the firm the shareholders own. Specifically, large shareholders have a strong incentive to monitor management while shareholders who own a small number of shares have proportionally little incentive to monitor. This dissertation proposes that another determinant of monitoring incentive is how long large shareholders hold their shares, which can be measured by the turnover rate of their shares. I define large shareholders as outside blockholders with at least 5% ownership stake in the firm, and I use the outside blockholder turnover rate as a measure of the outside blockholders' investment horizons.

Outside blockholders' investment horizons for a firm in which they invest (an investee firm) are likely to depend on the nature of the outside blockholders and the investee firm's characteristics that influence costs and benefits of monitoring management. The outside blockholders' investment horizons, in turn, influence their cost-benefit trade-offs in monitoring management, and thus the extent to which the outside blockholders monitor investee firm management.

To test this assertion, this dissertation addresses two primary issues. First, I examine whether outside blockholders' investment horizons vary across the firms in which they invest, and if so, what determine their investment horizons. Prior studies

measure investor horizons solely based on the investors' average portfolio characteristics. An implicit assumption of this approach is that investors' horizons do not vary across investee firms in their portfolio. My empirical results show that outside blockholders' horizons, as measured by outside blockholder turnover, do vary across investee firms, and that this variation depends on the characteristics of the investee firms. The systematic association in the data further suggests that outside blockholders' horizons vary in ways that reflect outside blockholders' rational responses to their monitoring cost-benefit trade-offs due to investee firm characteristics.

Second, I examine how outside blockholders' horizons are related to the design of the investee firm's CEO compensation. Prior studies on investor horizons argue that shorter horizons of large investors result in limited monitoring by these investors and can lead to higher agency costs in investee firms. The results of this study, however, suggest that those firms do not necessarily suffer higher agency costs. Specifically, I find that investee firms with greater outside blockholder turnover (i.e., shorter-horizon outside blockholders) are likely to design CEO compensation with greater pay-performance sensitivity and a higher level of CEO compensation. Further, the greater pay-performance sensitivity is primarily due to option-based incentives but not due to cash-based incentives. These results indicate that firms with shorter-horizon outside blockholders use incentive contracting more extensively to counter the potentially weaker monitoring by their outside blockholders.

To summarize, the findings in this dissertation imply first, that large shareholders' monitoring incentives, as reflected by their investment horizons, are determined to a

significant extent by investee firm characteristics. Second, I find that investee firms use CEO incentive contracting as an alternative to shareholder monitoring.

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CHAPTER 1

INTRODUCTION

The separation of ownership and control in a public corporation results in a potential agency problem between the owner who provides capital (shareholder) and the employee manager who runs the corporation on behalf of the owner. Specifically, in the absence of other governance mechanisms, the employee manager can potentially seek to further his self-interest at the expense of the owner's interest (Jensen and Meckling [1976]). Therefore, the effective monitoring of management to mitigate this potential agency conflict in publicly held corporations has long interested various interest groups, such as investors, market intermediaries, regulatory bodies, researchers and other stakeholders.

Monitoring management takes various forms of shareholder activities that are aimed at directly or indirectly influencing the management's decisions. Examples include gathering information about managerial performance, conducting private negotiations with management, publicizing shareholder activism, soliciting shareholder proposals, initiating litigation against the management, and in extreme situations, mounting a proxy contests to replace current management (Del Guercio and Hawkins [1999)]; Shleifer and Vishny [1986]; Bethel, Liebeskind and Opler [1998]).

While these monitoring activities mitigate the agency problem, they also impose costs on the shareholders. Therefore, shareholders' monitoring activities primarily hinge on the cost-benefit trade-offs of these activities (e.g., Grossman and Hart [1980]; Shleifer and Vishny [1986]). Specifically, because monitoring management is costly, shareholders

with small investments in a corporation are unlikely to have the necessary incentive to be active monitors. On the other hand, shareholders with large investments (blockholders) are more likely to find that investing time and effort in monitoring is cost-effective. This implies that with a highly diffused ownership structure where no single owner has a significant amount of ownership interest, shareholders do not have much incentive to actively monitor the managers.

The less shareholders can monitor managers' actions directly, agency theory predicts that the shareholders provide greater motivation to the managers to maximize firm value by tying the managers' pay-off to firm value or to other performance measures (Holmstrom [1979]; Prendergast [2002]). To understand the relation between shareholder monitoring and firms' use of incentives for managers, one stream of research examines how ownership concentration by various types of large investors affects CEO incentives (e.g., Mehran [1995]; Core, Holthausen and Larcker [1999]; Hartzell and Starks [2003]).

This dissertation introduces a measure of large shareholder[1] turnover as a determinant of shareholders' monitoring incentives above and beyond the size of shareholders' stakes in the firm. I then examine how large shareholder turnover helps to explain firms' design of CEO compensation contracts. I define large shareholder turnover as the proportion of total outside block ownership that changes hands annually. This measure reflects outside blockholders' investment horizons that are specific to a firm in which they invest ("investee firm" hereafter).

Outside blockholders' investment horizons for a particular investee firm in their portfolio is likely based on the nature of the outside blockholders and the investee firm's

[1] Following the SEC filing criterion, I define a large shareholder as one who owns at least 5% of a firm's outstanding voting stock. I use the terms 'large shareholders' and 'blockholders' interchangeably.

characteristics. The outside blockholders' investment horizons, in turn, influence their cost-benefit trade-offs in monitoring management, and thus the extent of resources devoted to monitoring the investee firm's management.

To test the above assertion, this dissertation examines two main issues. First, I examine the relation between outside blockholder horizons (as measured by outside blockholder turnover) and investee firm characteristics. This is unlike previous studies that relate investor horizons to the investors' portfolio characteristics (e.g., Bushee [1998]). Second, I examine the extent to which the investee firms' outside blockholder turnover explains their use of CEO incentive compensation, an alternative to shareholder monitoring. When examining the relation between outside blockholder turnover and CEO incentive compensation, I control for the effects of traditional measures of ownership structure (i.e., the level and the concentration of outside block ownership).

Large shareholders (i.e., blockholders) have an information advantage[2] compared to general investors in the market via their better access to the management of investee firms, greater expertise in monitoring and their ability to gather information more efficiently (Shleifer and Vishny [1986]; Kahn and Winton [1998]; Heflin and Shaw [2000]). Large shareholders can use this information advantage in two ways. They can use it to improve the monitoring of managerial performance or to intervene in the management of the investee firm for greater long-term firm value (control benefits).[3]

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[2] When explaining the motivation of Regulation FD (Fair Disclosure) (17 CFR Parts 240, 243 and 249), the SEC expresses its concern about "the selective disclosure of material information by issuers…to securities analysts or selected institutional investors…" Effective October 23, 2000, Regulation FD disallows public corporations' selective disclosure of their material information in favor of a certain group of investors. To the extent that Regulation FD limits block purchases motivated by information advantage, Regulation FD works against my hypotheses that hinge on blockholders' information advantage.

[3] Shareholder intervention can take different forms, including carrying out informal negotiation with the management (Shleifer and Vishny [1986]), soliciting shareholder proposals, initiating adverse publicity (Del Guercio and Hawkins [1999]), mounting a proxy contest (Shleifer and Vishny [1989]), replacing

Alternatively, they can pursue short-term profits from share trading strategies that use their information advantage (trading profits). Improving long-term firm value through monitoring or intervention in management generally takes longer time than exploiting profits through trading on private information. Therefore, investment strategies for control benefits require large shareholders to have longer investment horizons than do investment strategies for trading profits.

Large shareholders' choices of how to exploit their information advantage depend on the relative size of their net-control benefits and net-trading profits (Kahn and Winton [1998]), and the net-control benefits and the net-trading profits are directly related to the investee firm characteristics. For instance, high information asymmetry and high insider ownership of an investee firm increase large shareholders' costs of intervention in the investee firm management and thus reduce their net-control benefits. On the other hand, higher share liquidity and lower transaction costs of share trades are of greater benefit to the large shareholders who seek trading profits. Therefore, these investee firm characteristics will influence large shareholders' decision on how to use their information advantage and thus their investment horizons.

Consistent with this prediction, I find that investee firms with higher intervention costs proxied by firm risk and information asymmetry have greater outside blockholder turnover, reflecting the shorter horizons of outside blockholders in such firms. Similarly, investee firms with greater share liquidity have greater outside blockholder turnover. Outside blockholder turnover is also higher in high growth firms, possibly due to less potential for control benefits in those firms. Finally, inside block ownership significantly

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management (Bethel, Liebeskind and Opler [1998]), or ultimately, taking over the firm (Grossman and Hart [1980]); Shleifer and Vishny [1986]).

deters outside blockholder turnover, reflecting lower share liquidity and higher transaction costs of share trades in firms with higher inside ownership.

Greater outside blockholder turnover of a firm implies that there exist counterbalancing agency mechanisms that will substitute for the reduction in shareholder monitoring resulting from the greater outside blockholder turnover. One alternative mechanism that is discussed extensively in the agency literature is executive compensation. Therefore, I expect that firms with greater outside blockholder turnover will rely more on outcome-based compensation as an alternative to shareholder monitoring by the outside blockholders. To compensate for the additional risk associated with greater outcome-based compensation, expected management compensation must also be higher. This reasoning suggests that investee firms with higher outside blockholder turnover are more likely to design CEO compensation with greater pay-performance sensitivity and a higher level of compensation. Finally, following the agency prediction that the relative weight on two performance measures is decreasing function of the relative noisiness of the performance measures (Banker and Datar [1989]), I hypothesize that the investee firms will achieve the greater CEO pay-performance sensitivity by putting more weight on performance measures with relatively less noise.

My empirical results generally support these predictions. After controlling for all other firm characteristics, firms with higher outside blockholder turnover show a significantly greater reliance on incentives to induce desirable actions of their CEOs, and pay larger total CEO compensation for the risk associated with the incentives. Additionally, these firms tend to put more weight on stock returns than on accounting earnings when determining CEO incentives. The data suggests that greater weight on

stock returns is associated with greater noise in accounting earnings in firms with higher outside blockholder turnover.

Overall, the findings in this dissertation suggest that outside blockholders' decisions concerning their investment horizons in an investee firm reflect the monitoring cost-benefit trade-offs that they make in the investee firm. This decision, in turn, is factored into the investee firm's design of CEO compensation contracts in ways that are consistent with the optimal mitigation of agency conflict in the investee firm.

This dissertation contributes to the literature on ownership structure and executive compensation in several ways. First, I provide evidence that in addition to the level and the concentration of outside block ownership, horizons of outside blockholders are an important determinant of their monitoring incentives. Prior research relates a higher level of outside ownership to greater monitoring by the outside shareholders (Mehran [1995]; Core, Holthausen and Larcker [1999]; Talmor and Wallace [2000]; Hartzell and Starks [2003]). Recent studies, however, have emphasized that not all large investors have the same investment strategies and monitoring skills (Bethel, Liebeskind and Opler [1998]; Downes, Houminer and Hubbard [1999]; Del Guercio and Hawkins [1999]). Bethel, Liebeskind and Opler (1998) find that blockholders' monitoring styles vary with their type[4], and call for further research on the relation between shareholders' investment horizons and their monitoring activities. This dissertation directly addresses this issue and provides evidence that investment horizons of outside blockholders (measured by their turnover) are systematically associated with the way CEOs in the investee firms are

[4] Bethel, Liebeskind and Opler (1998) classify blockholders into activist individual blockholders, financial blockholders and strategic blockholders. They then examine how each type of blockholders influences investee firm governance, such as CEO turnover, restructuring and long-term performance.

compensated, and that the relation is consistent with firms' effort to minimize agency costs.

Second, most studies on investor horizons use the investors' average portfolio management characteristics as a proxy for shareholder horizons of investee firms in the investors' portfolio (Bushee[1998]; Gaspar, Massa and Matos [2004]); Dikolli, Kulp and Sedatole [2004]; Shin[2005]). This approach implicitly assumes that investors apply the same investment strategy to all investee firms in their portfolio. However, investors may apply different investment strategies to different investee firms (I discuss this issue in Chapter 3). Gaspar, Massa and Matos (2004) indeed share this view and cite the need for research on investee firm characteristics that determine investors' investment horizons. This dissertation directly responds to this call by analyzing how investee firm characteristics influence outside blockholders' investment horizons. To my knowledge, this is the first study that documents how outside blockholder turnover is systematically associated with investee firm characteristics. This finding has an important implication for studies on investor horizons. That is, studies examining the relation between investor horizons and corporate governance characteristics need to account for the potential endogeneity of investor horizons.

Third, prior studies (Potter [1992]; Bushee [1998]; Gaspar, Massa and Matos [2004]) suggest that investors' relatively short investment horizons can increase agency costs by reducing the effectiveness of shareholder monitoring. In contrast, my study suggests that variation in investors' choice of horizons is rationally related to investee firm characteristics, and that there exist counterbalancing agency mechanisms such as the

appropriate design of CEO compensation contracts. In other words, firms with short-horizon shareholders do not necessarily suffer higher residual agency costs.

The rest of my dissertation proceeds as follow. Chapter 2 reviews prior research and Chapter 3 discusses outside blockholder turnover. Chapter 4 describes the data sources and provides descriptive statistics. Chapter 5 develops and estimates outside blockholder turnover. Chapter 6 examines the association between outside blockholder turnover and firms' design of CEO compensation. Chapter 7 conducts robustness tests and Chapter 8 provides conclusions.

CHAPTER 2

LITERATURE REVIEW

This literature review focuses on the heterogeneous monitoring incentives of large shareholders and their influence on firms' design of CEO incentives. The review broadly consists of three sections. Section 2.1 reviews the literature on the variation in large investors' monitoring incentives. Section 2.2 discusses how ownership structure, as a proxy for shareholder monitoring, influences CEO compensation. Section 2.3 summarizes the studies on firms' use of earnings and stock returns as performance measures to determine CEO incentives.

2.1 Heterogeneous Monitoring Incentives of Large Investors

The literature on ownership views the size of an investor's ownership stake in an investee firm as primary determinant of the investor's incentives to monitor management of the investee firm. More recent studies, however, have suggested that various other factors also influence large investors' monitoring incentives. In this section, I discuss investors' heterogeneous investment strategies and their monitoring styles based on their type and their investment horizon.

2.1.1 Investment Strategies and Monitoring Styles by Investor Type

Agency problems due to diffused ownership structure stem from not only the separation of ownership and control but also free-rider problems among shareholders. While small atomistic shareholders generally do not benefit from costly monitoring, large

shareholders can benefit because they are able to capture a larger fraction of the wealth gains from the monitoring. Further, small individual shareholders have little incentive to monitor the managers because it is cost-beneficial to free ride on the efforts of large shareholders. Therefore, when examining the relation between ownership structure and shareholder monitoring, the prior literature has primarily focused on large shareholders (e.g., Grossman and Hart [1980]; Shleifer and Vishny [1986]; Huddart [1993]).

The literature on large shareholders (investors) can be broadly classified into studies on block ownership in general and studies focusing on institutional ownership. The following sub-sections describe the large investors' investment strategies and monitoring styles documented in these two lines of literature.

Blockholders:

Following the SEC filing requirement, the literature defines blockholders as shareholders who own at least 5% of voting stock. Due to their significant ownership stake, studies on ownership structure generally view blockholders (particularly, outside blockholders) as active monitors. This section discusses two studies that document heterogeneity in blockholders' monitoring activities. Bethel, Liebeskind and Opler (1998) classify block purchasers into activists, financial block purchasers and strategic block purchasers. Activists are primarily large, well known individual investors or investor groups, such as Carl Icahn, Irwin Jacobs, Bass Brothers, Mario Gabelli, and George Soros. Financial block purchasers are banks, pension funds, mutual funds or insurance companies. Strategic block purchasers are non-financial investors who are unopposed by management. Bethel, Liebeskind and Opler (1998) document that activists differ from the other two types of block purchasers because they directly intervene in the

management of the investee firms. In contrast, financial block purchasers or strategic block purchasers are generally passive in monitoring management. As evidence of the significance of this distinction, within the two years following block trades by the activists, sample firms experienced a significant increase in divestitures and spin-offs, CEO turnover, and improvement in long-term operating performance. In contrast, no such changes were observed after the block trades involving financial or strategic blockholders.

Next, Barclay, Holderness and Sheehan (2001) distinguish blockholders based on the nature of the block-share transactions: block trades versus private placements. They define a block trade as the transfer of block-shares from one blockholder to another blockholder. In contrast, private placement is the sale of block-shares by a target firm to a block purchaser, typically through issuance of stock. Using 204 block trades and 594 private placements for the period 1978-1997, Barclay, Holderness and Sheehan (2001) examine the variation in the activities of the block purchasers. They find that block trade purchasers are more likely to become activists than are private placement block purchasers. In the block trade sample firms, 20% of block trade purchasers or their representatives subsequently became the CEO of the investee firm, but less than 1% of private placement block purchasers did likewise. Further, 85% of block trade purchasers become active in the management of investee firms, whereas only 12% of private placement purchasers did.[5]

The empirical findings reported in these two papers demonstrate that heterogeneous investment strategies and monitoring styles arise even after controlling for

[5] They search The Wall Street Journal and the Dow Jones News Service for evidence of interaction between the investee firm and the two types of block purchasers during the two years following the trade or placement.

block size. These results suggest that share-holding size is not the only determinant of the monitoring incentives of large shareholders.

Institutional Investors[6]:

Rule 13-F of the SEC defines institutional investors as entities such as bank trusts, insurance companies, mutual funds and pension funds that manage and invest at least $100 million on behalf of others. The SEC classifies institutional investors into five groups:

- banks
- insurance companies
- investment companies (mutual funds)
- investment advisors
- others (public pension funds or university endowments).

Institutional investors have attracted significant interest from researchers, corporate managers and regulatory bodies due to their rapidly increasing investment size in U.S. corporations. The mean institutional ownership per investee firm increased from 6.1% in 1950 to 50% in 2002 (Board of Governors of the Federal Reserve System [2003]). As a result, institutional investors control more than $4 trillion of investment (Chidambaran and John [2000]). Studies on institutional ownership generally rely on the aggregate level of institutional ownership in an investee firm rather than on the distribution of institutional ownership, such as the concentration of institutional ownership or ownership per institutional investor (e.g., McConnell and Survaes [1990]; Rajgopal, Jiambalvo and Venkatachalam [2002]; Hartzell and Starks [2003]). This approach effectively treats institutional investors as a homogeneous group. More recent studies, however, document significant heterogeneity across institutional investors in

[6] Institutional investors discussed in this section are not necessarily blockholders. The literature on institutional ownership generally focuses on aggregate ownership by all institutional investors in an investee firm rather than individual institutional ownership.

their investment strategy and monitoring styles (Borokhovich, Brunarski and Parrino [2000]; Gillan and Starks [2004]; Almazan, Hartzell and Starks [2004]).

Based on in-depth interviews with top managers of large institutional investors, Downes, Houminer and Hubbard (1999) document and compare the monitoring styles of private mutual funds and pension funds and their positions concerning the corporate governance of the firms in their portfolio. They find that private mutual-fund investors monitor primarily investee firm performance as opposed to investee firm governance procedures. Monitoring investee governance is considered unusual, and occurs primarily in cases of gross mismanagement. In contrast, pension-fund investors routinely monitor investee firms' long-term performance and governance quality. Both pension-fund investors and private mutual-fund investors view time and money as the most significant direct monitoring costs. Whereas pension-fund investors believe that good governance of investee firms results in better shareholder value in the long-run, mutual-fund investors indicate skepticism concerning whether lobbying for governance change is worth the costs. The following quotes (Downes, Houminer and Hubbard [1999]) sum up the differences between private mutual-fund investors and pension-fund investors.

> Private mutual-fund position
> "…It is difficult to prove financial benefits of good governance structures…If a company has a smart and strong CEO with appropriate compensation incentives, it may do well for years without these structures. But these structures are important safety valves when crises arise, when CEO succession is an issue or when the business begins to go downhill…" Robert Pozen – President of Fidelity Management & Research Company (FMR), Harvard Business Review (1994)
>
> Pension-fund position
> "…The major goal of our corporate assessment program is to review our portfolio long-term performance and general corporate governance procedure. We are interested in answering this central question: Does the company have a vital and independent board performing a vigorous and challenging role in overseeing management's conduct of the business?...For companies where we cannot answer

> "yes", we have an important role as a responsible owner." John Biggs – CEO of TIAA-CREF, Director's Monthly (1996)

Targeting a narrower class of investors, Del Guercio and Hawkins (1999) examine the impact and motivation of pension fund activism for corporate governance issues for the period from 1987 through 1993. They find significant heterogeneity across pension funds in their activism objectives and tactics. Specifically, different pension funds have different ranges of their funds devoted to indexing. More highly indexed funds have less opportunity to implement the "Wall Street Walk" option of selling stock when fund managers are displeased with the performance of a firm in their portfolio. Thus, relative to actively managed funds (i.e., funds targeting more short-term investment), indexed funds tend to rely more on the publicity of their activism. Publicity not only affects the direct target of a funds' activism but also potentially other companies who observe the activism. The threat of publicity may give funds leverage with target management and motivate other companies to proactively improve their corporate governance structures without being explicitly targeted.

Researchers also classify institutional investors based on the extent of their potential affiliation with the investee firms (Brickley, Lease, Smith [1988]; Borokhovich, Brunarski and Parrino [2000]; Almazan, Hartzell and Starks [2004]). Specifically, they argue that bank trust departments and insurance companies are more likely to have business relationships with investee firms and, therefore, to be sensitive to pressure from the investee firms. This tendency is weaker for investment advisers and investment companies because they are less likely to have business relations with their investee firms. Their results suggest that pressure-sensitive institutions (banks or insurance

companies) are more likely to "go-along" with management decisions than pressure-insensitive institutions.

Borokhovich, Brunarski, and Parrino (2000) examine the market reaction to investee firms' adoption of anti-takeover provisions conditioned on the identity of their outside institutional blockholders. They report that when an investee firm has blockholders who are pressure-insensitive institutions, the market reaction to the investee firm's anti-takeover adoption is positive. However, when the blockholders are pressure-sensitive institutions, the market reaction is negative. One interpretation of these results is that pressure-sensitive institutional blockholders allow managers of investee firms to implement anti-takeover provisions to entrench themselves, whereas pressure-insensitive institutional blockholders allows only anti-takeover provisions that maximize shareholder value.

Researchers have analyzed differences among large investors and how these differences influence investee firms' performance or governance. The literature review so far documents that large investors' investment strategies and monitoring styles vary significantly with investor type. Whereas these classification schemes are insightful, they are still far from complete and raise several questions. For example, using the institutional investor classification scheme, it is clear that pension funds are more active in monitoring than are mutual funds (Downes, Houminer and Hubbard [1999]). However, not all pension funds are active in monitoring. Del Guercio and Hawkins (1999) report significant heterogeneity across pension funds in their activism objectives and tactics.

A potential reason for the difficulties in predicting investment strategies and monitoring styles of investors based solely on their type is that an investor may vary its

investment strategy and monitoring style in part based on investee firm characteristics. If this is the case, one may, first, expect to see a large investor taking different investment strategies for different investee firms in its portfolio. Second, to understand what monitoring roles large investors play in investee firms, researchers need to examine the large investors' investment strategies and monitoring styles in conjunction with the investee firm characteristics. In this dissertation, I take the view that investee firm characteristics influence investment strategies of large investors. Therefore, I explore whether investors' horizons vary across investee firms in their portfolio (Chapter 3), and examine what firm characteristics explain the variation in investor horizons as measured by outside blockholder turnover (Chapter 5).

2.1.2 Investment Horizons

In addition to the distinctions noted in subsection 2.1.1, researchers have also characterized investors according to their investment horizons. Froot, Perold and Stein (1992) compare the investment horizons of different institutional investors. They find that based on 1989 trading volume, mutual-fund investors and insurance companies had average investment horizons of 1.9 years and 2.5 years, respectively. Foundations and endowments had an average horizon of 4.5 years. Pension funds' horizons differ depending on their investment style. Actively trading pension funds had an average horizon of 1.9 years, while passively trading pension funds had an average horizon of 7.1 years.

Based on institutional investors' average portfolio management characteristics (portfolio diversification, portfolio turnover and sensitivity to earnings news), Bushee (1998) classifies the institutional investors into three investment strategy groups: transient

institutional investors, quasi-indexers and dedicated institutional investors. Transient investors have well diversified portfolios and higher portfolio turnover (shorter investment horizon). They are also more likely to use momentum strategies.[7] Quasi-indexers also have highly diversified portfolios but demonstrate lower portfolio turnover (intermediate investment horizons). They tend to rely more on a buy-and-hold investment strategy and demonstrate contrarian-trading tendencies. Dedicated investors tend to have highly concentrated portfolios with lower portfolio turnover (longer investment horizon). They demonstrate almost no trading sensitivity to current earnings.

Bushee (1998) uses the fraction of an investee firm's shares held by each type of institutional investor as a proxy for the investee firm's overall shareholder horizon. Specifically, he examines how the total ownership held by each of the three types of investors affects the likelihood that the investee firms will cut R&D expenses when their operating performance is below market expectations. He finds that firms with a higher concentration of ownership by transient institutional investors are more likely to cut their R&D expenses when their operating performance is slightly below market expectations. He interprets this result as managers attempting to increase short-term profit at the expense of long-term firm value in response to the pressure from the shorter-horizon investors.

Similar to Bushee (1998), Gaspar, Massa, and Matos (2004) estimate the average investment horizon of each institutional investor based on the institution's portfolio

[7] Momentum is defined as the rate of acceleration of a security's price or volume. Investors using a momentum strategy rely on the idea that short-term future stock returns move in the same direction as the movement of recent past returns. Momentum traders often take a long or short position in the stock based on acceleration in a stock's price (or earnings) with the hope that its momentum will continue. This strategy relies more on short-term movements in price rather than fundamental particulars of companies (Investopedia © www.answers.com).

turnover (referred to as the investor's "churn rate"). They use the investors' churn rates to construct a proxy for shareholder horizons of investee firms. Specifically, they measure an investee firm's overall shareholder horizon by summing each institutional investor's portfolio churn rate weighted by the investor's percentage shareholdings in the investee firm. They then hypothesize that weaker monitoring by shareholders with shorter horizons leads managers of takeover target firms to pursue their self-interest at the expense of shareholders' interest in the takeover bargaining between acquirers and the target firm. Consistent with their hypothesis, they find that target firms with shorter-horizon investors receive lower takeover premiums

Outside blockholder turnover, the turnover measure that I use in this dissertation, is conceptually similar to the measures used by Bushee (1998) and Gaspar, Massa, and Matos (2004) in that it is designed to reflect shareholder monitoring of investee firms. However, unlike their measures which use the investors' average portfolio characteristics, my measure of outside blockholder turnover uses actual block ownership data in each investee firm. Table A provides an example that compares Bushee's classification with my measure of outside blockholder turnover.

XYZ Corporation is a hypothetical company with the ownership structure shown in Table A. All investors listed in Table A are outside shareholders. Based on Bushee's (1998) classification, the institutional investors who own XYZ Corporation's shares are made up of one dedicated institutional investor (Blockholder C) and 40 transient institutional investors. This classification is not specific to XYZ Corporation, but rather reflects the investors' overall trading pattern. For example, Blockholder C would be

classified as a dedicated institutional investor whether it has block ownership in XYZ Corporation or in some other investee firm.

Table A Ownership Structure - Example

Company Name: XYZ Corporation				
Fiscal year	Investor Class	Investor Type	Number of investors	Percentage of voting stock
1998	Blockholder A	Individual	1	10%
	Blockholder B	Corporation	1	5%
	Blockholder C - Dedicated	Institution	1	15%
	Transient investors	Institution	40	20%
1999	Blockholder D	Individual	1	10%
	Blockholder C - Dedicated	Institution	1	15%
	Transient investors	Institution	40	20%

Following Bushee's classification, XYZ Corporation has 15% of its ownership reflecting long-term horizons (dedicated institutional ownership) and 20% of its ownership reflecting short-term horizons (transient institutional) in both 1998 and 1999. Block ownership by Blockholders A, B and D would not be considered because they are not institutional investors.

XYZ Corporation's outside blockholder turnover in 1999 is the percentage of outside block ownership that changed hands in the period from the end of 1998 to the end of 1999. Specifically, Blockholders A (10%) and B (5%) exited XYZ Corporation, and Blockholder D (10%) entered XYZ Corporation during this period. The total outside block ownership in 1998 and 1999 is 30% and 25%, respectively. Therefore, outside blockholder turnover of XYZ Corporation is measured as (10% + 5% + 10%) / (30% + 25%) = 0.5455 (54.55%). The ratio shows that 54.55% of XYZ Corporation's outside block ownership changed hands.

The above difference has significant implications in research design. For example, Bushee's (1998) classification is a composite index of institutional investors' investment

characteristics (i.e., portfolio diversification, portfolio turnover and the extent to which they employ momentum strategy). In contrast, outside blockholder turnover reflects changes in outside blockholders specific to the investee firm on hand and aims to examine how horizons of outside blockholders differ from size of outside block ownership in shareholder monitoring of investee firms. I provide more detailed discussions about the implications of the difference in Section 4.3.

The general conclusion in the literature on shareholder horizons is that firms with shorter-horizon investors monitor management less effectively and suffer higher agency costs. However, this conclusion raises the question of why we observe short-horizon investors playing such a significant role in corporate ownership if their short investment horizons increase agency costs and reduce long-term firm value. A possible explanation is that investee firms rely on other governance mechanisms to counterbalance the effect of shareholders' shorter-horizons.

Consistent with the preceding point, two recent studies suggest that institutional investors' average investment horizons can influence the pay-performance sensitivity of CEO compensation (Dikolli, Kulp and Sedatole [2004]; Shin [2005]). Using Bushee's (1998) classification, Dikolli, Kulp and Sedatole (2004) document that the greater the ownership by transient institutional investors, the weaker is the pay-performance sensitivity of CEO cash compensation. However, their study does not capture other ways in which blockholders' investment horizons can influence the design of CEO compensation contracts. For example, it is not clear from their study whether the lower pay-performance sensitivity of CEO cash compensation (lower risk) is accompanied by lower total CEO compensation (lower risk premium), or alternatively, whether the lower

pay-performance sensitivity is offset by an increase in pay-performance sensitivity of CEO equity compensation (higher risk).

In a similar study, Shin (2005) also uses Bushee's [1998] classification scheme and shows that institutional ownership is positively associated with CEO equity compensation the investee firm regardless of the institutional investors' horizons. His results are consistent with Hartzell and Starks (2003) who find a positive association between the level of institutional ownership and pay-performance sensitivity of CEO option compensation. As will be seen later, the insignificant effect of institutional investors' horizons on CEO equity-based compensation (Shin [2005]) is inconsistent with the findings of this dissertation. This is potentially due to the differences between Bushee's classification and my measure of outside blockholder turnover.

In summary, the studies referenced in this section suggest that how long investors intend to hold their shares influences how they monitor management of the investee firm and the design of CEO incentives in investee firms. However, research in this area remains very limited, and the relation between investor horizons and corporate governance still provides interesting unanswered questions. This dissertation aims to provide some additional insights in this area.

2.2 Ownership structure and CEO incentive compensation

The agency problem in a diffused ownership structure stems from the separation of ownership and control. Specifically, in the absence of other governance mechanisms, managers tend to seek to further their self-interest even when that is not the best interest of the shareholders. An extensive literature on ownership structure and executive compensation suggests that firms use monitoring and incentives to align the managers'

interests with those of shareholders (e.g., Mayers and Smith [1992]; Ke, Petroni and Safieddine [1999]; Hartzell and Starks [2003]).

The literature on ownership generally describes shareholder monitoring as the set of shareholder activities that aim to directly or indirectly influence management's decisions, such as gathering information about managerial performance, conducting private negotiations with management, publicizing shareholder activism, soliciting shareholder proposals, initiating litigation, and in extreme situations, mounting a proxy contest (Del Guercio and Hawkins [1999)]; Shleifer and Vishny [1986]; Bethel, Liebeskind and Opler [1998]). Although managerial incentives can take various forms, the agency theory literature primarily focuses on periodic financial compensation.[8] While shareholder monitoring and incentives mitigate agency problem, however, they are also costly to the owners. Therefore, firms are expected to use some mix of monitoring and incentives based on various cost-benefit trade-offs.

In the agency literature, monitoring and incentives are typically viewed as alternative mechanisms to mitigate the agency problem.[9] For example, assuming complete observation is possible, Holmstrom (1979) demonstrates that the costs of relying on imperfect performance measures can be avoided, and the first-best solution to the agency problem can be achieved by employing a forcing contract that penalizes behavior inconsistent with the principal's directives. However, when managers' effort

[8] Other researchers argue that CEO's existing equity portfolio (options and stock) should also be considered when examining CEO incentives. That is, they argue that total firm-specific CEO incentives reflect not only current CEO compensation but also changes in the value of the CEO's existing equity portfolio (Jensen and Murphy [1990]; Hall and Liebman [1998]; Core, Guay and Verrecchia [2003]).

[9] Alternatively, some researchers view shareholder monitoring and incentive as complementary mechanisms to align managers' interest with shareholders (Huddart [1993]; Hartzell and Starks [2003]; Almazan, Hartzell and Starks [2004]). These researchers define 'monitoring' as an activity to acquire more accurate signals of managerial effort, and argue that monitoring allows shareholders to make CEO compensation more sensitive without imposing additional compensation risk. In my dissertation, however, I take the view that monitoring and incentives are substitutes, following the conventional agency literature.

level is not observable, the owner must rely on imperfect performance measures, and thereby incur the cost of the risk premium to compensate the manager for bearing risk.

Several executive compensation researchers report empirical evidence that is consistent with the argument that monitoring and incentives are substitutes. Mehran (1995) uses blockholding as a proxy for shareholder monitoring and provides empirical evidence that such holdings act as a substitute for incentive compensation. Specifically, he finds that firms with a larger percentage of their shares held by outside blockholders, and hence with greater monitoring by the outside blockholders, use less equity-based compensation than do firms with fewer outside blockholders. In their study on the ownership characteristics of insurance companies, Ke, Petroni and Safieddine (1999) also provide the support for monitoring and incentives acting as substitutes. Unlike publicly-held firms, privately-held firms are typically owned by a few large shareholders. Therefore, relative to the shareholders of publicly-held firms with dispersed ownership structure, shareholders of privately-held firms are likely to have a stronger incentive to monitor management, as well as better access to management. Thus, the authors argue that privately-held companies will rely more on monitoring and less on incentive compensation contracting. Consistent with their argument, they find stronger pay-performance sensitivity, i.e. a larger positive association between return on assets (ROA) and the level of compensation for publicly-held firms than for privately owned firms. Similarly, Mayers and Smith (1992) predict and find that CEO compensation in mutual insurance companies with more concentrated ownership is less sensitive to firm performance than is CEO compensation in stock insurance companies which have more diffused ownership. This result suggests that greater shareholder monitoring reflected in

more concentrated ownership reduces the mutual insurance companies' reliance on incentive compensation.

Beatty and Zajac (1994) examine the trade-off between incentives and monitoring in IPO firms. They document that firms with stronger monitoring of management, as proxied by the existence of outside owner-directors or outside blockholders have lower equity-based CEO compensation and lower CEO equity ownership.

Overall, the studies of executive compensation relying on agency theory generally conclude that shareholder monitoring substitutes for incentive compensation in aligning the manager's interest with those of shareholders. In addition, the studies discussed in Section 2.1.2 suggest that firms with shorter-horizons investors tend to have weaker shareholder monitoring. These two lines of literature together predict that firms with shorter-horizon shareholders are more likely to rely on incentive compensation than are firms with longer-horizon shareholders. Using outside blockholder turnover as a measure of the investment horizon of the outside blockholders, this dissertation examines whether firms with higher outside blockholder turnover are more likely to show greater reliance on incentive compensation than firms with lower outside blockholder turnover.

2.3 Earnings and Stock Returns as Performance Measures

To tie CEO compensation to firm performance, firms must choose how much weight to put on alternative performance measures. The most commonly used performance measures in CEO compensation are accounting earnings and the firm's stock returns. In a study of 177 large U.S. firms, Murphy (2000) documents that while firms use a variety of financial and non-financial measures for executive compensation, almost all firms rely on some measures of accounting performance. Equity-based CEO

compensation explicitly ties CEO compensation to the firm's stock performance. Core and Guay (2003) report that during the period from 1993 to 2000, the majority of CEO compensation in their sample took the form of equity incentives. Further, Hall and Liebman (1998) report that 70% of the CEOs in their sample received option grants in 1994 with median option value of $1.2 million.

Agency theory suggests that the weight on a given performance measure is decreasing in the noisiness of the performance measure, and the relative weight on two performance measures is a decreasing function of the relative noisiness of the performance measures (Banker and Datar [1989]; Lambert [2001]; Bushman and Smith [2001]). That is, if A and B are both noisy signals of managerial performance, as measure A becomes noisier relative to measure B, the optimal incentive contract will reduce the weight on measure A relative to that on measure B.

Consistent with this theory, prior studies find that the weight on stock price in a CEO's total compensation varies inversely with the noise in the stock price (Garen [1994]; Aggarwal and Samwick [1999]; Core and Guay [2002b]). Additionally, Lambert and Larcker (1987) and Sloan (1993) examine cash compensation and find that the weight on accounting earnings relative to the weight on stock returns in determining cash compensation is a decreasing function of variance of accounting earnings relative to stock return variance. Specifically, as the variance of accounting earnings relative to stock return variance increases, firms put less weight on accounting earnings than on stock returns in determining cash compensation. Consistent with this view, Yermack (1995) reports that CEO compensation is more sensitive to stock returns in companies with noisy accounting data.

A natural extension of the above studies is to examine any systematic associations between governance characteristics and noise in different performance measures. For example, Dikolli, Kulp and Sedatole (2004) document that CEO cash compensation is not sensitive to either earnings or stock returns in firms with greater concentration of transient institutional investors (shorter-horizon investors). They argue that transient investors' frequent trading and their limited monitoring of investee firms increase the noise in both earnings and stock returns of the investee firms. Therefore, these investee firms reduce the weight on both earnings and stock returns when determining CEO cash compensation.

Dikolli, Kulp and Sedatole's (2004) argument can be applied to the horizons of outside blockholders. Outside blockholders with shorter-horizons will turn over their block shares more frequently than outside blockholders with longer-horizons. Further, as suggested by the studies discussed in Section 2.2, outside blockholders with shorter horizons tend to have less monitoring incentives than those with longer-horizons. Therefore, to the extent that higher outside blockholders turnover is associated with greater noise in earnings and stock returns, firms with higher outside blockholder turnover will put less weight on the two performances than do firms with lower outside blockholder turnover.

CHAPTER 3

INVESTMENT HORIZONS OF OUTSIDE BLOCKHOLDERS

Chapter 2 discussed the literature that demonstrates the significant effects of investor types and investor horizons on investee firm governance. For example, the literature finds that individual activist blockholders are more likely to intervene in the management of investee firms than are financial blockholders (Bethel, Liebeskind and Opler [1998]). Pension funds are more active in monitoring investee firms' governance than are mutual funds (Downes, Houminer and Hubbard [1999]). Due to the nature of their business, investment advisors and investment companies tend to be more vigilant in monitoring management of investee firms than banks and insurance companies (Almazan, Hartzell and Starks [2004]). Gaspar, Massa and Matos (2004) argue and document that shorter-horizon institutional investors are less effective monitors than are longer-horizon institutional investors in takeover target firms.

While each of these classification schemes provides insights into the monitoring styles of investors, the various classification schemes do not capture how an investor's monitoring can vary with the characteristics of the investee firm. That is, each classification scheme imposes a specific investing and monitoring style on an investor irrespective of the investee firms in question. However, it is very likely that investors determine their investment strategies and monitoring styles in part based on investee firm characteristics. If this is the case, an investor will demonstrate variation in its investment

strategies across different investee firms in its portfolio, and the variation will be systematically associated with investee firm characteristics.

In this chapter, I explore how large investors' investment horizons vary, using a sub-sample of outside blockholders from my overall sample. Specifically, I first examine the variation in investment horizons across the sub-sample of outside blockholders. This test will provide information about whether outside blockholders are different from each other in terms of their investment horizons. I then examine whether investment horizons of each outside blockholder also vary across investee firms within the outside blockholder's portfolio. If the outside blockholders' investment horizons are determined primarily based on their own characteristics, the outside blockholders will hold a predominant proportion of their portfolio for a particular holding period. In other words, there will be very little variation in each outside blockholder's block holding periods. These two examinations together will provide preliminary information about what determine large shareholders' investment horizons.

For this analysis, I pull outside blockholders with at least 10 investee firms in their portfolio from my overall sample, and measure their block holding periods in their investee firms. The overall sample investee firms, taken together, have a total of 1,102 unique blockholders over the four-year sample period. The 1,102 unique blockholders consist of 527 unique inside blockholders (managers, directors, ESOP or affiliated entities who each own at least 5% of the firm's voting shares) and 575 unique outside blockholders (blockholders who are not insiders and own at least 5% of the firm's voting shares). Of the 575 outside blockholders, 61 own blocks in at least 10 of my sample investee firms during the sample period. Appendix 1 lists these 61 blockholders, the

portfolio size for each blockholder, the distribution of block holding periods across the four-year horizon, and the mean portfolio holding period.

In measuring the distribution of block holding periods for each blockholder over the sample period, I assume for simplicity that the blockholders who are present at the end of the first year in the four-year sample period acquired their block ownership in the firm during the first year. Based on this measurement convention, the minimum holding period of block shares over the four-year sample period is less than 1 year (0-1 year), and the maximum holding period is 3-4 years. For example, Appendix 1 shows that AXA Financial Corp. owned blocks in 48 investee firms in its portfolio during the four-year sample period. It held blocks in 35 investee firms (73% of the 48 investee firms) for 0-1 year, nine investee firms (19%) for 1-2 years, two investee firms (4%) for 2-3 years and another two investee firms (4%) for 3-4 years. The weighted average holding period for AXA, as shown in Appendix 1, is 1.40 years. Obviously, this measurement convention understates the actual holding period for most sample firms because it assumes that no blockholders held shares prior to the four-year sample period.[10] Nevertheless, it still captures the relative extent to which each blockholder tended to hold its blocks for shorter or longer periods over the four-year sample period. Furthermore, because the measurement reduces the extent of variation in the holding period by cutting short the longer holding periods, it biases the study away from finding greater variation in the holding periods.

The mean portfolio holding periods for the 61 outside blockholders in Appendix 1 range from 1.09 years for Nicholas Applegate Capital Management to 3.41 years for

[10] Instead of using the block holding period, I use turnover of outside blocks as a proxy for investment horizons of the outside blockholders in my data analyses. I provide detailed discussions on the measurement of outside blockholder turnover in Section 4.3.

State Farm Mutual Auto Insurance Co. This range of holding periods across blockholders demonstrates that some blockholders tend to hold their blocks for considerably longer period than others. For example, AXA Financial's average block holding period was 1.40 years, whereas FMR Corp's average block holding period was 2.27 years.

To test the statistical significance of the variation in block holding periods across the investors listed in Appendix 1, I ranked the 61 blockholders based on their mean portfolio holding period and examine whether the distributions of the block holding periods are different across the blockholders.[11] The test result shows that the distributions of the block holding periods are significantly different across blockholders (Chi-square 291.67, $p<0.00$). In other words, the outside blockholders are different from each other in their pattern of block holding period.

Next, I examine whether the outside blockholders' block holding periods vary across their investee firms. The distributions of block holding periods within each blockholder's portfolio support the prediction that investors' investment horizons differ across the investee firms in their portfolio. The 61 outside blockholders, on average, hold 51% of their portfolio for 0-1 year, 22% for 1-2 years, 13% for 2-3 years and 14% for 3-4 years of the four-year sample period. The large variation within each outside blockholder's portfolio suggests that the outside blockholders determine their block holding period based on investee firm characteristics.

The overall results suggest that large shareholders' investment horizons vary based on both the large shareholders' own investment characteristics and the investee firm characteristics. For instance, FMR Corp.'s portfolio consists of 405 unique firms in the sample during the four-year sample period. FMR Corp. held 39% of its portfolio for

[11] I use Wilcoxon Rank-Sum Test.

less than one year, 20% for 1-2 years, 17% for 2-3 years, and 24% for 3-4 years during the four-year sample period. In other words, while FMR Corp demonstrated, on average, a longer investment horizon over the sample period (mean of 2.27 years) than did AXA Financial (mean of 1.40 years), FMR Corp. nevertheless held a larger proportion of its portfolio over 0-1 year of the sample period than over any other interval in the sample period.

An important implication of these results is that without taking into account investee firm characteristics, studies that examine the relation between investor horizons and governance of investee firms are likely to have a problem of omitted variables. Specifically, investee firm characteristics that are not in the model can potentially affect both investor horizons and the governance characteristics of investee firms, resulting in a spurious relation between investor horizons and the governance characteristics of investee firms.

CHAPTER 4

DATA AND DESCRIPTIVE STATISTICS

4.1 Data Sources and Sample Formation

The overall sample consists of 874 publicly listed U.S. investee firms drawn from the Investor Responsibility Research Center's (IRRC) surveys in 1995, 1998 and 2000 (Rosenbaum 1995, 1998 and 2000). Block ownership data[12] are from Dlugosz, Fahlenbrach, Gompers and Metrick (2004) (DFGM hereafter), who obtained the information from Compact Disclosure and proxy statements filed with the SEC. DFGM (2004) use voting power when computing the block ownership of their sample firms. Financial, stock price and CEO compensation data come from COMPUSTAT, CRSP and EXECUCOMP, respectively. From DFGM's sample of 1,913 unique firms during the period from 1996 to 2001, I removed 767 firms that do not have at least four consecutive years of ownership data. I further dropped 30 firms due to errors in the ownership data or lack of proxy statements, and 185 firms due to missing data in COMPUSTAT, CRSP or EXECUCOMP. Because my main variable of interest is turnover of outside blockholders,

[12] The SEC requires that all beneficial owners of more than 5% of a company's voting stock be listed in the proxy statement. Therefore, jointly held shares are listed multiple times for each blockholder in the block. For example, Warren Buffett and Berkshire Hathaway jointly own 8.1% of Coca Cola Co. Warren Buffett is a director of Coca Cola. The Coca Cola proxy statement, therefore, lists the 8.1% held by Warren Buffett under 'Beneficial Ownership by Directors and Executive Officers', and also reports the 8.1% block held by Berkshire Hathaway under 'Principal Share Owners'. Compact Disclosure frequently ignores the footnote details of these jointly held blocks. Instead, they list each blockholder as it appears in the summary table, resulting in multiple counts of the jointly held block ownership. DFGM segregate the shared block ownership to correct the errors and create variables that identify the blockholders with shared ownership. This process results in some blockholders with less than 5% ownership. Therefore, using the identifiers as suggested by DFGM, I verify the segregated block ownership against the proxy statements and sum them back to obtain the total corrected block ownership. For instance, I treat Warren Buffett and Berkshire Hathaway as a single entity that owns 8.1% of Coca Cola Co.'s voting shares.

I also removed 57 firms with zero outside block ownership over the four-year sample period. The final sample includes 874 unique investee firms with starting year in 1996, 1997 or 1998. The sample firms are generally large due to IRRC's focus on large firms in their surveys and my data screening procedures that require sample firms to have data available in COMPUSTAT, EXECUCOMP and CRSP. Of the 874 unique sample firms, 233 firms have data for the sample period 1996-1999, 208 firms have data for the sample period 1997-2000, and 433 firms have data for the sample period 1998-2001.

When analyzing data, I use four-year averages of outside blockholder turnover, block ownership and financial data for each firm in my sample for the following reasons. An examination of correlations indicates that the outside blockholder turnover and other block ownership variables are serially correlated during the four-year sample period, and the autocorrelations are statistically significant.[13] The autocorrelation of outside blockholder turnover is problematic in the pooled time-series OLS estimation of outside blockholder turnover. Specifically, the autocorrelation of outside blockholder turnover can seriously understate the true standard deviation of the regression coefficients of predictor variables in the OLS regression, making the t-test of the regression coefficients not strictly applicable (Neter, Kutner, Nachtsheim and Wasserman [1996]). Further, the high autocorrelation of the block ownership variables suggest that for this sample period, any systematic associations between ownership characteristics and CEO compensation are more likely coming from cross-sectional variation than from within firm variation.

[13] Four year average correlations of the annual block ownership of the sample firms are 0.79 for total block ownership; 0.94 for manager block; 0.89 for director block ownership; 0.68 for outside block ownership; 0.91 for ESOP block ownership and 0.71 for affiliated (gray) block ownership. The correlation for annual outside blockholder turnover is 0.23.

Finally, using four-year averages minimizes the effect of temporary fluctuations in key variables.

4.2 Reclassification of Block Types

DFGM classify blockholders into one of five categories: 1) officers, 2) directors, 3) affiliated entities, 4) Employee Stock Ownership Plans (ESOPs), and 5) outside blockholders. DFGM categorize individual blockholders who are directors of the firm as "director blockholders", but categorize blockholders (often corporations or financial institutions) whose representatives sit on the board of the firm as "outside blockholders" rather than "director blockholders". This classification may understate director block ownership because it does not include director block ownership held by corporations or institutions. Therefore, I redefine "director blockholders" to include all non-manager blockholders who are directors of the firm or whose representatives sit on the board of the firm. Using the information in the proxy statements and existing information in DFGM's ownership data, I reclassify the blockholder ownership as follows:

Manager block (MGRBLK):	A blockholder who is a manager (the manager may or may not also be a director)
Director block (DIRBLK):	A non-manager blockholder who is a director of the firm or whose representative is a director of the firm
Outside block (OUTBLK):	A blockholder who is neither a manager nor a director and who is not related to the founding family and has no other significant business relation with the company
ESOP block (ESOPBLK):	Blocks owned by employee stock ownership plans, employees savings plans, employees' retirement plans or any other blocks owned by the firms' employees
Gray block (GRAYBLK):	Affiliated blockholders as defined by DFGM – trusts for a founding family, subsidiaries or entities with significant business relation with the firm

For some subsequent analyses, I group the block ownership into outside blocks (OUTBLK) and inside blocks (INBLK), where INBLK includes manager blocks, director blocks, ESOP blocks and gray blocks.[14]

4.3 Measurement of Blockholder Turnover

Blockholder turnover of an investee firm is the percentage of the investee firm's block ownership that changes hands annually, and reflects the investment horizons of the blockholders. Specifically, higher blockholder turnover indicates shorter investment horizons of the investee firm's blockholders, whereas lower blockholder turnover indicates longer investment horizons of the investee firm's blockholders. While observed blockholder turnover is an ex post measure of the blockholders' investment horizons, I assume that it also reflects the blockholders' ex ante intentions about how long they plan to hold their block shares.

A more direct approach to measuring blockholders' investment horizons within an investee firm would be simply to measure how long each blockholder held the block ownership in the investee firm, and then to aggregate these individual holding periods weighted by the size of each block. However, my data does not enable me to take this approach. The DFGM blockholder data covers the period 1996-2001, and I restrict my sample to those firms with at least four years of consecutive blockholder data. Therefore, my data represents a four-year window into the complete blockholder history of the 874 firms in my sample. This four-year window is not sufficient to accurately measure total block holding periods which extend beyond the four-year sample period.

[14] I use outside blocks (OUTBLK) and insider blocks (INBLK) in the turnover regression model. For the compensation model, I use the level of outside block ownership (OUTBLK) and indicator variables for manager blocks and director blocks. The rationale for using indicator variables is discussed in Section 6.2.

Using blockholder turnover has some advantages compared to using the duration of the holding period. The four-year blockholder data set identifies all blockholders and the percentage of the investee firm's total shares that they own as of each proxy date (annual data). Therefore, I can accurately measure any annual changes in blockholders during the sample period without making any assumption about the duration of holding periods which extend outside the sample period.[15] In addition, because both my blockholder turnover measure and the level of block ownership are measured annually based on the proxy information, I can directly relate the annual blockholder turnover measure and the level of block ownership to CEO compensation characteristics. A parallel method based on block holding periods would be complicated by the issue of the aligning the holding period with the level of block ownership. Therefore, I use blockholder turnover as a measure of blockholder horizons. Because my study focuses on outside blockholder turnover, I then break the total turnover into turnover of outside block ownership and turnover of all other types of block ownership. I focus primarily on outside blockholder turnover in my data analyses.

Changes in an investee firm's blockholders are due to the exit of existing blockholders and the entry of new blockholders. At one extreme, an investee firm could have a set of blockholders who remained with the investee firm for its entire life, resulting in no blockholder turnover. At the other extreme, another investee firm could have a set of continually changing blockholders, resulting in a very high blockholder turnover. Therefore, I measure blockholder turnover by the rate at which existing

[15] Blockholder turnover measure does not capture the transactions by blockholders who might have held the firms' stock only for a short period during the proxy year. This can potentially result in understated blockholder turnover rates. However, understated blockholder turnover would work against this study because it would dampen the effect of blockholder turnover on CEO compensation by reducing the variation in blockholder turnover.

blockholders exit an investee firm and new blockholders enter. Specifically, blockholder turnover in year$_{t+1}$ is the sum of ownership of the existing blockholders who exit and the ownership of new blockholders who enter during year$_{t+1}$ scaled by the total block ownership at the end of year$_t$ and at the end of year$_{t+1}$. The following example illustrates the calculation of blockholder turnover for Teradyne Inc., a transportation firm in my sample.

Table B Example of Block Ownership and Blockholder Turnover Calculation

Company Name : Teradyne Inc.		
Proxy date	Blockholder name	% of outstanding voting shares
5/21/1998	Capital Group Companies, Inc. Pioneering Management Scudder Kemper Investment Neuberger and Berman LLC. Total	14.1% 5.5 13.7 7.5 40.8%
5/27/1999	FMR Corp. Neuberger and Berman LLC. Total	13.6% 6.0 19.6%

Teradyne's aggregate block ownership as of 5/21/1998 and 5/27/1999 is 40.8% and 19.6%, respectively. During the period from 5/21/1998 to 5/27/1999, three blockholders (Capital Group, Pioneering Management, Scudder Kemper Investment), owning 33.3% of Teradyne's stock, exited the firm. One new blockholder (FMR Corp.), owning 13.6%, entered. Therefore, my measure of Teradyne's blockholder turnover in the fiscal year 1999 is (33.3% + 13.6%)/(40.8% + 19.6%) = 0.7765. The turnover rate of 0.7765 means that 77.65% of Teradyne's block shares were transferred from one set of blockholders to another set of blockholders during the fiscal year 1999. The blockholder turnover rate ranges from 0% (none of the blockholders who were present at the beginning of the proxy year turned over their block shares during the proxy year) to

100% (all blockholders who were present at the beginning of the year their block shares during the proxy year).

This measure is a modified version of the mutation ratio used by Franks, Mayer and Rossi (2004) (See Appendices 2A and 2B for more details). I discuss descriptive statistics of the blockholder turnover in the sub-section titled *Blockholder turnover* of Section 4.5.

As discussed in Section 2.1, Bushee (1998) classifies institutional investors to capture the investment horizons of those institutional investors. My outside blockholder turnover measure and Bushee's classification are similar in that both measures aim to capture investee firms' shareholder horizons which, in turn, influence the investee firms' shareholder monitoring of management. However, my outside blockholder turnover measure is different from Bushee's in several ways.

First, Bushee's classification is based upon a composite index of average portfolio characteristics (i.e., portfolio diversification, portfolio turnover and the extent to which they employ momentum strategy). By aggregating these different dimensions of the portfolio characteristics, his classification scheme loses the information about individual dimensions of the portfolio characteristics. For example, Bushee's measure cannot distinguish between the effect of portfolio turnover and the effect of portfolio diversification on investee firms' R&D spending.

In contrast, because my outside blockholder turnover measure focuses on a single characteristic, it allows for the inclusion of other dimensions of ownership structure such as the level of block ownership and the dispersion of block ownership. The primary goal of using outside blockholder turnover in this dissertation is not to classify outside

blockholders based on their overall investment strategies, but to examine whether the investment horizons of outside blockholders (measured by the rate of outside blockholder turnover) matters to their monitoring incentives. Further, this approach enables me to analyze how the effect of outside blockholders' investment horizons differs from the effects of the level and the concentration of outside block ownership, ownership attributes that have been considered as primary determinants of shareholders' monitoring incentives in prior studies (Grossman and Harts [1980]; Shleifer and Vishny [1986]; Huddart [1993]).

Second, Bushee classifies institutional investors based on each investor's average portfolio characteristics and then uses the proportion of ownership held by each investor type as proxy for the investee firms' overall shareholder horizons. In contrast, I directly measure investee firms' outside blockholder turnover (horizons) in my sample. This difference has an important implication in my research design. By using institutional investors' average portfolio characteristics, Bushee (1998) removes the variation of investment strategies across investee firms in each investor's portfolio. By doing so, he implicitly assumes that the variation in an investee firm's shareholder horizons is solely due to the differences among the investors. In other words, he does not allow an investor's investment horizon to vary with investee firm characteristics. In contrast, my approach does the investee firm characteristics to influence the investor's investment horizon.

As discussed in Chapter 3 and demonstrated in Appendix 1, investment horizons vary not only across investors but also across investee firms within each investor's portfolio. This result suggests that investor horizons are in part determined by investee

firm characteristics. This is important because it means that any observed relation between investor horizons and investee firm governance, such as CEO compensation, is potentially spurious because firm characteristics can potentially influence both investor horizons and investee firm governance. To address this issue, I let the outside blockholders' investment horizons vary with investee firm characteristics by directly measuring outside blockholder turnover at the investee firm level. I then employ two-stage simultaneous estimation to account for the potential endogeneity of outside blockholder turnover.

Third, Bushee exclusively focuses on institutional ownership, whereas I include all large investors (i.e., blockholders) whether they are institutions, individuals or corporations. The underlying motivation of my dissertation is to examine how the investment horizons of share ownership differ from the size of ownership in determining investors' monitoring incentives. The exit and the entry of investors with a large fraction of ownership matter more to the monitoring of investee firm management than do the exit and the entry of investors who own a very small fraction of ownership. By focusing on large investors, I will be better able to contrast the effect of ownership horizons and the effect of ownership size on the monitoring of management.

As suggested by the above differences, outside blockholder turnover provides additional information about the role of investor horizons on corporate governance to the literature on ownership structure as well as the literature on investor horizons.

4.4 Compensation Measures

I use two measures of the level of CEO compensation (total CEO compensation and CEO cash compensation) and two measures of CEO pay-performance sensitivity (the ratio of stock options granted to total CEO compensation and ΔOPTION).

Total CEO compensation (TCOMP) is the total payments made to a CEO for the fiscal year ($000), including salary, bonus, stock options granted and all other compensation. Cash compensation (CASH) is the sum of CEO salary and cash bonus ($000) for the year. The ratio of stock options granted to total CEO compensation (OPTIONS/TCOMP) measures the extent to which a CEO's total compensation is tied to stock performance. Stock options granted is the aggregate value of stock options granted to a CEO during the fiscal year valued using S&P's Black-Scholes method. ΔOPTION is the change in the value of options granted during the fiscal year per $1,000 in shareholder wealth (Yermack [1995]; Hartzell and Starks [2003]).

In addition to the above four performance measures, I also use two interaction terms, [ROA*HITURN] and [ADJRET*HITURN], to examine 1) how the pay-performance sensitivity of total CEO compensation (CEO cash compensation) may potentially vary depending on the level of outside blockholder turnover (H1), and 2) how the weights on the performance measures, ROA and ADJRET, change as outside blockholder turnover changes (H2).[16] ROA denotes return on assets, and ADJRET

[16] Other researchers regress the changes in CEO compensation on the changes in shareholder wealth and use the coefficient on the changes in shareholder wealth as a pay-performance sensitivity measure; i.e., the coefficient shows the magnitude of the change in CEO compensation that is associated with the change in shareholder wealth (e.g., Jensen and Murphy [1990]; Hartzell and Starks [2003]). This measure, however, does not allow me to examine Hypothesis 2 which predicts differential sensitivity of CEO compensation to accounting earnings and stock returns. Therefore, I use accounting earnings and stock returns instead of changes in shareholder wealth to measure the pay-performance sensitivity of CEO compensation as well as the weights placed on the two performance measures.

denotes market adjusted stock returns. HITURN is an indicator variable for the sample firms with above median outside blockholder turnover.

In the total CEO compensation (CEO cash compensation) regression, [ADJRET*HITURN] is the interaction between market adjusted stock returns (ADJRET) and the indicator variable for high outside blockholder turnover (HITURN), and [ROA*HITURN] is the interaction between return on assets (ROA) and HITURN. Positive coefficients for the interaction terms would be consistent with total CEO compensation (CEO cash compensation) being more sensitive to the performance measures when outside blockholder turnover is higher.

Comparing the size of the coefficients on ROA and ADJRET with those on [ADJRET*HITURN] and [ROA*HITURN]) will show how the weights on ROA and ADJRET change as outside blockholder turnover increases from below median to above median. Specifically, the coefficients on ROA and RET reflects the weights on the two performance measures for total CEO compensation (CEO cash compensation) when outside blockholder turnover is below median (HITURN = 0). The coefficients on [ADJRET*HITURN] and [ROA*HITURN]) reflects the weights on the two performance measures for total CEO compensation (CEO cash compensation) when outside blockholder turnover is above median ((HITURN = 1).

4.5 Descriptive Statistics

Blockholder turnover

Outside blockholder turnover is the annual proportion of an investee firm's block ownership that changed hands, averaged over the four-year sample period. Because the annual turnover calculation requires data at both the beginning and end of the years, the

four-years of data yield three annual turnover rates for each sample firm. Table 1 Panel A reports descriptive statistics of blockholder turnover by blockholder type and by year within the sample period. Total blockholder turnover (TOTALTURN) is the sum of turnover across five categories of blockholders: outside blockholders (OUTTURN), manager blockholders (MGRTURN), director blockholders (DIRTURN), ESOP blockholders (ESOPTURN) and gray blockholders (GRAYTURN). For example, the first six rows of Panel A show that the 233 firms with data for 1996-1999 had, on average, 29.04% of total blockholder turnover in 1999. Further, most of this turnover involved outside blockholders, who accounted for 27.17% of the 29.04% total turnover rate. In contrast, the other four blockholder categories together accounted for less than 2% of the 29.04% total turnover rate. The smaller proportion of turnover rate for the later four groups reflects first, that these blockholder categories hold smaller proportion of the investee firm stock. Second, the turnover rates for these blockholder categories also tend to be smaller.

The last column of Table 1 shows that the average total blockholder turnover rates (TOTALTURN) for the sample periods 1996-1999, 1997-2000 and 1999-2001 were 28.68%, 30.64% and 32.32%, respectively. Similarly, outside blockholder turnover rates (OUTTURN) for the same sample periods were 26.85%, 28.27% and 30.18%, respectively. In other words, turnover by outside blockholders accounted for the great majority (92-94%) of total blockholder turnover during the sample period.

Manager blockholders and gray blockholders accounted for the smallest proportion of the total blockholder turnover. Out of 28.68-32.32% of total blockholder turnover, 0.26-0.43% is due to manager blockholder turnover (MGRTURN) and 0.10-

0.30% is due to gray blockholder turnover (GRAYTURN). Director blockholders and ESOP blockholders contribute slightly higher turnover rates; 0.45-0.93% is due to director blockholder turnover (DIRTURN) and 0.50-1.00% is due to ESOP blockholder turnover (ESOPTURN). These results show that outside blockholders are the dominant source of blockholder turnover in the sample firms over the sample period.

Table 1 Panel B reports the distribution of total blockholder turnover by type of blockholder and sample year. The average outside blockholder turnover rate for the period 1996-2001 is 28.84% with the lowest rate, 26.19%, in 1997-1998 (reflected in the1998 turnover rate) and the highest rate, 29.99%, in 1999-2000 (reflected in the 2000 turnover rate). The pattern of outside blockholder turnover over the six-year period does not show any significant fluctuations, indicating no significant effect of the 2000-2001 stock market crash on outside blockholder turnover of the sample firms. Manager blockholder turnover, director blockholder turnover, ESOP blockholder turnover and gray blockholder turnover again generally do not account for more than 1.0% of total blockholder turnover and demonstrate stable patterns in the period 1996-2001.

Industry distribution

Table 2 Panel A reports the distribution of the sample firms in Fama-French 12-industry portfolios. The number of firms in each industry groups varies from 5 to160 firms. Manufacturing is the largest (160 firms), followed by Business Equipment (141 firms) and Sales/Service industry (131 firms). Telephone/Television Transmission has the smallest number of firms (5 firms) in the sample.

Table 2 Panel B reports four-year averages of block ownership variables and CEO compensation by industry. Telephone/Television Transmission (Industry #7) and Utilities

(Industry #8), two regulated industries, show significantly lower levels of outside block ownership. The Telephone/Television Transmission industries have the lowest outside blockholder turnover, and also a significantly higher level of CEO cash compensations than other industries. The Utilities industry shows the lowest rate of option-to-total CEO compensation, and also the lowest level of total CEO compensation.

Firm characteristics

Table 3 documents four-year averages of sample firm characteristics. The sample firms are generally large with average assets (ASSET) and market value of equity (MKTBV) of $5,603 million and $5,445 million, respectively. The mean (median) number of business segments (SEGNUM) in which sample firms operate is 2.36 (2.00). Aggarwal and Samwick (2003) report 2.18 business segments for their sample firms for the period 1993-1998. As suggested by the large firm size, the sample firms are relatively well covered by analysts. On average, 10.38 analyst forecasts (ESTNUM) were available for each sample firm for any given month during the sample period. The mean (median) annual stock return (RET) was 0.198 (0.141), and the mean (median) return on assets (ROA) was 0.047 (0.047). These performance results are consistent with the strong stock market in the last half of the 1990s.

CEO compensation

Table 3 shows that the mean (median) total CEO compensation (TCOMP) over the four-year sample period was $4.21 million ($2.46 million), which is very similar to the $4.21 million ($1.76 million) for the period 1993 to 2000 reported by Core, Guay and Verrecchia (2003). The large standard deviation of total CEO compensation ($6,631 million) suggests that total CEO compensation varies widely across the sample. On

average, 34.9% of total CEO compensation is in the form of stock options (OPTIONS/TCOMP). ΔOPTION is the average change in the value of stock options granted in the current year per $1,000 in shareholder wealth, and measures pay-performance sensitivity of stock option compensation (Yermack [1995]; Hartzell and Starks [2003]; Core, Guay and Larcker [2003]). The average ΔOPTION is $2.019 per $1,000 change in shareholder wealth with a median of $1.085. These values are larger than Hartzell and Starks' corresponding mean and median values of $0.98 and $0.17 for the period 1992 to1997 and Yermack's $0.59 and $0.07 for the period 1984 to 1991. This is consistent with the increasing use of options in CEO compensation throughout the 1990s.

Block ownership

The descriptive statistics of block ownership (Table 3) show that outsiders hold the majority block ownership. The mean (median) outside block ownership is 16.02% (14.48%) of total outstanding voting stock, followed by manager blockholders (average 4.01%) and director blockholders (average 3.10%). However, the distributions of manager block ownership and director block ownership are highly skewed, as evidenced by the fact that 60-80% of all sample firms have no manager or director blockholders. The Herfindahl index of outside block ownership (HFOUT) indicates how concentrated a firm's outside block ownership is. The sample firms' mean (median) Herfindahl Index is 0.482 (0.470). These statistics suggest that the sample firms on average have about two outside blockholders with each outside blockholder having an average of half the total block ownership, i.e., about 7-8% of the firm's stock. As noted earlier in Table 1, the last

line of Table 3 shows that the mean (median) block turnover by outside blockholders (OUTTURN) was 28.84% (24.63%).

The correlations in Table 8 show that outside blockholder turnover is highly negatively associated with the existence of a manager blockholder (MGRDUM) (ρ = -0.30, $p < 0.01$) or a director who is also a blockholder (DIRDUM) (ρ = -0.29, $p < 0.01$). The aggregate level of outside block ownership (OUTBLK) is positively associated with outside blockholder turnover (OUTTURN) (ρ = 0.09, $p < 0.01$).

The descriptive statistics on outside blockholder turnover and block ownership provide interesting preliminary results on outside blockholder turnover. Over the four-year sample period, the sample firms experienced an annual rate of blockholder turnover of about 30%, and the great majority (92-94%) of the blockholder turnover represented the turnover of outside blockholders. This result is consistent with the operation of two important dimensions of outside block ownership: outside blockholders' ownership size (measured by the level and the concentration) and outside blockholders' investment horizons. Further, the relatively low correlation (ρ=0.09) between outside blockholder turnover (OUTTURN) and the level of outside block ownership (OUTBLK) suggests that the rate of outside blockholder turnover is not determined solely by the size of outside block ownership. Taken together, these results suggest that the investment horizons of outside block ownership and size of outside block ownership are two different dimensions of outside block ownership.

The preliminary examinations so far suggest that investment horizons of outside blockholders are likely to vary with investee firm characteristics (Chapter 3) and that outside blockholder horizons and the size of outside block ownership capture two

different dimensions of outside block ownership structure (Chapter 4). Extending these results, Chapter 5 explores what firm characteristics are systematically associated outside blockholder turnover, and Chapter 6 examines how outside blockholder horizon is different from the level and the concentration of outside block ownership in explaining CEO incentive compensation.

CHAPTER 5

DETERMINANTS OF OUTSIDE BLOCKHOLDER TURNOVER

The ownership literature generally views the size of ownership stake as the primary determinant of the extent of shareholder monitoring (e.g., Shleifer and Vishny [1986]; McConnell and Servaes [1990]; Cole and Mehran [1998]; Ke, Petroni and Safieddine [1999]). My central thesis is that in addition to the size of investors' ownership stakes, how long investors intend to hold their shares will also influence their investment in monitoring managerial performance. To date, only limited research has examined the relation between shareholders' investment horizons and their monitoring, and empirical examinations of the determinants of shareholders' investment horizons are even scarcer. For example, Bethel, Liebeskind and Opler (1998, p.632) conclude that the role of large shareholders' investment horizons on the extent of their monitoring in an investee firm remains an open issue. Gaspar, Massa and Matos (2004) call for more research on the determinants of an investee firm's shareholder base (i.e., shareholder horizons). To address this issue, this chapter uses a firm's outside blockholder turnover as a measure of shareholder horizons and seeks to identify firm characteristics that explain variation in outside blockholder turnover across investee firms.

Section 5.1 discusses relevant firm characteristics and develops hypotheses relating those characteristics to outside blockholder turnover (investor horizons). Section 5.2 provides univariate analysis results, and Section 5.3 tests the hypotheses in a multivariate setting.

5.1 Outside Blockholder Turnover Hypotheses

Blockholders have better access to the management of the investee firms and to more firm-specific information than other investors in the market can obtain (Shleifer and Vishny [1986]; Kahn and Winton [1998]; Heflin and Shaw [2000]). I refer to this as the blockholders' information advantage. Blockholders can potentially use this advantage either to intervene in management of the investee firm to enhance long-term firm value (control benefits) or to seek short-term profits from share trades (trading profits) (Kahn and Winton [1998]). The two strategies generally involve different investment horizons: i.e., pursuing control benefits generally requires longer investment horizons, whereas pursuing trading profits generally involve shorter investment horizons. Therefore, I expect investment horizons of outside blockholders (i.e., outside blockholder turnover) to vary with investee firm characteristics that influence the relative size of control benefits and trading profits. I identify intervention costs, share liquidity, firm performance and inside ownership as those investee firm characteristics. In the following sub-sections, I discuss each characteristic and develop testable hypotheses.

Intervention costs

While intervention in the management of the investee firm can potentially improve long-term firm value, it is also costly. A blockholder's intervention costs include monitoring costs (Noe [2002]) and block holding costs, such as loss of liquidity (Chidambaran and John [1999]) and foregone trading benefits (Kahn and Winton [1998]). Monitoring costs include expenditures on resources to monitor management, solicitation of shareholder proposals, potential legal challenges or, in an extreme situation, mounting a proxy contest (Bethel, Liebeskind and Opler [1998]). Assuming that the marginal

benefits of intervention are fixed across investee firms, these costs reduce the net-control benefits available to the blockholders. Therefore, holding all else constant, firms with higher intervention costs are less likely to attract long-horizon blockholders who seek to intervene in management of the investee firm to improve firm value. This implies that they are more likely to have blockholders who trade frequently to exploit their private information (Bethel, Liebeskind and Opler [1998]; Kahn and Winton [1998]).

Information for intervention of management is different from information for short-term trading profits. Holmstrom and Tirole (1993) classify information into "strategic information" and "speculative information". Strategic information is information that indicates a better course of action for the investee firm but is useless unless acted on. Speculative information simply helps to predict the future value of the investee firm, and is useful only for trading purposes (Holmstrom and Tirole [1993], p.699). Relative to the cost of speculative information, the cost of gathering strategic information is likely to be higher in firms with greater information asymmetry and greater firm risk, such as young firms in a rapidly evolving industry. For example, it may be hard for outside blockholders to determine optimal management policies in investee firms that are specialized in new technologies, have an intensive R&D focus or rely on specialized intangibles such as human skills (Kahn and Winton [1998]). Relative to the cost of gathering strategic information, the cost of gathering speculative information for share trading is lower in those firms.

Therefore, investee firms with greater information asymmetry and greater risk are less likely to have blockholders who seek control benefits,[17] i.e., longer investment

[17] Alternatively, Demsetz and Lehn (1985) argue that monitoring managerial performance is more difficult in firms operating in unstable environment than those operating in stable environment. Therefore, the

horizons and lower blockholder turnover. In turn, they are more likely to have blockholders who seek trading profits, i.e., shorter investment horizons and higher blockholder turnover.

H1 *Holding all else constant, investee firms with higher risk and greater information asymmetry are more likely to have greater outside blockholder turnover.*

To acquire control of an investee firm, investors need to control a significant percentage of the investee firm's voting shares. As investee firm size increases, the cost of acquiring any given fraction of ownership also increases. Therefore, it is costlier for the investors to accumulate enough shares to intervene in the management when the investee firm size is larger.[18] This suggests that large firms are less likely to have investors who seek control benefits and more likely to have shorter-horizon blockholders, i.e., investors with greater turnover.

H2 *Holding all else constant, larger investee firms are more likely to have greater outside blockholder turnover.*

Share Liquidity

Illiquid stocks tend to have greater bid-ask spreads, increasing the transaction costs of share trades (Falkenstein [1996]; Bushee and Noe [2000]; Gompers and Metrics [2001]). Although all outside blockholders would prefer high share liquidity, such liquidity will be more important to blockholders who turn over their portfolio more frequently than those who do not. Falkenstein (1996) examines equity holdings of

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noisier a firm's environment, the greater the payoff to owners in maintaining tighter control. Based on this argument, they predict that firms transacting in noisier environment are likely to have more concentrated ownership. However, Demsetz and Lehn's (1985) hypothesis does not consider investment horizons of shareholders. Instead, they assume that all shareholders have long-term horizons, and have an option to either delegate control to the management or to keep the control.

[18] Alternatively, smaller firms often have greater inside ownership, such as family-owned firms, and thus have greater intervention costs. To separate the firm size effect on outside blockholder turnover from the effect of inside ownership, I include both firm size and inside block ownership in the outside blockholder turnover model.

mutual funds (a class of investors with generally shorter investment horizons) and documents that mutual funds have a significant preference for stocks with high liquidity. Bushee and Noe (2000) find that transient institutional investors (shorter-horizon investors) prefer firms with high share liquidity, while dedicated institutional investors (longer-horizon investors) do not display such a preference. These results suggest that investee firms with greater share liquidity are more likely to attract shorter-horizon outside blockholders; i.e., they will experience greater blockholder turnover.

H3 *Holding all else constant, investee firms with greater share liquidity are likely to have higher outside blockholder turnover.*

Firm Performance

Existing literature documents that poorly performing firms or firms that are expected to perform poorly (low growth firms) tend to attract activist shareholders who seek control benefits. Specifically, managers who fail to create shareholder value tend to be disciplined by large shareholders. Denis and Serrano (1996) report that management turnover increases significantly in poorly performing takeover target firms in which outside blockholders acquire an ownership stake. Bethel, Liebeskind and Opler (1998) report that activist blockholders who seek control benefits tend to choose investee firms with low market-to-book value of equity (low expected future performance), and argue that activist blockholders play an important role in the market for partial control.[19]

[19] Jensen and Ruback (1983) define 'corporate control' as the right to determine management of corporate resources, that is, the right to hire, fire and set the compensation of top-level managers. The market for corporate control is usually referred to as the takeover market in which rival firms' management teams compete for control. The takeover market is an important component of the external managerial labor market. In the transfer of corporate control through a takeover, a bidding firm usually acquires 100% of the target's outstanding common stocks. In the transfer of partial control, however, a bidding firm (or investor) acquires less than 100% of the target's ownership but may obtain effective control over the target by being a majority shareholder or the largest shareholder.

Similarly, Bushee and Noe (2000) show that longer-horizon institutional investors tend to prefer lower market-to-book investee firms. In contrast, short-horizon institutional investors (short-horizon investors) use momentum strategies extensively; i.e., they buy shares of firms with recent good performance and sell shares of firms with poor performance (Bushee [1998], [2001]; Dikolli, Kulp and Sedatole [2004]).

These results suggest that longer-term investors target low growth firms with the intention of creating value through improved monitoring, whereas shorter-horizon investors target high growth firms with good recent performance to implement momentum trading strategies.

H4 *Holding all else constant, low growth firms tend to attract longer-horizon blockholders and therefore, experience lower blockholder turnover. In contrast, high growth firms tend to attract shorter-horizon blockholders and therefore, experience higher blockholder turnover.*

Inside Ownership

The relation between inside ownership (i.e., blocks owned by managers, directors, ESOP and affiliated entities) and outside blockholder turnover is unclear. On the one hand, the entrenchment hypothesis (Morck, Shleifer and Vishny [1988]) predicts that when managers own a substantial amount of the firm's equity ownership, it is more difficult for outside blockholders to pressure management to change firm policy or to replace underperforming managers. Consistent with the entrenchment hypothesis, the ownership literature documents that inside ownership is negatively associated with the probability that the firm will be taken over ([Stulz [1988]; Dann and DeAngelo [1988]). Researchers in these studies argue that the presence of entrenched insiders deters changes in corporate control or partial corporate control. Therefore, the entrenchment hypothesis

suggests that investee firms with higher inside ownership are less attractive to outside blockholders who seek control benefits. In other words, blockholders in such firms are more likely to be investors with greater focus on trading profits.

On the other hand, investee firms with large inside ownership tend to be smaller, with shares that are traded less frequently (lower share liquidity) and have greater transaction costs of trading. Therefore, inside block ownership is likely to deter shorter-horizon outside blockholders who prefer liquid and lower transaction-cost shares. This argument suggests that investee firms with higher inside block ownership are less likely to have shorter-horizon outside blockholders who trade frequently.

Because of the two opposing views on the relation between inside block ownership and outside blockholder turnover, I present the hypothesis in null form.

H5 *Holding all else constant, inside block ownership and outside blockholder turnover will have no systematic association.*

5.2 Univarite Analysis

As proxies of intervention costs (H1 & H2), share liquidity (H3) and firm performance (H4), I use nine firm characteristics: volatility of return on assets (ROASTD), volatility of stock returns (RETSTD), firm size (ASSET), the number of business segment (SEGNUM), share turnover rate (SHRTRN), the number of analysts forecasts (ESTNUM), firm age (AGE), market-to-book value of equity (MKTBV), and return on asset (ROA). I use inside block ownership as a measure of inside ownership (H5). Finally, I include the level (OUTBLK) and the concentration (HFOUT) of outside block ownership to examine how outside blockholder turnover is related to these two conventional ownership variables.

As a preliminary examination, I group the sample firms into quintiles based on the firm characteristics[20] and check how outside blockholder turnover rates vary across the quintiles. Table 4 Panels A-C report the results of the univariate analyses.

First, the univariate results suggest that outside blockholder turnover is higher in firms with greater information asymmetry and higher firm risk (Table 4 Panel A). Specifically, information asymmetry and firm risk measured by return volatility (RETSTD) and earnings volatility (ROASTD) are positively associated with outside blockholder turnover. Outside blockholder turnover increases monotonically from 22.45% (24.47%) for firms in the lowest quintile of ROASTD (RETSTD) to 33.95% (34.40%) for firms in the highest quintile of ROASTD (RETSTD). These results are consistent with Hypothesis 1.

Second, to achieve control benefits, a blockholder needs a significant amount of share ownership in a firm. As firm size (ASSET) increases, the costs of acquiring and owning any given fraction of ownership also increase. Therefore, trading profits may become more attractive than control benefits as firm size increases (Hypothesis 2). Outside blockholder turnover is generally increasing in firm size (ASSET), supporting Hypothesis 2. The mean (median) turnover is 23.91% (21.47%) in the lowest quintile of firm size and 29.88% (27.11%) in the highest quintile of firm size (Panel A in Table 4). However, the number of business segments (SEGNUM in Panel B of Table 4), another proxy for firm size, does not show a systematic association with outside blockholder turnover in a univariate setting.

[20] For inside block ownership, however, I use indicator variables for the presence of inside blocks (manager blocks and director blocks) because most firms do not have inside block ownership.

Third, outside blockholder turnover is higher in firms with greater share liquidity (SHRTN in Panel A in Table 4). Share liquidity, as measured by the ratio of annual share trading volume to total shares outstanding, is positively associated with outside blockholder turnover. The outside blockholder turnover rate increases from 14.83% in the lowest quintile of share liquidity to 37.13% in the highest quintile of share liquidity. This result strongly supports Hypothesis 3. Note that share liquidity measures turnover rate of all outstanding common stock, whereas outside blockholder turnover measure turnover rate of block shares owned by outside blockholders.

Forth, recent accounting performance measured by return on assets (ROA) is negatively associated with outside blockholder turnover (Panel A in Table 4). For example, the mean outside blockholder turnover decreases from 32.27% in the lowest quintile of ROA to 25.10% in the highest quintile of ROA. This result is inconsistent with Hypothesis 4 which predicts higher outside blockholder turnover in firms with better recent performance.

The number of earnings estimates by analysts (ESTNUM) proxies for either information asymmetry or expected future firm performance (Panel B of Table 4). On one hand, greater analyst following may lead to more firm-specific information available to the public. On the other hand, firms with good performance may attract more analysts (Lang, Lins and Miller [2003]). Based on the univariate analysis, outside blockholder turnover generally increases in ESTNUM. The mean (median) outside blockholder turnover is 21.40% (15.57%) in the lowest quintile of ESTNUM and 32.40% (21.22%) in the highest quintile of ESTNUM (Panel B in Table 4). This pattern suggests that shorter-

horizon outside blockholders are more likely to choose firms that analysts expect to perform well. This result is consistent with Hypothesis 4.

Market-to-book value of equity (MKT/BV), another proxy for expected future firm performance measure, demonstrates no systematic association with outside blockholder turnover. Taken together, the univariate results of ROA, ESTNUM and MKT/BV provide an inconclusive result for Hypothesis 4.

Fifth, outside blockholder turnover tends be higher in younger, less established firms. Specifically, outside blockholder turnover is generally decreasing in firm age (AGE) measured by the number of firm years in CRSP (Falkenstein [1996]). Firms in the lowest age quintile have a mean (median) outside blockholder turnover rate of 32.81% (28.94%), while firms in the highest age quintile have a mean (median) outside blockholder turnover rate of 28.54% (23.24%) (Panel A in Table 4).

Seventh, outside blockholder turnover shows a strong systematic association with the ownership structure of firms. Outside blockholder turnover has an increasing non-monotonic relation with the level of outside block ownership (OUTBLK) and the concentration of outside block ownership (HFOUT). Specifically, outside blockholder turnover increases in the first three quintiles of both ownership variables but decreases in the last two quintiles. Given this result, I control for the level of outside ownership and the concentration of outside ownership in the multivariate analysis.

Finally, outside blockholder turnover is significantly lower in firms with inside blockholders. The mean (median) outside blockholder turnover in firms with insider blockholder is 18.11 % (14.56%) whereas the mean (median) outside blockholder

turnover is 41.02% (37.05%) in firms with no inside blockholders. This result strongly supports Hypothesis 5.

5.3 Multivariate Analysis

5.3.1 Factor Analysis

The univariate analyses in Section 5.2 identify nine firm attributes (excluding ownership variables) that are potentially associated with outside blockholder turnover. While the univariate results show that most of these variables are systematically associated with outside blockholder turnover, in many cases, these firm characteristics are significantly high (Table 5). Therefore, the manner in which they are related to outside blockholder turnover becomes unclear in a multivariate setting. For example, share turnover (SHRTN) and firm risk measured by earnings volatility (ROASTD) and return volatility (RETSTD) are highly correlated. The correlation between SHRTN and ROASTD is 0.47 ($p < 0.01$), and the correlation between SHRTN and RETSTD is 0.66 ($p < 0.01$). Likewise, the two risk measures have positive and significant associations with outside blockholder turnover in an OLS regression without SHRTN. However, when SHRTN is included in the regression, the risk measures are no longer statistically significant.

Therefore, I use factor analysis (principal component) to reduce these nine firm characteristics to a smaller set of factors that are statistically uncorrelated (Ittner and Larcker [1995]; Nagar [2002]). Three factors with eigenvalues greater than unity emerge from the analysis. In order to aid interpretation of the resulting factors, I employ a Varimax rotation to form a simpler structure, and estimate factor scores for each firm.

The three factors together explain 65% of the total variance in the nine firm characteristics. Table 6.1 presents the factor loading coefficients.

For Factor 1, the firm attributes with significant factor loading (i.e., those with an absolute value of factor loading > 0.50) are share turnover (SHRTN), earnings volatility (ROASTD) and stock return volatility (RETSTD). Share turnover (SHRTN) reflects overall liquidity of the firm's stock. Firms with greater earnings volatility and stock return volatility are riskier firms with greater information asymmetry. The positive association between share liquidity and volatility of stock returns is consistent with Holmstrom and Tirole (1993) who analytically demonstrate that higher share liquidity leads to greater volatility of stock returns.

Return on assets (ROA) is also highly loaded on the Factor 1, but the sign of the loading is negative. The negative loading is consistent with the negative correlation between ROA and the two performance volatility measures, ROASTD and RETSTD, as seen in Table 5. Specifically, ROA is negatively associated with both earnings volatility ($\rho = -0.53$) and stock return volatility ($\rho = -0.28$). These results are consistent with weaker operating performance being associated with greater firm risk, leading to greater variation in investors' opinions on the firm value. Given the loadings above, I interpret Factor 1 as 'Share Liquidity and Information Asymmetry' (LQDITY/INFOCOST).

Factor 2 shows significant loadings on the number of business segments (SEGNUM), firm age (AGE) and firm size (ASSETS). Firms with greater total assets and more complex asset structures are typically more established firms. Also, firms that have been listed in the stock market longer are likely to be more mature firms. Therefore, I interpret Factor 2 as 'Size/Maturity' (SIZE/MATURITY).

Factor 3 reflects significant loadings on the number of earnings forecasts by analysts (ESTNUM) and the market-to-book value of equity (MKT/BV). ESTNUM and MKT/BV can proxy for either information asymmetry or expected future firm performance. Greater analyst following (higher ESTNUM) may lead to greater firm information available to the public (lower information asymmetry), or firms with greater expected performance may attract more analysts (Lang, Lins and Miller [2003]). Higher market-to-book value of equity (MKT/BV) reflects either higher information asymmetry or greater expected future firm performance. The positive correlation between these two variables (ρ=0.23, Table 5) and their factor loadings on Factor 3 suggest that ESTNUM and MKT/BV proxy for expected firm performance rather than information asymmetry. Therefore, I interpret Factor 3 as 'Performance' (PERFM).

As preliminary analysis for the association between outside blockholder turnover (OUTTURN) and the three factors, I examine Pearson correlations of among those variables (Table 6.2). Hypotheses 1 and 2 predict a positive association between intervention costs (measured by information asymmetry and firm size) and outside blockholder turnover. Hypothesis 3 predicts that firms with greater share liquidity will experience greater outside blockholder turnover. Therefore, I expect Factor 1 (Liquidity/Information Asymmetry) and Factor 2 (Size/Maturity) to be positively associated with outside blockholder turnover. Hypothesis 4 predicts a positive association between Factor 3 (Performance) and outside blockholder turnover.

Consistent with the predictions, Factor 1 (Liquidity/Information Asymmetry) is positively associated with outside blockholder turnover rate ($\rho = 0.22$, $p<0.01$), and so is Factor 3 (Performance) ($\rho = 0.17$, $p<0.01$). The positive correlation between Factor 2

(Size/Maturity) and outside blockholder turnover (OUTTURN) is consistent with the prediction, but the correlation is not significantly different from zero at conventional level. The correlations generally support Hypotheses 1 to 4.

5.3.2 Multivariate Estimation of Outside Blockholder Turnover

In this section, I test Hypotheses 1 to 5 in a multivariate setting, using the three factors obtained from the factor analysis in Section 5.3.1. The three factors are Liquidity/Information Asymmetry (LQDITY/INFOCOST), firm size/maturity (SIZE/MATURITY) and firm performance (PERFM). The Hypotheses 1 to 4 predict a positive association between the three factors and outside blockholder turnover. To examine Hypothesis 5, I use inside block ownership which consists of block-shares owned by managers, directors, ESOP or affiliated entities could be systematically associated with outside blockholder turnover but the direction of the association is ambiguous. I also include the following control variables that are potentially associated with outside blockholder turnover.

- Outside block ownership (OUTBLK): The aggregate level of outside block ownership may reflect outside blockholders' intention to seek control benefits or their intention to seek profits from trades on their private information. Therefore, the relation between OUTBLK and outside blockholder turnover is ambiguous. Inclusion of this variable is, however, important because it will help disentangle the effect of ownership stake from the turnover measure.

- Herfindahl Index of outside block ownership (HFOUT): The Herfindahl Index measures the concentration of outside block ownership. Investors who seek control benefits are more likely to acquire larger ownership stakes to enable them to influence the management of investee firm, and this will be reflected in the higher Herfindahl Index. Therefore, HFOUT and outside blockholder turnover should be negatively associated. Also similar to the reasoning above, inclusion of this variable is important to control for the effect of ownership dispersion.

- Regulated industries: Firms in the Telecommunication industry or in the Utility industry tend to be larger and have lower share liquidity. Therefore, firms in these industries tend to have lower outside block ownership as well as lower outside blockholder turnover (Table 3). I include indicator variables for the Telecommunication industry (TELDUM) and the Utility industry (UTILDUM) to control for the industry effects on outside blockholder turnover.

These variables yield the following OLS regression. I use log transforms for the ownership variables because of their skewed distributions.

$$\log(1+\text{OUTTURN}) = \varphi_0 + \lambda_1 \text{LQDTY/INFOCOST} + \lambda_2 \text{SIZE/MATURITY} + \lambda_3 \text{PERFM} + \lambda_4 \log(1+\text{INBLK}) + \lambda_5 \log(1+\text{OUTBLK}) + \lambda_6 \text{HFOUT} + \lambda_7 \text{TELDUM} + \lambda_8 \text{UTILDUM}$$

Model 1 in Table 7 reports a positive and significant coefficient for Liquidity/Information Asymmetry (LQDITY/INFOCOST) (t = 5.27), supporting Hypothesis 1. That is, firms with higher information asymmetry attract outside blockholders who tend to maximize their share value by trading on their private information (higher turnover) rather than outside blockholders who seek control benefits through improved monitoring (lower turnover). Size/Maturity (SIZE/MATURITY) does not have a statistically significant association with outside blockholder turnover (t =0.78). Therefore, Hypothesis 2 is not supported. The positive association between outside blockholder turnover and Liquidity/Information Asymmetry (LQDITY/INFOCOST) is consistent with Hypothesis 3. That is, shorter-horizon blockholders prefers firms with greater share liquidity which could contribute to greater increases in their net-trading profits.[21]

[21] One may argue that share liquidity and outside blockholder turnover measure the same attribute, i.e., share turnover rate. However, share liquidity explains only 8% of total variation in outside blockholder turnover in the OLS regression (the result is not reported). Besides, outside blockholder turnover is more

Performance (PERFM) is positively associated with outside blockholder turnover (t=4.88). This result supports Hypothesis 4 which predicts that longer-horizon outside blockholders (i.e., those with lower turnover rates) target poorly performing firms with the intention to improve long-term firm value via intervention in the management. These results of the three factors (Liquidity/Information Asymmetry, Size/Maturity and Performance) stay qualitatively the same after including inside block ownership and other control variables (Models 2 and 3 in Table 7).

To examine the association between outside blockholder turnover and other dimensions of bock ownership structure, I first add the level of inside block ownership (INBLK) to Model 1 (Model 2 in Table 7). I then additionally include two outside block ownership variables: the level of outside block ownership (OUTBLK) and the concentration of outside block ownership measured by the Herfindahl Index (HFOUT) (Model 3 in Table 7). The negative and highly significant coefficients on inside block ownership (INBLK) in both Models 2 and 3 in Table 7 support the argument in Hypothesis 5 that investors with shorter investment horizons avoid firms with greater inside block ownership due to lower share liquidity and higher transaction costs.

In Table 7 Model 3, both the level of outside block ownership (OUTBLK) and the concentration of outside block ownership (HFOUT) have positive coefficients, but they are not significantly different from zero at conventional levels. In other words, after controlling for inside ownership (INBLK) and other firm characteristics, neither the level (OUTBLK), nor the concentration of outside block ownership (HFOUT) explains outside blockholder turnover. This result is consistent with the perspective that outside

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closely correlated with inside block ownership ($\rho = -0.61$) than with share liquidity (($\rho = 0.34$) (Table 5). These results suggest that outside blockholder turnover is not the same as overall share turnover rate.

blockholder turnover captures a fundamentally different dimension of outside block ownership from that of the level of block ownership (OUTBLK) or the concentration of outside block ownership (HFOUT). An important implication of this result is that outside block ownership needs to be evaluated in terms of its horizon as well as the level and the concentration.

Finally, the adjusted R^2 of model 3 in Table 7 (adjusted $R^2 = 0.39$) demonstrates that Liquidity/Information Asymmetry (LQDITY/INFOCOST), Performance (PERFM), and the level of inside block ownership (INBLK) together explain an economically significant portion of the total variation in outside blockholder turnover. This result implies that the investment horizons of outside blockholders depend significantly on investee firm characteristics. Additionally, it also explains the observation in Appendix 1 that block holding periods vary not only across different investors, but also across investee firms in an investor's portfolio. In other words, to the extent that there is cross-sectional variation in investee firm characteristics within an outside blockholder's portfolio, the outside blockholder's investment horizon will also vary accordingly.

Overall, the results demonstrate that outside blockholder turnover is higher in firms with higher information asymmetry, greater share liquidity and higher growth. Inside block ownership significantly deters outside blockholder turnover, whereas the level and the concentration of outside block ownership have no significant effect on outside blockholder turnover. These results have two important implications for studies on ownership. First, the results suggest that outside block ownership should be evaluated along three dimensions of outside block ownership. They are the level of outside block ownership, the concentration of outside block ownership and the investment horizons of

outside blockholders. Second, horizons of outside blockholders are significantly determined by characteristics of the firms in which the outside blockholders invest. Therefore, without accounting for the potential endogeneity of outside blockholder horizons, the relation between outside blockholder horizons and governance of investee firms could be spurious.

In Chapter 6, I examine how firms design CEO compensation contracts in response to the different investment horizons of outside blockholders. Based on the results in Chapter 5, I include the three dimensions of outside block ownership (the level of outside block ownership, the concentration of outside block ownership and the investment horizons of outside blockholders) in the CEO compensation regression. To account for the potential endogeneity of outside blockholder turnover, I then employ two-stage simultaneous estimation approach.

CHAPTER 6

OUTSIDE BLOCKHOLDER TURNOVER AND CEO COMPENSATION

Chapter 5 concludes that attributes of an investee firm influence outside blockholders' decisions about their investment horizons for the investee firm by affecting the outside blockholders' monitoring cost-benefit trade-offs.

I argue that the investee firms, in response, take into account the outside blockholders' horizons when designing their CEO compensation contracts in ways that are consistent with the optimal mitigation of agency conflicts. To test this argument, this chapter examines how outside blockholder turnover is associated with investee firms' use of incentives for their CEOs. In isolating the effect of outside blockholder turnover on CEO incentives, I control for the potential effect of the level and the concentration of outside block ownership on CEO incentives.

The remainder of this chapter is organized as follows. Section 6.1 develops hypotheses, and Section 6.2 provides univariate analyses. Section 6.3 discusses multivariate analyses including model specifications and results.

6.1 Hypotheses

A firm owner can influence the behavior of managers in the firm by using a variety of mechanisms including monitoring[22] and incentive contracting. Shareholder monitoring includes various shareholder activities that aim to directly or indirectly

[22] I do not include external monitoring by stock market, labor market or product market in the shareholder monitoring.

influence management decisions. Examples of shareholder monitoring activities include gathering information about managerial performance, conducting private negotiations with management, soliciting shareholder proposals, initiating litigation against the management, and in an extreme situation, mounting a proxy contest to replace the current management (Del Guercio and Hawkins [1999)]; Shleifer and Vishny [1986]; Bethel, Liebeskind and Opler [1998]). Managerial incentives can be either financial or non-financial. However, the agency theory literature primarily focuses on periodical financial compensation.

While monitoring and incentive contracting mitigate the agency problem, they are also costly to the owners. For example, monitoring requires shareholders to commit time and resources on the monitoring activities. In addition, Chidambaran and John [1999] argue that an owner bears monitoring cost in the form of reduced liquidity. Similarly, incentive contracting can also be costly. For example, imposing financial risk on a risk-averse manager through incentive compensation requires that the owner pay the manager a risk premium for the financial risk that the manager bears. Therefore, the owner will determine an optimal mix of monitoring and incentive compensation based on the marginal cost-benefit trade-off of each mechanism (Core, Guay and Larcker [2003]; Hartzell and Starks [2003]).

Large shareholders, such as outside blockholders, have better access to the management of the investee firms and to more firm-specific information than other investors in the market can obtain (Shleifer and Vishny [1986]; Kahn and Winton [1998]; Heflin and Shaw [2000]). They can potentially use this advantage either to intervene in management of the investee firm to enhance long-term firm value (*control benefits*) or to

seek short-term profits from share trades (*trading profits*) (Kahn and Winton [1998]). The two strategies generally involve different investment horizons. Pursuing control benefits generally requires longer investment horizons, whereas pursuing trading profits generally involve shorter investment horizons.

Large shareholders who seek *control benefits* are more likely to invest time and resources in investee firm monitoring because their investment strategy is to maximize their portfolio value by intervening in investee firm management or providing improved monitoring of managerial performance. Accordingly, investee firms with large shareholders who seek control benefits are likely to rely more on shareholder monitoring than on incentive contracting when inducing desirable actions of managers.

Large shareholders who seek *trading profits* are less likely to expand time and resources on investee firm monitoring because they improve their portfolio value by trading on their superior information rather than by providing direct monitoring of investee firm management. Further, due to their frequent share turnover for trading profits, these outside blockholders have less time to learn about the firm to provide effective monitoring. Therefore, investee firms with large shareholders who seek trading profits (i.e., shareholders with shorter investment horizons) tend to rely more on incentive contracting than on shareholder monitoring when aligning managers' interest with those of shareholders. Additionally, as the investee firms impose more compensation risk on their managers through the increased incentives, they must also increase the risk premium that they pay to the managers (Holmstrom [1979]).

The preceding argument yields the following hypothesis:

H1 *Holding all else constant, firms with higher outside blockholder turnover are likely to design CEO compensation with greater pay-performance sensitivity and a higher level of CEO compensation.*

Firms frequently use stock returns and earnings as performance measures for CEO incentives. Murphy (2000) documents that while his sample firms use a variety of financial and non-financial measures for executive compensation, almost all of the sample firms rely on some accounting performance measures. Equity-based compensation directly links CEO incentives to stock returns. For a sample of firms in the period 1993-2000, Core and Guay (2003) find that the majority of CEO compensation is in the form of equity incentives.

Agency theory suggests that the relative weight placed on stock returns and earnings in determining CEO compensation is inversely related to the noise in each performance measure (Banker and Datar [1989]; Lambert [2001]; Bushman and Smith [2001]). Empirical studies support this prediction. For example, Lambert and Larcker (1987) show that firms rely more on stock-based compensation when accounting measures are noisy, and Yermack (1995) documents that CEO compensation is more sensitive to stock returns in companies with noisier accounting data.

A line of literature suggests that short horizons of investors may encourage earnings management by managers of investee firms. Bushee (1998) and Dikolli, Kulp and Sedatole (2004) argue that trading decisions of shorter horizon institutional investors are more sensitive to current earnings than longer horizon investors. Similarly, Jacobs (1991) and Porter (1992) contend that because short-horizon investors make trading

decisions in response to current earnings, managers of firms dominated by short-horizon investors have a greater incentive to take actions to manage current earnings.

Earnings are generally more subject to management discretion than are stock returns. Further, shareholder monitoring tends to be weaker in firms with higher monitoring costs (Kahn and Winton [1998]) and in firms dominated by shareholders with shorter investment horizons (Bushee [1998]; Gaspar, Massa, and Matos [2004]). These results suggest that the earnings of investee firms with higher monitoring costs and greater outside blockholder turnover (shorter investment horizons) are likely to be noisier and less informative about long-term firm value, and hence less useful for contracting. Such concerns will lead the investee firms with shorter-horizon blockholders to rely more on stock returns than on earnings.

Providing an alternative reason, Holmstrom and Tirole (1993) also predict that firms with shorter-horizon shareholders put greater weight on stock returns than on accounting earnings in managerial incentive contracts. They postulate that greater share liquidity of investee firms helps speculators (shorter-horizon investors) maximize their trading profits from their private information, and thus encourages the speculators to acquire more information[23] about investee firms. This increased information flow into the market improves the information content of the investee firms' stock price. That is, stock price of these investee firms is more informative about managerial performance.

[23] Holmstrom and Tirole (1993) classify information into "strategic information" and "speculative information". Strategic information is information that indicates a better course of action for the investee firm but is useless unless acted on. Speculative information simply helps to predict the future value of the investee firm, and is useful only for trading purposes (Holmstrom and Tirole [1993], p699). Therefore, shorter-horizon investors who seek trading profits will seek speculative information but not strategic information.

While the two views take a different position on how investment horizons of investors influence information content of the two performance measures, both predict that investee firms with shorter horizon shareholders will put more weight on stock returns than on accounting earnings for the managerial incentives.

H2 *Holding all else constant, firms with higher outside blockholder turnover are more likely to increase CEO pay-performance sensitivity by increasing the weight on stock returns relative to the weight on accounting earnings in CEO compensation.*

To summarize, Hypothesis 1 and Hypothesis 2 above predict that investee firms use incentive contracting as an alternative governance mechanism to outside blockholders' monitoring activities. Further, they rely more on stock returns than accounting based measures to provide incentives. To test these hypotheses, I conduct univariate analyses in Section 6.2 and multivariate analyses in Section 6.3.

6.2 Univariate Analysis

This section examines how outside blockholder turnover and traditional dimensions of block ownership are associated with the level, structure, and sensitivity of CEO compensation in a univariate setting (Table 9). I use the outside blockholder turnover rate (OUTTURN) to reflect the investment horizons of outside block ownership. In addition I use percentage of the total shares owned by all outside blockholders (OUTBLK) to reflect the level of outside block ownership and the Herfindahl Index of outside block ownership (HFOUT) to measure the dispersion of outside block ownership. For insider ownership, I use dummy variables for the presence of director blockholders (DIRBLK) and manager blockholders (MGRBLK). As shown in Table 3, most sample

firms do not have manager block ownership (MGRBLK) or director block ownership (DIRBLK), resulting in highly skewed distributions of those variables. Likewise, the median ownership size is zero for both MGRBLK and DIRBLK. Therefore, I use indicator variables for manager block ownership and director block ownership instead of treating them as continuous variables.

For CEO compensation, I use two measures of the CEO compensation level (total CEO compensation and CEO cash compensation) and two measures of CEO pay-performance sensitivity (the ratio of stock options granted to total CEO compensation and ΔOPTION). Total CEO compensation (TCOMP) is the total payments made to a CEO for the fiscal year ($000), including salary, bonus, stock options granted and all other compensation. Cash compensation (CASH) is the sum of salary and cash bonus ($000) for the year. The ratio of stock options granted to total CEO compensation (OPTIONS/TCOMP) measures the extent to which a CEO's total compensation is tied to stock performance. ΔOPTION is the change in the value of options granted during the fiscal year per $1,000 in shareholder wealth (Yermack [1995]; Hartzell and Starks [2003]).

Outside Blockholder Turnover

Table 9 Panel A shows that total CEO compensation (TCOMP) and the proportion of CEO compensation in the form of stock options (OPTIONS/TCOMP) are generally increasing in outside blockholder turnover. Likewise, ΔOPTION is also increasing in outside blockholder turnover. The mean (median) total CEO compensation in the lowest quintile of outside blockholder turnover is $4.134 million ($1.064 million) versus $4.890 million ($3.273 million) in the highest quintile. The mean value of

OPTIONS/TCOMP increases from 24.8% to 43.4% as outside blockholder turnover increases from the lowest quintile to the highest quintile. Similarly, ΔOPTION increases from 1.416 in the lowest quintile to 2.438 in the highest quintile. These results strongly support Hypothesis 1.

In contrast, the proportion of cash compensation (CASH/TCOMP) decreases in outside blockholder turnover. CEOs of firms in the lowest quintile of outside blockholder turnover receive 55.8% (54.4%) of their mean (median) total compensation in cash (CASH/ TCOMP), while CEOs of firms in the highest quintile receive only 35.6% (33.9%) of total compensation in cash. These results are further supported by the correlations in Table 8. Specifically, outside blockholder turnover (OUTTURN) is positively associated with TCOMP ($\rho = 0.06$), OPTIONS/TCOMP ($\rho = 0.24$), and ΔOPTION ($\rho = 0.10$). However, it is significantly negatively correlated with CASH/TCOMP ($\rho = -0.27$). These results indicate that larger total CEO compensation in firms with greater outside blockholder turnover result from larger option-based CEO compensation rather than larger cash-based CEO compensation. Given that cash-based incentives are typically based on accounting earnings, this result supports the prediction of Hypothesis 2 that firms with higher outside blockholder turnover will rely more on stock returns than accounting earnings to provide CEO incentives.

Figure 1 summarizes the above univariate analyses in the bar graph. The height of each bar represents median total CEO compensation for each quintile of outside blockholder turnover. The stacked blocks in each bar reflect components of the median total CEO compensation. The median total CEO compensation steadily increases from $1.064 million to $3.273 million as outside blockholder turnover rate increases from the

lowest quintile to the highest quintile. The graph shows that the increase in median total CEO compensation is primarily due to the increase in stock options granted. The median value of options granted is $346,000 in the lowest quintile of outside blockholder turnover and $1,282,000 in the highest quintile of outside blockholder turnover. Salary and cash bonus do not change significantly across different quintiles of outside blockholder turnover rates.

Overall, the univariate analyses indicate that firms with shorter horizon outside blockholders employ incentive structures with greater CEO pay-performance sensitivity. They do so by relying more on option-based incentives rather than cash-based incentives. Further, they pay larger total CEO compensation to offset the greater compensation risk imposed on their CEOs. These results are consistent with both Hypotheses 1 and 2.

Level and Concentration of Outside Block Ownership

Researchers typically use the size of ownership stake measured by the level and the concentration of share ownership as a proxy for the amount of shareholder monitoring in a firm. For example, Hartzell and Starks (2003) use the level and the concentration of institutional share ownership in an investee firm as a proxy for amount of monitoring by institutional investors. To be consistent with the literature, besides the outside blockholder turnover, I examine both the level of total outside block ownership (OUTBLK) and the concentration of outside block ownership as measured by the Herfindahl Index of outside block ownership (HFOUT).

To the extent that larger outside block ownership reflects greater monitoring incentives of the outside blockholders, agency theories predict that both the level of outside block ownership (OUTBLK) and the concentration of block ownership (HFOUT)

are negatively associated with pay-performance sensitivity of CEO compensation. Because smaller pay-performance sensitivity imposes less compensation risk, agency theories further predict that the level and the concentration of outside block ownership is negatively associated with the level of total CEO compensation.

Panels B and C in Table 9 show the univariate analyses relating the level of outside block ownership (OUTBLK) and the concentration of outside block ownership (HFOUT) to CEO compensation characteristics. The option-based CEO pay-performance sensitivity increases in the level of outside block ownership (OUTBLK). Specifically, the mean OPTIONS/TCOMP increases 30.5% in the lowest quintile of OUTBLK to 39.2% in the highest quintile of OUTBLK. Similarly, the mean ΔOPTION is 1.242 in the lowest quintile of OUTBLK but 2.860 in the highest quintile of OUTBLK. This result is inconsistent with agency theories that predict a negative association between incentives and shareholder monitoring. One potential explanation of this result is that the level of outside block ownership does not necessarily reflect the amount of outside block ownership. For example, an investee firm has large total block ownership, but its block ownership is owned by investors who have shorter investment horizons and seek trading profits. In this case, the aggregate level of outside block ownership reflects shorter investment horizons of the outside blockholders rather than aggregate amount of their monitoring incentives.

The more direct proxy for outside blockholders' monitoring incentives is concentration of outside block ownership (HFOUT) because an investor who intents to seek control of firm are more likely to acquire larger block ownership. Consistent with this view, the results for OPTIONS/TCOMP in Panel C of Table 9 show that the option-

based CEO pay-performance sensitivity decreases in the concentration of outside block ownership (HFOUT). That is, as the concentration of outside block ownership (HFOUT) increases from the lowest quintile to the highest quintile, the mean value of OPTIONS/TCOMP decreases from 38.1% to 32.1%, and the mean value of ΔOPTIONS decreases from 2.420 to 1.832 (Panel C in Table 9). These results for HFOUT indicate that more concentrated ownership stakes tend to be associated with a reduction in the need to impose greater compensation risks on CEO (resulting in smaller amount of incentives).

The proportion of CEO compensation in cash (CASH/TCOMP) decreases in OUTBLK but does not have any systematic association with HFOUT. Total CEO compensation shows no systematic pattern in either OUTBLK or HFOUT.

Presence of Inside Block Ownership

Table 9 Panels D and E characterize CEO compensation as a function of the presence (absence) of inside block ownership. Panel D shows that, on average, firms with director blockholders (DIRBLK) pay their CEO less (mean $3.107 million) than do firms without director blockholders (mean $4.487 million). However, the two groups of firms do not demonstrate any significant difference in the structure of compensation or option based pay-performance sensitivity. This result suggests that firms with greater shareholder monitoring proxied by director block ownership pay smaller total CEO compensation without decreasing pay-performance sensitivity of CEO compensation.

Similarly, Panel E of Table 9 shows that firms with manager blockholders pay smaller total CEO compensation ($3.334 millions) than do firms without manager blockholders ($4.504 millions). Additionally, these firms pay a greater proportion of

CEO compensation in cash than do firms without manager blockholders. The average value of the CASH/TCOMP is 55.1% for firms with manager blockholders versus 41.4% for firms without managerial blockholders. In contrast, firms with manager blockholders have a smaller fraction of CEO compensation in options (28.6%) than do firms without manager blockholders (37.0%). This result suggests that CEOs with high stock ownership already have enough incentive to maximize firm value, and thus the firms do not need to impose additional compensation risk on the CEOs and to pay larger total CEO compensation.

Overall, the univariate analyses support Hypotheses 1 and 2. Specifically, firms with higher outside blockholder turnover tend to have greater CEO pay-performance sensitivity and the larger total CEO compensation. The greater CEO pay-performance sensitivity is from option-based incentives but not from cash-based incentives which is often linked to accounting earnings. I re-examine these results in a multivariate setting in Section 6.3

6.3 Multivariate Analysis of CEO Compensation and Outside Blockholder Turnover

6.3.1 Regression Model

Hypothesis 1 predicts that firms with greater outside blockholder turnover will have greater CEO pay-performance sensitivity and larger total CEO compensation. Hypothesis 2 predicts that the greater CEO pay-performance sensitivity will be achieved primarily by increasing the weight on stock returns relative to accounting earnings in CEO compensation. To test these hypotheses, I first estimate the determinants of CEO compensation in Equation (1) using OLS. However, as discussed in Chapters 3 and 5, outside blockholder turnover (OUTTURN) varies systematically with investee firm

characteristics (i.e., firm risk, information asymmetry, share liquidity, performance and inside block ownership). Additionally, anecdotal evidence demonstrates that investors have strong preferences for particular features of CEO compensation contracts.[24] In particular, this anecdotal evidence suggests that investors with shorter investment horizons prefer firms with greater CEO pay-performance sensitivities. Together with the results in Chapter 5, this evidence supports the perspective that an investee firm's blockholder turnover will be endogenously determined as a function of investee firm characteristics and also the investee firm's design of CEO compensation contracts. Therefore, to capture the simultaneous determination of blockholder turnover and CEO compensation design, I next re-estimate the effect of outside blockholder turnover on CEO compensation using simultaneous equations (1) and (2) below. Several key variables, such as block ownership, firm size and stock options have skewed distributions. Therefore, I use log transformations for those variables.

CEO Compensation

$$\log(COMP) = \alpha_0 + \beta_1 \log(1+OUTTURN) + \beta_2 \log(1+OUTBLK) + \beta_3 HFOUT + \beta_4 MGRDUM + \beta_5 DIRDUM + \beta_6 CEOTURN + \beta_7 \log(ASSET) + \beta_8 [\log(ASSET)]^2 + \beta_9 \log(LEV) + \beta_{10} \log(DIV) + \beta_{11} \log(BETA) + \beta_{12} \log(IDIORISK) + \beta_{13} ROA + \beta_{14} ADJRET + \beta_{15} \log(MKTBV) + \beta_{16} (ROA*HITURN) + \beta_{17} (ADJRET*HITURN) + \sum_{m=1}^{11} \gamma_m \text{Industry dummy} + \varepsilon \quad \ldots\ldots (1)$$

(Where m denotes Fama-French industry portfolio dummies 1 through 11 and ε denotes random error)

[24] For example, according to Pearl Meyer & Partners (a New York based consulting firm dedicated to executive compensation strategies), about 90% (58%) of the fund managers who participated in their 2002 (1998) survey responded that when making investment decisions, companies' CEO compensation practices factor into their investment decisions (Source: Mutual Fund Market News, July 15, 2002).

Outside Blockholder Turnover

$$\log(1+\text{OUTTURN}) = \varphi_0 + \lambda_1 \log(\text{COMP}) + \lambda_2 \text{LQDTY/INFOCOST} + \lambda_3 \text{SIZE/MATURITY} + \lambda_4 \text{PERFM} + \lambda_5 \log(1+\text{INBLK}) + \lambda_6 \text{TELDUM} + \lambda_7 \text{UTILDUM} + \nu \quad \ldots\ldots (2)$$

(Where ν denotes random error)

In Equation (1), COMP is the natural log of the various CEO compensation measures (i.e., OPTIONS/TCOMP, ΔOPTION, TCOMP and CASH). To capture the effect of outside blockholder turnover on CEO compensation, I include outside blockholder turnover (OUTTURN) as the key variable of interest. Prior studies document that the size of ownership stake is systematically associated with CEO incentive compensation (Mehran [1995]; Hartzell and Starks [2003]). To control for the effect of ownership size and different monitoring incentives of blockholders, I include two additional dimensions of outside block ownership (OUTBLK, HFOUT) and indicator variables for manager blocks (MGRDUM) and director blocks (DIRDUM). OUTBLK is the level of outside block ownership, and HFOUT is the concentration of outside block ownership as measured by the Herfindahl Index of outside block ownership.

Beside ownership characteristics, I include control variables that existing literature on executive compensation finds to be cross-sectionally related to the level and the structure of CEO compensation. For example, CEO turnover (CEOTURN) often results in significant fluctuations in CEO compensation because of severance payments to the exiting CEO or a hiring bonus paid to the incoming CEO. Therefore, I include the number of CEO changes over the four year period (CEOTURN) to control for the effect of CEO turnover.

Ceteris paribus, the larger the size of the company, the greater the discretion that management has to influence shareholder wealth (Demsetz and Lehn [1985]; Core, Holthausen and Larcker [1999]). Therefore, larger firms are more likely to rely on incentive compensation than are smaller firms to align the interests of managers and shareholders. This argument predicts that firm size (ASSET) is positively associated with both CEO pay-performance sensitivity and the level of CEO compensation. To the extent that leverage (LEV) reflects agency costs between shareholders and debt-holders (Jansen and Meckling [1976]), firms with higher leverage will encourage their CEOs to engage in risky projects and will pay a greater proportion of CEO compensation in the form of stock options. Therefore, I expect a positive association between leverage and the pay-performance sensitivity of CEO option compensation (OPTIONS/TCOMP and ΔOPTION). Firms that pay dividends (DIV) tend to be more mature firms with greater cash flows, and thus are expected to be negatively associated with equity-based CEO compensation (Smith and Watts [1992]).

Idiosyncratic firm risk (IDIORISK) reflects the volatility of a firm's operating environment, and the ratio of market-to-book value of equity (MKTBV) is often used as a proxy for investment opportunities (Smith and Watts [1992]). To the extent that a volatile operating environment and investment opportunities are associated with greater complexity of managerial tasks and larger managerial discretion, IDIORISK and MKTBV will be positively associated with CEO pay-performance sensitivity and the level of CEO compensation (Talmor and Wallace [2002]). Agency theory suggests that the level of CEO compensation is positively associated with firm performance such as return on assets (ROA) or market adjusted stock returns (ADJRET), and so I also include

these variables as controls. Finally, I include industry dummy variables because the use of option plans varies significantly across industries (Core, Guay and Larcker [2003]).

To estimate outside blockholder turnover in Equation (2), I use the regression model developed in Chapter 5. Full descriptions of all the variables used in the models are in Appendix 3.

6.3.2 Results

Stock Option based Pay-Performance Sensitivity

Hypothesis 1 predicts that investee firms with greater blockholder turnover will tend to display higher CEO pay-performance sensitivity and correspondingly greater total CEO compensation.

OPTIONS/TCOMP, the ratio of stock options granted to total CEO compensation, and ΔOPTION, the change in option value per $1000 shareholder wealth, measure CEO pay-performance sensitivity. Tables 10 and 11 report the regression results for these two CEO pay-performance sensitivity measures.

The OLS regression results in Table 10 Panel A show that outside blockholder turnover (OUTTURN) is positively associated with OPTIONS/TCOMP ($t = 3.71$) after controlling for other dimensions of block ownership and various economic determinants of CEO compensation. The result of simultaneous equation estimation (Table 10 Panel B) further supports the OLS regression result. The estimated coefficient on OUTTURN in Panel B is 0.49, and is statistically significant at $p<0.01$ ($t = 5.04$). These results suggest that firms with higher outside blockholder turnover use stock options more extensively for CEO compensation, thereby increasing CEO pay-performance sensitivity.

The results in Table 10 are further supported by the results for ΔOPTION in Table 11. The estimated coefficients (0.46 in the OLS estimation and 0.78 in the two-stage simultaneous estimation) on outside blockholder turnover (OUTTURN) are positive and statistically significant at $p < 0.01$. These results provide strong evidence that option-based pay-performance sensitivity of CEO compensation increases as outside blockholder turnover increases, supporting Hypothesis 1. This implies that investee firms rely more on incentive compensation contracting when facing limited monitoring by shorter-horizon outside blockholders.

Consistent with the results of univariate tests (Table 9 Panels B and C), the multivariate results in Tables 10 and 11 indicate that the option-based CEO pay-performance sensitivity (OPTONS/TCOMP, ΔOPTION) is negatively associated with the concentration of outside block ownership (HFOUT) but positively associated with the level of outside block ownership (OUTBLK). The negative coefficients on HFOUT in OPTIONS/TCOMP (-0.07, t = -2.52) and in ΔOPTION (-0.25, t = -3.14) are consistent with the agency prediction that when concentrated ownership yields increased monitoring, firms can rely less on costly incentive compensation to motivate CEOs (Panel B in Tables 10 and 11). However, the positive coefficients on OUTBLK (Panel B in Tables 10 and 11) are inconsistent with the agency prediction.

A potential explanation for the positive coefficients of OUTBLK is that the level of outside block ownership may not necessarily proxy the aggregate amount of outside blockholders' monitoring incentives. The sub-sample results in Appendix 1 suggest that large blockholders hold a significant portion of their portfolio less then one year. Further, the primary source of blockholder turnover is outside blockholders (Table 1).

Specifically, the results in Table 1 show that 92%-94% of blockholder turnover involves outside blockholders. These results suggest that outside blockholders dominate a typical investee firm's blockholder turnover rate, and outside blockholders frequently act as short-horizon investors. Therefore, higher level of outside block ownership in an investee firm may reflect the outside blockholders' general preference for firms with greater CEO pay-performance sensitivity rather than aggregate amount of their long-term monitoring incentives.

In a parallel study, Hartzell and Starks (2003) find that both the level and the concentration of institutional ownership are positively associated with pay-performance sensitivity of top five executive officers' (and CEO's) compensation. They argue that the positive coefficient on the level of institutional ownership reflects the institutional investors' preference for firms with high powered incentives on managerial compensation contracts. Further, based on the positive association between the concentration of institutional ownership and the executive (or CEO) pay-performance sensitivity, they conclude that institutional investors use incentive compensation as part of their monitoring activities; i.e., incentive contracting and monitoring complement to each other

The effects of the two inside block ownership dummy variables are rather ambiguous because the sign and significance of the two variables are sensitive to estimation methods. The presence of manager blocks (MGRDUM) is generally insignificantly associated with both OPTIONS/TCOMP and ΔOPTION (Tables 10 and 11). The presence of director block (DIRDUM) has a statistically significant positive association with OPTIONS/TCOMP and ΔOPTION in the two-stage simultaneous

estimation (Panel B in Tables 10 and 11). However, the coefficients of DIRDUM are insignificant in the OLS estimation. (Panel A, Tables10 and 11).

Pay-Performance Sensitivity of Total Compensation and Cash Compensation

Hypothesis 1 predicts that CEO compensation will be more sensitive to firm performance when outside blockholder turnover is higher. Further, Hypothesis 2 predicts that firms with higher outside blockholder turnover will relate CEO compensation more to stock returns than to accounting earnings. To test these two hypotheses for total CEO compensation and cash compensation, I include two interaction terms, [ADJRET*HITURN] and [ROA*HITURN], in the total CEO compensation and Cash compensation models. HITURN is an indicator variable that takes a value of 1 for all firms with above median outside blockholder turnover. ADJRET is the investee firm's stock return adjusted by the CRSP value-weighted market return, and ROA is earnings performance measured by return on assets. Coefficients of [ADJRET*HITURN] and [ROA*HITURN] indicate how the sensitivity of total CEO compensation (or CEO cash compensation) to the two performance measures, ADJRET and ROA, changes as the level of outside blockholder turnover increases from low (HITURN = 0) to high (HITURN = 1).

Panel B in Table 12 shows the pay-performance sensitivity of total CEO compensation (TCOMP) in the simultaneous estimation. The coefficients on ADJRET (-0.07, t = -0.59) and ROA (1.31, t = 2.66) suggest that when outside blockholder turnover is low (HITURN = 0), firms rely more on accounting earnings (ROA) and less on stock returns (ADJRET) in CEO compensation. The total coefficient on ADJRET when outside blockholder turnover is high (HITURN =1) is 0.49 (i.e., the sum of

-0.07 for ROA and +0.56 for [ADJRET*HITURN]). This positive total estimated effect is significantly different from zero at the $p<0.01$ level. When outside blockholder turnover is high (HITURN =1), the total coefficient of ROA is -0.25 (i.e., sum of 1.31 for ROA and -0.56 for [ROA*HITURN]). However, the total estimated effect is not statistically significantly different from zero. In other words, when outside blockholder turnover is high, firms rely more on stock returns (ADJRET) and less on accounting earnings (ROA) in total CEO compensation. These results generally hold in the OLS estimation (Panel A in Table 12). For pay-performance sensitivity of total CEO compensation (or CEO cash compensation), investee firms put more weight on accounting earnings than on stock returns when outside blockholder turnover is low but do the opposite when outside blockholder is high.

In the two-stage simultaneous estimation in Table 13 Panel B, the results on the pay-performance sensitivity of cash compensation are generally consistent with those of total CEO compensation (Table 12). That is, when outside blockholder turnover is low (HITURN = 0), cash compensation is sensitive to ROA (1.03, t = 3.00) but not to ADJRET (0.06, t = 0.74). However, this pattern reverses when outside blockholder turnover becomes high (HITURN = 1). The coefficients on [ROA*HITURN] and [ADJRET*HITURN] are -0.80 (t = -1.61) and 0.19 (t = 1.86), respectively (Table 13 Panel B). In the OLS estimation, cash compensation is not sensitive to either ROA or ADJRET in both levels of outside blockholder turnover.

Overall, the results suggest that investee firms increase the pay-performance sensitivity of CEO compensation in response to an increase in outside blockholder

turnover. Further, these firms achieve the increased sensitivity by putting more weight on stock returns than on earnings. These results are consistent with Hypotheses 1 and 2.

I next examine the relation between outside blockholder turnover and the noisiness of accounting earnings relative to noisiness of stock returns. The basis of Hypothesis 2 is that shareholders' investment horizons influence the information content of accounting earnings and stock returns. Specifically, Bushee [1998] and Dikolli, Kulp and Sedatole [2004] suggest that shorter investment horizons of shareholders lead to greater noise in accounting earnings. In contrast, Holmstrom and Tirole [1993] argue that shorter investment horizons of shareholders (greater share liquidity) lead to greater volatility of an investee firm's stock returns which in return improve the information content of its stock return.

To sort out which argument the results of [ROA*HITURN] and [ADJRET*HITURN] support, I examine the relation between outside blockholder turnover and the ratio of the volatility of accounting earnings (ROASTD) to the volatility of stock returns (RETSTD). According to Holmstrom and Tirole's (1993) argument, as outside blockholder turnover increases, the ratio of ROASTD/RETSTD will decrease because the volatility of stock returns (RETSTD) increases. The increased volatility of stock returns improves the information content of the stock price. Accordingly, firms with greater outside blockholder turnover will put more weight on stock returns than on accounting earnings.

The volatility of accounting earnings is measured as the standard deviation of the annual return on assets (ROASTD) over the five-year period from $year_{t-1}$ to $year_{t+3}$ where t is the first year of the sample period. Similarly, the volatility of stock returns

(RETSTD) is measured as the standard deviation of monthly stock returns (RETSTD) for the same period. I then measure the volatility of ROA relative to that of RET as the ratio of ROASTD to RETSTD.

Figure 2 shows that the ratio of the volatility of accounting earnings to the volatility of stock returns (ROASTD/RETSTD) generally increases in outside blockholder turnover. ROASTD/RETSTD is significantly lower (0.19-0.20) in the first two quintiles of outside blockholder turnover than in the remaining three quintiles (0.26-0.28) at the $p < 0.00$. Further, the univariate analysis also shows that both the volatility of accounting earnings (ROASTD) and the volatility of stock returns (RETSTD) are lower in the first two quintiles of outside blockholder turnover than in the remaining three quintiles (the result is not reported). These results suggest that as outside blockholder turnover increases, the volatility of earnings increases more than the volatility of stock returns.

Additionally, the result in Figure 3 shows that as ROASTD/RETSTD increases from the lowest quintile to the highest quintile, the median ratio of options granted to total CEO compensation (Options/Total Comp) increases from 30% to 38%, whereas the median ratio of cash to total compensation (Cash/Total Comp) decreases from 45% to 36%.

Taken together, the results in Figures 2 and 3 indicate that the increased weight on stock returns in firms with higher outside blockholder turnover is more likely due to greater noise in accounting earnings than due to greater informativeness of the stock returns in those firms.

Level of Total CEO Compensation

In both OLS and two-stage simultaneous estimations, the coefficient for outside blockholder turnover (OUTTURN) is positive and significant in the total CEO compensation regressions (Table 12, Panels A and B). The coefficient on OUTTURN is 0.50 (t=2.95) in the OLS estimation and 1.76 (t=4.29) in the two-stage simultaneous estimation. The coefficient on outside blockholder turnover for cash compensation (Table 13 Panels A and B) is positive but not significantly different from zero at conventional levels. These results suggest that in response to the greater risk associated with higher pay-performance sensitivity of CEO compensation, firms with higher outside blockholder turnover increase the level of total CEO compensation. Further, the increase in total compensation tends to take the form of increased option-based compensation rather than cash payments. This interpretation is consistent with Hypotheses 1 and 2.

Overall, the results of this section strongly support Hypotheses 1 and 2. First, firms with higher outside blockholder turnover tend to have greater CEO pay-performance sensitivity and larger total CEO compensation (Hypothesis 1). Second, to increase CEO pay-performance sensitivity, firms rely more on equity-based incentives than on cash incentives (Hypothesis 2). This interpretation is reinforced by the finding that high blockholder turnover firms rely more on market adjusted returns than on earnings for CEO compensation.

CHAPTER 7

ROBUSTNESS TESTS

The key variables of this dissertation are pay-performance sensitivity of CEO compensation and outside blockholder turnover. The validity of the results documented in this study largely relies on the two measures. In this section, I re-examine the results of this dissertation using alternative measures of CEO pay-performance sensitivity and outside blockholder turnover to prove that the results are not driven by my choice of the measures.

7.1 Pay-Performance Sensitivity

When examining the effect of outside blockholder turnover on total CEO compensation, this study uses flow compensation (i.e., current CEO compensation). However, Jensen and Murphy (1990) and Hall and Liebman (1998) show that a CEO's incentives to increase share value derive mainly from the CEO's existing equity portfolio (stock and options that the CEO already owns). Likewise, Core, Guay and Verrecchia (2003) argue that total firm-specific CEO incentives reflect not only current CEO compensation but also changes in the value of the CEO's equity portfolio.

Therefore, I estimate the pay-performance sensitivity of the CEO's equity portfolio[25] to examine the effect of outside blockholder turnover on sensitivity of CEO

[25] I first estimate the sensitivity of the CEO's option portfolio following the method suggested by Core and Guay (2001a) except that I used in-money option values of total outstanding options available in EXECUCOMP (the variable names are INMONUN and INMONEX) to calculate the estimated exercise

equity portfolio. I examine Panel B of Table 11 but replace ΔOPTION with the sensitivity of CEO equity portfolio (ΔEQUITY). The resulting coefficient on outside blockholder turnover rate is negative and significant ($t = -2.24$, $p < 0.05$), which is inconsistent with the hypothesis. The negative coefficient is potentially driven by CEOs' stock ownership. Specifically, the highly negative association between outside blockholder turnover and manager block ownership ($t = -18.73$ in Model 3 of Table 7) suggests that investors with shorter investment horizons are less likely to take a large position in firms with higher managerial ownership. In the cross-sectional analysis, this will appear as if shareholders with shorter investment horizons reduce pay-performance sensitivity of CEO equity portfolio.

To confirm this reasoning, I estimate the sensitivity of CEO option portfolio (ΔOption Portfolio) which includes newly granted options and existing options but not existing stock. I then re-examine the model in Panel B of Table 11 using ΔOption Portfolio. As predicted, the coefficient of outside blockholder turnover becomes positive and significant ($t = 2.17$). As is the case in the ΔOPTION regression, the level of outside block ownership (OUTBLK) is positive and significant ($t=6.27$), whereas the concentration of outside block ownership (HFOUT) is negative and significant ($t= - 2.46$).[26]

price. I then add sensitivity of CEO stock ownership to estimate pay-performance sensitivity of equity portfolio.

[26] Results are not reported but are available upon request.

7.2 Outside Blockholder Turnover

To test the sensitivity of the results in Chapter 6, I rerun the estimation models in Table 10-13 using three alternative measures of outside blockholder turnover. First, I calculate the exit rate of outside blockholders (EXITRATE) measured as exit outside blocks divided by initial block ownership. An exit outside block is the block ownership that existed in the firm at the end of year$_t$ and left the firm by the end of year$_{t+1}$. Initial block ownership is the total block ownership at the end of year$_t$. EXITRATE measures the extent of block ownership that exited the firm over the current year. Replacing outside blockholder turnover (OUTTURN) with EXITRATE in all the compensation models in Tables 10-13 yields the results that are qualitatively similar to the results using OUTTURN.

In the second alternative measure of outside blockholder turnover, I attempt to control for the potential noise induced in the ownership data due to the reporting rules of the SEC. Firms are not required to report stakes of shareholders with less than 5% of ownership, and thus proxy statements do not list them as blockholders. Accordingly, outside blockholder turnover (OUTTURN) potentially overstates true outside blockholder turnover to the extent that the changes in block ownership in the proxy statements are due to fluctuations of block ownership around 5%. To address this potential measurement error, I calculate a second adjusted outside blockholder turnover rate. Specifically, when calculating the adjusted OUTTURN, I do not count outside blockholders who exit the firm in one year but return in the following year. I then replace OUTTURN with the resulting adjusted OUTTURN in all the compensation models (i.e., regressions in Table

10-13). Replacing OUTTURN with the adjusted OUTTURN does not change the results, suggesting that the results are robust to this potential source of measurement error.

Finally, cross-sectional analysis is subject to the potential problem of omitted variables. However, due to the limited number of firm years for each sample firm, panel data analysis is not available. To address the potential problem of omitted variables, I calculate industry-adjusted abnormal outside blockholder turnover by subtracting the corresponding industry average outside blockholder turnover from outside blockholder turnover of each firm. The results of the regressions in Tables 10-13 remain qualitatively the same with the abnormal outside blockholder turnover measure.

CHAPER 8

CONCLUSIONS

This dissertation addresses two primary issues. First, it examines whether the investment horizons of large shareholders (i.e., outside blockholders) vary across the firms in which they invest, and if so, what factors influence these investment horizons.

Prior studies measure an investor's investment horizon based on the investor's average portfolio characteristics. An implicit assumption of this approach is that the investment horizon does not vary across investee firms in the investor's portfolio. The results in Chapters 3 and 5 show that outside blockholders' investment horizons, as measured by outside blockholder turnover, vary across investee firms, and that the variation is significantly determined by the characteristics of the investee firms. This systematic association in the data further suggests that outside blockholders' horizons vary in ways that reflect outside blockholders' rational responses to their monitoring cost-benefit trade-offs in light of investee firm characteristics.

Second, this dissertation examines how investment horizons of large shareholders are related to the way investee firms pay their CEOs. Prior studies on investor horizons argue and document that shorter horizons of large investors result in limited monitoring by these investors and can lead to higher agency costs in investee firms. The results of this study, however, suggest that investee firms with shorter-horizon investors do not necessarily suffer higher agency costs. Specifically, I find that investee firms with greater outside blockholder turnover (i.e., shorter-horizon outside blockholders) are likely to

design CEO compensation with greater pay-performance sensitivity and a higher level of CEO compensation. Further, the greater pay-performance sensitivity is primarily due to option-based incentives but not due to cash-based incentives. These results indicate that firms with shorter horizon outside blockholders use incentive contracting more extensively to counter the potentially weaker monitoring by their outside blockholders.

Some caveat need to be mentioned in interpreting the results of this dissertation. First, I measure blockholder turnover using annual proxy statements. Therefore, outside blockholder turnover does not capture the transactions by outside blockholders who might have held the firms' stock only for a short period during the proxy year. This can potentially result in understated outside blockholder turnover rates.[27]

Due to lack of data on block ownership changes during each fiscal year, I am unable to directly assess the implication of this potential effect. However, it seems reasonable to expect that understated outside blockholder turnover would work against my hypotheses because it would dampen the effect of outside blockholder turnover on CEO compensation by reducing the variation in outside blockholder turnover.

Second, each firm in the sample has only four years of data. Therefore, this study primarily relies on cross-sectional analysis, which is subject to a potential problem of omitted variables. I attempt to address this issue by using industry-adjusted abnormal outside blockholder turnover. As discussed in Chapter 7, using this alternative turnover measure yields qualitatively the same results as the results of OUTTURN. However, the potential endogeneity issue still remains, and the reader need to interpret the results with a caution.

[27] On the other hand, the measurement convention for outside blockholder turnover may overstate actual outside blockholder turnover rates to the extent that the changes in block ownership are due to ownership fluctuation around 5%. The robustness check in Chapter 7 reveals that this is unlikely to drive the results.

To summarize, the findings in this dissertation imply that large shareholders' monitoring incentives, as reflected by their investment horizons, are determined in equilibrium to a significant extent by investee firm characteristics. Further, investee firms use incentive contracting to offset weaker shareholder monitoring that may arise due to shorter investment horizons of shareholders.

Finally, I conclude the dissertation with the following anecdotal evidence which illustrates how investment horizons of large shareholders (or investors) can influence CEO incentive compensation. Effective April 14, 2003, the SEC requires registered investment management companies to file with the Commission the specific proxy votes that they cast in shareholder meetings (17 CFR Parts 239, 249 & 274).

Table C illustrates four investors' proxy votes with regard to executive incentive plans recommended by management during the 2003-2004 shareholder meetings.

Table C Large Investors' Proxy Votes on Executive Incentive Plans - Example

Investment Company[28]	% of portfolio that has at least 3-4 year holding period (sample period)	Mean portfolio holding period (sample period)	Number of proxy voting reported in N-PX (2003-2004 proxy year)	Management Initiated Executive Incentive Plan	
				For	Against
Gabelli	54%	3.00 years	108	60 (56%)	48 (44%)
FMR	24%	2.27 years	106	58 (55%)	48 (45%)
Putnam	9%	1.71 years	80	76 (95%)	4 (5%)
AXA	4%	1.40 years	118	110 (93%)	8 (7%)

(Data source of proxy voting: SEC N-PX filing for proxy year 2003-2004)

These four investors, Gabelli Funds, FMR Corp., Putnam Investment and AXA Financial are blockholders in the sample investee firms used in this dissertation. Gabelli

[28] Investment companies often have multiple funds and file their proxy voting results for each fund. The table reports the voting result of the following funds:

Gabelli – Gabelli Investor Funds Inc., Gabelli Growth Fund, Gabelli Funds
FMR – Fidelity Advisor Series I
AXA – AXA Enterprise Multimanager Funds
Putnam – Putnam Investment Funds

Funds, FMR Corp., Putnam Investment and AXA Financial held block shares of several sample firms during 1996-2001. Based on the average holding period of their block ownership in the sample firms, as reported in the third column of Table C, Gabelli Funds and FMR Corp. have longer investment horizons (3.00 years and 2.27 years, respectively) than Putnam Investment and AXA Financial (1.71 years and 1.40 years respectively). Assuming that their block holding period in the sample investee firms is representative of their overall portfolio strategy, and that they maintain their portfolio strategy until 2003-2004, the results reported in this dissertation suggest that Putnam Investment and AXA Financial (shorter horizon investors) will support management initiated executive incentive plans more frequently than will Gabelli Funds and FMR Corp. (longer horizon investors).

Consistent with the prediction, Putnam Investment and AXA voted for 93%-95% of the management initiated executive incentive plans, whereas Gabelli Funds and FMR Corp. voted for only 55%-56% of the executive incentive plans. This stark difference in the voting patterns of these investors provides a powerful example of how investors' monitoring cost-benefit trade-offs can directly influence investee firms' governance mechanisms.

Figure 1 Univariate Analysis - Structure of Total CEO Compensation (Median) by Outside Blockholder Turnover (N = 874)

The following graph demonstrates the structure of total CEO compensation (annual) for each quintile of outside blockholder turnover. Total CEO compensation consists of salary, cash bonus, stock options granted, restricted stock granted, long-term incentive payments and all others. Salary is dollar value ($'000) of base salary. Bonus is dollar value ($'000) of cash bonus earned by a CEO during the fiscal year. Options are an aggregate value of stock options granted to a CEO during the fiscal year as valued using S&P's Black-Scholes method.

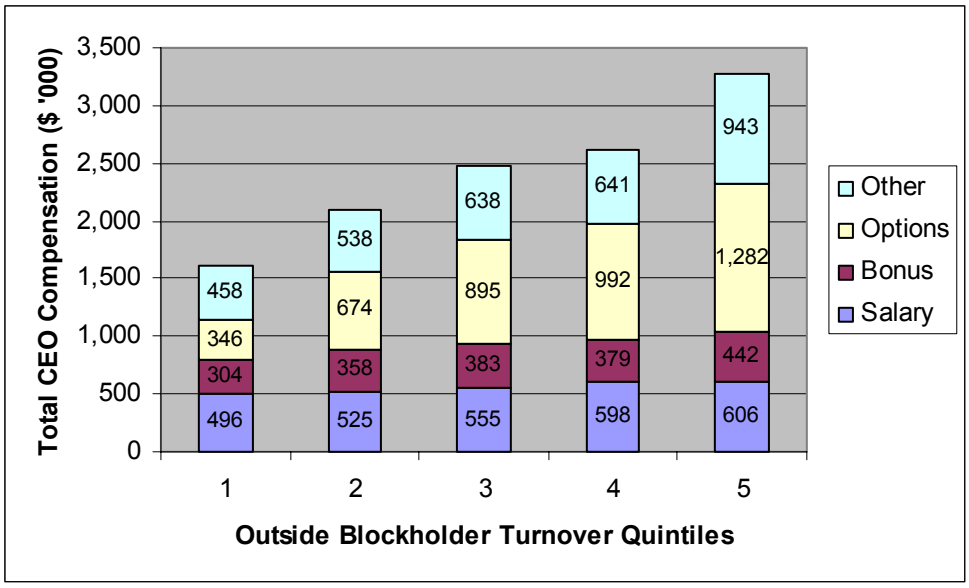

Figure 2 Univariate Analysis - Ratio of ROA Volatility to Return Volatility (Median) by Outside Blockholder Turnover (N = 874)

ROASTD is volatility of return on assets (ROA) and is measured by standard deviation of annual ROA for the period from *t*-1 through *t*+3 where *t* is the first year of the sample period. RETSTD is volatility of stock returns (RET) and is measured by standard deviation of monthly stock returns for the period from *t*-1 through *t*+3 where *t* is the first year of the sample period.

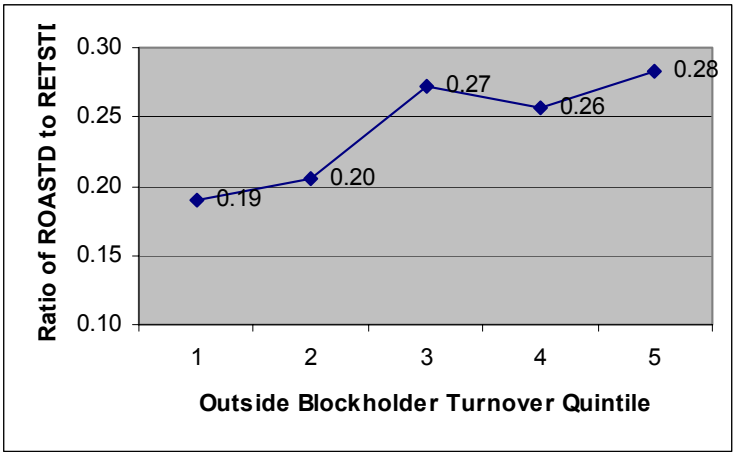

Figure 3 Univariate Analysis - Structure of CEO Compensation (Median) by Ratio of ROA Volatility to Return Volatility (N = 874)

ROASTD is volatility of return on assets (ROA) and is measured by standard deviation of annual ROA for the period from *t*-1 through *t*+3 where *t* is the first year of the sample period. RETSTD is volatility of stock returns (RET) and is measured by standard deviation of monthly stock returns for the period from *t*-1 through *t*+3 where *t* is the first year of the sample period. Cash/Total Comp is the proportion of total CEO compensation in cash. Options/Total Comp is the proportion of total CEO compensation in stock options.

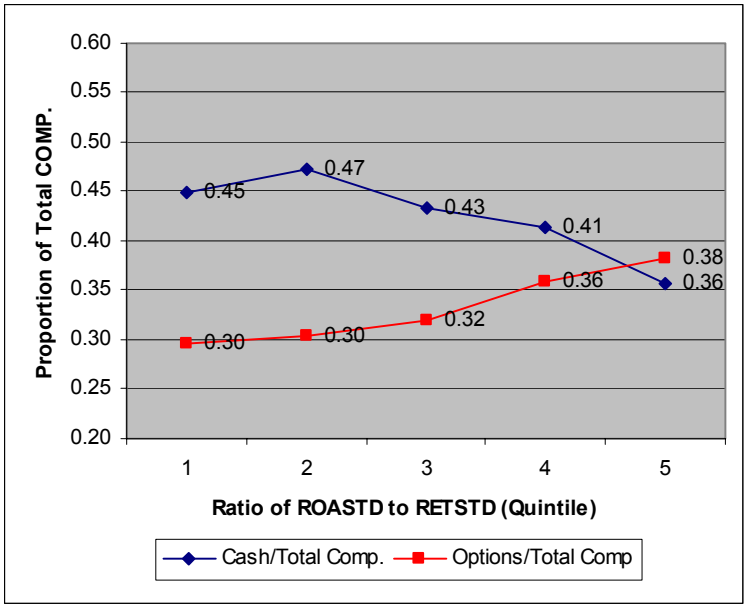

Table1 Sample Composition by Sample Year and Descriptive Statistics for Block Turnover (N = 874)

The sample consists of 874 unique firms, and each sample firm has four years of data with different starting year (1996, 1997 or 1998). Turnover is the proportion of block ownership that changed hands, and measured annually over the four-year sample period. Therefore, each sample firm has three years of turnover measures ($year_{t+1}$–$year_t$, $year_{t+2}$–$year_{t+1}$, and $year_{t+3}$–$year_{t+2}$). Panels A and B summarize the blockholder turnover by blockholder type: outside blockholder turnover (OUTTURN), manager blockholder turnover (MGRTURN), director blockholder turnover (DIRTURN), ESOP blockholder turnover (ESOPTURN) and gray blockholder turnover (GRAYTURN). TOTALTURN is sum of OUTTURN, MGRTURN, DIRTURN, ESOPTURN and GRAYTURN. I use four-year average outside blockholder turnover ('Average' in the last column of the table but for each sample) in my data analyses.

Panel A

Total = 874 firms	Turnover type	1997	1998	1999	2000	2001	Average
Sample firms for period 1996-1999 (233 firms)	OUTTURN	28.65%	24.73%	27.17%			26.85%
	MGRTURN	0.44%	0.15%	0.19%			0.26%
	DIRTURN	0.53%	0.53%	0.30%			0.45%
	ESOPTURN	0.57%	0.52%	1.38%			0.82%
	GRAYTURN	0.48%	0.43%	0.00%			0.30%
	TOTALTURN	30.67%	26.36%	29.04%			28.68%
Sample firms for period 1997-2000 (208 firms)	OUTTURN		27.82%	29.99%	27.01%		28.27%
	MGRTURN		0.22%	0.82%	0.13%		0.39%
	DIRTURN		1.08%	0.84%	0.72%		0.88%
	ESOPTURN		0.90%	1.19%	0.91%		1.00%
	GRAYTURN		0.31%	0.00%	0.00%		0.10%
	TOTALTURN		30.33%	32.84%	28.77%		30.64%
Sample firms for period 1998-2001 (433 firms)	OUTTURN			30.11%	30.93%	29.49%	30.18%
	MGRTURN			0.44%	0.38%	0.48%	0.43%
	DIRTURN			0.93%	1.04%	0.83%	0.93%
	ESOPTURN			0.69%	0.33%	0.46%	0.50%
	GRAYTURN			0.22%	0.25%	0.37%	0.28%
	TOTALTURN			32.39%	32.93%	31.63%	32.32%

Panel B

		1997	1998	1999	2000	2001	Average
Average turnover by blockholder type and year	OUTTURN	28.65%	26.19%	29.30%	29.66%	29.49%	28.84%
	MGRTURN	0.44%	0.18%	0.46%	0.30%	0.48%	0.38%
	DIRTURN	0.53%	0.79%	0.74%	0.94%	0.83%	0.79%
	ESOPTURN	0.57%	0.69%	1.00%	0.52%	0.46%	0.70%
	GRAYTURN	0.48%	0.38%	0.11%	0.17%	0.37%	0.24%
	TOTALTURN	30.67%	28.23%	31.61%	31.59%	31.63%	30.95%
Number of firm years		233	441	874	641	433	

Table 2 Descriptive Statistics by Industry

Panel A Sample Firm Distribution across Industry

Industry#	Industry classification	# of Firms
1	Consumer Non-durables -- Food, Tobacco, Textiles, Apparel, Leather, Toys	59
2	Consumer Durables -- Cars, TV's, Furniture, Household Appliances	32
3	Manufacturing - Machinery, Trucks, Planes, Office Furniture	160
4	Oil, Gas, and Coal Extraction and Products	37
5	Chemicals and Allied Products	38
6	Business Equipment - Computers, Software and Electronic Equipment	141
7	Telephone and Television Transmission	5
8	Utilities	53
9	Whole sale Retail and Some services	131
10	Healthcare, Medical equipment and Drugs	67
11	Finance	56
12	Other - Mines, Construction, Transportation, Hotels, Entertainment	95
	Total number of firms	874

Panel B Mean Block Ownership/Turnover and CEO Compensation by Industry

OUTBLK (%) is block-shares held by an outside blockholder who is non-manager, non-director or non-founding family members. MGRBLK (%) is block-shares held by management of the firm. DIRBLK (%) is block-shares held by outside directors. HFOUT is the Herfindahl Index of a firm's outside-block ownership and indicates the concentration of the firm's outside-block ownership. OUTTURN (%) is an annual outside blockholder turnover and is the proportion of outside block ownership that changed hands. TCOMP is total CEO compensation for the fiscal year ($'000) and comprised of salary, bonus, stock options granted, restricted stock granted and all others. CASH is sum of salary ($'000) and cash bonus ($'000) earned by a CEO during the fiscal year. OPTIONS/TCOMP is the proportion of total CEO compensation in options and measure. Options are an aggregate value of stock options granted to a CEO during the fiscal year as valued using S&P's Black-Scholes method. ΔOPTION is change in value of stock options granted in the current year per $1,000 in shareholder wealth.

Ind. #	OUTBLK	MGRBLK	DIRBLK	HFOUT	OUT-TURN	TCOMP	CASH	OPTIONS/ TCOMP	ΔOPTION
1	15.26	6.45	5.89	0.48	0.22	4,376	1,372	0.308	2.604
2	14.37	6.28	1.16	0.50	0.27	2,392	1,222	0.223	1.257
3	17.12	2.78	2.61	0.50	0.29	2,929	1,111	0.311	1.701
4	20.47	1.95	3.67	0.43	0.31	3,696	1,183	0.333	1.871
5	17.13	4.39	2.23	0.46	0.31	3,384	1,206	0.318	1.211
6	16.50	2.64	1.80	0.45	0.37	5,766	1,077	0.498	3.055
7	7.70	5.38	0.00	0.32	0.17	16,523	2,810	0.351	1.050
8	6.16	0.26	1.48	0.43	0.28	1,978	874	0.162	0.447
9	16.95	5.73	4.77	0.49	0.26	3,523	1,083	0.327	1.930
10	15.77	4.32	3.31	0.52	0.34	4,410	1,091	0.470	2.448
11	14.56	5.30	3.73	0.50	0.26	9,521	2,576	0.371	2.132
12	18.04	5.14	3.10	0.52	0.23	3,392	1,068	0.315	1.975

Table 3 Descriptive Statistics for Firm Characteristics (N=874)

The following table reports four-year averages of sample firm characteristics. ASSET is total assets ($ million). MKT is market value of equity ($ Million). MKTBV is ratio of market value of equity to book value of equity. LEV is ratio of long-term debt to total assets. DIV is dividends per $1 of investment in a firm's stock. RET is stock market return from CRSP. ROA is return on assets measured as income before extraordinary items and discontinued operation/beginning assets. AGE is firm age and measured by # of firm years in CRSP. SEGNUM is the number of business segment in a firm. ESTNUM is the one-year lag number of analyst forecasts (annual earnings) reported in IBES database. TCOMP is total compensation for the fiscal year ($'000) and comprised of salary, bonus, stock options granted, restricted stock granted and all others. Salary is dollar value ($'000) of base salary. Bonus is dollar value ($'000) of cash bonus earned by a CEO during the fiscal year. Cash is salary plus bonus. OPTIONS/TCOMP is ratio of Black-Scholes value of stock options granted to total CEO compensation. ΔOPTION is change in value of stock options granted in the current year per $1,000 in shareholder wealth. OUTBLK (%) is block-shares held by an outside blockholder who is non-manager, non-director or non-founding family members. MGRBLK (%) is block-shares held by management of the firm. DIRBLK (%) is block-shares held by outside directors. NUMBLK is number of block holders. HFOUT is the Herfindahl Index of a firm's outside-block ownership and indicates the concentration of the firm's outside-block ownership. OUTTURN (%) is an annual outside blockholder turnover and is the proportion of outside block ownership that changed hands.

	Mean	Median	20th	40th	60th	80th	Std.Dev
Firm Characteristics							
ASSET	5,603	1,289	436	895	1,892	5,277	19,986
MKT	5,445	1,618	487	1,032	2,329	5,381	16,761
MKTBV	4.129	2.481	1.527	2.168	2.963	4.540	9.720
LEV	0.204	0.191	0.058	0.147	0.235	0.325	0.154
DIV	0.014	0.007	0.000	0.003	0.013	0.024	0.029
RET	0.198	0.141	-0.008	0.089	0.201	0.364	0.322
ROA	0.047	0.047	0.017	0.038	0.061	0.089	0.080
AGE	23.86	22.00	7.00	14.00	25.00	35.00	18.76
SEGNUM	2.36	2.00	1.00	1.75	2.50	3.50	1.33
ESTNUM	10.38	8.89	3.71	7.08	10.58	17.19	7.65
CEO Compensation							
TCOMP	4,212	2,459	1,115	1,975	3,122	5,354	6,631
Salary	597	547	375	489	618	782	296
Bonus	617	396	150	303	492	797	997
OPTIONS/TCOMP	0.349	0.332	0.151	0.274	0.388	0.529	0.219
ΔOPTION	2.019	1.085	0.389	0.843	1.578	3.056	2.887
Block Ownership							
OUTBLK (%)	16.02	14.48	5.60	11.67	17.74	25.20	11.15
MGRBLK (%)	4.01	0.00	0.00	0.00	0.00	4.95	9.77
DIRBLK (%)	3.10	0.00	0.00	0.00	0.00	000	8.64
NUMBLK	2.47	2.50	1.50	2.00	2.75	3.50	1.22
HFOUT	0.482	0.470	0.275	0.402	0.512	0.695	0.232
OUTTURN (%)	28.84	24.63	8.38	19.04	32.29	46.03	22.33

Table 4 Mean (Median) Outside Blockholder Turnover (OUTTURN) Sorted by Investee Firm Characteristics

Panels A-C report mean (median) outside blockholder turnover by quintile of firm attributes. Quintile corresponds to firm characteristics, such as ROASTD or RETSTD. ROA is return on assets measured as income before extraordinary items and discontinued operation divided by beginning total assets. ROASTD is standard deviation of annual ROA for the period from *t*-1 through *t*+3 where *t* is the first year of the sample period. RETSTD is standard deviation of monthly stock returns for the period from *t*-1 through *t*+3 where *t* is the first year of the sample period. SHRTRN is share turnover rate measured as annual share trading volume/ total outstanding common stock. MKTBV is market value of equity/book value of equity. AGE is firm age and measured by the number of firm years in CRSP. ASSET is total assets. SEGNUM is the number of business segments of a firm. ESTNUM is the one-year lag number of analyst forecasts (annual earnings) reported in IBES database. OUTBLK is block-shares held by an outside blockholder who is non-manager, non-director or non-founding family members. HFOUT is the Herfindahl Index of a firm's outside-block ownership and indicates the concentration of the firm's outside-block ownership. DIRDUM is an indicator variable which takes value 1 if a firm has director blockholders and 0 otherwise. MGRDUM is an indicator variable which takes value 1 if a firm has director blockholders and 0 otherwise. INDUM is an indicator variable which take value 1 if firm has inside blockholders (managers, directors, ESOP and affiliated entities) and 0 otherwise.

Panel A OUTTURN for Investee Firms Ranked by Firm Characteristics Quintile (1)

Quintile	ROASTD	RETSTD	SHRTN	ROA	MKT/BV	AGE	ASSET
1	22.45 (17.45)	24.47 (18.23)	14.83 (8.58)	32.27 (30.27)	28.32 (23.99)	32.81 (28.94)	23.91 (21.47)
2	24.00 (16.91)	26.17 (21.51)	26.12 (20.18)	30.19 (25.92)	29.54 (27.15)	28.16 (25.94)	27.82 (22.89)
3	31.93 (28.99)	28.05 (21.85)	30.68 (26.61)	28.52 (25.22)	27.60 (22.89)	26.43 (20.01)	31.66 (26.84)
4	31.39 (26.98)	30.64 (27.90)	34.91 (32.12)	27.69 (22.20)	27.82 (21.91)	27.24 (23.54)	30.46 (26.83)
5	33.95 (31.65)	34.40 (32.89)	37.13 (34.99)	25.10 (18.05)	30.47 (26.79)	28.54 (23.24)	29.88 (27.11)

Panel B OUTTURN for Investee Firms Ranked by Firm Characteristics Quintile (2)

Quintile	SEGNUM	ESTNUM	OUTBLK	HFOUT
1	27.61 (22.88)	21.40 (15.57)	20.82 (10.78)	21.59 (16.66)
2	29.25 (25.26)	27.50 (24.73)	31.45 (25.58)	32.46 (29.47)
3	28.84 (25.68)	31.51 (26.84)	31.46 (25.29)	34.79 (32.89)
4	28.84 (24.89)	30.91 (26.79)	31.71 (28.94)	32.33 (25.71)
5	29.84 (26.22)	32.40 (21.22)	28.27 (26.06)	22.55 (16.45)

Panel C OUTTURN for Investee Firms with/without Inside Blockholders

	DIRDUM	MGRDUM	INDUM
0	31.93 (30.03)	32.66 (31.25)	41.02 (37.05)
1	15.97 (12.89)	17.00 (13.68)	18.11 (14.56)

Table 5 Correlations – Block Ownership and Firm Characteristics (N = 874)

OUTTURN is annual outside blockholder turnover, and the proportion of outside block ownership that changed hands. INBLK (%) is block-shares held by inside blockholders, such as managers, directors, ESOP and affiliated entities. TELDUM is an indicator variable for firms in telecommunication/broadcasting industries. OUTBLK (%) is aggregate shares held by outside blockholders who own at least 5% of a firm's outstanding common stock. HFOUT is the Herfindahl index of a firm's outside-block ownership and indicates the concentration of the firm's outside-block ownership. SEGNUM is the number of business segments of a firm. ESTNUM is the one-year lag number of analyst forecasts (annual earnings) reported in IBES database. SHRTRN is share turnover rate measured as annual share trading volume/ total outstanding common stock. AGE is firm age and measured by the number of firm years in CRSP. ASSET is total assets. MKTBV is market value of equity/book value of equity. ROA is return on assets measured as income before extraordinary items and discontinued operation divided by beginning total assets. ROASTD is standard deviation of annual ROA for the period from *t*-1 through *t*+3 where *t* is the first year of the sample period. RETSTD is standard deviation of monthly stock returns for the period from *t*-1 through *t*+3 where *t* is the first year of the sample period.

	log (1+OUTTURN)	log (1+INBLK)	log (1+OUTBLK)	HFOUT	SEGNUM	ESTNUM	log (SHRTN)	log (AGE)	log (ASSET)	log (MKTBV)	ROA	ROASTD
log(1+OUTTURN)	1.00											
log(1+INBLK)	-0.61***	1.00										
log(1+OUTBLK)	0.25***	-0.32***	1.00									
HFOUT	0.01	0.05	0.17***	1.00								
SEGNUM	0.04	-0.09***	-0.13***	0.05	1.00							
ESTNUM	0.14***	-0.15***	-0.09***	-0.01	0.05	1.00						
log (SHRTN)	0.34***	-0.26***	0.21***	-0.04	-0.24***	0.13***	1.00					
log(AGE)	-0.08**	-0.03	-0.23***	0.08**	0.31***	0.09***	-0.35***	1.00				
log (ASSET)	0.07**	-0.13***	-0.21***	0.02	0.39***	0.45***	-0.17***	0.36***	1.00			
log (MKTBV)	0.01	-0.01	-0.10***	0.02	-0.12***	0.23***	0.26***	-0.12***	0.01	1.00		
ROA	-0.08**	0.10***	-0.13***	-0.01	-0.03	0.12***	-0.16***	0.04	0.05	0.21***	1.00	
ROASTD	0.13***	-0.06	0.11***	-0.05	-0.13***	-0.08**	0.47***	-0.21***	-0.29***	0.16***	-0.53***	1.00
RETSTD	0.12***	-0.02	0.17***	-0.01	-0.23***	-0.09***	0.66***	-0.39***	-0.33***	0.14***	-0.28***	0.45***

*, **, *** indicates significance at the 0.10, 0.05 and 0.01 levels, respectively (two-tailed)

Table 6.1 Factor Analysis (Principal Component) (N = 874)

SEGNUM is the number of business segments of a firm. ESTNUM is the number of analyst forecasts (annual earnings) reported in IBES database. SHRTRN is share turnover rate measured as annual share trading volume/ total outstanding common stock. AGE is firm age and measured by the number of firm years in CRSP. ASSET is total assets. MKTBV is market value of equity/book value of equity. ROA is return on assets measured as income before extraordinary items and discontinued operation/beginning assets. ROASTD is standard deviation of annual ROA for the period from *t*-1 through *t*+3 where *t* is the first year of the sample period. RETSTD is standard deviation of monthly stock returns for the period from *t*-1 through *t*+3 where *t* is the first year of the sample period.

	Factor 1 (Liquidity & Information Cost)	Factor 2 (Size/Maturity)	Factor 3 (Performance)
SEGNUM	0.00	**0.70**	-0.09
ESTNUM	-0.02	0.35	**0.75**
log(SHRTN)	**0.63**	-0.36	0.45
log(1+AGE)	-0.21	**0.66**	-0.12
log(ASSET)	-0.14	**0.76**	0.38
log(MKTBV)	0.01	-0.23	**0.71**
ROA	**-0.78**	-0.23	0.34
ROASTD	**0.82**	-0.15	0.01
RETSTD	**0.67**	-0.44	0.15
% Variance Explained	24.44%	23.22%	17.44%

Table 6.2 Correlations - Block Ownership and Factors (N = 874)

OUTTURN is annual outside blockholder turnover, and the proportion of outside block ownership that changed hands. INBLK (%) is block-shares held by inside blockholders, such as managers, directors, ESOP and affiliated entities. OUTBLK is aggregate shares held by outside blockholders who own at least 5% of a firm's outstanding common stock. HFOUT is the Herfindahl Index of a firm's outside-block ownership and indicates the concentration of the firm's outside-block ownership. Factor 1 (LQDITY/INFOCOST) is liquidity of shares and information asymmetry. Factor 2 (SIZE/MATURITY) is firm size and maturity of firms. Factor 3 (PERF) is firm performance.

	log (1+OUTTURN)	log (1+INBLK)	log (1+OUTBLK)	HFOUT	Factor 1	Factor 2	Factor 3
log(1+OUTTURN)	1.00						
log(1+INBLK)	-0.61***	1.00					
log(1+OUTBLK)	0.25***	-0.32***	1.00				
HFOUT	0.01	0.05	0.17***	1.00			
Factor1	0.22***	-0.16***	0.17***	-0.02	1.00		
Factor2	0.03	-0.13***	-0.20***	0.05	0.00	1.00	
Factor3	0.17***	-0.15***	-0.08***	-0.01	0.00	0.00	1.00

Table 7 Outside Blockholder Turnover – OLS Estimation

OUTTURN is annual outside blockholder turnover, and the proportion of outside block ownership that changed hands. LQDITY/INFOCOST (Factor 1) is liquidity of shares and information asymmetry. SIZE/MATURITY (Factor 2) is firm size and maturity of firms. PERFM (Factor 3) is firm performance. OUTBLK (%) is aggregate shares held by outside blockholders who own at least 5% of a firm's outstanding common stock. HFOUT is the Herfindahl Index of a firm's outside-block ownership and indicates the concentration of the firm's outside-block ownership. INBLK (%) is block-shares held by inside blockholders, such as managers, directors, ESOP and affiliated entities. TELDUM is an indicator variable for firms in telecommunication/broadcasting industries. UITLDUM is an indicator variable for firms in utility industry. White heteroscedasticity robust t-statistics are given in the parenthesis.

Independent variables	Dependent variable: log (1+OUTTURN)					
	Model 1		Model 2		Model 3	
Intercept	0.24***	(43.40)	0.33***	(44.22)	0.30***	(17.16)
LQDITY/INFOCOST	0.04***	(5.27)	0.02***	(3.85)	0.02***	(3.77)
SIZE/MATURITY	4.37E-3	(0.78)	-0.01	(-1.39)	-0.01	(-1.20)
PERFM	0.03***	(4.88)	0.01***	(2.96)	0.01***	(3.21)
log(1+OUTBLK)					0.01	(1.21)
log(1+INBLK)			-0.07***	(-22.61)	-0.07***	(-18.73)
HFOUT					0.03	(1.18)
TELDUM	-0.08	(-1.22)	-0.08	(-0.94)	-0.07	(-0.85)
UTILDUM	0.02	(0.64)	-0.01	(-0.35)	5.44E-4	(0.02)
Adjusted R^2	0.07		0.39		0.39	
N	874		874		874	

*, **, *** indicates significance at the 0.10, 0.05 and 0.01 levels, respectively (two-tailed)

Table 8 Correlations - CEO Compensation and Outside Blockholder Turnover (M = 874)

HFOUT is the Herfindahl Index of a firm's outside-block ownership and indicates the concentration of the firm's outside-block ownership. OUTTURN is annual outside blockholder turnover, and the proportion of outside block ownership that changed hands. OUTBLK (%) is aggregate shares held by outside blockholders who own at least 5% of a firm's outstanding common stock. DIRDUM is an indicator variable which takes value 1 if a firm has director blockholders and 0 otherwise. MGRDUM is an indicator variable which takes value 1 if a firm has director blockholders and 0 otherwise. TCOMP is total compensation for the fiscal year ($'000) and comprised of salary, bonus, stock options granted, restricted stock granted and all others. Salary is dollar value ($'000) of base salary. Bonus is dollar value ($'000) of cash bonus earned by a CEO during the fiscal year. CASH is salary plus cash bonus. CASH/TCOMP is the proportion of total CEO compensation in cash. OPTIONS/TCOMP is the proportion of total CEO compensation in options and measured as ratio of S&P Black-Scholes value of stock options granted to total CEO compensation. ΔOPTION is change in value of stock options granted in the current year per $1,000 in shareholder wealth.

	HFOUT	OUTTURN	OUTBLK	DIRDUM	MGRDUM	TCOMP	CASH/ TCOMP	OPTIONS/ TCOMP	ΔOPTION
HFOUT	1.00								
OUTTURN	0.01	1.00							
OUTBLK	-0.15***	0.09***	1.00						
DIRDUM	-0.02	-0.29***	-0.10***	1.00					
MGRDUM	0.09***	-0.30***	-0.09***	0.00	1.00				
TCOMP	-0.01	0.06*	-0.05	-0.08***	-0.08**	1.00			
CASH/TCOMP	0.04	-0.27***	-0.12***	0.06*	0.26***	-0.45***	1.00		
OPTIONS/TCOMP	-0.05	0.24***	0.15***	-0.04	-0.17***	0.37***	-0.74***	1.00	
ΔOPTION	-0.04	0.10***	0.20***	0.04	0.12***	0.26***	-0.36***	0.39***	1.00

*, **, *** indicates significance at the 0.10, 0.05 and 0.01 levels, respectively (two-tailed)

Table 9 CEO Compensation sorted by Block Ownership Characteristics

Panels A-E report mean (median) level of CEO compensation (types and structure) by quintile of block ownership characteristics. Quintile corresponds to block ownership characteristics, such as OUTTURN or OUTBLK. OUTTURN is an annual outside blockholder turnover and is the proportion of outside block ownership that changed hands. OUTBLK is block-shares held by an outside blockholder who is non-manager, non-director or non-founding family members. HFOUT is the Herfindahl index of a firm's outside-block ownership and indicates the concentration of the firm's outside-block ownership. DIRDUM is an indicator variable which takes value 1 if a firm has director blockholder(s) and 0 otherwise. MGRDUM is an indicator variable which takes value 1 if a firm has manager blockholder(s) and 0 otherwise. TCOMP is total compensation for the fiscal year ($'000) and comprised of salary, bonus, stock options granted, restricted stock granted and all others. Salary is dollar value ($'000) of base salary. Bonus is dollar value ($'000) of cash bonus earned by a CEO during the fiscal year. Cash is salary plus bonus. OPTIONS/TCOMP is ratio of S&P Black-Scholes value of stock options granted to total compensation. ΔOPTION is change in value of stock options granted in the current year per $1,000 in shareholder wealth.

Panel A Outside Blockholder Turnover (OUTTURN)

OUTTURN Quintile	TCOMP	SALARY/ TCOMP	BONUS/ TCOMP	CASH/ TCOMP	OPTIONS/ TCOMP	ΔOPTION
1	4,134	0.348	0.210	0.558	0.248	1.416
	(1,604)	(0.309)	(0.189)	(0.544)	(0.216)	(0.586)
2	3,568	0.291	0.193	0.484	0.322	1.623
	(2,095)	(0.250)	(0.171)	(0.432)	(0.322)	(1.005)
3	3,924	0.269	0.173	0.442	0.364	2.416
	(2,471)	(0.225)	(0.155)	(0.413)	(0.362)	(1.507)
4	4,544	0.255	0.149	0.404	0.386	2.200
	(2,610)	(0.229)	(0.145)	(0.367)	(0.380)	(1.253)
5	4,890	0.203	0.153	0.356	0.434	2.438
	(3,273)	(0.185)	(0.135)	(0.339)	(0.392)	(1.523)

Panel B Level of Outside Block Ownership (OUTBLK)

OUTBLK Quintile	TCOMP	SALARY/ TCOMP	BONUS/ TCOMP	CASH/ TCOMP	OPTIONS/ TCOMP	ΔOPTION
1	4,881	0.282	0.193	0.475	0.305	1.242
	(2,390)	(0.240)	(0.170)	(0.424)	(0.276)	(0.517)
2	4,000	0.301	0.182	0.484	0.320	1.463
	(2,643)	(0.236)	(0.176)	(0.447)	(0.298)	(0.808)
3	4,007	0.285	0.179	0.464	0.338	2.095
	(2,146)	(0.249)	(0.167)	(0.441)	(0.319)	(1.183)
4	4,592	0.252	0.161	0.414	0.389	2.432
	(2,567)	(0.229)	(0.144)	(0.399)	(0.388)	(1.494)
5	3,583	0.244	0.161	0.406	0.392	2.860
	(2,471)	(0.210)	(0.142)	(0.373)	(0.357)	(2.013)

(Continued)

Table 9 - Continued

Panel C Concentration of Outside Block Ownership (HFOUT)

HFOUT Quintile	TCOMP	SALARY/ TCOMP	BONUS/ TCOMP	CASH/ TCOMP	OPTIONS/ TCOMP	ΔOPTION
1	4,547	0.278	0.171	0.449	0.339	1.942
	(2,288)	(0.239)	(0.158)	(0.405)	(0.327)	(1.060)
2	3,911	0.264	0.177	0.442	0.381	2.420
	(2,380)	(0.232)	(0.154)	(0.416)	(0.343)	(1.683)
3	4,114	0.243	0.170	0.414	0.361	2.120
	(2,553)	(0.212)	(0.154)	(0.398)	(0.338)	(1.178)
4	4,167	0.287	0.176	0.463	0.340	1.782
	(2,202)	(0.246)	(0.161)	(0.441)	(0.330	(0.943)
5	4,323	0.291	0.182	0.474	0.325	1.832
	(2,517)	(0.231)	(0.168)	(0.416)	(0.312)	(0.955)

Panel D Block Ownership by Outside Directors (DIRDUM)

DIRDUM	TCOMP	SALARY/ TCOMP	BONUS/ TCOMP	CASH/ TCOMP	OPTIONS/ TCOMP	ΔOPTION
0	4,487	0.266	0.175	0.441	0.353	1.964
	(2,575)	(0.228)	(0.160)	(0.409)	(0.337)	(1.093)
1	3,107	0.301	0.177	0.478	0.332	2.241
	(2,017)	(0.250)	(0.153)	(0.439)	(0.319)	(1.066)

Panel E Block Ownership by Managers (MGRDUM)

MGRDUM	TCOMP	SALARY/ TCOMP	BONUS/ TCOMP	CASH/ TCOMP	OPTIONS/ TCOMP	ΔOPTION
0	4,504	0.245	0.169	0.414	0.370	1.821
	(2,843)	(0.216)	(0.157)	(0.394)	(0.351)	(1.093)
1	3,334	0.357	0.194	0.551	0.286	2.615
	(1,428)	(0.317)	(0.167)	(0.524)	(0.251)	(1.048)

Table 10 Blockholder Turnover and Options/Total CEO compensation (OPTIONS/TCOMP)

OPTIONS/TCOMP is the ratio of options granted to total CEO compensation. OUTTURN is annual outside blockholder turnover. OUTBLK (%) is aggregate shares held by outside blockholders. HFOUT is the Herfindahl index of a firm's outside-block ownership. MGRDUM is an indicator variable for the presence of manager blocks (manager blocks = 1, otherwise 0). DIRDUM is an indicator variable for the presence of director blocks (director blocks = 1, otherwise 0). INBLK is block-shares held by inside blockholders, such as managers, directors, ESOP and affiliated entities. CEOTURN is the number of CEO turnovers during the four year sample period. ASSET is total assets. LEV is leverage measured as long-term debt/total assets. DIV is dividend yield measured as total dividends/market value of the equity. BETA is coefficient of value-weighted market model estimated by monthly returns of five-year period. IDIORISK is idiosyncratic firm risk measured as standard deviation of residuals from value-weighted market model. ADJRET is stock return adjusted by value-weighted market return. ROA is return on assets. MKTBV is market value of equity/book value of equity. LQDITY/INFOCOST denotes share liquidity and information asymmetry. SIZE/MATURITY denotes firm size and is maturity. PERFM denotes firm performance. TELDUM is an indicator variable for firms in the telecommunication industry (Telecommunication = 1, otherwise 0). UITLDUM is an indicator variable for firms in the utility industry (Utility = 1, otherwise 0). IND_DUMMY is an indicator variable for the sample firm industry (Fama-French 12 industry portfolios). The results of IND_DUMMY are not reported in the table. log denotes natural log. White heteroscedasticity robust t-statistics are provided in the parenthesis for the OLS estimation.

	OLS Estimation (Panel A)		Simultaneous Estimation (Panel B)			
	OPTIONS/TCOMP		OPTIONS/TCOMP		log (1+OUTTURN)	
Intercept	-0.35***	(-2.46)	-0.26*	(-1.71)	0.31***	(8.85)
log (1+OUTTURN)	0.16***	(3.71)	0.49***	(5.04)		
log (1+OUTBLK)	0.03***	(3.91)	0.02**	(2.36)		
HFOUT	-0.07**	(-2.38)	-0.07**	(-2.52)		
log (1+INBLK)					-0.07***	(-17.18)
OPTIONS/TCOMP					0.05	(0.61)
MGRDUM	-0.05***	(-2.83)	-0.02	(-0.82)		
DIRDUM	0.02	(1.16)	0.05***	(2.74)		
CEOTURN	-0.01	(-1.02)	-0.01	(-0.87)		
log (ASSET)	0.09**	(2.40)	0.05	(1.33)		
$[\log (ASSET)]^2$	-3.62E-3	(-1.57)	-1.52E-3	(-0.62)		
log (LEV)	0.02	(0.25)	0.01	(0.17)		
log (1+DIV)	-0.55	(-1.24)	-0.63**	(-2.16)		
BETA	0.05***	(3.14)	0.05***	(3.09)		
IDIORISK	0.44*	(1.63)	0.34**	(2.34)		
ADJRET	0.02	(0.53)	0.03	(1.12)		
ROA	-0.02	(-0.15)	-0.02	(-0.21)		
log (MKTBV)	0.07***	(4.99)	0.07***	(5.48)		
LQDITY/INFOCOST					0.02**	(2.49)
SIZE/MATURITY					-0.01	(-1.12)
PERFM					0.01	(1.01)
TELDUM					-0.08	(-1.31)
UTILDUM					-1.01E-3	(-0.05)
IND_DUMMY						
Adjusted R^2	0.32		0.32		0.39	
N	874		874		874	

*, **, *** indicates significance at the 0.10, 0.05 and 0.01 levels, respectively (two-tailed)

Table 11 Blockholder Turnover and Option Delta (ΔOPTION)

.ΔOPTION is change in value of stock options granted in the current year per $1,000 in shareholder wealth. OUTTURN is annual outside blockholder turnover, and the proportion of outside block ownership that changed hands. OUTBLK is aggregate shares held by outside blockholders. HFOUT is the Herfindahl index of a firm's outside-block ownership. MGRDUM is an indicator variable for the presence of manager blocks (manager blocks = 1, otherwise 0). DIRDUM is an indicator variable for the presence of director blocks (director blocks = 1, otherwise 0). INBLK is block-shares held by inside blockholders, such as managers, directors, ESOP and affiliated entities. CEOTURN is the number of CEO turnovers during the four year sample period. ASSET is total assets. LEV is leverage measured as long-term debt/total assets. DIV is dividend yield measured as total dividends/market value of the equity. BETA is coefficient of value-weighted market model estimated by monthly returns of five-year period. IDIORISK is idiosyncratic firm risk measured as standard deviation of residuals from value-weighted market model. ADJRET is stock return adjusted by value-weighted market return. ROA is return on assets. MKTBV is market value of equity/book value of equity. LQDITY/INFOCOST denotes share liquidity and information asymmetry. SIZE/MATURITY denotes firm size and is maturity. PERFM denotes firm performance. TELDUM is an indicator variable for firms in the telecommunication industry (Telecommunication = 1, otherwise 0). UITLDUM is an indicator variable for firms in the utility industry (Utility = 1, otherwise 0). IND_DUMMY is an indicator variable for the sample firm industry (Fama-French 12 industry portfolios). The results of IND_DUMMY are not reported in the table. log denotes natural log. White heteroscedasticity robust t-statistics are given in the parenthesis for the OLS estimation.

	OLS Estimation (Panel A)		Simultaneous Estimation (Panel B)			
	log ((ΔOPTION)		log ((ΔOPTION)		log (1+OUTTURN)	
Intercept	1.31***	(3.43)	1.40***	(3.32)	0.33***	(12.42)
log (1+OUTTURN)	0.46***	(3.87)	0.78***	(2.88)		
log (1+OUTBLK)	0.12***	(4.92)	0.11***	(4.37)		
HFOUT	-0.25***	(-3.33)	-0.25***	(-3.14)		
log (1+INBLK)					-0.07***	(-19.37)
log(1+ΔOPTION)					0.01	(0.26)
MGRDUM	-0.01	(-0.14)	0.03	(0.49)		
DIRDUM	0.07	(1.34)	0.11*	(1.92)		
CEOTURN	-0.01	(-0.18)	-3.93E-3	(-0.13)		
log (ASSET)	-0.11	(-1.17)	-0.14	(-1.31)		
[log (ASSET)]^2	-8.58E-4	(-0.15)	1.22E-3	(0.18)		
log (LEV)	0.46**	(2.52)	0.46***	(2.64)		
log (1+DIV)	-2.78	(-1.58)	-2.86***	(-3.45)		
BETA	0.05	(0.96)	0.04	(1.03)		
IDIORISK	1.31**	(2.55)	1.20***	(2.96)		
ADJRET	0.01	(0.10)	0.02	(0.24)		
ROA	-0.56*	(-1.94)	-0.56**	(-2.09)		
log (MKTBV)	-0.06	(-1.27)	-0.06	(-1.59)		
LQDITY/INFOCOST					0.02***	(2.77)
SIZE/MATURITY					-4.89E-3	(-0.72)
PERFM					0.01***	(2.89)
TELDUM					-0.08	(-1.30)
UTILDUM					-0.01	(-0.24)
IND_DUMMY						
Adjusted R^2	0.30		0.30		0.39	
N	874		874		874	

*, **, *** indicates significance at the 0.10, 0.05 and 0.01 levels, respectively (two-tailed)

Table 12 Blockholder Turnover and Total CEO Compensation (TCOMP)

TCOMP is total compensation ($'000). OUTTURN is annual outside blockholder turnover, and the proportion of outside block ownership that changed hands. OUTBLK is aggregate shares held by outside blockholders. HFOUT is the Herfindahl index of a firm's outside-block ownership. MGRDUM is an indicator variable for the presence of manager blocks (manager blocks = 1, otherwise 0). DIRDUM is an indicator variable for the presence of director blocks (director blocks = 1, otherwise 0). INBLK is block-shares held by inside blockholders, such as managers, directors, ESOP and affiliated entities. CEOTURN is the number of CEO turnovers during the four year sample period. ASSET is total assets. LEV is leverage measured as long-term debt/total assets. DIV is dividend yield measured as total dividends/market value of the equity. BETA is coefficient of value-weighted market model estimated by monthly returns of five-year period. IDIORISK is idiosyncratic firm risk measured as standard deviation of residuals from value-weighted market model. ADJRET is stock return adjusted by value-weighted market return. ROA is return on assets. HITURN is an indicator variable for firms with above median outside blockholder turnover (above median=1, otherwise 0). MKTBV is market value of equity/book value of equity. LQDITY/INFOCOST denotes share liquidity and information asymmetry. SIZE/MATURITY denotes firm size and is maturity. PERFM denotes firm performance. TELDUM is an indicator variable for firms in the telecommunication industry (Telecommunication = 1, otherwise 0). UITLDUM is an indicator variable for firms in the utility industry (Utility = 1, otherwise 0). IND_DUMMY is an indicator variable for the sample firm industry (Fama-French 12 industry portfolios). The results of IND_DUMMY are not reported in the table. log denotes natural log. White heteroscedasticity robust t-statistics are given in the parenthesis for the OLS estimation.

	OLS Estimation (Panel A)		Simultaneous Estimation (Panel B)			
	log(TCOMP)		log(TCOMP)		log (1+OUTTURN)	
intercept	3.53***	(6.89)	3.79***	(6.95)	0.31***	(3.27)
log (1+OUTTURN)	0.50***	(2.95)	1.76***	(4.29)		
log (1+OUTBLK)	0.11***	(4.05)	0.08***	(2.66)		
HFOUT	-0.17*	(-1.68)	-0.17*	(-1.62)		
log (1+INBLK)					-0.07***	(-19.86)
log(TCOMP)					2.40E-3	(0.20)
MGRDUM	-0.19***	(-2.64)	-0.08	(-1.06)		
DIRDUM	-0.01	(-0.19)	0.09	(1.33)		
CEOTURN	-0.05	(-1.34)	-0.05	(-1.20)		
log (ASSET)	0.54***	(4.09)	0.42***	(2.93)		
[log (ASSET)]^2	-0.01	(-0.74)	1.24E-3	(0.14)		
log (LEV)	-0.17	(-0.63)	-0.16	(-0.70)		
log (1+DIV)	-2.09	(-1.58)	-2.34**	(-2.18)		
BETA	0.10*	(1.67)	0.09*	(1.62)		
IDIORISK	1.07	(1.61)	0.77	(1.46)		
ADJRET	-0.06	(-0.24)	-0.07	(-0.59)		
ROA	0.59	(0.74)	1.31***	(2.66)		
ADJRET*HITURN	0.49*	(1.84)	0.56***	(3.80)		
ROA*HITURN	-0.08	(-0.09)	-1.56**	(-2.19)		
log (MKTBV)	0.25***	(4.45)	0.27***	(5.31)		
LQDITY/INFOCOST					0.02***	(4.43)
SIZE/MATURITY					-0.01	(-1.15)
PERFM					0.01*	(1.78)
TELDUM					-0.08	(-1.31)
UTILDUM					-0.01	(-0.29)
IND_DUMMY						
Adjusted R^2	0.53		0.52		0.39	
N	874		874		874	

*, **, *** indicates significance at the 0.10, 0.05 and 0.01 levels, respectively (two-tailed)

Table 13 Blockholder Turnover and Cash Compensation (CASH)

CASH is total cash compensation which consists of salary and cash bonus. OUTTURN is annual outside blockholder turnover, and the proportion of outside block ownership that changed hands. OUTBLK is aggregate shares held by outside blockholders. HFOUT is the Herfindahl index of a firm's outside-block ownership. MGRDUM is an indicator variable for the presence of manager blocks (manager blocks = 1, otherwise 0). DIRDUM is an indicator variable for the presence of director blocks (director blocks = 1, otherwise 0). INBLK is block-shares held by inside blockholders, such as managers, directors, ESOP and affiliated entities. CEOTURN is the number of CEO turnovers during the four year sample period. ASSET is total assets. LEV is leverage measured as long-term debt/total assets. DIV is dividend yield measured as total dividends/market value of the equity. BETA is coefficient of value-weighted market model estimated by monthly returns of five-year period. IDIORISK is idiosyncratic firm risk measured as standard deviation of residuals from value-weighted market model. ADJRET is stock return adjusted by value-weighted market return. ROA is return on assets. HITURN is an indicator variable for firms with above median outside blockholder turnover (above median=1, otherwise 0). MKTBV is market value of equity/book value of equity. LQDITY/INFOCOST denotes share liquidity and information asymmetry. SIZE/MATURITY denotes firm size and is maturity. PERFM denotes firm performance. TELDUM is an indicator variable for firms in the telecommunication industry (Telecommunication = 1, otherwise 0). UITLDUM is an indicator variable for firms in the utility industry (Utility = 1, otherwise 0). IND_DUMMY is an indicator variable for the sample firm industry (Fama-French 12 industry portfolios). The results of IND_DUMMY are not reported in the table. log denotes natural log. White heteroscedasticity robust t-statistics are given in the parenthesis for the OLS estimation.

	OLS Estimation (Panel A)		Simultaneous Estimation (Panel B)			
	Log(CASH)		log(CASH)		log (1+OUTTURN)	
intercept	4.93***	(13.09)	4.97***	(13.09)	0.39***	(3.09)
log (1+OUTTURN)	0.02	(0.13)	0.21	(0.75)		
log (1+OUTBLK)	0.05***	(2.81)	0.05**	(2.10)		
HFOUT	-0.04	(-0.52)	-0.04	(-0.50)		
log (1+INBLK)					-0.07***	(-20.93)
log(CASH)					-0.01	(-0.49)
MGRDUM	-0.09*	(-1.87)	-0.07	(-1.45)		
DIRDUM	-0.05	(-1.23)	-0.03	(-0.66)		
CEOTURN	-0.11***	(-4.48)	-0.11***	(-4.06)		
log (ASSET)	0.22**	(2.27)	0.20**	(2.00)		
$[\log (ASSET)]^2$	0.01	(0.98)	0.01	(1.15)		
log (LEV)	-0.20	(-1.23)	-0.20	(-1.29)		
log (1+DIV)	-0.15	(-0.29)	-0.19	(-0.25)		
BETA	0.02	(0.36)	0.01	(0.35)		
IDIORISK	-0.55*	(-1.67)	-0.60*	(-1.64)		
ADJRET	0.06	(0.45)	0.06	(0.74)		
ROA	0.92*	(1.95)	1.03***	(3.00)		
ADJRET*HITURN	0.18	(1.26)	0.19*	(1.86)		
ROA*HITURN	-0.56	(-1.14)	-0.80	(-1.61)		
log (MKTBV)	-0.01	(-0.25)	-0.01	(-0.18)		
LQDITY/INFOCOST					0.02***	(3.82)
SIZE/MATURITY					-3.13E-3	(-0.40)
PERFM					0.02***	(2.69)
TELDUM					-0.08	(-1.30)
UTILDUM					-0.01	(-0.57)
IND_DUMMY						
Adjusted R^2	0.49		0.49		0.39	
N	874		874		874	

*, **, *** indicates significance at the 0.10, 0.05 and 0.01 levels, respectively (two-tailed)

Appendix 1 Holding Periods of Large Investors Holding Blocks in at least 10 Sample firms (N = 61)

The sample has a total of 874 unique firms with 1,102 unique blockholders over 4 year sample period. The 1,102 blockholders consist of 527 inside blockholders (managers, directors, ESOP or affiliated entities who own at least 5% of outstanding common stock), and 575 outside blockholders. Of the 575 outside blockholders, 61 outside blockholders has at least 10 sample firms in their portfolio. Following table lists the 61 outside blockholders, their portfolio size (# of firms) and summary of holding period (year). Meanhp is the mean portfolio holding period. Stdhp is standard deviation of holding periods for each blockholder's portfolio. Stdhp/Meanhp is coefficient of the standard deviation and is measure as standard deviation of holding periods (Stdhp) divided by the mean portfolio holding period (Meanhp).

Blockholder Name	Portfolio size (#firms)	Proportion of portfolio by holding period (yr = year)				Meanhp	Stdhp	Stdhp/ Meanhp
		0-1yr	1-2yrs	2-3yrs	3-4yrs			
Nicholas Applegate Capital Management	11	0.91	0.09	0.00	0.00	1.09	0.30	0.28
AIM Management Group Inc	23	0.91	0.04	0.04	0.00	1.13	0.46	0.40
Barclays Global Investors NA	17	0.82	0.18	0.00	0.00	1.18	0.39	0.33
Filrim Baxter & Associates LTD	28	0.86	0.11	0.04	0.00	1.18	0.48	0.40
Boston Partners Asset Management LP	11	0.82	0.18	0.00	0.00	1.18	0.40	0.34
American Century Companies Inc	13	0.77	0.15	0.08	0.00	1.31	0.63	0.48
TCW Group Inc	18	0.72	0.22	0.00	0.06	1.39	0.78	0.56
AXA Financial Corp	**48**	**0.73**	**0.19**	**0.04**	**0.04**	**1.40**	**0.76**	**0.55**
Jennison Associates LLC	10	0.70	0.20	0.10	0.00	1.40	0.70	0.50
Invesco PLC	17	0.71	0.24	0.00	0.06	1.41	0.80	0.56
Goldman Sachs & Co	14	0.79	0.07	0.07	0.07	1.43	0.94	0.66
Reich & Tang Asset Management LP	14	0.71	0.21	0.00	0.07	1.43	0.85	0.60
Equitable Cos. Inc	37	0.68	0.24	0.05	0.03	1.43	0.73	0.51
Delaware Management Holdings, Inc.	13	0.69	0.15	0.15	0.00	1.46	0.78	0.53
Janus Capital Corp	38	0.71	0.16	0.08	0.05	1.47	0.86	0.58
CitiGroup Inc	16	0.69	0.13	0.19	0.00	1.50	0.82	0.54
Loomis Sayles & Co. LP	21	0.62	0.24	0.14	0.00	1.52	0.75	0.49
Amvescap PLC	61	0.59	0.30	0.11	0.00	1.52	0.70	0.46
Merrill Lynch & Co Inc	48	0.67	0.17	0.13	0.04	1.54	0.87	0.57
Mellon Financial Corp	57	0.67	0.18	0.11	0.05	1.54	0.89	0.58
Heartland Advisors Inc	14	0.50	0.43	0.07	0.00	1.57	0.65	0.41
American Express Co	29	0.55	0.28	0.17	0.00	1.62	0.78	0.48
Morgan Stanley Dean Witter & Co	46	0.61	0.22	0.04	0.13	1.70	1.05	0.62
Macakay Shields Financial Corp	10	0.50	0.30	0.20	0.00	1.70	0.82	0.48
Putnam Investments Inc	**124**	**0.58**	**0.22**	**0.11**	**0.09**	**1.71**	**0.99**	**0.58**
Vanguard (various funds)	38	0.47	0.39	0.05	0.08	1.74	0.89	0.51
JP Morgan Chase & Co	50	0.48	0.34	0.12	0.06	1.76	1.12	0.64
Lazard Freres & Co LLC	27	0.52	0.19	0.26	0.04	1.81	0.96	0.53
Sanford C Bernstein & Co, Inc	71	0.48	0.30	0.13	0.10	1.85	0.99	0.54
Tiger Management LLC	13	0.54	0.23	0.08	0.15	1.85	1.14	0.62
Binson Partners Inc	42	0.43	0.33	0.19	0.05	1.86	0.90	0.48
Scudder Kemper Investments Inc	22	0.50	0.23	0.18	0.09	1.86	1.04	0.56
J&W Seligman & Co Inc	30	0.53	0.17	0.17	0.13	1.90	0.89	0.47
Harris Associates LP	16	0.56	0.06	0.25	0.13	1.94	1.18	0.61

(Continued)

Appendix 1 - Continued

Blockholder Name	Portfolio size (#firms)	Proportion of portfolio by holding period (yr = year)				Meanhp	Stdhp	Stdhp/ Meanhp
		0-1yr	1-2yrs	2-3yrs	3-4yrs			
T Rowe Price Associates Inc	77	0.45	0.27	0.14	0.13	1.95	1.06	0.55
Neuberger & Berman LLC	51	0.43	0.31	0.10	0.16	1.98	1.09	0.55
Dimensional Fund Advisors Inc	116	0.39	0.34	0.16	0.11	1.99	1.00	0.50
Massachusetts Financial Services Co	50	0.52	0.18	0.08	0.22	2.00	1.23	0.61
Oppenheimer Group Inc	44	0.50	0.14	0.20	0.16	2.02	1.17	0.58
Primecap Management Co	23	0.30	0.43	0.13	0.13	2.09	1.00	0.48
Wellington Management Co LLP	113	0.40	0.27	0.17	0.16	2.09	1.10	0.53
Ariel Capital Management Inc	10	0.40	0.20	0.30	0.10	2.10	1.10	0.52
Prudential Investment Corp	58	0.36	0.33	0.16	0.16	2.10	1.07	0.51
Capital Research & Management Co	178	0.35	0.30	0.18	0.17	2.16	1.09	0.50
Franklin Resources Inc	79	0.35	0.27	0.23	0.15	2.18	1.08	0.50
Crabbe Huson Group Inc	16	0.38	0.25	0.19	0.19	2.19	1.17	0.53
Private Capital Management Inc	13	0.38	0.23	0.15	0.23	2.23	1.24	0.55
FMR Corp	**405**	**0.39**	**0.20**	**0.17**	**0.24**	**2.27**	**1.21**	**0.53**
Dodge & Cox	18	0.44	0.06	0.22	0.28	2.33	1.33	0.57
Trimark Financial Corp	18	0.17	0.44	0.28	0.11	2.33	0.91	0.39
State of Wisconsin Investment Board	38	0.37	0.24	0.08	0.32	2.34	1.28	0.55
Barrow, Hanley, Mewhinney & Strauss Inc	20	0.40	0.10	0.25	0.25	2.35	1.27	0.54
ICM Asset Management Inc	16	0.25	0.25	0.38	0.13	2.38	1.02	0.43
Pioneering Management Corp	34	0.38	0.12	0.24	0.26	2.38	1.26	0.53
Royce & Associates Inc	13	0.38	0.15	0.15	0.31	2.38	1.33	0.56
First Pacific Avisors Inc	18	0.33	0.22	0.11	0.33	2.44	1.29	0.53
Southeastern Asset Management Inc	21	0.29	0.24	0.19	0.29	2.48	1.21	0.49
David Babson & Co Inc	18	0.28	0.17	0.22	0.33	2.61	1.24	0.48
GEO Capital LLC	10	0.20	0.20	0.10	0.50	2.90	1.29	0.44
Gabelli Funds Inc & Gamco Investors	**24**	**0.17**	**0.21**	**0.08**	**0.54**	**3.00**	**1.22**	**0.41**
State Farm Mutual Auto. Insurance Co.	22	0.00	0.27	0.05	0.68	3.41	0.91	0.27
Average across blockholders	48.80	0.51	0.22	0.13	0.14	1.89	0.96	0.51

Appendix 2A – Measurement of Blockholder Turnover

I manually examine the blockholders of each firm to identify unique blockholders and assign an ID to each blockholder in the sample. I then check the exit of existing blockholders and the entry of new blockholders in the sample firms annually, and calculate the annual turnover of the block ownership (Refer to Appendix 1B for the formula).

I use the following steps to avoid measurement errors in blockholder turnover:

1. Code different funds under single investment company as the same blockholder (e.g., Capital Guardian, Capital Group International and Capital Research and Management are different investment groups in Capital Group Companies, and I code them as the same investors in the sample. Similarly, Franklin Templeton Investment and Franklin Resources are coded as the same blockholder).

2. Code related investor groups as the same blockholder (e.g., Mario Garbelli and Gamco Investors, and Warren Buffett and Berkshire Hathaway Inc.).

3. Code trustees of a firm's Employee Stock Ownership Plans (ESOPs) and other employee savings and retirement plans as the same blockholder (Firms typically list a trustee of their ESOP in the proxy statements as a blockholder if the ESOP has more than 5% of the firm' common stock. I assign a unique block ID to the ESOP regardless of the identity of the ESOP trustee. As a result, a change in a firm's ESOP trustee does not contribute to blockholder turnover).

4. Group shares owned by founding family members into a single block, and do not count exit or entry of individual family members as a turnover transaction.

5. Do not count changes in blockholder name due to a merger or a restructuring as a turnover transaction.

6. Identify and correct spelling errors or other recording inconsistency in blockholders' names.

Appendix 2B – Calculation of Blockholder Turnover

Blockholder turnover in year$_{t+1}$ is the proportion of block ownership that changed hands during year$_{t+1}$. The formula for blockholder turnover in year$_{t+1}$ is as follows:

$$\frac{\sum_{h=1}^{l} B_{h,\,t} + \sum_{i=1}^{m} B_{i,\,t+1}}{\sum_{j=1}^{o} B_{j,\,t} + \sum_{k=1}^{p} B_{k,\,t+1}}$$

$B_{h,\,t}$: block-shares owned by Blockholder h who existed at the end of year $_{t}$ and exited the firm by end of year $_{t+1}$

$B_{i,\,t+1}$: block-shares owned by Blockholder i who entered the firm in year $_{t+1}$

B_{j} : block-shares owned by Blockholder j at the end of year $_{t}$

$B_{k,\,t+1}$: block-shares owned by Blockholder k at the end of year $_{t+1}$

(where l , m, o and p are the number of blockholders, and $l \in o$, $m \in p$)

(Example) Delta Corp had block ownership at the end of year $_{t}$ and year $_{t+1}$ as follow:

Year $_{t}$		Year $_{t+1}$	
Block A 5%		Block A 20%	
Block B 15%	√	Block D 10%	√
Block C 15%	√	Block E 5%	√
Total 35%		Total 35%	

In the above example, Block B and Block C exited the company, and Block D and Block E entered the company during year $_{t+1}$. Therefore, Delta Corp's blockholder turnover in year $_{t+1}$ is as follows:

Blockholder turnover in year $_{t+1}$ = (15+15+10+5) / (35+35) = 0.643 (64.3%)

Appendix 3 Variable Description

Block Ownership Variables

OUTTURN: Proportion of outside block ownership that changed hands.
MGRBLK: Block-shares (%) owned by a blockholder who is a manager or manager/director
DIRBLK: Block-shares (%) owned by an outside blockholder who is a director or has representatives in the board
OUTBLK: Block-shares (%) owned by an outside blockholder who is not a manager, director or a member of founding family
ESOPBLK: Block-shares (%) owned by the firm's Employee Stock Ownership Plan or employee savings plan
GRAYBLK: Block-shares (%) owned by a founding family, subsidiaries or entities that have significant business transactions with the firm
INBLK: Sum of MGRBLK, DIRBLK, ESOPBLK and GRAYBLK.
MGRDUM: Indicator variable for the presence of manager blockholder (Manager blockholder = 1, otherwise 0)
DIRDUM: Indicator variable for the presence of director blockholder (Director blockholder = 1, otherwise 0)
HFOUT: Concentration of outside block ownership as measured by the Herfindahl Index of outside block ownership.

CEO Compensation Variables

TCOMP: Total compensation for the fiscal year ($'000) and comprised of salary, bonus, stock options granted, restricted stock granted and all others.
CASH : Dollar value ($'000) of base salary and cash bonus earned by a CEO during the fiscal year.
OPTIONS: Aggregate value of stock options granted to a CEO during the fiscal year as valued using S&P's Black-Scholes method.
ΔOPTION: Change in value of option granted in the current year per $1,000 in shareholder wealth.

Financial and Other Variables

(Unless otherwise stated, Data # refers to COMPUSTAT data reference number.)

ADJRET: Monthly stock returns adjusted by CRSP value-weighted market return
ASSET: Total assets [Data#6]
BETA: Coefficient of value-weighted market model estimated by monthly returns of five-year period
CEOTURN: The number of CEO turnover over four-year period
DIV: Dividend yield measured as Total dividends/Market value of equity
IDIORISK: Idiosyncratic firm risk measured as standard deviation of residuals from a value-weighted market model that uses monthly returns of five-year period
IND_DUMMY: Indicator variables for sample firm industry (Fama-French's 12 Industry Portfolios)
LEV: Leverage measured as Long-term debt/Total assets [Data#9/Data#6]
MKT: Market value of equity [Data#24*Data#25]
MKTBV: Market value of equity/Book value of Equity [(Data24*Data25)/Data216]
ROA: Return on assets [Data #18/Data#6]
SHRTRN: Share turnover rate measured as annual share trading volume/outstanding common stock.

Factors

LQDITY/INFOCOST: Share liquidity and information asymmetry (Factor 1)
SIZE/MATURITY: Firm size and maturity (Factor 2)
PERFM: Firm performance (Factor 3)

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