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ABSTRACT

ESSAYS ON INSTITUTIONAL OWNERSHIP

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The first chapter addresses the link between the liquidity of a firm's equity securities and the ability of large shareholders to influence control of a firm. Using a sample of U.S. outside blockholdings from 1994-2005, I examine whether liquidity influences the creation of block holdings. Using an instrumental variable approach, I find that liquidity increases the likelihood of block formation. Consistent with prior theory, blockholders of more liquid securities take smaller stakes that do not precommit them to monitor. I find evidence that the threat of exit from a block can discipline managers and that this threat is more effective when liquidity is higher. While liquidity increases exit from existing blocks, I find no evidence that illiquidity forces blockholders to actively monitor. Blockholders' returns are consistent with liquidity facilitating costly monitoring, and blockholder choose forms of monitoring that are more effective when liquidity is higher.

In the second chapter, we empirically examine employee ownership of institutional investment management firms. We show that employee ownership is common, and the majority of firms in this industry are employee owned. The distribution of employee ownership is consistent with an optimal contracting equilibrium. It is more prevalent when it is less costly, more efficient, and when alternative incentives are less attractive. The level of employee ownership does not predict risk-adjusted returns, also consistent with an optimal contracting equilibrium. Finally, we show that employee ownership predicts risk taking. Portfolios managed by employee owners have significantly higher tracking errors, betas, and standard deviations even after controlling for firm characteristics.

In the third chapter, we use mandatory disclosures by investment advisers to predict which firms have future incidences of fraud and other investment-related crime. We find that internal polices that allow for more potential conflicts of interest are associated with an increased level of future events. Internal monitoring and incentive aligning mechanisms lead to lower levels of future events. The presence of sophisticated clients is negatively related to the frequency of future events. Even after accounting for all the above factors, a history of disciplinary actions against the firm predicts future events. Overall, the required disclosure is useful for predicting events, and the probability of events is positively correlated with permissive firm policies and negatively correlated with internal and external monitoring.

DEDICATION

To my family, without whom this would not have been possible.

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Chapter 1

Blockholder Ownership and Corporate Control: The Role of Liquidity

This essay examines a sample of outside blockholdings in U.S. firms to determine whether the liquidity of a firm's equity affects the propensity of block shareholders to engage in activism. Theoretical work such as Shleifer and Vishny (1986) suggests that by purchasing a significant block of shares a blockholder can overcome the free-rider problem inherent in widely dispersed shareholdings. The relative paucity of intervention by blockholders in the U.S. when compared to other countries like Germany or Japan has led several scholars to cite the higher liquidity of U.S. securities as an obstacle to blockholder intervention. Their reasoning follows that higher liquidity lowers the cost of exiting the position (Bhide (1993)) or increases the potential benefits from speculation (Kahn and Winston (1998)). These views neglect to consider why blockholders would rationally establish the block in the first place. In a theoretical work, Maug (1998) counters that more liquid securities will attract more blockholder

intervention because blocks become cheaper to acquire and higher liquidity allows the cost of intervention to be borne across more shareholders. The blocks are cheaper in more liquid securities not just because of lower transaction costs, but because the higher liquidity allows blockholders not to precommit to monitoring.

As disagreement exists among theorists regarding the relation of liquidity and blockholder intervention, I examine liquidity's on blockholder intervention empirically using a newly constructed sample of blockholdings in S&P 1500 firms from 1994-2005. The comprehensive nature of this sample also contributes to the literature on blockholders as prior work has focused on either a particular type of blockholder (e.g. 1,902 hedge fund blockholdings in Clifford (2008)) or only activist events (e.g. 244 activist blockholdings in Bethel, Liebeskind, and Opler (1998)). The sample of 18,210 blockholdings includes both active and passive filings from all outside blockholders. The broad coverage of the sample is important as I find that characteristics of the blocks such as size and level of activism vary with the identity of the blockholder and that certain types of blockholders tend to be more passive or active. Their tendency to either engage or refrain from activism correlates with regulatory and business constraints. By using a well defined set of potential targets, the S&P 1500, I am able to avoid self-selection issues that other papers that only study the characteristics of observed blockholdings suffer.

With this sample, I investigate whether liquidity increases the likelihood of new block formation. As liquidity of a firm's equity and block stock holdings are endogenously determined, I establish causality of the relationship using the change in tick size on major U.S. stock exchanges in 1997 and 2001 to help form an instrument for liquidity. I find that liquidity increases the probability of block formation in my sample. This result supports the theoretical claim that more liquid markets encourage the formation of blocks. As blocks will only form when the benefits of monitoring

are higher than the cost, the result is consistent the conjecture in Maug (1998) that higher liquidity leads to a higher socially improving level of monitoring, though such a conclusion is difficult to support empirically without observing the cost of monitoring and losses to other stakeholders.

I then turn my attention to the set of observed blockholdings and examine the determinants of the size of the blockholder's stake. The model in Maug (1998) implies that a blockholder will take smaller stakes in more liquid securities all else equal. The blockholder's decision to perform costly monitoring is private information, so the higher liquidity allows the blockholder to engage in more informed trading with liquidity traders. Therefore, blockholders have a greater potential to gain when they are less precommitted to monitoring as they can buy shares for a lower price that does not fully incorporate the benefits of their monitoring activity. As expected, I find that blockholders take a smaller initial position in more liquid securities.

Besides encouraging activism by making blockholdings more profitable, I find that liquidity can enhance governance through the threat of exit. If managerial compensation is sensitive to the share price then blockholders can encourage managers to engage in share price maximizing behavior by threatening to sell their block, an event that would punish managers. Illiquid securities reduce the credibility of the threat to exit since blockholders would receive lower prices for their shares. I show that firm value is enhanced in situations when the threat to exit is most credible - when managerial sensitivity to the stock price is high and when shares are liquid. This result contradicts the suggestion that liquidity hurts governance.

I also look at existing blockholdings to see if illiquidity encourages blockholders to be more active monitors of management. Though I find that increasing liquidity increases the propensity for blockholders to exit their position, I do not find any support for illiquidity increasing the propensity to engage in activism. Instead of exiting

or fighting management, blockholders of illiquid positions often choose a third option and do nothing. As building blocks in less liquid firms provides less opportunity to engage in beneficial monitoring and is more costly, investors will only do so when expected returns from doing so are higher. I find that block holding return measures are increasing in illiquidity though blockholders with fewer constraints demand a smaller illiquidity premium. Finally, I show that the liquidity affects the choice of monitoring action.

This paper contributes to the literature by conducting an empirical test of the effect of liquidity on a blockholder's decision to intervene. I provide evidence consistent with theoretical models that predict that improved liquidity will enhance monitoring by blockholders by permitting profitable action more often. I find no evidence that illiquidity forces institutions to monitor when exit is costly. Instead, I find that many blockholders are bound by regulatory restrictions or fiduciary responsibility and choose not to engage in shareholder activism.

1.1 Hypothesis Development

Difficulties in contracting that arise from the separation of ownership and control as stated in Jensen and Meckling (1976) provide small atomistic shareholders with little incentive to exert control. They bear the full cost of monitoring to reduce agency costs and receive only a small portion of the benefits of their actions. The existing literature suggests that this free-rider problem can be overcome by the presence of a large outside blockholder. For example, Shleifer and Vishny (1986) present a model in which small minority shareholders in widely-held firms have little incentive to incur monitoring costs because each would like to free-ride on the monitoring of the others, but a blockholder can profitably take action if its stake is large enough. Throughout

this paper, I use this definition of monitoring - an action by an outside shareholder which can increase shareholder value relative to the value if the outside shareholder takes no action. This is similar to the definition adopted in Maug (1998) and makes no differentiation whether the action increases overall firm value or just expropriates from other stakeholders in the firm. In practice, these actions can take a variety of forms: engaging in conversations with management, starting proxy fights, "vote no" campaigns, the threat of selling the block, and even hostile takeover attempts.

Blockholdings in public companies are commonplace around the world and are found frequently even in the relatively more dispersed U.S public equity market.[1] Using a sample of 1,500 companies,[2] Dlugosz, Fahlenbrach, Gompers, and Metrick (2006) observe that the average firm in their sample has one outside shareholder that controls between 14-18% of the outstanding equity. Despite of this finding regarding the ubiquitous nature of blockholders, evidence of intervention by these blockholders is mixed. Clearly some blockholders, for instance wealthy activist individual investors, play an important role in governance.[3] In recent decades, other types of institutional investors, such as pension funds and hedge funds, have also attracted media and academic attention for their activist actions (e.g. Smith (1996) studies a series of activist interventions by CalPERS).

In contrast, Jensen (1989) notes that financial institutions and money management firms, which control over a third of all corporate equity in the United States, are typically uninvolved in the major decisions and long-term strategies of the firms in which

[1]Faccio and Lang (2002) finds that in Western countries 92% of firms have at least one shareholder with at least 5% of voting rights.

[2]The sample taken from the Investor Responsibility Research Center (IRRC) covers about 90% of the value of the NYSE, AMEX, and NASDAQ markets and covers a set of firms and years similar to the sample used in this paper.

[3]For an example of recent intervention by an individual blockholder, see Carl Icahn's recent involvement with Yahoo!: http://blogs.wsj.com/deals/2008/07/21/what-can-carl-icahn-do-for-yahoo-now/

they invest. Furthermore, more involved actions such as seeking board representation and engaging in proxy fights are rarer still. Jensen (1989) attributes this perceived passivism to a host of populist laws and regulations approved in the wake of the Great Depression, such as the Glass-Steagall Banking Act of 1933, the Securities Exchange Act of 1933, the Securities Exchange Act of 1934, and the Investment Company Act of 1940. Black (1990) suggests this passivity may be justified by the burden of legal obstacles that hinder rational action in all but extreme cases. Another frequently cited explanation for this lack of shareholder activism is that institutions would rather take the "Wall Street walk"[4] - a colloquialism that implies selling a poorly run stock is much easier than dealing with management to try to improve the firm.

1.1.1 Trade-off between liquidity and control

Given that blockholders may choose to exit from their blockholding when costly monitoring is needed, highly liquid markets may be a hindrance to effective corporate governance by permitting blockholders an easier and cheaper exit. This view fails to consider that blockholders will rationally consider the liquidity of the security before choosing to form the block. Recent theoretical work, such as in the model presented in Maug (1998), has countered that more liquid markets may actually lead to more monitoring by blockholders as blocks become cheaper to form and liquidity allows the cost of intervention to be shared with the liquidity traders.

In response to a perceived need for improvement in an organization, Hirschman (1970) suggests three possible outcomes: exit, voice, or loyalty. In the case of block ownership, the blockholder can sell their shares (exit), engage in activism (voice), or simply do nothing and maintain their position (loyalty). In this framework, a trade-

[4]The oft-cited "Wall street walk" or "Wall street rule" traces its origins to guidelines published by the American Bankers Association in the 1940s.

off occurs between exit and voice if the choice to remain loyal is not viable. Holding all else constant, as the cost of exit is lowered, exit becomes preferable to voice. Previous finance literature have suggested that this relation is an important reason for why the U.S. market displays so little large shareholder intervention - highly liquid securities markets enable blockholders to cheaply dump under performing firms. Bhide (1993) argues that a natural trade-off between stock liquidity and active investing is inevitable. Active shareholders could reduce agency problems by providing internal monitoring, but the act of monitoring makes these investors informed and thereby reduces the stock liquidity of their position owing to information asymmetry problems. Conversely, stock liquidity discourages internal monitoring by reducing the cost of exit of unhappy shareholders. Bhide (1993) concludes that the public policy choices in the U.S. that have provided a very liquid stock market may come at the cost of foregoing potentially valuable active investing.

The cost of monitoring may also play an important role in which monitoring activities blockholders choose, though inexpensive forms of monitoring may be ineffective. As Black (1990) states, some institutions face legal barriers against accumulating the size of the stake necessary to make value enhancing actions profitable. These legal rules were often intended to protect to mutual fund investors. Their ultimate effect is to render these blockholders inactive. Similarly, Bolton and von Thadden (1998) argue that the liquidity of the stock market will reduce activism as such liquidity encourages them to trade on private information. The incentive to speculate increases with the blockholder's informational advantage over other investors, which will be higher in smaller more opaque firms. These are typically the firms that are traditionally thought to need monitoring by blockholders the most.

The above analysis does not take into account the blockholder's decision to form the block. Kahn and Winston (1998) and Maug (1998) show that liquid markets can

help large blockholders overcome the free-rider problem. In particular, Maug (1998) presents a model in which the large stakeholder buys an initial position that is too small in the sense that the capital gain on the initial position does not cover the cost of monitoring. However, the ability to purchase shares on the open market at a price that only partially reflects the blockholder's monitoring efforts gives the blockholder incentive to monitor. A larger toehold that would cover the cost of monitoring would precommit the blockholder to monitor, and thus prices would reflect this precommitment. By making the decision to monitor uncertain, the blockholder creates private information from which it can engage in informed trading. The blockholder gains most when other shareholders are most uncertain about whether the blockholder will monitor. The ability to make greater gains allows the blockholder to intervene profitably in situations with higher monitoring costs. This is the mechanism by which liquidity can enhance monitoring by blockholders. Higher liquidity may lead to a socially improving higher level of intervention (some stakeholders like managers with excessive compensation may be worse off).

Liquidity allows the blockholder to share the costs of monitoring with the small shareholder through informed trading with them overcoming the free-rider problem. Since the blockholder's decision to engage is costly and the blockholder's initial stake does not precommit them to monitoring, the blockholder can make profits by making the private decision to monitoring and then trading with the knowledge that their decision to monitor will improve firm value. The price of the shares will partially reflect the improvement in firm value that monitoring by the blockholder could provide. Therefore, the blockholder can choose to intervene and then buy shares that only partially reflect the full value of the blockholder's monitoring improvements.

In order for this to occur, the decision to monitor must be not deterministic. One plausible reason that a blockholder would use a random strategy would be that the

improvements of the blockholder's monitoring are known to all traders, but only the expected cost of monitoring is known. Once the blockholder takes a toehold, it receives a realization about the true cost of monitoring and then make its decision of whether to monitor based on this realization that is known only to the blockholder. Therefore, equity liquidity should enhance blockholders' ability to engage in costly monitoring as liquidity allows informed trading to spread the cost of monitoring among liquidity traders. As the cost to the blockholder is lower, blockholdings will emerge in firms where the cost of performing monitoring would prohibit profitable blockholdings if the firm's equity was less liquid. Liquidity should also affect the choice of monitoring action. In Maug (1998), the author shows that a blockholder should be more concerned with effectiveness of the action than the cost in a more liquid market since the cost can be shared over the liquidity traders.

This gives me three testable implications. First, increasing liquidity should encourage the formation of blockholding ceteris paribus. For a given monitoring cost, higher liquidity will allow the blockholder to spread more of that cost to other passive shareholders as liquidity increases. Second, following the same logic, conditional on a block being formed, when liquidity is higher the initial stake taken by the blockholder will be smaller all else equal. Third, blockholders should choose more effective forms of monitoring when the liquidity is higher.

1.1.2 Control through threat of exit

Jensen (1989) suggest that institutional investors are "remarkably powerless: they have few options to express dissatisfaction with management other than to sell their shares and vote with their feet". As Admati and Pfleiderer (2008) points out, exit through the "Wall Street walk" is not necessarily an alternative to activism. The threat of exit may itself be a form of corporate governance. While managers might prefer

frequent turnover by institutional investors to large active investors that desire to serve on the boards to monitor and correct managers' mistakes, managers would really prefer locked-in passive investors who do not sell their shares. If the liquidation of large block holdings has an adverse effect on the stock price, then managers who have much of their compensation tied to the share price either through stock or option holdings are credibly threatened by the possibility of exit by these blockholders. While this may not be monitoring in the conventional sense, the presence of the large blockholders can significantly improve firm value by encouraging managers to enhance shareholder value.

This leads to another testable implication. As transaction costs impose a cost to exit, the effectiveness of a large shareholder's threat to exit is increasing in market liquidity. In the Admati and Pfleiderer (2008) model, the discipline effect of a potential exit on the managers decision is increasing in the interaction of liquidity of the large shareholder's position and the fraction of managerial compensation tied to stock performance. In Edmans (2008), the author presents a model in which privately informed blockholders remain even when exit is viable as a way to over myopic investment by management. In either model, the ability to exit enhances the value created by the blockholder. Therefore, I expect to see firm value enhanced when blockholders buy stakes in firms they can credibility use this threat against - firms with high levels of liquidity and also high managerial compensation sensitivity to the share price.

1.2 Data

The initial sample consists of block share acquisitions of S&P 1500 firms by outside blockholders between 1994 and 2005. Prior work has focused on either on a particular type of blockholder or only activist events. Bethel, Liebeskind, and Opler (1998)

survey activism by all types of blockholders in Fortune 500 companies. Several recent papers study U.S. hedge fund activism using Schedule 13D filings. For the period 1998 to 2005, Clifford (2008) studies 1,902 sets of block acquisitions (both active and passive) by hedge funds, focusing on the stock price reaction and changes in operating performance. Using a sample of 194 Schedule 13D filings from 2003 to 2005, Klein and Zur (2009) examine entrepreneurial activists (both hedge funds and non-hedge funds), but focus on confrontational activism ignoring passive filings. With a sample of 1,059 Schedule 13D filings from 2001 to 2006, Brav, Jiang, Partnoy, and Thomas (2008) find that hedge fund activists are typically successful in the majority of their activist attempts.

I limit my sample to S&P 1500 firms for two reasons. The first is a data constraint. I need information on managerial stock ownership which I obtain from Standard and Poor's Executive Compensation Database (Execucomp) for some of my empirical tests. The second is that I need a well-defined population, so that I can also observe which firms do not have blockholdings. While the S&P 1500 represents 87 percent of the total U.S. equity market capitalization, the sample selection may limit the applicability of some of the results to other samples. Using a more extensive sample, Cadman, Klasa, and Matsunaga (2007) find Execucomp firms rely more heavily on aggregate financial performance measures, such as earnings and stock returns to determine CEO cash compensation. As the stock incentive effect is integral in order for the threat of exit to provide discipline, this threat may be less credible in non-Execucomp firms.

When a person or group of persons acquires beneficial ownership, that person must file a Schedule 13D with the SEC. Beneficial ownership is defined by the Securities and Exchange commission (SEC) as voting power or investment power (direct or indirect power to sell the security) of more than 5% of a voting class of a company's equity. Schedule 13Ds must be filed with the SEC within 10 days of an entity obtaining 5%

or more of any class of a company's securities. Alternatively, the filer can submit the short-form, Schedule 13G, which is intended for passive investments. By filing the Schedule 13G, the filer (i.e. blockholder) cedes the right to effect or influence the control of the target.[5] The penalties engaging in control purposes after filing a Schedule 13G can include losing the right to vote any stock in excess of 5%, loss of profits and even criminal sanctions.[6] Filers must update Schedule 13D upon changes in the position, while filers of Schedule 13G must update their holdings only once a year. I use the required subsequent filings (Schedule 13D\A or 13G\A) to determine the post-acquisition changes in holdings.

To construct my sample, I obtain 407,809 Schedule 13D and 13G filings and their amendments which have S&P 1500 firms as targets. These filings are available on the EDGAR website[7] for the years 1994 through 2005. The 407,809 individual filings correspond to 20,684 target-blockholder pairs and give a time-series evolution of each blockholding. I define the holding period as the period from initiation of the block until the blockholder reports a shareholding less than 5% or is no longer required to report (i.e. when holdings drop below 5%). In cases in which multiple blockholders file together on the same Schedule 13D, I consider only the lead filer. This choice should not affect inferences since the group members should share the same incentives.

In my study, I focus on outside block ownership and do not include managerial and employee stock ownership since managers and employees may have additional economic interests other than their interest as shareholders. For example, ownership by managers may have conflicting influences on firm value and agency costs. Man-

[5]Though passive filers may be eligible to file the Schedule 13G, the Schedule 13D is the default filing. Since a filer has to petition the SEC to file as a passive investor, filers that do not choose to do this will file a Schedule 13D even if they have no intentions of engaging in activist activities.

[6]For an example of a legal case in which an investor failed to disclose a control purpose as required see *Gulf & Western Industries, Inc. v. Great Atlantic & Pacific Tea Company, Inc.*

[7]`http://www.sec.gov/edgar.shtml`

agers may value consuming perquisites or keeping their job even when they should be replaced at the cost of other stakeholders, particularly shareholders. Jensen and Meckling (1976) propose that ownership by managers can help align incentives and reduce agency costs. Empirically, Morck, Shleifer, and Vishny (1988) find that while small levels of managerial ownership reduce agency costs, high levels of managerial ownership can serve to entrench management and reduce firm value.

Similarly for rank and file employees, the relation between ownership and firm value is not clear. Ownership by rank and file employees could better motivate and align interests. Kim and Ouimet (2008) show that small employee share ownership plans (ESOPs) may increase firm value, while large (i.e. greater than 5%) ESOPs do not increase firm value. A large ownership stake by employees may allow them to extract unearned benefits at the expense of other stakeholders. Consistent with this explanation, Faleye, Mehrotra, and Morck (2006) document lowered investment, poor performance and decreased firm value in firms with large ESOPs. As the interests of managerial and employee block ownership are ambiguous, I exclude them from my analysis and focus only on outside block ownership.

The mixed empirical evidence of the effectiveness of outside blockholder activism is not that surprising considering all blockholders do not face the same set of constraints. The ability to take advantage of liquidity may only hold for certain segments of blockholders. Cronqvist and Fahlenbrach (2008) show that blockholders are not a homogeneous group. Some blockholders appear to influence corporate behavior while others seem to passively seek their preferred behavior. One explanation is that some entities, such as hedge funds, have few restrictions and can pursue whatever policy their managers see fit, while other entities face binding institutional constraints. Even for a single entity, the act of acquisition of shares above certain ownership levels may impose constraints. For example, the Exchange Act Section 10(b) requires that block-

holders that own more than 10% of a share class report their sales and purchases every month and forfeit profits made from "round trip" transactions. This effectively reduces the short-term liquidity of the position.

Certain institutional investors face a variety of regulatory barriers and potential conflicts of interest that make active monitoring difficult, if not impossible in many cases. Legal or regulatory restraints may prevent some regulated financial firms from accumulating the necessary size block that makes monitoring cost effective. For instance, a diversified fund, as defined in the Investment Company Act of 1940, may hold no more than 5% in any one company, and not more than 10% of any firm's outstanding shares. These constraints are binding for many investors. An investment by the Fidelity Magellan mutual fund of only 0.05% of its portfolio is sufficient to buy the maximum 5% ownership stake in the smallest S&P 1500 firm, Biolase Tech, Inc. (as of August 21, 2008). Likewise, conflicts of interest may exist when mutual funds consider activism against current or potential clients. Davis and Kim (2006) use proxy voting to show that mutual fund companies are less likely to vote against those firms with which they have a business relation. Similarly, pension funds are typically bound by ERISA or "prudent man" regulation. This forces pension funds to only hold prudent securities limiting their investment opportunity set. Also, "prudent investor" rules require high levels of diversification. Given the constraints to holdings, these financial blockholders may find exiting or remaining passive more attractive than trying to acquire a large enough stake in the firm or forming a coalition of like-minded shareholders to cover the costs of performing monitoring.

Like financial blockholders, non-financial operating companies may establish blockholding in other firms, which I will call corporate blockholdings for the sake of brevity. A large (and somewhat inconclusive) literature exists on the merits of diversification strategies by such firms. Corporate blockholders may also seek other benefits when es-

tablishing a blockholding. In a sample of over 10,000 customer-supplier relationships, Fee, Hadlock, and Thomas (2006) studies a firm's decision to invest in trading partners. They find equity stakes can often help overcome contractual incompleteness and also help provide quasi-inside financing to ease financial constraints of trading partners. The presence of these intense trading relationships between firms may mitigate the incentive to provide discipline. Kang and Kim (2006) show that the relatedness of the acquirer and the target is an important determinate of blockholder intervention. They find relatedness negatively impacts action as blockholders do not want to damage business ties through heavy-handed governance. Borokhovich, Brunarski, and Parrino (2006) find that outside blockholders who do not have current or potential business connections to a firm are perceived to be better monitors of management than outside blockholders with such connections. Though corporate blockholders face these conflicts of interest, they are typically free from ownership level restrictions unlike financial blockholders. Corporate blockholders can and frequently do exercise control through complete corporate control. Partial stakes are often a precursor to takeover attempts. Kyle and Vila (1991) suggest that liquidity enables the formation of a toehold stake necessary for profitable hostile takeovers. Overall, corporations may face lesser regulatory constraints than financial firms, but business relationships between firms may limit aggressive monitoring activity.

Activist investors such as hedge funds and individuals are typically free from the regulatory barriers and conflicts of interest that limit activism by financial firms and corporations. Recently, hedge fund activism has been a hot topic both in the media and academic literature. Unlike mutual funds, hedge funds can take much larger undiversified positions since they are not subject to the Investment Act of 1940 that stifles activism by mutual funds. Brav, Jiang, Partnoy, and Thomas (2008) note that hedge fund managers typically have strong incentives to generate returns and

often require investors to "lock-up" funds for long periods of time allowing greater flexibility in trading. While the academic literature typically focuses on hedge funds as a special type of activist, the characteristics attributed to them are not unlike those of wealthy individual investors. Entrepreneurial investors, such as Carl Ichann, Ronald Perelman, George Soros, and Warren Buffett, can and frequently do acquire blockholdings and sometimes engage in activism.

I combine both individual and hedge fund entities in the Individual/partnership category for a variety of reasons. First, there is no generally accepted definition of a hedge fund.[8] Since the main issue of this paper is to examine the effect of liquidity on governance by blockholders, lumping individuals with hedge funds is natural since both face a similar lack of constraints on their ability to engage in activism. Among the distinguishing features of hedge funds mentioned in prior literature are highly incentivized managers, lack of regulation, ability to take concentrated undiversified positions, and the use of derivatives and leverage. Clearly, most wealthy individual investors have extremely similar features. Khein and Zur (2009) also note that both hedge funds and activist individuals are both relatively free from regulatory controls of the Security Act of 1933, the Securities and Exchange Act of 1934, and most importantly the Investment Company Act of 1940.

Other categories of blockholders such as church plans and endowment are harder to classify cleanly into any of the aforementioned categories. To cover blockholders that do not natural fall into the financial, corporate and individual/partnership categories, I create a category called other. On one hand, these blockholders may be exempt from the legal restrictions that apply to financial blockholder and the conflicts of interest that emerge in corporate blockholdings. However, these entities may have many other

[8]See http://www.sec.gov/spotlight/hedgefunds/hedge-vaughn.htm for a variety of opinions and definitions.

self-imposed or social oriented constraints.

I exclude from my block formation sample filings from trusts, estates and foundations that represent the passing of an already established block from one owner to another.[9] Similarly, I exclude filings reporting ownership in a new company which was formed from an existing company in which the filer had a blockholding (e.g., a merger or spin-off).

I use the Compustat Execucomp database to find directors and executives of target firms. I then compare these with the filing to eliminate insider blockholdings from the sample. The use of the Execucomp dataset limits my sample to the years 1994-2005 and coverage of firms in the S&P 1500.[10] Since blockholdings must be reported only if the filer owns at least 5% of the target, this restriction limits the amount of blockholding observed compared to the set of all publicly traded firms since my sample is biased toward large cap firms. To eliminate ESOPs and other profit sharing plans, I examine the self-reported filer classification on the Schedule 13D and Schedule 13G. I eliminate blockholdings in cases when the ESOP invests in the firm which employs the participants of the ESOP. (I do retain ESOP investments in other "outside" firms).

One important caveat is that I only observe equity ownership. I may miss control actions when an outside shareholder uses empty voting. Empty voting occurs when investors borrow shares by short selling for the primary purpose of voting on corporate matters. The practice creates a larger control position relative to the economic position. Hu and Black (2006) notes that derivative positions are not fully disclosed in these filings. To the extent that this practice occurs in lieu of using equity, the

[9]These positions frequently result from deaths and divorces and are almost exclusively for investment purpose only.

[10]Technically, I use the intersection of my blockholdings data and Execucomp, but I refer to the sample as the S&P 1500 for brevity. Execucomp covers the S&P 1500 (excluding ADRs) plus companies that were once part of the 1500 plus companies removed from the index that are still trading, and some client requests. All told Execucomp contains over 2500 companies, both active and inactive.

results will under report the amount of activism.

1.2.1 Summary statistics of firm characteristics

On Schedule 13D, Item 14 of the cover page asks the filer to self-classify the "Type of reporting person." Item 12 reports a similar classification on the Schedule 13G. The SEC provides thirteen possible classifications. To make analysis tractable, I classify all filers into one of four types based on the similarity of the constraints they face: financial, corporate, individual/partnership, and other. I classify any filer that reports as either a broker-dealer, bank, insurance company, investment company, or investment adviser as a financial blockholder. As "type of reporting person" is self-reported, I add an additional screen. Since one major feature that I am trying to capture is the presence of regulatory restrictions, I collect all filings required under the Investment Company Act of 1940 during the sample period from the EDGAR website and classify any blockholder that files these forms as a financial blockholder. Using the response to Item 14, I classify any filer that reports as either a corporation or parent holding company as a corporate blockholder. This group consists of both private and publicly traded companies. Again using the response to Item 14, I label any filer that reports as either a individual or partnership as an individual/partnership blockholder. This group contains venture capital funds, hedge funds, private equity and wealthy private investors. Since I employed a CIK match to identify firms that are subject to the Investment Company Act of 1940, the individual/partnership group correctly contains hedge funds sponsored by large financial institutions that are legally separate and therefore not subject to the same legal restrictions. In the final group, I include those entities which are difficult to group with the prior three. The final group includes filers that report as employee benefit plan (excluding ESOP that represent

employees of the target firm), endowment fund, savings association, church plan, and other.

In Table 1.1 Panel A, I breakdown the filings by blockholder type. Financial blockholders are by far the common blockholder type comprising nearly two thirds of the sample. As the previous literature suggests, financial blockholders are predominantly passive blockholders - only filing a Schedule 13D 3.24% of the time. As a group they have the smallest initial position size, 7.46% and rarely exceed a 20% ownership stake in the target firm. This is consistent with the legal and structural constraints they face. Corporate blockholders comprise around 10% of the sample. They have a higher degree of activism, filing a Schedule 13D 28.2% of the time and often take large initial positions as a third of the initial blockholding exceed 10% ownership of the target. A close reading of Item 4 "Purpose of Transaction" shows that many of these positions are taken as a toehold in a merger agreement. Corporate blockholders are unique in that they can create synergies through cross-ownership with the target company that other blockholders may not be able to realize. As expected, the highest occurrence of activism is seen among the individual/partnership blockholders. While much of the existing hedge fund literature has focused on activist filings with Clifford (2008) being the notable exception, over half the filings by individual/partnership blockholders are passive. This suggests that previous studies of activist hedge funds may not capture the entire role of hedge funds as blockholders. Overall, the ownership patterns of the other category most closely resembles the financial group, which is not surprising since the main constraints governing the other group include ERISA and "prudent investor" rules. These findings are consistent with the differences in constraints faced by each group.

In Table 1.1 Panel B, the difference in blockholdings between active (Schedule 13D) and passive (Schedule 13G) filings becomes evident. The initial stake in an

active Schedule 13D filing is nearly twice the size of the stake in a passive Schedule 13G filing. Interestingly, Schedule 13D filings typically have a longer holding length (30.75 months vs. 23.12 for passive).[11] This finding is interesting since hedge funds and other activist investors are often accused of short-termism by critics. Despite the low frequency of activism by financial blockholders, they still account for 22.49% of the active filings due to the sheer number of financial blockholders. I create an indicator variable that equals one if the blockholder subsequently increases the size of their holding above their initial filing ownership level and zero if they keep the same size stake or decrease it from the initial level. The probability of the position being increased is slightly lower for Schedule 13D filings; however, the increase size of the ownership position is greater for Schedule 13D filings. This is suggestive of larger but less anticipated increases in positions for the active filings consistent with Maug (1998).[12]

Table 1.2 presents the summary statistics of the 2,456 unique targets of block share acquisitions from 1994-2005. To control for other firm characteristics that could impact the decision to intervene, I use return on assets as a measure of Performance (a proxy for the need of monitoring as Kang and Shivdasani (1995) argues that activism is more valuable when the firm is performing poorly), firm size as the logarithm of the market capitalization (a proxy for public monitoring as in Merton (1987)), Leverage (a proxy for monitoring by debt holders which may lower monitoring costs for equity holders), and G-Index (a proxy for the level of shareholders' rights defined in Gompers, Ishii, and Metrick (2003)). Using Compustat, I obtain accounting data for all firms in my sample years. I calculate ROA and leverage for all Compustat firms and winsorize at the 1% and 99% levels. I then calculate industry adjusted values for ROA and

[11] In this table, I exclude those Schedule 13D filings that are not closed out by the end of the sample period, so this may downward bias my duration figure.

[12] Since initial positions below 5% cannot be observed, this result must be interpreted with caution.

leverage using the Compustat universe.

As a metric of managerial share price sensitivity, I calculate the Incentive Ratio as suggested in Bergstresser and Philippon (2006). The metric is defined as the ratio of (0.01 * Price * (Shares + Options) denoted ONEPCT over (ONEPCT + Salary + Bonus). The ONEPCT corresponds to the increase in manager's wealth caused by a one percent increase in the stock price. The incentive ratio captures the relative value of short-term compensation.

Several features in Table 1.2 are worth noting. Industry-adjusted ROA is negative for active block targets and nearly zero for passive block targets suggesting that active targets have more severe performance issues relative to industry peers. Active target firms are also smaller and have relatively higher debt levels compared to industry peers. One must keep in mind that these statistics are conditioned on being targeted by a blockholder.

1.2.2 A measure of liquidity

Though there are many definitions of liquidity, the term typically refers to an asset's ability to be easily converted through an act of buying or selling without causing a significant movement in the price and with minimum loss of value. The existing literature conventionally expresses liquidity proxies in terms of trading cost or price impact, which are decreasing in liquidity.

Using correlations with intra day measures, Goyenko, Holden, and Trzcinka (2009) find that the Amihud ratio from Amihud (2002) does a good job of capturing the price impact. The Amihud illiquidity ratio is the monthly average (using daily data) of $1000 * \sqrt{|Return|/(Dollar\ Trading\ Volume)}$. Another commonly used measure of trading cost is the effective cost. The effective cost of trading is usually estimated from transaction-level trade and quote data. On the buy side, the effective cost is

the execution price less the midpoint of the prevailing bid and ask quotes (and the opposite for the sell side). Hasbrouck (2009) proposes a Gibbs estimate of effective cost that is based on daily closing prices. In a broad sample of U.S. firms over a sample period similar to the one I use (1993-2005), an annual Gibbs estimate based on daily data achieves a correlation of 0.965 with the intra day TAQ value of effective cost.[13] The effective cost contains both the trade-related temporary and permanent (price impact) components of the price change. As a third alternative, I use the proportion of zero return days in a month which I call the *Z-Index*. Lesmond, Ogden, and Trzcinka (1999) provides a theoretical justification for using this as a proxy of liquidity. Given an arbitrary informative signal, x, a market participant will only trade if the transactions costs are less than x or otherwise there will be no trade and hence zero return. As transaction costs increase, for the same set of informative signals, zero returns will be observed at a higher frequency. I also use the monthly dollar volume of trading, which is increasing in liquidity, and the monthly bid-ask spread as two additional liquidity metrics. In the sample, these measures are highly but not perfectly correlated suggesting that each measure may capture slightly different components of liquidity.

Since the measures are not directly comparable, I use a standardized version of each illiquidity measure in all subsequent tables. In Table 1.3 Panel A, I report the yearly averages for the five measures of liquidity. For expositional clarity and to capture the commonality between the various liquidity measures, I use a principal component analysis to create a single liquidity metric[14]. I use a methodology similar to the analysis in Korajczyk and Sadka (2008). The results are in Table 1.3 Panel

[13] I thank Dr. Hasbrouck for providing the Gibbs estimates on his website, `http://pages.stern.nyu.edu/~jhasbrou/Research/GibbsEstimates2006/Liquidityestimates2006.htm`

[14] In a previous version of this paper, I run all the tests with the Amihud, Gibbs and Z-Index measures individually and find similar results.

B. I only retain the first principal component as it explains 42% of the variance of the five measures and the incremental value of the addition components in negligible. The loadings of the first component incorporate all five measures fairly evenly, but the signs make the intrepretation of the component as increasing in illiquidity.

1.3 Empirical results

1.3.1 Blockholder preferences

I predict increasing liquidity should encourage the formation of blockholding ceteris paribus. The blockholder can recoup the cost of monitoring through capital gains to its initial blockholdings and also through informed trading with liquidity traders, since only the blockholder know if it will monitor. If the blockholder did precommit to monitor, then the other shareholders would only sell at a price that reflects the full value of monitoring, thereby reducing the blockholders incentives to monitor. Some value improving monitoring opportunities will be lost because other shareholders will free ride. As the blockholder receives more of the benefits of monitoring, blockholdings will occur more often, all else equal. For fixed monitoring costs, higher liquidity will allow the blockholder to spread more of that cost to other passive shareholders as liquidity increases.

Observing such a relationship in the data is problematic. Monitoring cost is unobservable, and even if a good proxy could be found, monitoring cost may vary depending on the characteristics of the blockholder. Another major concern is the endogeneity between block ownership and liquidity. Heflin and Shaw (2000) attempt to look at the effect of the presence of blockholders on liquidity and find that both inside and external blockholders decrease subsequent liquidity. In equilibrium, blockholders will set their holding levels according to the level of liquidity in the market. Block formation

are also self-selected in the sense that they are only observed in the cases in which the blockholder believes the potential benefits of owning the block exceed the cost.

To get around these issues and in order to estimate how liquidity affects the propensity for block formation, I appeal to an instrumental variables approach using a set of exogenous shocks to liquidity to identify the effect on block formation. To measure the liquidity shocks, I use an indicator variable for the sixteenths and decimal tick size regimes on the U.S. stock exchanges. I interact these with $\frac{1}{price}$ since lower priced stocks should be more affected by the shift in tick size. On June 2, 1997, the NASDAQ pricing switched from eighths to sixteenths. The NYSE followed on June 24, 1997. The NYSE switched stock pricing from eighths to decimals starting with 7 firms in August 2000 and all firms by January 29. 2001. The NASDAQ began to switch to decimals tick sizes in March of 2001. The SEC ordered all U.S. stock markets to convert to decimal pricing by April 9th, 2001. Chakravarty, Wood, and van Hess (2004) find quoted and effective bid-ask spreads on the NYSE declined significantly following decimalization. Furfine (2003) documents that though decimalization leads to smaller spreads it also lead to lower depth therefore causing a theoretically ambiguous change to market liquidity. From his empirical work using price impact measures, he concludes that actively traded stocks (like the ones used in my study) generally experienced an increase in liquidity following decimalization. Thus, different tick size regimes interacted with $\frac{1}{price}$ should meet the criteria of a good instrumental variable as the instrument is significantly correlated with liquidity and there is not a plausible reason to believe that block formation (or the unobserved cost to monitor) should be correlated with the instruments except through liquidity.

To implement the test, I collect a sample of 157,763 firm-month observations for all the S&P 1500 firms between 1994 and 2005 that have liquidity data available. I create an indicator variable that is equal to one if a new block filing occurs in the firm-

month and zero otherwise, and a set of instruments as described earlier. $\frac{1}{price}$ is also included as an instrument so the interaction terms have the correct interpretation. In the reduced form equation, I regress the liquidity proxies on the instruments (and the exogenous control variables in the second specification). In the structural equation, I use the indicator variable for new block filing as the dependent variable. In order to control for other potentially influential target characteristics, I include log(market cap) and leverage as proxies for monitoring by other stakeholders and industry-adjusted ROA as a proxy for the need for monitoring. I estimate the instrumental variable probit model using maximum likelihood estimation. Standard errors are clustered by firm.

Table 1.4 reports the results of the estimation. In the first column of each specification, Table 1.4 shows the reduced form model estimates for liquidity. In all three specifications, the illiquidity measure has a negative and statistically significant coefficient for the decimalization interaction variable. The eighths regime interaction is negative for all three specifications and statistically significant once the controls are included. As expected, $\frac{1}{price}$ is positive and statistically significant in all specifications. The R^2 for the reduced form model are relatively high and increase from 24% for the liquidity-only model to 60% for the full model. This further supports that interactions are a reasonable choice for an instrumental variable. The estimates of the structural model are reported in the right column of each specification in Table 1.4. In the first specification, I only include the liquidity variables. The coefficient on Illiquidity in the structure model is negative, but economically and statistically significant. However, once I include the control variables in the second specification, the Illiquidity variable become statistically significant. The economic significance is large as well. A one standard deviation in Illiquidity more than doubles the rate of block formation. These levels of economic and statistical significance remind the third

specification where IU add a control for managerial ownership. For all three specifications, I reject the hypothesis that the error terms in the structural equation and the reduced-form equation for the liquidity are uncorrelated, suggesting endogeneity was a legitimate concern. The information asymmetry may arise when a blockholder acquires a position as the blockholder becomes more informed about the potential cost to monitor the firm. This information asymmetry could manifest in reduced liquidity.

I also find that the coefficients of the control variables are consistent with the ex-ante predictions. The negative coefficient in the second and third stage on Performance implies that block formation is more likely when the firm is performing poorly. Poor firms may have more opportunity for improvement, and the gains to monitoring may be greater when firms are under performing their peers. The coefficient on log(market cap) is negative and strongly statistically significant across all three specifications. This result is likely due to how the sample was constructed. Since I only observe blockholding when the holding exceeds 5% of the firm, the same dollar value ownership position in a small firm will not be observable in a larger firm. I also observe that block formation is more likely when Leverage is higher. This is consistent with the interpretation that debt holders may help encourage monitoring by sharing monitoring costs. There is no evidence that the G-Index is related to block formation.

In summary, the analysis of block formation supports the hypothesis that blocks are more likely to form when liquidity is higher. The results also suggest that the instrumental variable methodology was valid and necessary as reduced tick sizes impacted liquidity and block formation and liquidity are endogenously determined.

1.3.2 Liquidity and Precommitment

According to the model in Maug (1998) in an equilibrium market, large shareholders will buy an initial stake that will not precommit them to monitoring. That is,

the capital gain on their initial position due to monitoring is insufficient to cover the cost of monitoring. However, the blockholder can gain two ways: capital gains to its blockholdings and informed trading with liquidity traders. When liquidity is higher, the blockholder prefers to buy a smaller stake because it can do so at a lower price because shares do not fully reflect the increase in value of the blockholder's monitoring. If the blockholder did precommit to monitor, then the other shareholders would only sell at a price that reflects the full value of monitoring, thereby reducing the blockholders incentives to monitor. In more liquid markets, the blockholder can profit from additional shares purchased from the other shareholders. Conditional on a block being acquired, as liquidity decreases a larger initial stake is needed to be purchased so that the blockholder can capture capital gains on the initial stake.

To test this empirically, I create a sample of 18,210 blockholder acquisitions in which the blockholder obtains a 5% or greater stake in any S&P 1500 firm between 1994 and 2005. I expect that all else equal, a blockholder will take a smaller initial stake in a more liquid firm. I run a regression to predict the size of the blockholding conditional on liquidity and control variables. The dependent variable is the ownership percentage as recorded in the initial blockholding filing (i.e. Schedule 13D or Schedule 13G). As I did before, to control for other potentially influential target characteristics, I include ROA, log(market cap), leverage, and the G-Index. To avoid issues with simultaneity, I use the values of the illiquidity measures and control variables one year before block acquisition. I also include an indicator variable for an active (Schedule 13D) filing. Since active filings will be more costly for blockholders, the size of the position should be larger, ceteris paribus.

I estimate the model using an instrumental variable Tobit model censored at 5% and 100% and report the results in Table 1.5. As before, the reduced form model is consistent with the reduction of tick sizes increasing liquidity. In each of the specifi-

cations, I find a positive and significant coefficient on Illiquidity indicating that the blockholder buys a smaller stake in a more liquid market. To understand the economic significance, I find that a one standard deviation decrease in Illiquidity corresponds to a 1.03 to 1.37% reduction in initial ownership stake. These results support the hypothesis that the size of the blockholding will decrease with liquidity as blockholders rely more on capital gains on their initial position in illiquid markets and on informed trading in liquid markets.

1.3.3 Threat of exit

In the model presented in Admati and Pfleiderer (2008), a large shareholder can reduce agency costs by discipling managers through the threat of exit. This implies that the stock price should react favorably to a partially unanticipated acquisition by a large block holder, though this prediction is not unique to Admati and Pfleiderer (2008). Admati and Pfleiderer (2008) show that the effectiveness of the threat to exit as a discipline action increases when the large shareholder can more credibility exit its position. If the security is highly illiquid, then the threat to exit is not credible as the blockholder does not want to suffer a large loss in value to exit its position. In those situations where the threat is credible, the blockholder can influence managerial behavior to be more aligned with shareholders by threatening the managers. The amount of influence should be proportion to the size and credibility of the threat. Therefore, the disciplining effect of a potential exit on the managers decision is increasing in the interaction of the position's liquidity and the importance of managerial compensation tied to stock performance. The blockholder threat is credible even in a very liquid market because the market will react to the information conveyed by the blockholder leaving the position not because of the price impact of the exit trade.

In equilibrium, the current price reflects the expected firm value based on existing public information. A positive announcement return indicates that the market believes that the new blockholder will make the firm more valuable. If the threat of exit can encourage managers to increase shareholder value, then abnormal returns should increase when this threat is more credible, that is, when market liquidity is high and managers are highly sensitive to share prices. To test this empirically, I compute the abnormal return using the standard event-study methodology. I obtain my estimates of the market model by using 200 trading days of return data beginning 220 days before and ending 21 days before the announcement of the block share purchase. I use the CRSP value weighted return as the market return. I sum daily abnormal returns to get the cumulative abnormal return $CAR(t_1, t_2)$ from day t_1 before the announcement date of the block share purchase to day t_2 after the announcement date.

I used the file date listed on Schedule 13D or Schedule 13G. Mikkelson and Ruback (1985) note that the Schedule 13D only needs to filed within 10 days of crossing the 5% threshold, and this causes difficulty in determining the correct event date. The problem is worse for Schedule 13G which only needs to be filed within 45 days of crossing the 5% threshold. The acquiring blockholder also may spread its purchases over several weeks triggering a filing only when it crosses the 5% threshold. This will reduce the power of my tests as I cannot percisely identify when knowledge of this new blockholding becomes public. To the extent that this information falls outside the window, the tests will be less likely to find a significant result.

I use a sample of 12.868 block formations that also have Execucomp data since I need this data to construct the threat of exit proxy. I regress the abnormal return experienced when the blockholder acquires the block on the Illiquidity measure, the Incentive Ratio and the interaction of the two. I include the Illiquidity measure and

Incentive Ratio as separate terms to control for other explanations that do not involve the threat of exit such as price pressure.

Table 1.6 presents the announcement returns estimates for four event windows: -1 to 1, -5 to 5, -10 to 10 and -20 to 20 days around the file date. Since I am using an Illiquidity measure, I interpret a negative coefficient on the interaction term as evidence of the threat of exit increases firm value. In Table 1.6 columns (1) to (4), I observe that the results are generally consistent with the implications of the Admati and Pfleiderer (2008) model. I find that the coefficient on the interaction of Incentive Ratio and Illiquidity is negative suggesting that in cases where managers have highly aligned incentives illiquidity reduces the validity of the threat to exit. The effect is modest for all cases ranging from 11bp for the shortest window to 38bp for the longest window. In columns (5) - (8), I repeat the earlier test adding a dummy variable for Active blockholdings. The magnitude of this variable is between 1 and 4%. These results suggest that liquid markets allow blockholders to influence managerial behavior to be more aligned with shareholders by threatening to exit blockholdings, but the effect is much smaller than announcing a specific activist agenda.

1.3.4 Loyalty, exit, or voice decision

The prior empirical tests only speak to the creation of new blocks. When reevaluating their existing positions, blockholders may respond differently to liquidity. Using the Hirschman (1970) nomenclature reaction to a declining firm, a blockholder can remain loyal, exit, or exercise voice. Once a block is formed, liquidity could hinder activism (voice) as liquidity allows exit from the block to be a cheaper solution than actively monitoring. To test whether increased liquidity encourages existing blockholders to take the exit via "Wall Street walk" rather than exercise voice and take an active stand against management, I create a sample of passive blockholdings (i.e.

blockholdings where the initial filing was a Schedule 13G). On Schedule 13D. the blockholder is required to report if the blockholder has previously filed a statement on Schedule 13G to report the acquisition which is the subject of this Schedule 13D. I use this entry to create an indicator for a switch to activism. So for each month, every existing passive blockholding has three possible outcomes. The position can remain passive. the "loyal" case. Alternatively, the blockholder can file a Schedule 13D declaring its activist intentions thereby exercising "voice". The other possible outcome is the blockholder can simply "exit" and sell the blockholding.

Since I have three possible outcomes, I employ a multivariate logit regression to analyze the determinants of these three outcomes. I make the loyalty or do nothing case the omitted or base outcome. If liquid markets hinder activism, then I should see a positive relation between illiquidity and activism. That is, if illiquidity encourages blockholders to be more active in monitoring because they are stuck in their position, I should observe a positive coefficient of illiquidity in the "voice" outcome. If liquidity lowers the cost of exit, then I should see a negative coefficient on the illiquidity measures for the "exit" outcome. I also consider other factors that may affect the choice of exit, voice or loyalty. Demsetz and Lehn (1985a) argue that blockholders as long-term investors have strong incentives to monitor management. So I include the length of the time in months that the block has been held as an explanatory variable.[15] Therefore, I include the blockholdings cumulative stock market performance to date.

Table 1.7 presents the results of the multivariate logit estimation. Consistent with the theory of the trade-off between liquidity and control, higher liquidity (or lower Illiquidity) increases the probability of exit. However, the evidence of a relationship between "voice" and liquidity is mixed. In the first specification without controls. the

[15] I do this instead of the total holding period of the block, since the total holding period is not known prior to termination of the blockholding. This avoids any spurious inferences that could be caused by including information that is not in the information set at each block-month observation.

coefficient is positive and statistically significant, which is consistent with the argument in Bhide (1993). However, the sign of the coefficient flips and loses statistical significance in the second specification when controls are added. This suggests that even if blockholders are locked into a blockholding position they will choose to remain passive rather than engage in monitoring. The implication is that there is little evidence of a trade-off between liquidity and control. Even if liquidity leads to more exit, a blockholder who is unable to exit due to low liquidity is unlikely to engage in monitoring. One reasonable explanation follows from Table 1.1. Passive blockholders tend to be the more constrained financial blockholders who have regulatory restrictions that inhibit their ability to be effective active monitors. Following the results of the previous section, financial blockholders may be more inclined to exert discipline by exit when faced with restrictions on engaging on more traditional forms of monitoring. I find this to be the case as corporate and especially individual/partnership blockholders are more likely to shift to activism. Consistent with presence of wealth constraints on building a significant position in the largest of firms and presence of other public forms of monitoring for well known firms, blockholdings in larger targets are more likely to stay remain passive as the coefficients of log(market cap) is negative for both "voice" and "exit".

1.3.5 Blockholder Gains from Activism

The free-rider problem mentioned in Shleifer and Vishny (1986) suggests that a blockholder will only intervene when the amount of benefits from their stake exceeds the cost of monitoring. Unfortunately, the cost of monitoring is difficult to observe. I make the natural assumption that in equilibrium, blockholders will only actively monitor when the expected compensation they receive from the action exceeds the expected cost of taking the action. I use the realized values to proxy for the expected

compensation for the blockholder. This allows me to compare the returns to active and passive blockholding as well as among types of blockholders.

I calculate the holding period returns for each of the blocks using the closing CRSP prices on the file date of the block announcement and the file date when the block drops below 5% ownership. As holding lengths vary considerably, I also find market-adjusted returns by netting the returns of the position against an equal size investment in the market during the holding period. One important caveat is that these returns do not necessarily reflect the profits the blockholders actually make. I do not have actual prices for their trades and these figures do not take into account the possibility that the blockholder held a sub 5% stake before the filing date (or retained a sub 5% ownership stake post-blockholding). In the most illiquid securities, a blockholding will only be observed if the high cost of monitoring can be compensated with equally high returns. As liquidity increases, blockholders can monitor in more marginally beneficial situations, so therefore I expect a positive relation between illiquidity and blockholder returns. A more constrained blockholder will be limited in the size of its position and possible actions it can take and will demand a higher premium. Conversely, unconstrained blockholders, such as corporations and individual/partnerships will find opportunities profitable even will a relatively lower liquidity premium.

Columns (1) - (3) in Table 1.8 contain the holding period return, while columns (4) and (5) contain the market adjusted returns. Despite the mentioned caveats, these results are consistent with the positive relation of illiquidity and returns. In column (1), I find that Illiquidity is positively related to the blockholder's holding period return. Though the relation of illiquidity and returns is not an original finding, the size of the effect on returns due to illiquidity appears to be too high to be attributed only to trading costs. In column (2), I find that individual/partnerships have the highest returns. The results imply that individual/partnerships can engage in more

costly monitoring and also the greater ability of these blockholders to take risk in the absence of constraints that bind the other types of blockholders. In column (3), I interact Illiquidity with a dummy for low constraints (i.e. non-financial blockholders). I find that Illiquidity is still positive, but the interaction term is negative suggesting that blockholders with fewer constraints can accept a smaller illiquidity premium. Columns (4) and (5) repeat the earlier specifications with the market-adjusted returns. All implications remain the same. Given that Kang and Shivdasani (1995) suggests that poorly performing firms have the most to gain from monitoring, I partition the sample on industry-adjusted ROA and again test if the relationship hold for below-median performing firms. I find this is the case.

1.3.6 Blockholder choice of action and success

Blockholders often make very general or boilerplate demands in the "Item 4. Purpose of Transaction" section of the Schedule 13D filing. While this is done to keep open a wide host of potential remedies for poor firm performance, this also makes empirical measurement of blockholder success of achieving their stated purpose difficult. I thereby focus on two specific types of purposes that have very clearly defined objectives: mergers and CEO turnover. An example text is listed in the Appendix. First, I identify all blockholdings in which the blockholder states that the objective of the blockholding is to support or oppose a merger of the target with another firm. I then use Factiva and the CRSP delisting data to determine whether the blockholders objective was accomplished. Similarly, I examine the statement of purpose for calls for resignation of the CEO and use Factiva and the Compustat Execucomp database to determine whether the CEO was removed during the blockholding period. Overall, I identify 1,297 cases and blockholders are successful in gaining their stated objective in over half the cases.

Maug (1998) argues that blockholders should favor the more effective means of monitoring in firms with highly liquid securities since cost is less of a factor since it can be spread across the plentiful liquidity traders. Conversely, when the firm's security is less liquid, cost becomes a relatively more important factor than effectiveness. To test this prediction, I examine the outcomes of the 1,297 cases in which I can determine success. I consider three possible forms of activism: mergers, CEO turnover, and other which contains all other classifiable purposes. In Table 1.9, I employ a multinomial logit regression to determine whether liquidity plays a role in the choice of activism. I find that Illiquidity is negatively related to mergers in both the liquidity-only and full specification. If mergers are the more effective means of controlling a firm (a plausible assumption), then this is evidence in support of the prediction. I find that in merger the blockholder is slightly less likely to be successful (that is the outcome is the same as what the blockholder supported) than in CEO turnover. However, this comparison suffers from sample selection is not necessarily a true comparison of effectiveness. Without more detail on costs, I cannot definitively say that mergers are more effective and more costly than other forms of activism, but the conjecture seems reasonable. If one accepts that conjecture, then the findings in Table 1.9 support the assertion in Maug (1998).

1.4 Conclusion

In this paper, I empirically examine the role of the liquidity of a firm's equity in allowing blockholders influence control over targets. By using the reduction in tick sizes of the stock exchanges as an instrument to break the endogeneity between block formation and liquidity, I find liquidity positively influences the creation of blockholdings. Also consistent with theory, blockholders take smaller stakes that do

not precommit them to monitor firms with more liquid securities. I also find that blockholders can use liquidity to influence management. I find evidence that the threat of exit from a block can improve firm value and that this threat is more effective when liquidity is higher. I fail to find evidence of a trade-off between liquidity and control. While liquidity increases exit from existing blocks, I find no evidence that illiquidity forces blockholders to monitor. Blockholders' returns are consistent with liquidity facilitating costly monitoring. I also the choice of blockholder activism and examine success rates. I find evidence consistent with the Maug (1998) prediction that blockholders will prefer more effective methods of control like takeovers over lower cost methods. Overall, increased liquidity, such as was seen after the reduction of the tick sizes improves blockholders ability to monitor firms.

1.5 Appendix

Instructions for filing Schedule 13D:

Item 4. Purpose of Transaction

State the purpose or purposes of the acquisition of securities of the issuer. Describe any plans or proposals which the reporting persons may have which relate to or would result in:

a. The acquisition by any person of additional securities of the issuer, or the disposition of securities of the issuer;

b. An extraordinary corporate transaction, such as a merger, reorganization or liquidation, involving the issuer or any of its subsidiaries;

c. A sale or transfer of a material amount of assets of the issuer or any of its subsidiaries;

d. Any change in the present board of directors or management of the issuer, including any plans or proposals to change the number or term of directors or to fill any existing vacancies on the board;

e. Any material change in the present capitalization or dividend policy of the issuer;

f. Any other material change in the issuer's business or corporate structure, including but not limited to, if the issuer is a registered closed-end investment company, any plans or proposals to make any changes in its investment policy for which a vote is required by Section 13 of the Investment Company Act of 1940;

g. Changes in the issuer's charter, bylaws or instruments corresponding thereto or other actions which may impede the acquisition of control of the issuer by any person;

h. Causing a class of securities of the issuer to be delisted from a national securities exchange or to cease to be authorized to be quoted in an inter-dealer quotation system of a registered national securities association;

i. A class of equity securities of the issuer becoming eligible for termination of registration pursuant to Section 12(g)(4) of the Act; or

j. Any action similar to any of those enumerated above.

Below is an example from a Schedule 13D filed on September 4th. 1996 by Clover Capital Management for its investment in California Microwave, Inc.

Item 4. Purpose of Transaction. The subject securities were acquired and continue to be held by the Reporting Persons for investment purposes. Each reserves the right to acquire or dispose of the subject securities. On August 28, 1996 representatives of Clover met with the Chief Executive Officer and Chief Financial Officer of the Company and recommended that the Chief Executive Officer be replaced because in Clover's opinion (1) the Company s credibility in the investment community has suffered because of earnings forecasts made by the Chief Executive Officer that have failed to materialize, (2) the Company s performance has been and continues to be inferior to the Company s competitors, (3) certain of the Company s fundamental business strategies are flawed and (4) the Company has not provided a credible strategy as to how it will maximize shareholder value. In the future, Clover may present specific business strategies to the Board of Directors or otherwise provide advice regarding the business of the Company and possible ways to maximize shareholder value. Except as set forth in this Item 4, the Reporting Persons have no present plan or proposals that relate to or that would result in any of the actions specified in clauses (a) through (j) of Item 4 of Schedule 13D of the Securities Exchange Act of 1934.

Table 1.1
Summary of block acquisitions

The initial sample of 18,210 blockholder acquisitions in which the filer that obtains a 5% or greater stake in any S&P 1500 firm between 1994 and 2005. I obtain the sample of block acquisitions from SEC Schedule 13D and 13G filing and their amendments as provided by EDGAR. This table reports values based on the initial 13D by the acquiring blockholder. The classification of blockholders into *Financial* (subject to Investment Company Act of 1940), *Corporate*, and *Individual/Partnership* is based on the blockholder response to Item 14 on Schedule 13D (or Item 12 on Schedule 13G). The *Initial position size* is based upon the ownership percentages reported by the blockholder. *Holding length* is the number of months a block is held. It is determined using the first date that the blockholder exceeds the 5% threshold until the blockholder reports a sub 5% stake or does not make a required filing (indicting that the position no longer exists). *Active* means that the blockholder states that it pursues action by the management of the target as reported on the Schedule 13D. The actions range from discussing business strategy to a hostile takeover attempt. (See the Appendix for SEC instructions for reporting Item 4 - Purpose of Transaction)

Panel A: Block holding summary by blockholder type

Type of blockholder	Sample size	Schedule 13D	Initial position size	Initial > 10%	Initial > 20%	Holding length (months)
Financial	11,884	3.24%	7.46	13.20%	0.90%	22.37
Corporate	1,872	28.24%	11.60	33.33%	11.43%	22.73
Individuals/ partnerships	1,128	44.17%	9.78	24.84%	6.91%	26.92
Other (church plan, endowments, etc...)	3,326	9.14%	8.58	26.33%	2.19%	29.60
Total	18,210	9.57%	8.26	18.31%	2.68%	23.85

Panel B: Block holding summary by purpose

	Sample size	Financial	Corporate	Individual/ partnership	Initial position size	Initial > 10%	Initial > 20%	Holding len. (months)
Passive	16,335	71.09%	9.02%	3.85%	7.61	15.47%	0.90%	23.12
Active	1,875	22.49%	33.52%	28.74%	14.33	45.19%	19.47%	30.75
Total	18,210	66.44%	11.36%	6.23%	8.26	18.31%	2.68%	23.85

Table 1.2
Summary statistics

The sample consists of 2456 unique U.S targets of 18,210 block share acquisitions between 1994 and 200. I obtain group targets into *Passive* and *Active* based on which type of schedule filed and the response to Item 4 on the Schedule 13D, if applicable. *G-Index* is the Governance index as reported in Gompers, Ishii, and Metrick (2003). *log(market cap)* is the logarithm of book market capitalization as reported by Compustat. *Performance* is the industry adjusted return on assets defined as EBITDA/(lagged assets). *Leverage* is the industry adjusted book leverage ratio defined as debt/(debt + book equity of equity). *Incentive ratio* is defined as in Bergstresser and Philippon (2006) as the ratio of (0.01 * Price * (Shares + Options) denoted ONEPCT over (ONEPCT + Salary + Bonus). All target variables from Compustat are industry-adjusted.

	Passive			Active			Total			Difference	
	N	Mean	Median	N	Mean	Median	N	Mean	Median	Mean	T-test
Performance	16,715	0.000	-0.002	1964	-0.032	-0.016	18679	-0.004	-0.004	0.03	12.73***
log(market cap)	17,254	6.724	6.633	2033	6.288	6.222	19287	6.678	6.595	0.44	12.89***
Leverage	16,370	-0.021	-0.034	1904	0.028	0.009	18274	-0.016	-0.031	-0.05	-8.83***
G-Index	10,962	9.116	9	1157	9.113	9	12119	9.115	9	0.00	0.03
Incentive ratio	14,300	0.213	0.134	1541	0.209	0.128	15841	0.212	0.133	0.00	0.73

Table 1.3
Principal component analysis

Panel A reports the yearly average of the five measures of liquidity I use in this study. *Amihud* is defined as in Amihud (2002) - the monthly average (using daily data) of $1000 * \sqrt{|Return|/(Dollar\ Trading\ Volume)}$. *Z-Index* is defined as the proportion of zero return days in the preceding month. *Gibbs* is the Gibbs estimate of effective cost of trading from Hasbrouck (2009). Dollar Volume is the monthly dollar volume of trading activity from CRSP. Abs(spread) is the monthly average of the absolute bid-ask spread.

Panel A: Time series of illiquidity variables

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Amihud	0.15	0.30	0.26	0.20	0.05	0.02	-0.02	0.02	0.04	0.03	-0.08	-0.39
Gibbs	0.08	0.28	0.28	0.35	0.11	0.00	0.11	0.50	0.07	-0.04	-0.38	-0.54
Z-Index	1.02	1.15	1.10	0.86	0.38	-0.15	-0.09	-0.22	-0.69	-0.78	-0.74	-0.81
Dollar Volume	-0.37	-0.32	-0.17	-0.22	-0.17	-0.13	0.11	0.05	0.11	0.01	0.16	0.33
Abs(spread)	-0.23	-0.39	-0.14	-0.06	0.10	0.35	0.74	0.48	0.02	-0.38	-0.28	-0.20
Principal Component	1.04	1.30	1.05	0.79	0.26	-0.14	-0.27	-0.03	-0.41	-0.24	-0.49	-0.90

Panel B: Principal components

	1st	2nd	3rd	4th	5th
Amihud	0.55	0.22	-0.12	-0.25	0.75
Gibbs	0.36	6145	-0.04	-0.39	-0.58
Z-Index	0.54	0.08	0.3	0.77	-0.12
Dollar Volume	-0.35	0.57	-0.59	0.44	0.13
Abs(spread)	-0.39	0.49	0.74	-0.03	0.25
Eigenvalue	2.11	1.31	0.62	0.52	0.44
Proportion of variance	42.2%	26.3	12.5	10.4	8.7

Table 1.4
Likelihood of being targeted by a blockholder

This table reports the estimates of an instrumental variables probit model. The sample consists of 195,984 firm-month observation of S&P 1500 firms between 1994 and 2005. The dependent variable, *Block*, equals one when a new block is formed in a particular firm-month and zero otherwise. *Illiquidity* is the first principal component of the liquidity variables as defined in Table 1.3. *Performance* is the industry adjusted return on assets defined as EBITDA/(lagged assets). *log(market cap)* is the logarithm of book market capitalization as reported by Compustat. *Leverage* is the industry adjusted book leverage ratio defined as debt/(debt + book equity of equity). *G-Index* is the Governance index as reported in Gompers, Ishii, and Metrick (2003). Constants are included in the model but not reported for brevity. Standard errors are clustered by target firm. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Spec 1		Spec 2		Spec 3	
	Illiquidity	Block	Illiquidity	Block	Illiquidity	Block
Decimalization	-5.53***		-4.25***		-3.59**	
* (1/P)	(3.18)		(3.09)		(2.36)	
Eighths * (1/P)	-4.29		-12.73***		-13.90***	
	(0.86)		(6.74)		(9.84)	
(1/Price)	12.01**		18.01***		18.39***	
	(2.31)		(9.90)		(14.46)	
Illiquidity		-0.00		-0.05***		-0.05***
		(0.01)		(3.70)		(3.48)
Performance			-0.08	-0.29***	-0.18	-0.21**
			(0.38)	(3.95)	(0.70)	(2.65)
log(market cap)			-0.44***	-0.10***	-0.58***	-0.08***
			(20.50)	(11.37)	(18.38)	(6.67)
Leverage			0.54***	0.15***	0.52***	0.09**
			(6.55)	(4.13)	(5.26)	(2.08)
G-Index			0.01	0.00	0.03***	0.00
			(1.37)	(0.10)	(3.42)	(0.67)
Mgr Own %					0.02***	-0.01***
					(9.46)	(6.00)
Observations	157,763	157,763	131,174	131,174	69,577	69,577
R^2	0.24		0.57		0.60	
Wald test		8.01		14.98		7.87
Prob > χ^2		0.0046		0.0001		0.0050

Table 1.5
Determinants of the size of initial blockholding

This table reports the estimates from a Tobit model where the dependent variable is the ownership percentage as recorded in the initial blockholding filing (i.e. Schedule 13D or Schedule 13G), the lower bound is 5% and upper bound is 100%. The initial sample of 14,027 blockholder acquisitions in which the filer that obtains a 5% or greater stake in any S&P 1500 firm between 1994 and 2005. *Illiquidity* is the first principal component of the liquidity variables as defined in Table 1.3. *Active* means that the blockholder states that it pursues action by the management of the target as reported on the Schedule 13D. The actions range from discussing business strategy to a hostile takeover attempt. (See the Appendix for SEC instructions for reporting Item 4 - Purpose of Transaction) *Performance* is the industry adjusted return on assets defined as EBITDA/(lagged assets). *log(market cap)* is the logarithm of book market capitalization as reported by Compustat. *Leverage* is the industry adjusted book leverage ratio defined as debt/(debt + book equity of equity). *G-Index* is the Governance index as reported in Gompers, Ishii, and Metrick (2003). Standard errors are clustered by target firm. T-statistics are in parentheses. Constants are included but not reported. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Spec 1		Spec 2	
	Illiquidity	Size	Illiquidity	Size
Illiquidity		1.01		1.366
		(2.75)***		(2.26)**
Decimalization * (1/P)	-2.47		-3.220	
	(2.65)***		(6.05)***	
Eighths * (1/P)	-4.93		-1.627	
	(1.04)		(0.75)	
(1/Price)	7.30		2.775	
	(1.45)		(1.13)	
Active			0.164	6.393
			(3.31)***	(13.48)***
Performance			-0.445	0.199
			(1.90)*	(0.29)
log(market cap)			-0.651	0.906
			(25.65)***	(2.26)**
Leverage			0.812	-0.430
			(7.41)***	(0.71)
G-Index			0.015	-0.104
			(2.00)**	(4.04)***
Observations	14,027	14,027	9,546	9,546

Table 1.6
Target Announcement Cumulative Abnormal Returns (CARs)

The sample consists of 12,868 block share acquisitions between 1994 and 2005 that have managerial ownership data reported in Execucomp. I compute the abnormal normal returns using the market model. I estimate the market model using 200 trading days of return data ending 21 days before the block acquisition filing. I use the CRSP value weighted return as the market return. *Incentive ratio* is defined as in Bergstresser and Philippon (2006) as the ratio of (0.01 * Price * (Shares + Options) denoted ONEPCT over (ONEPCT + Salary + Bonus). T-statistics are in parentheses. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	CAR(-1,1)	CAR(-5,5)	CAR(-10,10)	CAR(-20,20)	CAR(-1,1)	CAR(-5,5)	CAR(-10,10)	CAR(-20,20)
Illiquidity (a)	-0.08	-0.11	-0.24	-0.4	-0.10	-0.14	-0.31	-0.48
	(2.24)**	(1.48)	(2.36)**	(2.94)***	(1.52)	(1.92)*	(3.01)***	(3.50)***
Incentive (b)	-0.05	-0.08	-0.21	-0.34	-0.03	-0.09	-0.23	-0.36
	(1.23)	(1.03)	(1.84)*	(2.23)**	(0.60)	(1.14)	(2.00)**	(2.38)**
(a) * (b)	-0.11	-0.19	-0.19	-0.38	-0.03	-0.19	-0.19	-0.37
	(3.88)***	(3.57)***	(2.59)***	(3.75)***	(1.19)	(3.53)***	(2.53)**	(3.71)***
Active					1.03	1.77	3.66	4.25
					(6.49)***	(5.71)***	(8.47)***	(7.24)***
Constant	0.09	0.06	0.10	0.51	0.00	-0.12	-0.27	0.08
	(0.92)	(0.32)	(0.40)	(1.43)	(0.00)	(0.63)	(1.01)	(0.21)
Observations	12,868	12,859	12,841	12,807	12,868	12,859	12,841	12,807
R^2	0.001	0.001	0.001	0.001	0.003	0.004	0.006	0.005

Table 1.7
Likelihood of Voice and Exit

The sample consists of 278,987 blockholder-month observations in which the blockholder initially files a Schedule 13G. The dependent variable equals "voice" if the blockholder switches to a Schedule 13D filing, "exit" if the blockholder reports a ownership level less than 5%. The omitted case is if the blockholder continues to be passive (filing the required Schedule 13G every year). *Cumulative return* is the stock return since the initial blockholder filing. *Age of position* is the number of months since the initial blockholder filing. *Change in size* is the change in percentage of shares of the target owned by the blockholder from the initial filing. The classification of blockholders into *Financial*, *Corporate*, and *Individual/Partnership* is based on the blockholder response to Item 14 on Schedule 13D (or Item 12 on Schedule 13G). Standard errors are clustered by target firm. Constants are included in the model but not reported for brevity. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Spec 1		Spec 2	
	Voice	Exit	Voice	Exit
Illiquidity	0.16***	-0.06***	-0.068	-0.139***
	(2.79)	(6.49)	(0.67)	(10.00)
Cumulative return			-0.029	-0.020
			(0.41)	(1.20)
Age of position (months)			0.015	-0.001
			(1.60)	(0.73)
Change in size %			0.036	-0.0428***
			(0.73)	(5.56)
Corporate			1.056*	0.708***
			(1.83)	(12.3)
Individual/partnership			1.688***	0.269***
			(4.23)	(2.69)
Performance			-4.139***	-0.378**
			(4.88)	(2.17)
log(market cap)			-0.308**	-0.146***
			(2.51)	(10.5)
Leverage			-0.181	0.136*
			(0.33)	(1.93)
G-Index			-0.041	-0.002
			(0.56)	(0.37)
Observations	278,987	278,987	198,647	198,647
Pseudo R^2	0.001	0.001	0.012	0.012

Table 1.8
Blockholding returns

I calculate the holding period returns for each of the block using the closing CRSP prices on the file date of the block announcement and the file date when the block drops below 5%. In columns 1-3, the dependent variable is the raw holding period return. In columns 4 and 5, the dependent variable is the market adjusted holding period return. In column 6, only firms with negative performance over the last year are included. The classification of blockholders into *Financial*, *Corporate*, and *Individual/Partnership* is based on the blockholder response to Item 14 on Schedule 13D (or Item 12 on Schedule 13G). *Nonconstrained* are blockholders not governed by the Investment Act of 1940. Standard errors are clustered by target firm. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Holding period return			Market-adjusted return		Poor firms
	(1)	(2)	(3)	(4)	(5)	(6)
Illiquidity	0.06		0.07		0.01	0.06
	(8.71)***		(8.23)***		(2.03)**	(5.33)***
Illiquidity * Non-constrained			-0.03		-0.03	-0.05
			(2.30)**		(3.11)***	(2.29)**
Non-constrained			0.06		-0.03	0.04
			(2.97)***		(2.29)**	(1.12)
Individual/partnership		3.26		1.48		
		(8.22)***		(8.94)***		
Corporation		-0.16		-0.01		
		(0.48)		(0.07)		
Financial		-0.21		-0.02		
		(0.92)		(0.26)		
Constant	0.35	0.64	0.33	0.21	0.10	0.29
	(36.16)***	(3.21)***	(28.12)***	(2.47)**	(12.68)***	(16.25)***
Observations	14,030	18,116	14,030	18,116	14,030	6,871
R^2	0.005	0.005	0.006	0.006	0.001	0.004

Table 1.9
Choice of blockholder action

The sample consists of 1,297 blockholdings in which the blockholder initially files a Schedule 13D requesting a change in company action. I use a multivariate logit model in which the dependent variable equals "CEO" if the filer requests a change in chief executive officer, "merger" if the filer requests a completion or rejection of a proposed merger, and "other" if neither (the omitted case). *Performance* is the industry adjusted return on assets defined as EBITDA/(lagged assets). *log(market cap)* is the logarithm of book market capitalization as reported by Compustat. *Leverage* is the industry adjusted book leverage ratio defined as debt/(debt + book equity of equity). *G-Index* is the Governance index as reported in Gompers, Ishii, and Metrick (2003). The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Spec 1		Spec 2	
	CEO	Mergers	CEO	Mergers
Illiquidity	0.02	-0.13***	0.16	-0.129**
	(0.13)	(3.62)	(0.56)	(2.14)
Performance			2.67	0.83
			(0.68)	(1.05)
log(market cap)			-0.04	-0.07
			(0.11)	(0.99)
Leverage			1.984*	-0.45
			(1.67)	(1.36)
G-Index			-0.01	-0.02
			(0.10)	(0.62)
Constant	-4.24***	-0.31***	-3.96	0.35
	(13.26)	(5.39)	(1.32]	[0.64]
Observations	1,297		832	
Pseudo R^2	0.01		0.012	
Success rate	75%	56%	73%	65%

Chapter 2

Employee Ownership of U.S. Institutional Investment Management Firms

Institutional investment management firms are the single largest category of investors in the U.S. equity market. These firms manage portfolios on behalf of institutional clients such as pension funds, university endowments, and charitable foundations. As of December 2005, institutional investment management firms (IIM firms) managed $5.8 trillion worth of U.S. equities, almost a trillion dollars more than the second largest category of investors, mutual funds[1]. Despite the massive amount of wealth controlled by these firms, surprisingly little academic research has focused on this industry.

Although IIM firms all offer the same primary service, delegated portfolio management, many different organizational structures coexist within the industry. One structure which varies widely is employee ownership[2]. Slightly over half of the firms in this industry are wholly employee owned, 29% have no employee ownership, and the rest are partially employee owned. In this paper, we address the questions: Why do so many different employee ownership structures coexist among firms providing similar services? Does the variation in employee ownership structures predict performance or investment behavior?

We take an optimal contracting approach to answering these questions. We view employee ownership as one tool IIM firms use to reduce agency problems with their employees. Of course, IIM firms can use other incentives to motivate their employees. They will select employee ownership only when the benefit of employee ownership outweighs the cost relative to alternative incentives. We identify variables measuring these costs and benefits and analyze the determinants of employee ownership.

[1]There is some double counting between these two categories of investors. Many mutual funds outsource portfolio management to IIM firms. For example, Vanguard markets the Vanguard Wellington Fund. Stock selection for this fund is outsourced to Wellington Management Company. The Vanguard fund is counted as part of mutual fund assets, and these assets are counted again as part of Wellington's assets.

[2]Throughout this paper we use the term ownership to refer to ownership of investment management firms. We do not use this term to describe the holder of portfolio securities.

We begin by examining aggregate employee ownership at the firm level. Consistent with an optimal contracting equilibrium, employee ownership is lower when it provides less benefit, which we measure in several ways. First, when many people contribute to the success of the firm the free rider problem is greater and the incentive effect of employee ownership is weaker. We find strong support for this argument. Employee ownership is decreasing in the number of professional employees, the number of investment styles offered by the firm, and the amount of assets under management. Second, one benefit of employee ownership is that it reduces the need for firms to monitor employees, but this benefit is small when the cost of monitoring is low. Consistent with this idea, employee ownership is lower in firms with a large proportion of indexed funds.

Our next step is to look within firms, and examine several factors which predict individual employee ownership. First, we find that portfolio managers who manage a large proportion of their firms' assets and portfolios, and thus generate a large proportion of their firms' profits, have higher ownership. Second, when an employee has multiple roles within the firm, ownership will be an attractive incentive, because it rewards the value maximizing allocation of effort across tasks. Consistent with this idea, we find that portfolio managers who are also firm executives have significantly higher ownership. Third, employee ownership creates a strong link between the firm and the employee. This is less costly when there is low uncertainty about employees' quality. We find that portfolio managers with longer tenure have higher ownership. Fourth, ownership provides a coordinating incentive that encourages cooperation within firms. We find that portfolio managers whose investment style overlaps with their firms' dominant style have higher ownership, which we interpret as due to the benefits of creating an incentive to share information and methodologies. These results hold even after including firm fixed effects.

If firms and employees optimally allocate ownership, then employee ownership will not predict performance. If employee ownership predicted performance, then firms would alter their ownership structure and clients would alter their investment flows to eliminate the outperformance. However, because ownership rarely changes shocks to the economic environment may have resulted in suboptimal ownership structures. This does not appear to be the case. Consistent with equilibrium, we find no relationship between firm level employee ownership and risk adjusted performance. After controlling for firm characteristics, there is no evidence that portfolio managers' ownership of IIM firms predicts performance.

Employee ownership alters firms' risk taking incentives in two ways. First, employee ownership reduces risk sharing decreasing employees' incentive to take risk. Second, employee owners are less likely to be terminated, reducing their career concerns and increasing their ability to bear risk. We test which of these effects dominates by regressing portfolio risk on employee ownership of IIM firms. The results show that portfolios managed by employee owned firms, and portfolios managed by individual employee owners, have higher tracking errors, betas, and standard deviations. Even after including firm fixed effects, portfolios managed by employee owners have higher risk.

Our work contributes to the literature on agency problems in delegated portfolio management. Most of the existing literature has focused on the agency problem between portfolio management firms and investors. For example, Almazan, Brown, Carlson, and Chapman (2004) show that explicit investment restrictions are a substitute to other control mechanisms used to protect investors. Chen, Goldstein, and Jiang (2008), Del Guercio, Dann, and Partch (2003), Khorana, Tufano, and Wedge (2007), Meschke (2006), and Tufano and Sevick (1997) show that mutual funds boards' characteristics explain fee setting and restructuring decisions. Deli (2002) empirically

examines mutual fund contracts and finds that variation in fund fees is consistent with rational contracting.

While there have been many studies of the agency problem between investors and portfolio management firms, there has been far less research on agency problems within portfolio management firm. Clearly these agency problems are linked. To minimize agency problems with investors, portfolio management firms must control their employees. The earliest studies of agency problems within portfolio management firms, Chevalier and Ellison (1999) and Khorana (1996) focus on the role of career concerns in aligning employees' interests with the firm. Specifically, they show that poor performance leads to termination. Gervais, Lynch, and Musto (2005) derive a model explaining these empirical findings. They assume that mutual fund families are better informed about portfolio managers' quality, and they can credibly signal their information to investors by terminating some portfolio managers.

In addition to disciplining portfolio managers through termination, investment management firms can reward employees for good performance. Kempf and Ruenzi (2008) find that relative performance within mutual fund family results in risk shifting, which they attribute to competition among portfolio managers for promotion and access to resources. Farnsworth and Taylor (2006) survey portfolio managers about compensation. They show that performance based bonuses are widespread. Interestingly, bonuses are usually discretionary rather than formula based, and investment performance is not the primary determinant. Khorana, Servaes, and Wedge (2007) show that mutual fund manages who invest in their own funds have positive risk-adjusted performance.

Our paper continues this line of research on agency problems within portfolio management firms. We make several novel contributions. Most importantly, this is the first study of the role of employee ownership in portfolio management companies.

Employee ownership is related to firms' economic structure and investment behavior, and is widespread but it has not received any prior academic attention. This is also the first study of agency issues within the institutional investment management industry.

More generally, our results contribute to the literature on employee ownership and its role in controlling agency problems. There is an old debate in the finance literature on the effect of employee ownership on performance. McConnell and Servaes (1990) and Morck, Shleifer, and Vishny (1988) argue that employee ownership of publicly traded corporations has an observable effect on firm value. On the other side, Demsetz (1983), Demsetz and Lehn (1985b), and Himmelberg, Hubbard, and Palia (1999) argue that competitive pressure forces firms to optimally allocate ownership, and that employee ownership varies depending on its costs and benefits. Further, they believe that any observed relationship between ownership structure and firm value is the result of an omitted variable bias caused by failing to include factors which affect ownership. Our results are consistent with the optimal allocation of ownership within firms, and we do not find a relationship between employee ownership and performance. Our sample includes a large number of private firms, and so we observe a much greater range of employee ownership than previous studies.

The final contribution of our paper is that we provide a detailed description of the structure and organization of institutional investment management firms. The few prior studies of IIM firms have primarily focused on performance persistence. Busse, Goyal, and Wahal (2007), Christopherson, Ferson, and Glassman (1998), Coggin, Fabozzi, and Rahman (1993) and Lakonishok, Shleifer, and Vishny (1992) all find evidence of IIM firm performance persistence. Del Guercio and Tkac (2002) focus on fund flows rather than performance persistence, and show that the performance fund flow relationship is linear for IIM firms. With our focus on employee ownership we

provide a far more detailed description of the structure IIM firms than prior papers.

2.1 The Institutional Investment Management Industry

Like mutual funds, institutional investment management (IIM) firms provide delegated portfolio management services to their clients. However, IIM firms differ from mutual funds in several important ways. First, mutual funds directly own their portfolios, and mutual fund shares represent claims on these portfolios. IIM firms provide security selection services, but typically their clients directly own the securities. Second, IIM firms have large minimum investments, and their clients are institutional investors and wealthy individuals. Third, unlike mutual funds, the portfolios do not have a board of directors to protect investors' interests, and there currently exists little SEC regulation.

All IIM firms offer their clients portfolio management products, which represent security selection services in a specified investment style. Frequently, within a product each client's assets are held in separate accounts. A product's performance is a value-weighted composite of the constituent accounts. Each account in a composite will hold the same portfolio, subject to some variation resulting from differences such as social responsibility screens and diversification restrictions.

2.2 Theory and Hypotheses

Ownership structures vary widely in the institutional investment management industry. Our goal is to understand why this variation occurs, and its relation to investment behavior. To examine these questions, we use an optimal contracting per-

spective. We view employee ownership as one tool IIM firms use to align employees' interests with the firm. In equilibrium, IIM firms and employees will jointly determine ownership by trading off the costs and benefits, while also considering alternatives.

The IIM industry is highly competitive for two reasons. First, the barriers to entry are low. Second, clients can withdraw funds under management. The combination of these two factors creates strong product market competition. Fama and Jensen (1983a) argue that firms with the lowest cost structure will be the ones to survive competition. Failure to efficiently solve agency problems will result in higher prices or worse performance, and eventually firm failure. To survive, IIM firms must optimally allocate ownership.

2.2.1 The Costs of Employee Ownership

Fama and Jensen (1983b) and Demsetz and Lehn (1985b) state that employee ownership is costly because it requires risk-averse employees to hold undiversified portfolios. As a result, equity is worth substantially less to employees than to diversified outsiders. Employee ownership may also distort incentives and encourage employee owners to invest in low risk projects to reduce their personal risk, even if these investments are inferior. Empirically this implies that, all else equal, firms with lower risk will have higher employee ownership[3]. As many of the firms in our sample are private, we do not directly observe firms' equity price volatility, and we do not directly observe profits. However, profits are a function of assets managed[4], so the volatility of a firm's assets under management will be strongly correlated with firm risk.

[3]Another important consideration is that employees' outside wealth should influence their willingness to own their employer. Unfortunately we cannot observe employees' wealth.

[4]Most firms are compensated as a percentage of assets under management. Many firms also offer clients the option of paying partially through incentive fees.

Employee ownership provides a strong incentive when a small number of individuals control the key decisions that determine firm performance. However, Fama and Jensen (1983a) argue that when decision making is dispersed throughout the firm, the incentive effect of ownership is diluted, and free riding will occur. As decision making becomes increasingly dispersed throughout the firm, individual specific incentives such as salary and bonuses, become relatively more efficient. Thus we expect employee ownership to decrease as the number of business segments, employees, funds, and breadth of products offered increases.

Employee ownership reduces or eliminates a firm's ability to terminate an employee. This is not entirely a bad thing. Chevalier and Ellison (1999) show that fear of termination causes portfolio managers to herd. By reducing the probability of termination, employee ownership helps to create the correct ex ante incentives. However, ex post, once a firm has acquired additional information about an employee's skill, the option to terminate is valuable. Because employee ownership makes termination costly or impossible, it reduces the firm's options. When the firm is certain that an employee's quality is high, it is less costly to give up the option to terminate the employee. Since the firm learns about employee quality over time, employee ownership should be higher for employees with long tenure.

Lakonishok, Shleifer, and Vishny (1992) show that the IIM industry is composed of two segments: a small set of large firms which offer generic products and compete by offering low costs and stability, and a large number of small boutique firms offering specialized niche products. Economies of scale are more important for generic low cost products. Since high employee ownership limits firms' ability to raise external capital, we expect that employee ownership will be low for large firms offering generic products and high for small specialized firms.

2.2.2 The Benefits of Employee Ownership

The most obvious benefit of employee ownership is that it creates an incentive to exert effort. Of course there are other incentives, such as bonuses, profit sharing, and career concerns. We expect employee ownership to be high when the benefits of employee ownership are high and the costs are low relative to alternatives.

Relative to other incentives, an advantage of employee ownership is that it correctly aligns employees' incentives with the firm. This will be especially important when employees have multiple roles within the firm, and the correct allocation of effort across roles depends on employees' information. This information asymmetry will weaken other incentives. Bonuses will be inefficient because the firm does not know how the employee should allocate their effort, and profit sharing will cause employees to trade long term value creation for short term profits. Fama and Jensen (1983a) argue that when decision rights and decision control are held by a single individual it is optimal for them to have ownership. As a result, we expect employees who manage multiple portfolios or who manage the firm to have higher employee ownership.

In the previous subsection, we stated that employee ownership is a diluted incentive because its value depends on the actions of all employees. However, this can be beneficial if the firm needs to coordinate employees' actions. There is evidence that cooperation within portfolio management firms is important. Farnsworth and Taylor (2006) show that firm performance has a larger effect on bonuses than individual performance in IIM firms. Pomorski (2008) shows that information sharing between mutual funds within a family is important, and that information sharing is higher when funds have similar styles. Since information sharing is more valuable for products with similar styles, we hypothesize that that employee ownership should be higher when a firm's product offerings are concentrated in a narrow range of investment styles.

Fama (1980) argues that career concerns will align employee interests with the firm.

However, Holmstrom (1982) shows that when effort is unobserved and output is noisy, career concerns will usually fail to fully align incentives. For example, career concerns diminish close to retirement resulting in reduced effort. Morrison and Wilhelm (2004) develop a model of partnerships, which closely resemble many of the IIM firms in our sample. In their model, firms benefit when senior employees mentor young employees to transfer soft skills. However, because mentoring is unverifiable and noncontractible, senior employees will underinvest in mentoring. Employee ownership is a solution to this problem, as senior employees can sell their equity to the younger employees at retirement[5]. The price paid at retirement will depend on the retirees' prior investment in mentoring. Because employee ownership can be sold at retirement, it provides an incentive for older employees. Empirically this implies that longer tenure employees will have higher ownership.

Employee ownership is the only incentive that does not require external monitoring. This implies that employee ownership should be high when there are large benefits to aligning incentives and external monitoring is difficult. Chen, Goldstein, and Jiang (2008) and Cremers, Driessen, Maenhout, and Weinbaum (2006) argue that monitoring is more valuable and more difficult when products hold risky assets, actively trade, and have high turnover. Thus, we expect to see higher employee ownership for firms managing portfolios with these characteristics. Cremers, Driessen, Maenhout, and Weinbaum (2006) also argue that there are economies of scale in portfolio monitoring, which suggests that employee ownership will be higher for firms with less assets under management.

[5]Anecdotally, we are told it is common for retiring employee owners to sell their equity to junior employees. We thank Steven M. Levitt of Park Sutton Advisors for helpful discussions on this point.

2.2.3 Employee Ownership and Performance

Does employee or portfolio manager ownership reliably predicts performance? Intuitively it seems that employee ownership and skill should be positively related. Portfolio managers who know their skill is high will form their own firms and existing firms will offer their most skilled employees ownership. However, this does not necessarily imply an observable relationship between employee ownership and alpha.

If employee ownership is optimally determined in equilibrium, two forces will prevent employee ownership from predicting performance. First, if employee ownership caused outperformance competition would cause firms to alter their ownership structures until the outperformance was eliminated. Second, clients select firms based on expected net-of-fee alpha. Even if employee ownership predicts, but does not cause outperformance, it would affect fund flows. Berk and Green (2004) show that if there are decreasing marginal returns to scale in portfolio management, then in equilibrium clients will allocate money to firms with predictably positive alphas until expected alpha is zero. Given that Chen, Hong, Huang, and Kubik (2004) and Pollet and Wilson (2008) show that mutual funds have diminishing marginal returns to scale, this suggests that fund flows will eliminate performance predictability. However, employee rarely changes and fund flows may not fully eliminate predictability and so we test if employee ownership predicts performance.

2.2.4 Employee Ownership and Risk Taking

Fama and Jensen (1983b) argue that risk-averse employee owners will choose to reduce firm risk, because of their undiversified holdings. However, employee ownership reduces or eliminates firms' ability to terminate employees, which decreases employ-

ees' career concerns[6]. Prior studies show that mutual fund managers' career concerns affect portfolio risk. Chevalier and Ellison (1999) show that younger managers, whose termination-performance relationship is stronger, take on less unsystematic risk and hold more conventional portfolios. Khorana (2001) shows that following poor performance, portfolio managers increase portfolio risk prior to termination. These papers suggest that employee ownership will affect risk taking, but the direction of the relationship is unclear. Ownership will increase employees' rewards from positive outcomes. But for negative outcomes the ownership has two competing effects: employee owners will suffer direct losses if their firms' products underperform, but they have lower career concerns. Whether higher potential rewards and lower career concerns outweigh potential capital losses is an empirical question.

There are two types of investment risk affecting IIM firms: asset price volatility and tracking error. Since fees are based on a percentage of assets managed, revenue will fluctuate along with asset prices. Firms can control this risk by managing their portfolios' betas and standard deviations. Fund flows are heavily influenced by performance relative to a benchmark as shown by Del Guercio and Tkac (2002) and James and Karceski (2006) show that institutional funds have a linear performance-flow relationship[7] and underperforming a benchmark results in significant outflows. Portfolio managers can reduce the risk of outflows by tracking the benchmark closely.

[6]In our sample, we find a very strong negative relationship between employee ownership and termination, for both key personnel and portfolio managers. Results are available from the authors upon request.

[7]Del Guercio and Tkac (2002) and James and Karceski (2006) show that the performance- fund flow relationship is linear for IIM firms' products. We find a similar result in our sample.

2.3 Data

We use two datasets in this study: a panel of Form ADVs[8] filed with the SEC, and the PSN Database produced by Informa Investment Solutions. All IIM firms with at least $25 million in assets under management are required to file Form ADV[9]. Firms must file Form ADV at least annually and more frequently if there are material changes to the firm, including changes to owners controlling more than 5% of the firm. We have a panel of all Form ADV filings from 2000[10] through 2006, including the filings of defunct firms. This panel should be comprehensive and survival bias free, because firms are legally required to file Form ADV.

The PSN database[11] is designed for plan sponsors and consultants to identify potential asset managers. It contains information on investment performance as well as firm and portfolio characteristics. Although the PSN Database begins in 1979, we use only the portion that overlaps with our Form ADV data from 2000-2006.

2.3.1 Employee Ownership of Institutional Investment Management Firms

We obtain information on employee ownership of IIM firms using information from SEC Form ADV. Schedule A of Form ADV requires each firm to list all direct owners with a stake greater than 5%, as well as all executive officers and directors regard-

[8]Active IIM firms' most recent Form ADV filings are available at : `http://www.adviserinfo.sec.gov/IAPD/Content/Search/iapd_OrgSearch.aspx`.

[9]Intentional misstatement, deliberate omission, or failure to file Form ADV is a federal crime. In practice, criminal prosecution is rare and firms are brought into compliance by the threat of legal action.

[10]We have all Form ADV filings from January 1, 2000. However, firms can file as little as once per year, and so we use Form ADV information from the beginning of 2001 to be certain our sample is complete.

[11]Berzins and Trzcinka (2005) and Del Guercio and Tkac (2002) use Mobius Group's M-search database. In 2006 Informa Investments purchased and integrated the Mobius database into the PSN Database.

less of ownership. Each owner is required to list their title or status within the firm. Schedule B identifies indirect ownership, which is common as many employees own equity through layers of trusts and holding companies. Both schedules report ownership by categories rather than exact percentages. We impute ownership using an algorithm described in the Appendix. Because non-executive owners with less than 5% ownership are not required to report, we do not observe ownership stakes below 5% for non-executives. However, we will observe employee ownership that represents meaningful control rights over firms' operations.

Employee ownership of firms is common in the institutional investment management industry. Table 1 Panel A shows 72.6% of firms have employee ownership greater than zero. We include three measures of employee ownership: the largest position, the sum of the three largest positions, and total employee ownership. The summary statistics are calculated conditional on employee ownership greater than zero. Clearly, employee ownership is concentrated. The average largest position is 56.8%, the average top three positions is 78.2%, and average total employee ownership is 89.5%.

We also look within firms, and measure individual portfolio managers' ownership. By combining Form ADV data with portfolio manager names from the PSN database to identify portfolio managers who are also employee owners. Table 1 Panel A shows that 17.5% of the products in the sample are managed by portfolio managers with at least a 5% ownership stake in their firm. Conditional on non-zero ownership, the average portfolio manager's ownership is 52.1%.

2.3.2 Institutional Investment Management Firms

Table 1 Panel B shows there are 1,118 firms in the intersection of the Form ADV sample and PSN database. Table 2 Panel A shows the firms divided into four categories: zero employee ownership, minority employee owned, majority employee owned,

and wholly employee owned. The majority of firms are wholly employee owned and 28.8% have no employee ownership. Majority employee ownership is about twice as common as minority employee ownership.

Table 2 Panel A shows that firms with zero employee ownership have far more professional employees and manage more separate products. Minority employee owned firms have moderately more professional employees and products than majority and wholly employee owned firms.

From Form ADV we observe if firms have additional business segments engaged in the following business activities: broker-dealer, registered representative of a broker dealer, commodity trading, real estate, insurance, banking, and other financial products. We calculate the variable, Other Business Segments, as the sum of the number of additional business segments. Index % is the percentage of the firms' assets under management in index products. Table 1 Panel A shows that very few firms offer index products. This segment of the market is dominated by a few large firms. Firm Portfolio Turnover is the value weighted annual turnover across a firm's products.

We measure the homogeneity of a firm's products with the variable Style Herfindahl. This is the sum of the squared percentage of total assets under management invested in each equity style. We use 12 equity style categories based on four size categories: all, large, mid and small, and three style categories: value, growth, and core. The average Style Herfindahl is 0.89 indicating that most firms focus on a narrow sector of the equity market. Style Herfindahl is higher for employee owned firms.

Form ADV requires firms to list additional services provided to portfolio clients from the following list: financial planning, pension consulting, selection of other advisers, publications of periodicals or newsletters, security rating or pricing services, market timing services, and other. Non-Portfolio Services is the sum of the additional services provided to portfolio clients. The majority of firms in our sample do not

provide any additional services.

Average assets under management is $17.8 billion but this figure is highly skewed, median assets under management is only $1.2 billion. Table 2 Panel A shows that firms with zero employee ownership are much larger than the other firms. Minority employee owned firms are considerably larger than majority or wholly employee owned firms.

Equity is the largest component of assets under management and more than half the firms have only equity products. Employee owned firms are more focused on equity products. Table 2 Panel A shows that employee owned firms manage fewer international products, more small cap products, and marginally fewer core equity products.

2.3.3 Portfolio Manager Ownership of Institutional Investment Management Firms

In the combined PSN and ADV sample, we observe all portfolio managers who own at least 5% of their firm. Table 1 Panel C shows there are 3,118 distinct portfolio managers in our sample, who on average manage 1.9 products.

Key Person is an indicator variable that equals one if a portfolio manager is also an executive officer of the firm. Table 1 Panel C shows that 18% of portfolio managers are also executive officers. Table 3 Panel A shows that portfolio managers who are also executive officers are more likely to have an equity stake in their firm.

We include two variables to measure the importance of a portfolio manger within the firm. Proportion of Products Managed is the number of products managed by a portfolio manager divided by the total number of products offered by their firm. Proportion of Firm's Assets Managed is the total value of assets controlled by a portfolio

manager divided by the total value of assets managed by their firm. Table 3 Panel A shows that both of these variables are higher when the portfolio manager is an owner. Tenure is the number of years the portfolio manager has been at the firm. Table 1 Panel C shows that on average portfolio managers have been at their current firm for 10 years. Table 3 Panel A shows that portfolio managers with an ownership stake have longer tenure than non-owners

PM Index is the proportion of assets managed by a portfolio manager in index products. Very few portfolio managers control index products. PM Turnover is the portfolio managers' value weighted average turnover across the products they manage. Table 3 Panel A shows that portfolio managers with an ownership stake have lower turnover.

We include two variables that measure the similarity between a portfolio manager's products and their firm's products. PM Style Complement is the percentage of the firm's total assets under management in the same equity style as portfolio manager's products. For example, if a portfolio manager controlled a single small cap value portfolio, and 35% of the firm's assets under management were invested in small cap value products, this variable would be 0.35. For portfolio managers with multiple products it is the value weighted average across their products. PM Asset Class Complement is calculated in the same way, but measures the asset class overlap between firms and portfolio managers' products. Portfolio managers with an ownership stake in their firm have higher values of both variables.

Table 3 Panel A shows that portfolio managers with an ownership stake usually are more focused on equity, but the differences in equity style are not large. These results are generally consistent with the firm level findings.

2.3.4 Product Performance

The product returns reported in the PSN Database are a composite of returns on clients' accounts. Accounts within the same product can have different returns for a variety of reasons, such as social responsibility screens and diversification criteria. A products' return is a value-weighted average of all an IIM firm's accounts with a similar investment style[12]. The SEC checks reported returns during random audits of IIM firms. Table 1 Panel D shows summary statistics of the returns reported to the PSN Database. The mean monthly return is 0.72%. To risk adjust returns, we use two variations of the Carhart (1997) four factor model[13].

$$R_{it} = \alpha_i + \beta_{1i}(R_{Mt} - R_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \beta_{4i}PR12_t + \epsilon_{it} \quad (2.1)$$

In the first version, denoted Forward Carhart Alpha we estimate the Carhart model over the 24 months following the measurement of ownership. We also estimate a one period Carhart alpha as:

$$\alpha_{it} = Return_{it} - [\beta_{1i}(R_{Mt} - R_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \beta_{4i}PR12_t] \quad (2.2)$$

where the coefficients are estimated using data from the previous 24 months i.e. t-24 to t0. As a robustness check, and because it is common practice in industry, we include benchmark adjusted abnormal returns[14]. We calculate this benchmark, denoted as Russell alpha, as the geometric mean return on the fund over the 24 months

[12]For the rules governing the calculation of composite returns see `http://www.gipsstandards.org/`.

[13]Factor returns are from Ken French's webpage.

[14]We assign each fund to one of 12 size/style groups. There are three styles: core, growth, and value, coupled with four size groups: large, mid, small, and all. We use the appropriate Russell size/style index except for large core, where we use the S&P 500 index, as the PSN reports that the S&P 500 is the most widely used index for this group. Russell Indexes are the most common benchmark for all other groups.

after measuring ownership, minus the geometric mean return on the appropriate style matched index. Table 2 Panel C shows that the returns and alphas are similar for firms with different levels of employee ownership, and Table 3 Panel B shows returns and alphas are similar regardless of portfolio managers' ownership of their IIM firm.

2.3.5 Comprehensiveness and Survival

The fact that participation in the PSN database is voluntary may create two problems: selection bias and survival bias. Selection bias will occur if firms' decision to participate in the PSN database is correlated with characteristics of interest. To examine this issue, we compare the PSN data with statistics from the Conference Board (2007) report. We take the percentage of the total U.S. equity market managed by all institutions and subtract off mutual fund and hedge fund holdings. The remainder is IIM firms' holdings, and direct stock ownership by insurance companies, pension funds, and endowments. PSN firms manage 90% of this remainder. Because the remainder contains direct ownership by other institutions, it should be larger than the value of funds managed in the PSN database. Since the unexplained remained is relatively small, it is suggestive that the PSN dataset is reasonably comprehensive.

Because participation is voluntary the PSN dataset may contain a survival bias. There are three forms of survival bias: backfilling, liquidation bias, and non-reporting. Liquidation bias occurs if the terminal returns reported for a fund do not include the terminal returns from dissolving the fund. Non-reporting bias occurs when a firm strategically ceases reporting following poor performance. As discussed in Busse, Goyal, and Wahal (2007), the PSN database has not permitted backfilling since 1994. We use only post 1994 data in our sample and so backfilling is not an issue. In their study, Busse, Goyal, and Wahal (2007) examine the PSN database and conclude that it does not have a meaningful survival bias.

Table 4 Panel A shows summary statistics of annualized firm level survival. On average 3.5% of firms cease reporting each year. We divide disappearing firms into two categories: cease filing Form ADV, and continue to file. The majority of firms that exit the PSN dataset also cease reporting to the SEC, suggesting that they have genuinely not survived. However, each year 1.3% of firms exit the PSN database while continuing to file Form ADV. It is possible these firms cease managing institutional money but continue other activities requiring them to file Form ADV, so 1.3% is an upper bound on the firm level survival bias. Even if some surviving firms exit the PSN database, this will only bias our results if exit is correlated with employee ownership. The differences in survival across ownership categories are not statistically significant.

Table 4 Panel B shows summary statistics of annualized product level survival. Product exit is lower than firm exit because large firms have more products and higher survival rates. In an average year, 1.8% of products exit the PSN database. Slightly over half of these cases occur when the firm managing the product exits the PSN database, but 0.7% of products exit while the managing firm continues to report other products to PSN. Unfortunately there is no way to determine if the firm has genuinely closed the product or if the product still exists and is not reported. The non-survival of products in this dataset is lower than that of mutual funds reported in Carhart (1997), suggesting that non-survival in this dataset is relatively low. Once again, the differences in survival across ownership categories are not statistically significant.

Studies examining performance persistence are concerned about survival because performance has a strong negative correlation with survival. As a result, survival bias causes researchers to overestimate persistence. Our focus is employee ownership and so our concern is whether there is a relationship between employee ownership and survival. To test this relationship, we regress non-survival on employee ownership using a random effects panel probit model. The dependent variable equals one if it

is the last period the product reports. The results in Table 4 Panel C show that the relationship between employee ownership and non-survival is not significant. Given the absence of backfilling, the similarity between non-survival of IIM firms mutual funds, and the fact that ownership and non-survival are uncorrelated, we conclude it is unlikely that survival bias affects our results.

2.4 Determinants of Institutional Investment Management Firm Ownership

Table 5 examines the determinants of IIM firm employee ownership. We use three definitions of employee ownership: the largest position, the sum of the three largest positions, and total employee ownership. Because employee ownership is bound between 0% and 100% we use a random effects panel Tobit model.

The logarithm of the number of professional employees is negative and statistically significant in all specifications. This result is consistent with the idea that when many employees contribute toward the value of the firm, ownership's incentive effect is diluted. Since each employee receives a smaller benefit from their effort, free riding occurs. For all models, a one standard deviation decrease in the number of professional employees implies an increase in employee ownership of greater than 20% relative to the mean.

The logarithm of the number of products and the Other Business Segments index are also included primarily as measures of firm focus. Concentrated employee ownership is lower when there are many products, as the number of products grows firms either disperse equity across more employees, or avoid employee ownership entirely. Other Business Segments has a significant and positive relationship with the largest employee ownership position, but is insignificant in the other two specifications.

There is a clear negative relationship between employee ownership and the percentage of a firm's assets under management in index products. There are several very good reasons for this. First, the cost of monitoring index products is very low. Index funds are simple and transparent, the portfolio manager's task is clearly defined, and performance is easy to evaluate. When the costs of alternatives to employee ownership are low, employee ownership will be low. Second, the transparency and simplicity of index funds implies very strong product market competition, reducing the need for other incentives. Third, there appear to be large economies of scale for index funds. This segment of the market is dominated by a relatively small number of large institutions.

Chen, Goldstein, and Jiang (2008) and Cremers, Driessen, Maenhout, and Weinbaum (2006) argue that portfolio turnover is related to the need for external monitoring. High turnover implies both greater portfolio manager discretion and higher external monitoring costs, suggesting that employee owned firms will have a competitive advantage in high portfolio turnover strategies. However, the data do not support this argument. There is a significant negative relationship between employee ownership and portfolio turnover in the first column, and no relationship in the remaining two columns.

We include two variables that measure the scope of the firms' operations. Style Herfindahl is a Herfindahl Index of each firm's investment styles. Non-Portfolio Services measures the number of additional services that the firm offers to its portfolio clients. Each variable is weakly significant in one specification, but overall these variables have little significance. The logarithm of total assets under management is highly significant. Firms managing more money have significantly lower employee ownership. This effect is economically large. If the logarithm of total assets under management decreases by one standard deviation it implies an increase in employee ownership of

between 15%-35% relative to the mean. This negative relationship is unsurprising. First, one way a firm becomes large is by taking in a large amount of external equity. Second, the larger the firm the more difficult it is for any one individual employee to have a large impact on firm performance. Third, Almazan, Brown, Carlson, and Chapman (2004) and Cremers, Driessen, Maenhout, and Weinbaum (2006) find evidence of economies of scale in mutual fund families' monitoring of funds, suggesting that the relative costs of alternatives to employee ownership decrease in firm size.

The remaining variables all control for the type of investment products the firm offers. The results show that broad based employee ownership, shown in column three is associated with equity investment. But there is no relationship for closely held firms. Possibly this suggests that it is easier for employee owners to bear undiversified firm risk when this risk is spread across many employees. The clearest result is that employee owned firms invest far less in core equity products, and specialize in either value or growth products.

2.5 Portfolio Manager Ownership of Institutional Investment Management Firms

In this section, we examine which employees within IIM firms have ownership. Because of data limitations we limit our focus to portfolio managers. If a portfolio manager controls multiple products they are aggregated, resulting in one observation per portfolio manager per year. The first column of Table 6 is estimated using a random effects panel Tobit model. The second column is estimated using a linear panel regression model with firm level fixed effects[15].

[15]Parametric panel Tobit models with fixed effects are not consistent. Semiparametric models for panel Tobit fixed effects are available only when the fixed effect is for the unit of observation. Since we estimate fixed effects at the firm level, and not the portfolio manager level, the semiparametric models are not applicable.

Key Person equals one if the employee is a key person as defined in Form ADV[16]. Key Persons have responsibility and control over the entire firm. Since they affect overall firm profits, the incentive effect of equity is not diluted. Further, employees who are portfolio managers and Key Persons have multiple roles within the firm. It would be extremely difficult to write a compensation contract specifying the allocation of effort between portfolio management and firm management. Equity ownership solves this problem, and rewards the correct allocation of effort. The Key Person variable is highly significant even with firm fixed effects included. In the Tobit model, the results suggest that Key Persons have ownership stakes about 16% higher relative to the mean. When fixed effects are included the implied effect is larger, implying a key person has an ownership stake 75% higher relative to the mean.

We include two closely related variables: the proportion of the firms' total assets under management controlled by the portfolio manager, and the proportion of the firm's total products controlled by the portfolio manager. When either variable is high the portfolio manager has a large effect on overall firm profitability. As predicted, the results show significant positive relationships between both variables and ownership. The implied effect of these variables is relatively modest in the panel Tobit, a one standard deviation decrease change in these variables results in decreases in portfolio manager ownership of 2.5% and 0.5% relative to the mean. However, the implied effect is much larger in the firm level fixed effects regressions. For both variables, a one standard deviation decrease is associated with more than a 25% decrease in portfolio manager ownership relative to the mean.

There is a strong negative relationship between the logarithm of firm total assets under management and portfolio manager ownership in the Tobit regression. This is

[16]Form ADV defines key persons as: Chief Executive Officer, Chief Financial Officer, Chief Operations Officer, Chief Legal Officer, Chief Compliance Officer, director, and any other individuals with similar status or functions.

consistent with economies of scale in portfolio monitoring. The results state that a one standard deviation change in a firm's assets under management is associated with 3%-4% higher portfolio manager ownership. Once firm fixed effects are included this variable is not significant.

Portfolio mangers with long tenure have significantly higher ownership. There are many reasons to expect this result. First, it is less costly for the firm to eliminate its option to terminate long-term employees as there is less uncertainty about ability. Second, employee ownership makes it significantly more costly for the firm to terminate a portfolio manager, increasing tenure. Third, portfolio managers with high tenure likely have greater wealth, increasing their capacity to bear the risk of a large position in their employer. Finally, skill or some other third variable may drive both tenure and ownership. In the fixed effects regression a one standard deviation decrease in tenure is associated with a 15% decrease in employee ownership relative to the mean.

We include PM Index % and PM Portfolio Turnover as measures of the cost of external monitoring. The results are significant and negative for both variables in the Tobit regression. The result for index fund management is consistent with our hypothesis that ownership is lower when there is less need for monitoring. However, the negative result for portfolio turnover was not predicted. Once firm level fixed effects are included, neither variable is significant.

We include two variables to measure the overlap between portfolio managers' products and their firms' products. The results show a strong positive relationship between portfolio manager ownership and the complement of their equity style with their firm. The firm fixed effects regression suggests that a portfolio manager whose style complement is one standard deviation below the mean will have 9% less ownership relative to the mean. These results are consistent with Pomorski (2008), who shows that there are greater benefits to sharing information when portfolio styles overlap. Portfolio

manager ownership is higher in firms which manage primarily equity. However, once firms' asset class focus is controlled for with fixed effects, portfolio managers with both pure equity funds and balanced funds are more likely to be IIM firm owners.

We include controls for the asset class and investment style of the portfolio managers' products. The panel Tobit regression small cap portfolio managers have higher ownership. Once firm fixed effects are included neither style or market cap is related to portfolio manager ownership.

2.6 Employee Ownership and Alpha

Beginning in this section we limit our sample to U.S., actively managed, equity products. Most prior empirical results in the managed funds literature are for equity products, and so restricting our sample allows for greater comparability with the existing literature and established benchmarks.

We test if employee ownership predicts performance using both firm level employee ownership and portfolio manager ownership. For each product, we estimate alpha using the three benchmarking methods discussed in subsection 3.4. We use two methods to test for significance: pooled OLS regressions with standard errors clustered by product and size as recommended by Petersen (2009), and Fama-MacBeth regressions. We also form equally weighted portfolios of products based on firm and portfolio manager ownership and estimate the Carhart (1997) alpha. We include the logarithms of firm assets under management and product assets under management as control variables following the results of Chen, Hong, Huang, and Kubik (2004).

2.6.1 IIM Firm Employee Ownership and Alpha

Because several authors have argued there is a non-linear relationship between employee ownership and performance for publicly traded companies i.e. Morck, Shleifer,

and Vishny (1988) and McConnell and Servaes (1990). we measure firm level employee ownership with a series of indicator variables[17]: Minority, Majority, and Wholly Employee Owned.

Table 7 Panel A shows some of the coefficients on employee ownership are significant. But it is very difficult to argue that there is a consistent or meaningful pattern of significance. Of the alpha estimates. forward Carhart alpha is the most precisely estimated. Employee ownership and forward Carhart alpha are not significantly related in the clustered regression and one coefficient is significantly negative in the Fama-MacBeth regressions. For the other alphas there is some positive significance between employee ownership and alpha, but exactly which ownership level is significant varies across the specifications. Perhaps most striking is the small size of the estimated coefficients. Most coefficients represent only a few basis points per month and so in addition to sporadic statistical significance there is little economic significance.

There are three sets of portfolio regression results in Table 7 Panel B. The first row shows the alpha from Carhart regressions run on firm employee ownership sorted portfolios. The alphas are insignificant for all portfolios. Because the results in Panel A show that firm and product assets under management predict alpha, we perform two-way portfolio sort. First, we divide products into two categories depending on whether the managing firms' total assets under management are above or below the median. For small firms none of the alphas are significant. For large firms all of the employee ownership sorted portfolios have alphas significantly different from zero, but not significantly different from the zero employee ownership portfolio. Second, we divided products into two categories depending on whether there product total assets are above or below the median. There are no significant difference in alpha across

[17]If we estimate this relationship using the percentage of the IIM firm owned by employees or a quadratic specification. instead of indicator variables, the results are not significant.

product total asset and employee ownership sorted portfolios.

2.6.2 Portfolio Manager Ownership and Alpha

Since portfolio performance ultimately depends upon the portfolios manager's actions, we examine the relationship between performance and portfolio manager IIM firm ownership. The results in Table 8 Panel A do not show a clear relationship between portfolio manager ownership and performance. The coefficients are insignificant in five of the six specifications. The Fama-MacBeth regression using the forward Carhart alpha shows a significant negative relationship with portfolio manager ownership. However, given that the most reasonable ex ante prediction was for a positive coefficient and only one of six specifications is significant, we interpret these results as failing to show a meaningful relationship between alpha and portfolio manager ownership.

The portfolio regression results in Table 8 Panel B show a marginally significant positive alpha for products managed by non-owners and no significant result for the products managed by employee owners. The long-short portfolio alpha is significantly negative. The alpha of the large firm/zero portfolio manager ownership portfolio is significantly positive. After performing a two way sort by portfolio manager IIM firm ownership and firm total assets under management there are no significant differences in alpha between portfolios. Similarly, after performing a two-way way sort with product total assets, there are no significant differences in alpha between portfolios. These results suggest that any significance between portfolio manager IIM firm ownership and alpha is driven by the correlation between portfolio manager IIM firm ownership and firm and product size.

2.7 Employee Ownership and Risk Taking

Employee ownership has two effects on risk incentives. First, employee owners have a large undiversified stake in their employer, which will create an incentive to reduce firm risk. Second, employee owners reap all of the gains from risk taking, and have lower termination risk. To examine the tradeoff between these considerations. we regress portfolio risk measures on employee ownership. We measure portfolio risk with three variables: tracking error, beta, and portfolio standard deviations. We measure tracking error as the standard deviation of the difference between a product's return and the benchmark return over the 24 months subsequent to measuring ownership. Table 9 Panel A shows the results of regressions of tracking error on employee ownership. We include controls for firm and product size as well as a set of indicator variables for the style and market cap of the product's holdings. In the first three columns the t-statistics are based on standard errors clustered by product and time.

The first column shows the results of regressing tracking error on firm employee ownership. There is a significant positive relationship between firm employee ownership and tracking error. The average tracking error of products managed by wholly employee owned firms is higher by 0.1% per month than products offered by firms with no employee ownership.

In columns two and three, the portfolio managers' HM firm ownership is included as an independent variable. Portfolio manager ownership is significant, and the coefficient is twice the size of the coefficient on firm employee ownership. These results provide strong support for the hypothesis that portfolio manager ownership reduces career concerns sufficiently to affect investment behavior.

The last column of Table 9 Panel A contains results from a panel regression with firm fixed effects. After controlling for firm level fixed effects, the effect of portfolio

manager IIM firm ownership is smaller, but the statistically significance is much higher. Even within a firm, products managed by employee owners have higher tracking error than products managed by non-owners. This strongly supports the notion that there is a positive relationship between ownership and risk taking.

Table 9 Panel B shows the results of regressing betas and portfolio standard deviations on employee ownership. In the first two columns, the dependent variable is portfolio beta and in the third and fourth columns the dependent variable is portfolio standard deviation. Both are estimated over the 24 months after measuring ownership. Firm level employee ownership does not significantly predict betas, but it does have a positive relationship with portfolio standard deviations. The portfolio manager results include firm level fixed effects, and find significant positive coefficient for both betas and portfolio standard deviations. The portfolio manager results include firm level fixed effects. These results strongly suggest that employee ownership is positively associated risk taking.

The causal interpretation of these results is that employee ownership reduces career concerns, resulting in greater risk taking. However, there are alternative explanations. The reverse causality explanation is that firms grant ownership as a reward for taking risk. Given that employee ownership rarely changes in our sample this seems unlikely. Another alternative is that both portfolio risk and employee ownership are driven by portfolio managers' risk aversion. Individuals with low risk aversion are more likely to form their own firms and manage riskier portfolios.

2.8 Conclusion

Employee ownership of IIM firms is common, and there is large variation in ownership structures across firms. In this paper, we provide the first empirical analysis of

IIM firm employee ownership. We view employee ownership as one tool that IIM firms use to control the agency problem between firms and employees, and we argue that in equilibrium firms should be driven to optimal ownership structures by market competition. This implies that employee ownership should vary cross-sectionally based on firm characteristics measuring the costs and benefits of employee ownership. However, in equilibrium there should not be an observable relationship between employee ownership and performance.

We begin our empirical tests by analyzing the determinants of employee ownership at the firm level. Then, we look within firms, and test which portfolio managers have an ownership position in their employer. Our results are broadly consistent with an optimal contracting equilibrium. Employee ownership is higher when its value is greater. Within firms, we find that portfolio managers who are also firm executives, who manage multiple products, or who manage a large proportion of their firms' assets, have significantly higher ownership.

Next we test if employee ownership predicts performance. We fail to find a consistent significant relationship between firm level employee ownership and alpha. We interpret this result as consistent with an equilibrium in which firms and employees allocate ownership optimally, and clients allocate funds correctly given the observable characteristics of firms and products.

Finally, we test if employee ownership is related to risk taking. We show that employee owned firms' products have significantly higher tracking errors and standard deviations. Within firms, products managed by employee owners have significantly higher tracking errors, betas, and standard deviations than products managed by non-owners. The portfolio manager results hold even after including firm fixed effects.

While there is a large body of academic work examining agency conflicts between portfolio management firms and their clients, the agency problem between portfolio

management firms and their employees has received far less attention. This is the first study to examine employee ownership of portfolio management firms as a means of controlling this agency problem. Overall, our results are consistent with an optimal contracting equilibrium, in which firms and employees efficiently trade off the costs and benefits of employee ownership.

2.9 Appendix

The firm is defined as the investment adviser or "separately identifiable department or division" (SID) of a bank. Each firm may have one or multiple products. Firms are matched from the SEC Form ADV data to the PSN dataset using a name match and are verified using a combination of city, state and assets under management.

The employee ownership variable captures the amount of the investment firm itself (i.e. not the assets under management) that is owned by employees of the firm. Our data source for investment firm ownership is SEC Form ADV. If a firm files multiple times within a month, we retain the latest filing in that month. The form must be filed annually and "other than annually" if Items 1 (Identifying Information), 3 (Form of Organization), 9 (Custody) or 11 (Disclosure Information) become inaccurate or Items 4 (Successions), 8 (Participation or Interest in Client Transaction) or 10 (Control Persons) become materially inaccurate. Schedule A contains information about direct owners and executive officers. Each CEO, CFO, COO, CLO (Chief Legal Office), CCO (Chief Compliance Officer), director must be reported. Each shareholder with a direct ownership of greater than 5%, all general partners, and those limited partners and members that have right to receive upon dissolution or have contributed more than 5% of the capital must report ownership on Schedule A. On Schedule B, all indirect owners that have a 25% interest in any entity listed in Schedule A are recorded. Using Schedule B we find the true controlling ownership stake of each entity listed in Schedule A. Based on the field "Title or Status", we define whether each entity is an employee or non-employee. On Schedule A, the ownership is classified into 6 groups: "NA - Less than 5%", "A -5% but than 10%", "B -10% but less than 25%", "C 25% but less than 50%", "D 50% but less than 75%", "E-75% or more". To construct a single value for each ownership stake, we apply the following algorithm.

We sum the number in each ownership group. Starting at "E-75% or more", we build an upper and lower constraint based on the sum of each of the other groups except "E-75% or more" multiplied by the maximum and minimum possible value for each of the other groups. We then take the midpoint of the maximum and minimum possible value as the value for any entity classified as "E-75% or more". We then construct the constraints for "D 50% but less than 75%" again as above using an upper and lower constraint based on the sum of each multiplied by the maximum and minimum possible value for each group except now we omit "D 50% but less than 75%" and use the value for "E-75% or more" as both the minimum and maximum constraint for "E-75% or more". Again, we take the midpoint of the constraints as the value for "D 50% but less than 75%". We proceed recursively until we obtain values for each group, finishing with the smallest ownership group. We verify the validity of the results of the algorithm by ensuring that each calculated group value falls within the prescribed range and that the values of all the stakes in a single firm sum to 100%. For the small number that do not, we correct these entries by hand. (E.g. there are reporting errors where a single individual with "E-75% or more" ownership stake is listed multiple times for multiple positions: CEO, CCO) We then sum the ownership stake associated with employees.

Table 2.1
Summary Statistics

Panel A shows summary statistics of employee ownership. Panel B shows summary statistics of firm level variables. Panel C shows summary statistics for portfolio manager level variables. In Panels A through C each observation is included once per year. Panel D shows product level summary statistics with monthly observations.

Panel A: Ownership					
	Mean	SD	25th%	Median	75th%
Firms with Employee Ownership	72.6%				
Avg. Largest Position > 0	56.8%	29.3	32.5	55	82.5
Avg. Top Three Positions > 0	78.2%	28	62.5	92.5	100
Avg. Employee Ownership > 0%	89.5%	23.2	100	100	100
Products with PM Ownership	17.5%				
Avg. PM Ownership > 0	52.1%	33.3	21.3	50.0	82.5

Panel B: Institutional Investment Management Firms					
	Mean	SD	25th%	Median	75th%
Total # of Firms	1,118				
Avg. # of Firms per period	843				
# of Professional Employees	50	176.8	6	13	29
# of Products	5.06	7.54	1	3	5
Other Business Segments	0.19	0.49	0	0	0
Index %	2.4%	12.9	0.0	0.0	0.0
Firm Portfolio Turnover	65.5%	64.5	26.2	46.7	82.7
Style Herfindahl	0.89	0.19	0.87	1	1
Non-Portfolio Services	0.61	0.77	0	0	1
Firm Total Assets $M	17,783	76,110	270	1,222	5,810
Percent Equity	72.8%	37.0	47.7	100.0	100.0
Percent International	4.3%	17.5	0.0	0.0	0.0
Percent Core	32.7%	41.9	0.0	0.1	79.6
Small Cap %	16.8%	31.9	0.0	0.0	14.6

Table 2.1 continued

Panel C: Portfolio Managers					
	Mean	SD	25th%	Median	75th%
Total # of PMs	3,118				
# Products Managed	1.9	2.1	1	1	2
Key Person	0.18	0.38	0	0	0
Proportion of Products Managed	32.3%	34.8	5.9	16.7	50.0
Proportion of Assets Managed	24.7%	32.9	1.3	7.1	37.8
Tenure	10.5	7.9	5	9	14.7
PM Index	0.6%	6.9%	0.0	0.0	0.0
PM Turnover	53.7%	70.9	3.9	34.0	75.0
PM Style Complement	35.4%	40.6	0.0	14.2	74.8
PM Asset Class Complement	53.9%	39.4	9.0	55.9	99.2
PM Percent Equity	70.2%	44.3	0.0	100.0	100.0
PM Percent Core	22.2%	38.7	0.0	0.0	33.3
PM Percent Small Cap	23.3%	40.9	0.0	0.0	21.7

Panel D: Investment Products					
	Mean	SD	25th%	Median	75th%
Total # of Products	3,605				
Product Total Assets $M	1,350	3,868	48.6	251.8	1,016
Unadjusted Returns	0.72%	4.56	-1.92	0.96	3.55
One Period Carhart Alphas	0.05%	1.87	-0.86	0.01	0.91
Forward Carhart Alphas	0.04%	0.48	-0.19	0.02	0.27
Russell Alphas	0.24%	2.48	-0.85	0.15	1.25
Tracking Error	1.90	1.22	1.09	1.64	2.50

Table 2.2
Summary Statistics by Employee Ownership

This table shows pooled averages of the variables used in this paper. Each column shows pooled averages for firms that fall into a specific ownership category. Panel A shows summary statistics for firm level variables. Each firm is observed annually. Panel B contains product level variables. Each product is observed monthly.

Panel A: Institutional Investment Management Firms				
	Zero	Minority	Majority	100%
% of Firms in Category	28.8%	5.5	10.9	54.7
# Professional Employees	116.1	23.3	13.6	17.7
# of Products	9.4	4.8	3.2	3.6
Other Business Segments	0.29	0.16	0.20	0.15
Index %	4.8%	6.3	1.6	1.9
Firm Portfolio Turnover	73.0%	70.4	68.6	60.7
Style Herfindahl	0.80	0.87	0.93	0.93
Non-Portfolio Services	0.72	0.52	0.53	0.59
Firm Total Assets $M	55,577	18,254	2,728	4,573
Percent Equity	74.1%	85.4	91.7	83.6
Percent International	13.0%	9.4	8.8	5.3
Percent Core	36.1%	34.2	32.8	30.2
Small Cap %	15.6%	21.7	26.6	19.7

Panel B: Products				
	Zero	Minority	Majority	100%
Product Total Assets $M	1,914	936	810	898
Unadjusted Returns	0.74%	0.65	0.82	0.70
One Period Carhart Alphas	0.04%	0.06	-0.01	0.06
Forward Carhart Alphas	0.06%	0.03	0.01	0.02
Russell Alphas	0.25%	0.28	0.18	0.25
Tracking Error	1.8%	2.1	1.9	2.0

Table 2.3
Summary Statistics by Portfolio Manager Ownership

This table shows pooled averages of portfolio and product level variables used in this paper for two ownership categories: products managed by employees with no employee ownership, and products managed by employee owners. Panel A contains summary statistics at the portfolio manager level. Each portfolio manager is observed annually. Panel B contains summary statistics at the product level. Each product is observed monthly.

Panel A: Portfolio Manager Level		
	Zero	PM Ownership > 0
Key Person	10.40%	55.7
Proportion of Products Managed	24.5%	71.4
Proportion of Assets Managed	11.8%	52.7
Firm Total Assets $M	107,718	3,030
Tenure	9.8	13.0
PM Index	0.1%	0.0
PM Turnover	56.1%	43.9
PM Style Complement	0.32	0.51
PM Asset Class Complement	0.52	0.61
PM Percent Equity	68.7%	76.6
PM Percent Core	21.6%	24.9
PM Percent Small Cap	12.8%	14.6

Panel B: Product Level		
	Zero	PM Ownership > 0
Product Total Assets $M	1,997	657
Unadjusted Returns	0.64%	0.60
One Period Carhart Alphas	0.11%	0.10
Forward Carhart Alphas	0.12%	0.06
Russell Alphas	0.26%	0.24
Tracking Error	1.90%	2.0

Table 2.4
Survival

This table shows annual product survival of firms and products in the PSN database. Panel A shows summary statistics of firm survival for different categories of employee ownership. Firms are considered to disappear if they no longer file SEC Form ADV. If a firm continues to file Form ADV but no longer reports to the SEC it is identified as ceasing to report. Panel B shows summary statistics of product survival for different categories of employee ownership. Panel C shows the result of random effect panel probit regressions where the dependent variable equals one if it is the firm or products' last period. Constants are included but not reported. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

Panel A: Firm Survival Summary

	Zero	Minority	Majority	100%	All
Survive	96.0%	96.9	96.7	96.7	96.5
Firm Ceases to Exist	2.6%	2.6	2.4	2.0	2.2
Firm Ceases to Report	1.5%	0.5	0.9	1.3	1.3

Panel B: Product Survival Summary

	Zero	Minority	Majority	100%	All
Survive	98.5%	98.2	98.1	98.1	98.2
Product and Firm Disappear	0.7%	0.6	1.1	1.3	1.0
Product Disappears	0.8%	1.2	0.9	0.6	0.7

Panel C: Panel Probit Regressions of Survival

	Firm Survival		Product Survival	
	Firm Disappears	Ceases Reporting	Product and Firm Disappear	Only Product Disappears
Employee Ownership %	0.0001	-0.017		
	(0.08)	(1.63)		
PM Ownership %			-0.003	-0.001
			(1.01)	(0.07)
Ln(Firm Total Assets)	0.10	-0.860	0.159	-0.285
	(-0.23)	(4.73)***	(6.36)***	(1.06)
Ln(Product Total Assets)			-0.293	0.083
			(-14.0)***	(-0.39)
Lagged Alpha			-0.613	0.100
			(-8.97)***	(-0.27)
# Observations	5,081	5,081	222,721	222,721

Table 2.5
Determinants of Institutional Investment Management Firm Employee Ownership

This table shows the results of random effect panel Tobit regressions where the dependent variable is IIM firm employee ownership. There is one observation per IIM firm per year. In column one, employee ownership is the single largest employee ownership position. In column two, employee ownership is the three largest positions. In column three, employee ownership is the sum of all employee ownership positions. Constants are included but not reported. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Largest Position	Three Largest Positions	Total Employee Ownership
Ln(# Professional Employees)	-8.278	-9.602	-12.561
	(3.32)***	(5.30)***	(4.48)***
Ln(# of Products)	-5.722	-8.468	0.957
	(3.11)***	(4.43)***	(0.39)
Other Business Segments	4.923	0.101	-3.041
	(2.11)**	(0.04)	(0.73)
Index %	-12.046	-44.420	-23.672
	(2.36)**	(6.25)***	(2.11)**
Firm Portfolio Turnover	-0.061	-0.018	-0.006
	(4.01)***	(1.13)	(0.23)
Style Herfindahl	-5.516	14.228	-1.378
	(1.08)	(2.00)**	(0.16)
Non-Portfolio Services	-1.223	-1.622	3.618
	(0.29)	(1.20)	(1.77)*
Ln(Firm Total Assets)	-7.090	-7.675	-4.464
	(9.24)***	(7.89)***	(3.03)***
Equity %	-2.140	0.883	24.005
	(0.39)	(0.20)	(3.33)***
Percent International	1.734	2.726	-5.454
	(0.35)	(0.57)	(0.79)
Percent Core	-12.191	-9.053	-27.774
	(2.88)***	(3.48)***	(7.42)***
Percent Small Cap	3.053	3.064	-3.947
	(0.74)	(0.94)	(0.90)
Pseudo R^2	0.249	0.300	0.231
Number of Observations	2,609	2,609	2,609

Table 2.6

Determinants of Portfolio Managers' Ownership of Institutional Investment Management Firms

This table shows the results of regressions where the dependent variable is portfolio manager ownership of their IIM firm. There is one observation per portfolio manager per year. In the first column, the coefficients are estimated using a random effects panel Tobit model. In the second column, the results are estimated using a panel regression with firm level fixed effects. Constants are included but not reported. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Random Effects Tobit	Firm Fixed Effects Regression
Key Person	16.150	6.516
	(17.54)***	(17.76)***
Proportion of Products Managed	40.131	7.052
	(23.06)***	(6.80)***
Proportion of Assets Managed	4.679	7.855
	(3.42)***	(12.99)***
Ln(Firm Total Assets)	-6.752	-0.075
	(25.40)***	(0.26)
Tenure	0.612	0.157
	(11.98)***	(8.87)***
PM Index	-18.053	1.111
	(2.86)***	(0.60)
PM Portfolio Turnover	-0.017	0.000
	(2.52)**	(0.06)
PM Style Complement	10.551	1.992
	(7.66)***	(4.31)***
PM Asset Class Complement	7.405	-2.193
	(4.51)***	(4.34)***
PM Equity %	-8.279	0.413
	(5.58)***	(1.13)
PM Percent Core	0.561	0.229
	(0.49)	(0.64)
PM Percent Small Cap	6.070	0.283
	(4.54)***	(0.78)
Firm Fixed Effects	No	Yes
Time Effects	Yes	Yes
(Pseudo) R^2	0.356	0.359
Number of Observations	11,283	11,283

Table 2.7
Employee Ownership and Alpha

This table shows the results of regressing portfolio alphas on IIM firm employee ownership. Panel A has the results where the dependent variable is individual product's alpha. We measure employee ownership with indicator variables: Minority, Majority, Wholly Employee Owned. We test significance using two methods: Fama-MacBeth regressions, and pooled regressions with standard errors clustered by time and product. Forward Carhart alphas are estimated using the Carhart (1997) model over the 24 month period following the measurement of ownership. One period Carhart alphas are estimated as the fund's actual return in the current month minus the product of lagged factor loadings times current period factor returns. Russell alphas are the difference between the product's geometric mean returns over the next 24 months and the geometric mean return on the benchmark index. Constants are included but not reported.

Panel A: Firm Level Regressions

	Clustered			Fama-MacBeth		
	Forward Carhart Alpha	One Period Carhart Alpha	Russell Alpha	Forward Carhart Alpha	One Period Carhart Alpha	Russell Alpha
Minority Employee Owned	0.011	0.067	0.077	0.000	0.056	0.157
	(0.44)	(1.95)*	(1.95)*	(0.02)	(1.57)	(2.11)**
Majority Employee Owned	0.001	-0.003	-0.025	-0.030	-0.046	-0.108
	(0.04)	(0.08)	(0.63)	(2.06)**	(1.33)	(1.41)
Wholly Employee Owned	0.000	0.059	0.025	-0.025	0.057	-0.007
	(0.01)	(2.33)**	(0.84)	(1.47)	(2.26)**	(0.24)
Ln(Firm Total Assets)	0.021	0.015	0.019	0.021	0.012	0.020
	(5.39)***	(1.65)*	(2.02)**	(14.10)***	(1.47)	(2.06)**
Ln(Product Total Assets)	-0.021	-0.011	-0.016	-0.028	-0.023	-0.021
	(5.62)***	(1.60)	(1.57)	(7.63)***	(2.45)**	(2.49)**
R^2	0.010	0.004	0.003	0.0001	0.05	0.05
# Observations	105,168	137,794	157,358	105,168	137,794	157,358

Table 2.7 continued

Panel B has alphas from Carhart regressions using portfolios formed on the basis of IIM firms' employee ownership. In the double sorted portfolio results. 'large' and 'small' are relative to the median firm or product size respectively. The column "Long-Short" shows the alpha of a portfolio long wholly employee owned firms' products and short zero employee ownership firms' products. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

Panel B: Portfolio Sorted Results

Ownership Portfolio	Zero	Minority	Majority	Wholly Owned	Long-Short
Carhart Alpha	0.09	0.08	0.07	0.07	-0.02
	(1.49)	(1.34)	(1.23)	(1.42)	(0.33)
Small Firm Carhart Alpha	0.07	0.02	0.07	0.04	-0.04
	(1.37)	(0.28)	(1.23)	(0.84)	(1.44)
Large Firm Carhart Alpha	0.10	0.29	0.48	0.20	0.10
	(1.33)	(2.06)**	(2.55)**	(2.20)**	(0.96)
Small Product Carhart Alpha	0.08	0.05	0.05	0.06	-0.02
	(1.42)	(0.79)	(1.06)	(1.32)	(0.51)
Large Product Carhart Alpha	0.11	0.14	0.12	0.10	-0.01
	(1.57)	(2.11)**	(1.60)	(1.33)	(0.11)

Table 2.8

Portfolio Manager Ownership and Alpha

This table shows the results of regressing portfolio alphas on portfolio manager ownership. Panel A has the results where the dependent variable is individual product's alpha. PM Ownership % is portfolio managers' ownership in their IIM firm. We test significance using two methods: Fama-MacBeth regressions, and pooled regressions with standard errors clustered by time and product. Forward Carhart alphas are estimated using the Carhart (1997) model over the 24 month period following the measurement of ownership. One period Carhart alphas are estimated as the fund's actual return in the current month minus the product of lagged factor loadings times current period factor returns. Russell alphas are the difference between the product's geometric mean returns over the next 24 months and the geometric mean return on the benchmark index. Panel B has alphas from Carhart regressions using portfolios formed on the basis of portfolio manager employee ownership. In the double sorted portfolio results, 'large' and 'small' are relative to the median firm or product size respectively. The column "Long-Short" shows the alpha of a portfolio long wholly employee owned firms' products and short zero employee ownership firms' products. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

Panel A: Product Level Regressions

	Clustered			Fama-MacBeth		
	Forward Carhart Alpha	One Period Carhart Alpha	Russell Alpha	Forward Carhart Alpha	One Period Carhart Alpha	Russell Alpha
PM Ownership %	-0.003	0.000	0.000	0.000	0.000	0.000
	(0.75)	(0.62)	(0.09)	(3.82)***	(0.28)	(0.04)
Ln(Firm Total Assets)	0.010	0.003	0.003	0.010	0.005	0.011
	(2.59)***	(0.58)	(0.33)	(9.94)***	(0.81)	(0.99)
Ln(Product Total Assets)	-0.016	-0.009	-0.018	-0.024	-0.022	-0.023
	(4.58)***	(1.40)	(1.97)**	(6.05)***	(2.15)**	(2.67)***
Constant	0.005	0.034	0.249	0.031	0.120	0.209
	(0.13)	(0.47)	(1.54)	(2.10)**	(1.52)	(1.35)
R^2	0.006	0.0001	0.0002	0.02	0.01	0.01
# Observations	97,464	126,642	146,373	97,464	126,642	146,373

Table 2.8 continued

Panel B: Portfolio Sorted Results

Ownership Portfolio	Zero	PM Ownership	Long-Short
Carhart Alpha	0.10	0.02	-0.08
	(1.83)*	(0.53)	(2.17)**
Small Firm Carhart Alpha	0.06	0.04	-0.02
	(1.27)	(0.78)	(0.82)
Large Firms Carhart Alpha	0.13	0.44	0.31
	(2.06)**	(0.70)	(0.51)
Small Product Carhart Alpha	0.07	0.05	-0.03
	(1.53)	(0.99)	(0.79)
Large Product Carhart Alpha	0.12	0.05	-0.07
	(1.96)**	(0.98)	(1.55)

Table 2.9
Employee Ownership and Tracking Error, Betas, and Standard Deviations

Panel A shows the results of regressing the next 24 months' tracking error on employee ownership. The first three columns show pooled regressions with standard errors clustered by product and time. The last column is a panel regression with firm fixed effects. Panel B shows the result of regressing the next 24 months' betas and portfolio standard deviations on employee ownership. For both variables, the first column contains results from pooled regressions with standard errors clustered by product and time, and the second column contains results from panel regressions with firm level fixed effects. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

Panel A: Tracking Error				
Employee Ownership %	0.0010	0.0010		
	(3.16)***	(2.38)**		
PM Ownership %		0.002	0.002	0.001
		(1.96)**	(2.68)***	(4.03)***
Ln(Firm Total Assets)	-0.041	-0.035	-0.044	0.012
	(4.19)**	(3.35)***	(4.27)***	(1.16)
Ln(Product Total Assets)	-0.074	-0.074	-0.073	-0.082
	(7.21)**	(7.24)***	(7.14)***	(50.91)***
Style and Market Cap Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	Yes	No	Yes
Time Effects	No	Yes	No	Yes
Constant	2.274	2.216	2.323	2.534
	(20.88)***	(19.17)***	(20.36)***	(26.88)***
R^2	0.10	0.10	0.10	0.19
# Observations	97,540	97,540	97,540	97,540

Table 2.9 continued

Panel B: Betas and Standard Deviations

	Portfolio Betas		Portfolio Std. Deviations	
Employee Ownership %	0.0001		0.001	
	(0.70)		(1.99)**	
PM Ownership %		0.0002		0.002
		(2.47)**		(7.71)***
Ln(Firm Total Assets)	0.003	0.020	0.013	0.087
	(1.71)*	(7.52)***	(1.45)	(7.64)***
Ln(Product Total Assets)	0.007	0.010	-0.020	0.001
	(3.48)***	(23.95)***	(1.91)*	(0.51)
Style and Market Cap Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	Yes	No	Yes
Time Effects	No	Yes	No	Yes
Constant	0.816	0.654	3.477	4.149
	(39.61)***	(27.43)***	(25.51)***	(40.82)***
R^2	0.07	0.05	0.18	0.58
# Observations	97,540	97,540	97,540	97,540

Chapter 3

Fraud and Registered Investment Advisers

The recent publicized cases of fraud by investment advisers has bought much attention to fraud detection. On December 11, 2008, the Securities and Exchange Commission (SEC) charged Bernard "Bernie" Madoff and his investment firm, Bernard L. Madoff Investment Securities LLC, with securities fraud for a multi-billion dollar Ponzi scheme that he perpetrated on advisory clients of his firm.[1] Estimates of client losses (included fabricated gains) amounted to nearly $65 billion.[2] Only two month later, on February 17, 2009, the SEC charged Robert Allen Stanford and three of his companies for orchestrating a fraudulent, multi-billion dollar investment scheme.[3] Given the massive task of overseeing over ten thousand individual investment advisers, federal regulators could benefit by knowing which firm attributes, such as potential conflicts of interest, make firms more likely to commit fraudulent actions. The SEC tries to examine advisers with a high risk profile on a three-year cycle and has no set cycles

[1] http://www.sec.gov/news/press/2008/2008-293.htm

[2] Amir Efrati and Robert Frank "Madoff Set to Plead Guilty to 11 Felonies ", Wall Street Journal, Wednesday, March 11, 2009

[3] http://www.sec.gov/news/press/2009/2009-26.htm

for others. A better prediction model would also benefit regulators by quantifying the potential for trouble.

The investment advisers in the U.S. provide advice to over 20 million clients and have discretionary control of over $32 trillion in assets. Despite this large sum, registered investment advisers (RIAs) have very few restrictions imposed by federal law. Instead, the SEC relies on mandatory disclose of potential conflict of interests, so that clients can make an informed decision. The recent incidences of fraud by investment advisers raise the question of whether these disclosures are valuable. Using these mandatory disclosures by investment advisers, we are able to predict which firms have future incidences of fraud and other investment-related crime. We find that conflicts of interest are associated with an increased level of fraud. Internal monitoring and aligned incentives lead to lower frequency of fraud. The presence of sophisticated clients is negatively related to the frequency of fraud. Even after accounting for all the above factors, a history of disciplinary actions against the firm predicts fraud. Overall, the required disclosure is useful for predicting fraud, and the probability of events is positively correlated with permissive firm policies and negatively correlated with internal and external monitoring.

The ability to avoid losses resulting from inadequate or failed internal processes, people and systems is important for investors using advisers in the United States. The primary federal law that regulates investment advisers is Investment Advisers Act of 1940. Unlike many countries, in the United States, the federal securities laws do not mandate a minimum level of experience, specific qualifications, or accreditations. The laws also do not prohibit advisers from having substantial conflicts of interest that could impact their objectivity. Instead, federal law only outlines the disclosures that advisers must provide and leaves the responsibility for selecting the advisers to investors.

We also examine investors reaction to events. Investors appear to only withdraw funds from the firm when the offense is by investment adviser firm owner. A rational manager will fire an employee only when the costs of retaining the employee exceed the benefits. If the employee is also an owner, it may be more difficult to terminate the employee. Consistent with this view, we find that key persons that commit fraud or other crimes are fired more often when they are not an owner.

The biggest contribution of this paper is to show that the disclosure mandated by the SEC is useful in predicting future events, even if we cannot say with certainty that this is economically efficient since we do not observe the cost of disclosure or expected losses from operational events. Our work contributes to the larger literature of prediction of fraud and operational events in other financial companies such as in hedge funds: Liang (2003), Bollen and Pool (2008), Brown, Goetzmann, Liang, and Schwarz (2008), banks: Chernobai, Jorion, and Yu (2009), and mutual funds: Cici, Gibson, and Moussawi (2006) and Nohel, Wang, and Zheng (2006). Our work also contributes to the literature on firm and market reaction after a scandal in mutual funds: Wellman and Houge (2005), Choi and Kahan (2007) and public companies: Agrawal, Jaffe, and Karpoff (1999), Karpoff and Lott, Jr. (1993), Karpoff, Lee, and Martin (2008), Fich and Shivdasani (2007), Niehaus and Roth (1999), and Srinivasan (2005).

3.1 Registered investment advisers (RIAs)

An investment adviser receives compensation for providing advice about individual securities or managing portfolio of securities for clients. The Investment Advisers Act of 1940 requires any investment adviser that manages $25 million or more in client assets to register with the SEC, while those with less assets under management must

register with the state of their principal place of business. The Office of Investment Adviser/Investment Company Examinations reports the existence of over 10,600 IAs with total assets of $32.3 trillion dollars[4] and nearly 20 million clients.

Common examples of investment advisers include pension fund managers, mutual fund families, and trust fund managers. Individuals, partnerships, or certain corporations may also be registered under the Act.[5]

While passed at a similar time as the Investment Company Act of 1940, the Investment Advisers Act of 1940 covers a related but broader set of investment firms. For example, the investment adviser, Fidelity Management and Research Company (covered by the Investment Advisers Act of 1940), advises the Fidelity family of mutual funds (covered by the Investment Company Act of 1940).

Section 203(b)(3) of the Advisers Act exempts from registration investment advisers that during the preceding 12 months have had fewer than 15 clients, do not advise an investment company registered under the Investment Company Act of 1940, as amended, nor "hold themselves out to the public" as investment advisers. Many hedge funds use this exemption to avoid registration. A rule passed by the SEC required hedge fund managers to register by February 1, 2006, but this rule was reversed by the U.S. Court of Appeals for the District of Columbia on June 23, 2006. Furthermore, an investment adviser can be part of a firm that serves many different types of

[4]These values are reported as of October 2nd, 2007. Source: `http://www.sec.gov/about/offices/ocie/ocie_offices.shtml`

[5] The definition in the Investment Advisers Act of 1940 includes any person or business who, for compensation, engages in the business of advising others, either directly or through publications or writings, as to the value of securities or as to the advisability of investing in, purchasing, or selling securities, or who, for compensation and as part of a regular business, issues reports concerning securities. The definition also explicitly exempts banks; a lawyer, accountant, engineer, or teacher whose performance of such services is solely incidental to the practice of his profession; any broker or dealer whose performance of such services is solely incidental to the conduct of his business as a broker or dealer; and a publisher of any bona fide newspaper, news magazine or business or financial publication. A "two year lockup" provision is included so that venture capital and private equity firms are excluded from registering as an RIA.

clients or conducts other lines of business such as insurance or banking. A firm that qualifies under the Investment Adviser Act of 1940 must register even if investment advice is not its primary business.

With the variety of business models and ways to generate revenue, potential conflicts of interest may arise within the RIA firm. In addition to managing portfolios for clients, RIAs may provide a broader range of financial planning services such as insurance, tax, and estate-planning. Other RIAs may provide pension consulting, selection of other advisers, publication of newsletters, security rating, and market timing services. The investment adviser may be part of a firm that also engages in business as a broker-dealer, insurance broker, and/or bank. In these cases, an opportunity for self-dealing may arise. By law an investment adviser is considered to be acting in a fiduciary capacity on behalf of clients with a higher standard of disclosure and due care, a commitment to disclose, minimize and resolve conflicts of interest than would be found in a traditional securities brokerage environment. Registration also requires that firms adopt a code of ethics.

3.1.1 Conflicts

While an RIA has fiduciary duty to investors, a number of potential conflicts of interest can arise depending on the way the RIA is structured. The conflicts can be mitigated by external monitoring by clients who can leave the firm if they disapprove of firm behavior. Internal governance mechanisms can align incentives and make fraud less attractive. The presence of a conflict is not necessarily a bad thing; likewise, more internal governance is not always better. In equilibrium, the added cost due to the potential for wrong doing owing to a particular business practice must be balanced out by the benefits of that practice in a competitive industry. Of course, there is no guarantee that there is an equilibrium relationship in the investment adviser industry.

For example, the practice of soft dollar brokerage has offsetting costs and benefits. In the advisory business, a common practice is to direct client trades to a particular brokerage that may have a higher commission than other brokerages in return for credits that can used for proprietary research or other benefits. Since RIAs have a fiduciary obligation to their clients, those RIAs that engage in this practice argue that the extra commissions that they pay are fairly compensated through the research and other products they receive. However, the lack of transparency makes this hard to observe. Bogle (2009) argues that this practice should be discontinued as the lack of transparency and accountability subjects clients to abuse by unscrupulous advisers. Others such as Horan and Johnsen (2008) defend the practice. They find that premium commissions are related positively to risk adjusted performance suggesting soft dollar usage benefits investors. Overall, while the question of whether soft dollars arrangements benefit clients is still an open one, we predict a positive relationship with the likelihood of a fraud event.

RIAs can recommend securities in which they have an ownership interest, serve as an underwriter, or have any other sales interest. This creates a potential conflict of interest between the firms' and the clients' interests. While the partiality of the firm may be questioned in these cases, refusing to advise to clients about these securities would harm investors by limiting their investment opportunity set.

RIAs may retain custody of clients' assets or choose to use an outside service agent. Keeping custody in-house allows a one-stop shop that produces all the documentation and holds the money to control costs and provide fast access to assets. However, the arrangement removes any third-party checks. In her testimony before the Senate Committee on Banking, Housing And Urban Affairs on 3/27/2009, SEC Chairman Mary Schapiro suggested that the Madoff fraud would likely have been discovered sooner if stricter rules had been in effect governing instances in which RIAs take

custody of client assets.

Likewise, a tight affiliation with a broker/dealer can open up similar issues. While cost-savings and expediency of service may be gained by in-house broker-dealer arrangements, the lack of outside verification can permit fraud to go undiscovered for longer periods of time. Affiliations with other financial businesses can also increase potential conflicts of interest and create opportunities for fraud.

Overall, we predict that the use of practices that introduce conflicts of interest or avoid third-party monitoring (such as interest in client transactions, soft dollars, internal custody of assets, close affiliation with a broker/dealer and other affiliations) will open up the firm to a higher likelihood of a fraud event.

External monitors are a potential solution to mitigate operational risk. Sophisticated, powerful investors may be better able to demand relevant information and spot trouble than less sophisticated investors. Unsophisticated clients may underestimate the amount of operational risk that a firm permits. Alternatively, smaller clients may not have the market power to demand the disclosures that would allow the client to precisely determine operational risk.

The RIA firm may also use internal controls to mitigate operational risk within the firm. By having a high level of employee ownership, the individual employees are more closely tied to the firm, so that reputational penalties may be more effective. The bonding of employee ownership works in two ways. By tightly tying the employee to the firm, ownership increases the employee's share of the negative effects the firm incurs due to fraud and reduces the profitability of the fraud. Likewise with non-employee owners, the effect of fraud can be mitigated by promptly firing the employee. Also, compensation that is tied to performance can help mitigate wasteful practices like frivolous use of soft dollars since the managers compensation is tightly tied to the client's performance. In addition to aligning incentives of employees with both the

firm and clients, the firm can put in place a more stringent internal compliance system, such as separating the role of chief compliance officer.[6] This may allow the firm to catch potential problems early on and then fix them. Of course, since the disclosed data only contains events that the SEC discovers, a better compliance department may actual increase the probability that fraud is discovered.

3.2 Operational risk

The Basel Committee defines operational risk as: "The risk of loss resulting from inadequate or failed internal processes, people and systems or from external events." In this paper, we use a similar definition focusing on the risk caused by employees and affiliates of the firm, but excluding operational risks from external events such as terrorism or natural disasters.

In their paper on operational risk in the hedge fund industry, Brown, Goetzmann, Liang, and Schwarz (2008) construct a measure of operational risk, the ω score, by canonical analysis using the hedge fund database, TASS, and disclosures from Form ADV. They find no relation between hedge fund investors fund flows and the ω score. Brown, Goetzmann, Liang, and Schwarz (2008) also report firm factors like high leverage and concentrated ownership are associated with a past history of events.

In the banking industry, Chernobai, Jorion, and Yu (2009) find that operational losses are related to firm factors such as firm size, volatility, increasing leverage, the number of employees, and profitability as well as the macroeconomic environment. The firms suffering from operational losses also tend to be more complex and have fewer auditors on the board.

[6] In the case of Bernard L. Madoff Investment Securities, LLC, Peter Madoff is listed as both the chief compliance officer and the director of trading.

A major caveat in interpreting the literature is that committing a fraudulent act is related to but distinct from being caught committing a fraudulent act. This distinction may be meaningful. Operational risk by definition is impossible to observe. The risk factors can vary according to the internal controls put in place by the firm, external monitoring and incentives of the employees. However, even a low-risk firm may experience an event by chance. The observation of operational losses can also depend on the degree of scrutiny that is placed on the firm. If two firms have equal operational risk, but one firm is monitored more tightly then we are more likely to observe an operational risk event in that firm even if the true risk is the same. Failure to detect an event early can also impact the magnitude of the loss as was the case in the Madoff Ponzi scheme. Ultimately, a documented fraud event are a product of both an actual fraudulent event and the detection of the event.

Regulators may not play an important role if market participants have alternative mechanisms to combat fraud. Chang and Evans (2007) argue that while corporate fraud can impose significant costs if left unchecked, evidence shows market mechanisms discipline much bad behavior. The authors conclude the benefits of criminalization must be balanced with the reduction of socially efficient risk taking behavior.

In a study of the mutual fund scandals, Choi and Kahan (2007) find market-based penalties for mutual funds provide substantial incentives to adopt an organizational structure that reduces the likelihood of scandals. However, they also observe that investors do not withdraw their assets after scandals that do not harm the investors (e.g. when fund managers use insider trading to benefit investors). In their work on market timing in international funds, Goetzmann, Ivković, and Rouwenhorst (2001) find that very limited exploitation of these opportunities suggesting that either the funds effectively curtail day traders or few investors are aware of these opportunities.

In addition to discipline from clients, firms may be disciplined by the providers

of capital. The firm may lose value because of operational events through losses to intangible assets such as reputation. Karpoff and Lott, Jr. (1993) and Karpoff, Lee, and Martin (2008) show that the negative effect for firms that commit criminal fraud comes primarily from the reputational penalty. Only a small fraction (6.5% in the Karpoff and Lott, Jr. (1993) study) is directly due to legal fees and fines. Even after accounting for changes due to reporting the correct earnings, the majority of the announcement loss in firm value is due to reputational penalties.

Market reactions or reputation penalties will only occur if the operational risk event conveys new information about the firm. The occurrence of an operational risk event may cause clients to update their beliefs about the unobservable operational risk. However, an occurrence of an operational risk event does not necessarily mean risk is increased. The firm can also update its beliefs about the operation risk and engage in efforts to lower that risk. In Agrawal, Jaffe, and Karpoff (1999), the authors find that managerial turnover is higher after a fraud event; however, after controlling for firm characteristics fraud events, they find that these events do not increase the benefits to managerial turnover.

All activities that the investment adviser engages in generate some level of operational risk. For example, the RIA may take legal control of the client's assets to enable it to easily manage the funds. However, this control makes it possible for the RIA to steal the funds. If the market is competitive, firms should only engage in activities when benefit more than offsets the cost caused by increased operation risk. The RIA industry is highly competitive for several reasons. The barriers to entry are very low. The cost to file and set up a new firm is under $1000, as very little physical capital is needed. The basic service is very fungible; a client can easily remove money and start using a competitor. This feature of the industry creates strong product market competition. Fama and Jensen (1983a) argue that firms with the lowest cost structure

will be ones to survive. Failure to mitigate operational risk subject to the costs of mitigation will result in uncompetitive fees and/or performance. To survive, RIAs must optimally mitigate operational risk.

3.3 Data

To disclose the potential conflicts of interest, presence of external monitors and internal measures, the SEC requires all registered investment advisers to file a Form ADV annually with the SEC.[7] This filing must be updated upon material change - including the occurrence of a fraud charge, so that clients and potential clients have current available information about the RIA.[8]

We obtain data for our study from the Form ADV filing required for all RIAs for the years 2001 to 2006. All investment advisers with at least $25 million in assets under management are required to file the Form ADV. Our panel data includes all initial filings and amendments, including the filings of now defunct firms. As firms are legally required to file the Form ADV and we have all filings, the dataset should be comprehensive and survival bias free. A criminal DRP must be filed if a "person associated with an investment adviser"[9] has been charged or convicted of or plead guilty or nolo contendere ("no contest") in a domestic, foreign, or military court to a felony or misdemeanor involving: investments or an investment-related business, or

[7] This form is available at `http://www.adviserinfo.sec.gov/IAPD/Content/Search/iapd_OrgSearch.aspx`.

[8] The form must be filed annually and "other than annually" if Items 1 (Identifying Information), 3 (Form of Organization), 9 (Custody) or 11 (Disclosure Information) become inaccurate or Items 4 (Successions), 8 (Participation or Interest in Client Transaction) or 10 (Control Persons) become materially inaccurate.

[9] The Investment Advisers Act of 1940 defines this term as any partner, officer, or director of such investment adviser (or any person performing similar functions), or any person directly or indirectly controlling or controlled by such investment adviser, including any employee of such investment adviser, except that for persons associated with an investment adviser whose functions are clerical or ministerial.

any fraud, false statements, or omissions, wrongful taking of property, bribery, perjury, forgery, counterfeiting, extortion, or a conspiracy to commit any of these offenses.

Amended Form ADV filings can occur as frequently as multiple times in a single day. To create an annual panel data set, we use the current filing as of August 31st of each year.[10] All explanatory variables are measured as of August 31st. We then collect information on disclosure reporting pages (DRPs) filed September 1st to August 31st of the next year. We have 51,397 firm-years representing 13,579 unique RIAs. The number of unique RIAs exceeds the number of active RIAs reported by the OIA because our sample includes defunct firms. Firm-years with at least one DRP filing are called an "event year", and those without a DRP filing are called a "clean year".

In Table 3.1, we observe that RIAs come in a wide array of sizes. While the median assets under management (AUM) is $100 Million, the mean AUM is over $2.4 billion. In Table 3.1, Panels B and C show the structure of the industry with many small advisers and a handful of large advisers. Also noticeable is that the number and frequency of reported events is much higher for larger firms. Firm policies are vary greatly among investment advisers. We examine several of these policies in Table 3.2. Interest in Client Transaction is a binary variable that takes the value of one if the firm recommends securities in which it has an ownership interest, serves as an underwriter and/or has any other sales interest. Soft Dollars is a binary variable equal to one if the firm receives research, other products or services other than execution from a broker-dealer or a third party in connection with client transactions. Custody of Assets is a binary variable equal to one if the firm retains custody of clients' cash and/or securities. Broker/Dealer is a binary variable that takes the value of one if the firm reports an affiliation with a broker/dealer. Other Affiliation is a binary variable that

[10]We choose August 31st to maximize the number of annual observations since our data set of ADV filings ends in September of 2006. We have DRP filings through 2007.

takes the value of one if the firm reports an affiliation with an investment company, other investment adviser, bank, insurance company or other financial company. Small Client Focus is a binary variable that takes the value of one if the reported percent of individual (non-high net worth) clients exceeds 50%. Separate chief compliance officer (CCO) is a binary variable that takes the value of one if the person reported on the Schedule A filing has no job title other than CCO. The CCO of a company is the officer primarily responsible for overseeing and managing compliance issues within an organization. Performance-Based compensation is a binary variable that takes the value of one if the firm reports that it is compensated based on performance. History of Violations is a binary variable equal to one if the firm has to file a DRP for a fraud event during the last 10 years. The history can be removed if the responsible party is no longer affiliated with the firm or more than 10 years has elapsed. In the first column of Table 3.2, we observe that firm policies that may cause a conflict of interest are common but not ubiquitous. The last variable, History of Violations, is relatively uncommon. This is not surprising since reputation is very important in the industry. The policies are fairly stable over time as shown in column two. Over ninety percent of firms have the same policy in the current year as they had in the past year.

In Table 3.3 Panel A, we examine the difference in firm policies and fraud. We split the sample into firm-years with zero DRP filings (clean firms) and firm-years with one or more DRP filings (fraud firms). [11] Consistent with the view that firms with more potential conflicts of interest will have more operational risk, we observe a positive and significant differences for all four internal conflict variables. For clean firms, less than a third of firms recommend securities to clients in which they have an economic interest, in nearly three-fourths of fraud firms, the firm engages in this

[11] To be precise since our data is a panel, a firm may appear in both samples though in different years.

practice. Similarly, the use of soft dollars is 16% higher in event years. The difference in internal custody of assets is nearly 40% higher in fraud firms. The presence of other business activities within the firm or affiliations with related firms with these activities also varies significantly between clean and fraud firms. Broker/Dealer and Other Affiliations are found in 86% and 90% of fraud firms. Both values are significantly higher than in clean firms.

In clean firms, only 22% of firms have a primarly low-net worth individual client base, while the figure is 43% of firms for fraud firms. The prescence of a separate chief compliance officer (CCO) is slightly higher in fraud firms. Also, Performance-Based compensation does not meaningfully vary between the two groups. The most dramatic results while only 0.8% of firms have a prior history of an event for clean firms, 27.5% of firms have a prior history of events for fraud firms.

While these are only unconditional averages and should not be interpreted causally, there is a strong connection between permissive internal polices and future events. Similarly, unsophisticated clients are more likely to be present during event years. Interestingly, the relation between a dedicated CCO and event is positive. One explanation is that a dedicated CCO may be more likely to find fraud causing more events. However, the correlation could be spurious is the number of events increases with size of the firm and larger firms are more able to afford a dedicated CCO.

In Table 3.3 Panel B, we examine the frequency of events by year. Although there is no strong pattern in the trend, we include year dummies in all subsequent analysis to guard again faulty inference that could be caused by changing in monitoring by regulators over time.

3.4 Empirical results

3.4.1 Prediction of fraud

Our main research goal is to predict which firms will suffer an operation event based on observable firm characteristics. The purpose is two-fold. First, an accurate prediction model is useful to investors and regulators to identify firms that have features that are consistent with a higher incidence of operational risk events. Second, we would like to determine a causal relation between firm characteristics and incidences of fraud events. While our research design limits the possibility of reverse causation, we still need to be concerned about the possible endogeneity of our explanatory variable and event variable. We observe the act of getting caught, not the fraud event itself, so in that our explanatory variable are correlated with the probability of getting caught conditional on committing a fraud the inferences will shift. Still, we can answer an interesting question: do certain practices increase the chance of the firm getting caught for fraud.

We use the filing of a criminal disclosure reporting page (DRP) as the operational risk event. We construct a panel of RIA firm-year observations and then measure the number of DRP filings over the next year. In our main set of tests, we estimate a probit model using an indicator that equals one when there is one or more DRP filings over the subsequent year and zero otherwise. We report the results in Table 3.4. In the first column, we include five variables that indicate different types of internal conflicts.

We find that having an Interest in Client Transactions, use of Soft Dollars, Custody of Assets, affiliation with a Broker/Dealer, and Other Affiliations all have statistically significant positive relations with the incidence of DRP filings. This is consistent with the view that given a greater latitude to commit fraud, more fraud will be committed.

In all specifications in Table 3.4, we control for the number of employees using a series of dummies related to the range reported on Item 5a of the Form ADV: 1-5, 6-10, 11-50, 51-250, 251-500, 501-1,000 and More than 1,000. We also control for firm size, firm age and year effects. As expected. the point estimate of the employee effect increases as the number of employees increase, and a F-test of the combined significance of the number of employee variables is strongly significant for all specifications.

In the second column of Table 3.4, we include two proxies for external monitoring that are measures of the client type of the RIA: a dummy if the primary client type is individual investors[12] and average account size. Neither variable is statistically significant in this specification though the point estimates are the predicted signs.

In the third specification. we examine three measure of internal monitoring. Employee ownership is derived from the Schedule A and B filings as described in Dimmock, Gerken, and Marietta-Westberg (2009). Employee ownership has a strong and significant negative effect as expected. Performance-Based compensation has a negative effect as expected, and a separate CCO is related to a slightly higher incidence of fraud even after controlling for firm size. However. neither of these variables are statistically significant.

In the fourth model. we include all explanatory variables for internal conflict, external monitoring and internal monitoring. While the model still has the same interpretation as a predictive model, the interpretation as a causal model shifts since the some of the explanatory variables are determined by the RIA firm, while others are set by clients and can be considered an outcome of RIA firms' choices. Overall, the results are remarkably similar to the inferences from the prior models. The statistical significance remains for all of internal conflict variables except Other Affiliates.

[12]This classification excludes high-net worth investors who have over $750,000 in assets invested with the RIA or over $1.5 million in total net worth, as well as institutional investors that aggregate assets from individuals such as mutual and pension funds.

Interestingly, the average account size variable is now significant suggesting that after accounting for the potential conflicts and internal firm monitoring, larger clients are associated with a lower incidence of fraud.

In the fifth specification, we also add a control for a history of violations. History of violations is a binary variable that takes the value of one if the firm reports "yes" to any question on Item 11 (Disclosure Information). This variable is strongly significant indicating a prior history of events is a strong predictor of future events. Again, the interpretation of the other variables shifts as their effect is now conditional on having a past event. However, the statistical and economical significance of the other explanatory variables remains essentially the same. In the sixth specification, we employee a random effects probit model to control for unobserved firm-specific characteristics to address an omitted variable concern. Even with this specification, we still have qualitatively similar results that are still statistically significant.

Overall, the results are consistent with our predictions. When an RIA firm chooses practices that permit greater freedom to engage in fraudulent practice, more fraud is observed. Sophisticated clients invest with firms that have a lower subsequent incidence of fraud. Also, firms that put strong internal monitoring and incentives to mitigate fraud see lower subsequent rates of fraud.

To test the predictive accuracy of our models, I use the Hanssen-Kuipers score as discussed in Granger and Pesaran (2000). The authors show that the Hanssen-Kuipers score can be interpreted as average economic value when the payoff ratio is constant over time and equal to the unconditional forecast probability. The score is calculated by $HK = H + F$, where $H = \frac{true\ positive}{true\ positive + false\ positive}$ is the hit rate and $F = \frac{false\ negative}{false\ negative + true\ negative}$ is the false-alarm rate. Using the full probit model from the last column in Table 3.4, the hit rate is 29.4% and the false-alarm rate is 0.26% yielding a Hanssen-Kuipers score of 29.2%. We can reject that this value

equals zero at the one-percent level. A score of zero indicates no skill. This method is preferable over an accuracy measure based only on the number correct since such a method is heavily influenced by the most common category and very few firms have events. For example, a naïve forecast of that no firm has a event would score yield a Hanssen-Kuipers score of zero, but have a 99.6% accuracy. Also, our full-model has a statistically significantly higher score than a model that only considers the historical events, which has a Hanssen-Kuiper's score of 14.8%.

Anecdotally, our model also fares well. Using the most recent filing of the Bernard L. Madoff Investment Securities Form ADV available online (dated 01/07/2008), we find that the projected value operation risk places the firm at the 97^{th} percentile of all firms in our sample. The firm's custody of its clients assets, close association with a broker/dealer and history of violations[13] are all factors for the high score. Another firm that has recent media attention is Stanford Capital Management. Like Bernard L. Madoff Investment Securities, Stanford has custody of its clients assets, close association with a broker/dealer and a history of violations[14] as well as various interests in client transactions resulting in a 99^{th} percentile score.

Given the strong significance of the number of employees and incidence of fraud,

[13]According to the Investment Adviser Registration Depository (IARD), the firm had two DRPs on file. On 07/06/2005, the NASD alleged the firm failed to display immediately customer limit orders in Nasdaq securities in its public quotation. Without admitting or denying the allegations, the firm consented to the described sanctions and to the entry of findings, was censured and fined $7,000.00. On 02/26/2007, the firm admitted violations of limit order display and limit order protection. Without admitting or denying the allegations, the firm consented to the sanctions, was censured and fined $8,500.00.

[14]On 04/12/2007, the firm held customer funds without making required reserve computations and to make deposits into a special reserve bank account for the exclusive benefit of the customers. The findings stated that the firm failed to establish and maintain a supervisory system reasonably designed to achieve compliance with applicable securities laws, regulations and NASD rules in that it failed to provide each of its branch offices with copies of its written supervisory procedures or an equivalent document regarding the timely processing of customer checks. The findings also stated that the firm conducted a securities business while failing to maintain its required minimum net capital. Without admitting or denying the findings, Stanford Group Company consented to the described sanctions and to the entry of findings, therefore, the firm was censured and fined $20,000.

we run two other checks to ensure that our inferences are not due to the differences in the size (number of employees) of firms. First, in Table 3.5, we again use the same specifications as in Table 3.4 with one change. Instead of including number of employee dummy variables, we split the sample into small and large firms, with small defined as less than 50 employees. Overall, the results are consistent with our previous estimates. The differences in the sample levels of the explanatory variable can account for the difference in statistical estimates. For example, all large firms in our sample have at least one affiliated business so we cannot estimate an effect for that variable.

For our second robustness check, we account for the fact that a firm can have multiple DRP filings for different events in a single year by estimating a count model where the dependent variable is the number of DRPs filed in a single year. We use a negative binomial instead of a Poisson model due to overdispersion of DRPs (the variance is greater than the mean - thus Poisson model is inefficient with downward biased standard errors). We also use the same sets of explanatory regressors as in Table 3.4. We report our results in Table 3.6. Again, our point estimates are qualitatively similar and all of the explanatory variables except for that Broker/Dealer remains significant in the full specification (5) and Other Affiliates becomes statistically significant. Overall, our robustness tests confirm that our earlier results are not due solely to difference in firm size or clustering of DRP filings in a single firm.

In Table 3.7, we perform a similar analysis to predict DRP filed for owners of the RIA firm. We find that we get qualitatively similar results, although the statistical significance is diminished for the conflict of interest variables. Employee ownership remains strongly negative even though there is a positive mechanical relationship between employee ownership and an owner DRP filing.

3.4.2 Investor Reaction

While prediction of fraud events is clearly important to regulators, do these events matter to investors? One way to answer this question is to look at investors react to these events. Choi and Kahan (2007) find a negative outflow by fund investors in response to the announcement of mutual fund timing scandals. Investor reaction also varied by the degree the scandal negatively impacted the fund investors. Wellman and Houge (2005) find that other funds in same family also suffer outflows suggesting that investors update their beliefs about risk at the firm level. Interestingly, using a sample of hedge funds, Brown, Goetzmann, Liang, and Schwarz (2008) find no relation between their risk measure from Brown, Goetzmann, Liang, and Schwarz (2009) and flows. There results may differ because their sample only contains a single cross-section of ADV data at the end of their sample period and thus can only tell whether a firm has had a reportable incident during the last 10 years, but not the number or timing of the incidents. Also, their sample consists of only hedge funds. They interpret the findings as hedge fund investors either disregard the ADV or already have the disclosed information from other sources. However, their data does not allow them to rule out other plausible explanations such as: investors react immediately or the firm could change after events (e.g. altering policies and/or firing employees).

Unfortunately, the required data on the Form ADV is insufficient to back out investor flow information for RIAs. We therefore use data on portfolio holdings from the required SEC 13F filings. One limitation of this approach is that this restriction changes our sample from all RIAs with over $25 million in AUM to those firms that have at least $100 million in eligible securities. However, this reduced sample contains the majority of firms with a DRP filing.

The Spectrum 13F institutional investor holding database includes all long equity positions on securities that trade on an exchange or NASDAQ, closed-end funds,

some equity options, warrants, and some convertible debt, but no information on short positions or derivatives. We match the Spectrum 13F to Investment Adviser Public Disclose (IAPD) data using a name match and verify our matches using asset under management and place of business that is given in both the 13F and ADV filings. We calculated flows using $Flow_{i,t} = \frac{Assets_{i,t} - (Assets_{i,t-1} * Returns_{i,t-1})}{Assets_{i,t-1}}$ as suggested in Sirri and Tufano (1998).

In Table 3.8, we report regressions of flows using the combined data set. Total DRP is the total number of DRPs filed in the year in which flows are calculated. Owner DRP is number of DRPs filed in which the reported person is an owner of the firm. Prior Return is the return for the prior year. Log(Portfolio Value) is the value of the reported assets in the 13F filing. Four style dummies, large-growth, large-value, small-growth, and small-value are calculated as in Bushee (1998). In the first specification, we see a negative, but economically small and statistically insignificant effect of a DRP on firm flows. However, in the second specification, we see that an owner DRP has an economically and statistically significant effect of roughly -30%. This negative effect of owner DRPs is robust to inclusion of overall firm DRPs, returns, employee, and style dummies. The evidence is consistent with investors having little reaction to overall DRPs, but only reacting when the event is associated with a firm owner.

One reason that our results differ from Brown, Goetzmann, Liang, and Schwarz (2008) may be that data limitations force the authors to use a risk measure based on a ten year aggregate measure of events. Therefore, they only observe factors that correlate with a history of events and not the events directly. Another reason is that we study all RIAs, while their study focuses on hedge funds.

3.4.3 RIA reaction

Prior work on firm reaction to fraud finds mixed evidence on employee retention after a fraud event generally implying negative job market penalty for being associated with a fraud. Srinivasan (2005) find directors experience significant labor market penalties. Niehaus and Roth (1999) finds CEO turnover around securities class actions lawsuits, and this effect is larger for successful lawsuits. Farber (2005) finds a positive association between fraud detection and subsequent improvements in board quality and audit committee activity. However, Agrawal, Jaffe, and Karpoff (1999) find little evidence of turnover of management or senior directors after the revelation of fraud after control for firm characteristics. Fich and Shivdasani (2007) also finds that outside directors do not face abnormal turnover after the revelation of fraud, but subsequently hold less other board seats.

In this section, we investigate one possible explanation for the results in the prior section. While a firm can quickly rid itself of DRP filing by firing the offender, a firm may be less likely to do so if the person is an owner.

One limitation is that while we see all firm employee who report a DRP, we do not all the complete set of employees who never report a DRP. We do however have information on all key persons of the firm. A key person is an executive officer, director or owner with influence over firm policy. We can use this information to determine when a key person leaves the firm, but unfortunately we do not know why they leave. This leaves us with a relative small sample of 87 key people.

Using the key person data found on Schedule A, we construct a sample of all key persons who file a DRP. In Table 3.9 Panel A, we examine the unconditional probability of departure from the firm. The probability of leaving the firm is much higher for non-owners than owners. Also, key persons who file a DRP are more likely to leave for both owners and non-owners. However, the increase in likelihood for non-

owners is 5.95% versus an increase of only 0.62% for owners. This is consistent with non-owners being more likely to leave the firm after a DRP. In Table 3.9 Panel B, we use a probit model where the dependent variable is one if the key person leaves the firm (we cannot separate voluntary departure from forced). We find a strong negative effect of ownership on leaving the firm even if we include year and key person fixed-effects. Since owners are more likely to be retained after a DRP violation, this can explain why investors react more strongly to owner DRPs than non-owner DRPs.

3.5 Conclusion

In this paper, we find evidence that the mandatory disclosures required by the SEC of RIA firms are useful in predicting future fraud and other criminal behavior by RIA firm employees. The firm's choice of engaging in practices that produce potential conflicts of interest is related to an increased probability of future fraud events. Conversely, internal monitoring, incentive alignment, and sophisticated external monitors reduce the probability of fraud. Investors only react strongly to these violations when the offender is a firm owner. We find that owners are less likely to leave the firm after being charged with fraud. Together this suggests that firms can mitigate the impact of fraud events by firing offenders and investors react accordingly.

We leave to future work extending our analysis to other regulatory violations such as regulatory and civil actions. While criminal behavior is clearly important, it is interesting to see if other types of events, such as regulatory or civil actions can be predicted by firm characteristics. Also, it may be interesting to see if the market participants take these actions as seriously as they do criminal ones.

Table 3.1
Summary

This table presents characteristics of the 13,579 registered investment adviser firms that filed Form ADV with the SEC from 2001 to 2006. Panel A contains the size, number of accounts, age, and employee ownership of the firm. Panel B summarizes the disclosure reporting page (DRP) filings by number of employees. Panel C summarizes the disclosure reporting page (DRP) filings by total assets under management.

Panel A: Firm Characteristics					
	Mean	SD	25th	Median	75th
Number of firms	13,579				
AUM ($Million)	2,841	19,952	38.3	100	453
Accounts	111,669	11,441,819	8	82	292
Average Account Size ($Thousand)	82,212	839,312	324	1,148	20,782
Firm Age (years)	9.05	8.8	2.25	6.15	13.9
Employee Ownership %	66.7%	44.6%	0%	100%	100%

Panel B: Rate by Number of Employees			
Employees	DRPs	Total Firm-Years	DRPs per Year
1-5	31	25,087	0.001
6-10	18	9,671	0.002
11-50	41	11,144	0.004
51-250	44	3,498	0.013
251-500	21	583	0.036
500-1000	13	432	0.030
1000+	641	564	1.137
All	809	50,979	0.016

Panel C: Rate by Discretionary Assets Under Management			
Discretionary AUM	DRPs	Total Firm-Years	DRPs per Year
Less than 1M	68	9,872	0.007
1M-10M	1	1,684	0.001
10M-100M	31	17,634	0.002
100M-1B	74	14,734	0.005
1B-10B	158	5,510	0.029
100B-100B	328	1,659	0.198
100B+	149	304	0.490
All	809	51,397	0.016

Table 3.2
Consistency of RIA practices

This table reports the frequency of certain RIA practices over subsequent firm-years. Interest in Client Transactions is a binary variable that equals one if the firm recommend securities in which it has an ownership interest, serves as an underwriter or has any other sales interest. Soft Dollars is a binary variable that equals one the firm receive research, other products, or services other than execution from a broker-dealer or a third party in connection with client securities transactions Custody of Assets is a binary variable that equals one the firm has custody of clients' cash and/or securities. Performance-Based compensation is a binary variable that equals one if the firm provides compensation based on performance. Broker/Dealer is a binary variable that equals one if the firm reports an affiliation with a Broker/Dealer. Other Affiliation is a binary variable that equals one if the firm reports an affiliation with an investment company, other investment adviser, bank, insurance company or other financial company. Small Client Focus is a binary variable that equals one if the reported percent of individual (non-high net worth) clients exceeds 50%. Separate CCO is a binary variable that equals one if the person reported on the Schedule A filing has no job title other than CCO. History of Violations is a binary variable that equals one if the firm reports "yes" to any question on Item 11 (Disclosure Information).

	Total	Same	Remove	Add
Interest in Client Transactions	31.6%	96.2%	1.4%	2.5%
Soft Dollars	58.9%	96.0%	1.6%	2.4%
Custody of Assets	26.1%	94.4%	1.4%	4.2%
Performance-Based compensation	25.5%	97.7%	1.0%	1.9%
Broker/Dealer	40.5%	96.9%	2.0%	1.7%
Other Affiliation	56.1%	95.9%	1.9%	2.7%
Small Client Focus	23.9%	97.1%	1.5%	2.0%
Separate CCO	16.0%	91.9%	0.8%	7.9%
History of Violations	0.8%	99.7%	0.2%	0.2%

Table 3.3
DRP Summary

Panel A reports the relative frequency of certain RIA practices depending on whether the firm has a fraud incidence during the year. The frequency of each practice among all firm-years is tabulated in the first column. The frequency of each practice among all firm-years that do not report a DRP is tabulated in the second column. The frequency of each practice among all firm-years that report at least one initial DRP is tabulated in the third column. The difference between the second and third columns is reported in the fourth column. Fisher's exact test is used to determined statistical significance of the difference. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Panel B reports the frequency of DRP filings by year.

Panel A: Internal policies versus DRP filings				
	Total	No DRP	$\geq$ 1 DRP	Difference
Interest in Client Transactions	31.0%	30.9%	74.6%	43.7%***
Soft Dollars	58.2%	58.1%	74.1%	16.0%***
Custody of Assets	25.7%	25.6%	64.6%	39.0%***
Performance-Based compensation	26.6%	26.5%	29.6%	3.1%
Broker/Dealer	39.2%	39.0%	85.7%	46.7%***
Other Affiliation	54.4%	54.3%	92.1%	37.8%***
Small Client Focus	22.8%	22.7%	42.9%	20.1%***
Separate CCO	14.7%	14.6%	31.2%	16.6%***
History of Violations	0.8%	0.7%	27.5%	26.8%***

Panel B: Initial DRPs by year							
	2001	2002	2003	2004	2005	2006	Total
Initial DRPs	84	62	98	165	202	198	809

Table 3.4
Probit

This table shows the results of pooled probit regressions where the dependent variable is a binary variable that equals one if an initial DRP is filed in a firm-year. # of Employees is set of dummies for each range of employees given in Form ADV Item 5: 1-5, 6-10, 11-50, 51-250, 251-500, 501-1,000 and More than 1,000. For brevity, we include but do not report these dummies are included (omitting 1-5). We include a set of year dummies. Standard errors are clustered by firm in (1)-(5). Random firm effects are included in (6). Constants are included in the model but not reported for brevity. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Interest in Transactions	0.159**			0.216***	0.206**	0.220**
	(2.10)			(2.64)	(2.52)	(2.19)
Soft Dollar	0.171**			0.189**	0.185**	0.219**
	(2.06)			(2.15)	(2.17)	(2.37)
Custody	0.147*			0.139*	0.099	0.143
	(1.90)			(1.68)	(1.19)	(1.63)
Broker/Dealer	0.280***			0.210**	0.203**	0.263**
	(3.36)			(2.20)	(2.10)	(2.34)
Other Affiliates	0.228**			0.146	0.151	0.170
	(2.24)			(1.35)	(1.41)	(1.28)
Small Client Focus		0.073		0.070	0.077	0.093
		(0.92)		(0.81)	(0.91)	(0.89)
Log(Avg. Account Size)		-0.025		-0.044**	-0.035**	-0.034*
		(1.49)		(2.53)	(2.09)	(1.73)
Employee Ownership %			-0.426***	-0.310***	-0.291***	-0.316***
			(4.66)	(2.76)	(2.67)	(2.71)
Separate CCO			0.056	0.030	0.023	0.015
			(0.71)	(0.39)	(0.32)	(0.16)
Performance-Based			-0.041	-0.031	-0.043	-0.041
			(0.47)	(0.31)	(0.46)	(0.43)
History					0.901***	0.698***
					(6.41)	(4.71)
Log(AUM)	-0.027*	0.012	-0.020	0.000	-0.006	-0.012
	(1.69)	(0.60)	(1.19)	(0.02)	(0.29)	(0.51)
Log(Firm Age)	0.038	0.025	0.039	0.027	0.024	0.027
	(1.26)	(0.84)	(1.23)	(0.80)	(0.75)	(0.75)
Observations	46,349	46,341	44,376	44,370	44,370	44,370
Pseudo R^2	0.248	0.229	0.252	0.275	0.300	.

Table 3.5
Probit by Firm Size

This table shows the results of pooled probit regressions where the dependent variable is a binary variable that equals one if an initial DRP is filed in a firm-year. The first column, Small Firms, includes only RIA firms with 50 or less employees. The second column, Large Firms, includes only RIA firms with greater than 50 employees. Constants are included in the model but not reported for brevity. Standard errors are clustered by firm. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Small Firms	Large Firms
Interest in Client Transactions	0.183**	0.274*
	(1.96)	(1.78)
Soft Dollar	0.075	0.357**
	(0.73)	(2.42)
Custody	0.116	0.265**
	(1.18)	(1.99)
Broker/Dealer	0.269***	0.146
	(2.65)	(0.61)
Other Affiliates	0.111	
	(1.03)	
Small Client Focus	0.030	0.090
	(0.24)	(0.65)
Log(Avg. Account Size)	-0.005	-0.105***
	(0.23)	(3.62)
Employee Ownership %	-0.300**	-0.477*
	(2.50)	(1.76)
Separate CCO	0.016	0.034
	(0.14)	(0.31)
Performance-Based	0.085	-0.321**
	(0.70)	(2.17)
Log(AUM)	-0.022	0.051
	(0.69)	(1.59)
Log(Firm Age)	0.007	0.214***
	(0.18)	(2.96)
Year Dummies	YES	YES
Observations	40,320	3,790
Pseudo R^2	0.072	0.154

Table 3.6
Negative binomial

This table shows the results of negative binomial regressions where the dependent variable is the number of initial DRP filed in a firm-year. Standard errors are clustered by firm. Constants are included in the model but not reported for brevity. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Interest in Client Transactions	0.375			0.680**	0.677**
	(1.41)			(2.41)	(2.40)
Soft Dollar	0.135			0.422	0.489*
	(0.46)			(1.42)	(1.71)
Custody	0.181			0.240	0.099
	(0.67)			(0.82)	(0.35)
Broker/Dealer	0.646*			0.481	0.450
	(1.82)			(1.19)	(1.06)
Other Affiliates	1.205***			0.686*	0.711*
	(2.84)			(1.71)	(1.83)
Small Client Focus		0.221		0.314	0.244
		(0.81)		(1.20)	(0.99)
Log(Avg. Account Size)		-0.020		-0.099*	-0.090*
		(0.37)		(1.67)	(1.68)
Employee Ownership %			-1.575***	-1.202***	-1.170***
			(5.04)	(3.05)	(3.09)
Separate CCO			0.111	-0.026	-0.032
			(0.51)	(0.13)	(0.17)
Performance-Based			-0.063	0.006	0.065
			(0.23)	(0.018)	(0.20)
History					2.542***
					(7.35)
Log(AUM)	0.001	0.053	-0.030	0.037	0.013
	(0.020)	(0.85)	(0.56)	(0.60)	(0.23)
Log(Firm Age)	0.097	0.062	0.138	0.106	0.103
	(0.93)	(0.59)	(1.33)	(0.98)	(0.98)
# of Employee Dummies	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES
Observations	46,349	46,341	44,376	44,370	44,370

Table 3.7
Owner Probit

This table shows the results of pooled probit regressions where the dependent variable is a binary variable that equals one when an initial DRP is filed for a firm owner in a firm-year. # of Employees is set of dummies for each range of employees given in Item 5: 1-5, 6-10, 11-50, 51-250, 251-500, 501-1,000 and More than 1,000. For brevity, we include but do not report these dummies. We include a set of year dummies. Standard errors are clustered by firm. Constants are included in the model but not reported for brevity. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Interest in Client Transactions	0.015			-0.187	-0.211
	(0.097)			(1.05)	(1.13)
Soft Dollar	0.108			0.091	0.100
	(0.64)			(0.56)	(0.64)
Custody	-0.036			-0.037	-0.054
	(0.21)			(0.25)	(0.35)
Broker/Dealer	0.123			0.069	0.066
	(0.75)			(0.37)	(0.34)
Other Affiliates	-0.085			-0.153	-0.154
	(0.52)			(0.82)	(0.80)
Small Client Focus		0.068		0.087	0.096
		(0.41)		(0.50)	(0.56)
Log(Avg. Account Size)		0.024		-0.008	-0.005
		(1.16)		(0.36)	(0.24)
Employee Ownership %			-0.282	-0.371*	-0.341*
			(1.42)	(1.74)	(1.74)
Separate CCO			-0.019	0.007	0.006
			(0.10)	(0.044)	(0.032)
Performance-Based			0.222	0.311*	0.325*
			(1.55)	(1.75)	(1.86)
History					0.826**
					(2.38)
Log(AUM)	-0.072***	-0.088***	-0.076***	-0.077***	-0.083***
	(3.05)	(3.57)	(3.67)	(4.17)	(4.66)
Log(Firm Age)	0.010	0.020	0.016	0.015	0.010
	(0.16)	(0.32)	(0.23)	(0.23)	(0.15)
Observations	46,349	46,341	44,376	44,370	44,370
Pseudo R^2	0.0177	0.0157	0.0390	0.0498	0.0635

Table 3.8

Flows

The dependent variable is $Flow_{i,t} = \frac{Assets_{i,t} - Assets_{i,t-1} * Returns_{i,t-1}}{Assets_{i,t-1}}$. The sample is RIA firms with available 13F data. # of Employees is a set of dummies for each range of employees given in Item 5: 1-5, 6-10, 11-50, 51-250, 251-500, 501-1,000 and More than 1,000. Style is a set of dummies for large cap growth, large cap value, small cap value, and small cap growth. For brevity, we simply report YES if these sets of dummies are included. Standard errors are clustered by firm and year. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Total DRP	-0.0001		0.001		0.001	0.0003
	(0.042)		(0.64)		(0.65)	(0.23)
Owner DRP		-0.295***		-0.437***	-0.438***	-0.407***
		(3.95)		(5.56)	(5.61)	(5.32)
Prior Return			0.252	0.253	0.252	0.253
			(1.20)	(1.20)	(1.20)	(1.20)
Log(Portfolio Value)			-0.010*	-0.010*	-0.010*	-0.018**
			(1.66)	(1.66)	(1.67)	(2.53)
Constant	0.050	0.050	0.281***	0.281***	0.282***	0.392***
	(0.67)	(0.67)	(2.64)	(2.63)	(2.65)	(3.26)
# of Employee Dummies	NO	NO	NO	NO	NO	YES
Style Dummies	NO	NO	YES	YES	YES	YES
Observations	7,199	7,199	7,199	7,199	7,199	7,190
R^2	0.0000	0.0001	0.048	0.048	0.048	0.053

Table 3.9
Key Person Turnover

This table shows the likelihood of key persons leaving the firm after a DRP is filed. Panel A shows unconditional averages. Panel B shows the results of probit regressions where the dependent variable is one if the key person leaves the firm and zero otherwise. Owner is a binary variable that equals one if the key person has an ownership stake in the firm. log(Tenure) is the logarithm of the number of days since the person assumed their current title with the firm. In column three, we estimate the model with a job (employee-firm pair) fixed effect. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

Panel A: Probability of leaving the firm			
	Non-owner	Owner	Difference
No DRP	11.91%	2.77%	9.14%***
DRP	17.86%	3.39%	14.47%***
Difference	5.95%	0.62%	

Panel B: Regression Analysis			
	(1)	(2)	(3)
Owner	-0.900**	-1.034**	-1.066**
	(2.06)	(2.38)	(2.21)
log(Tenure)	-0.020	0.003	0.007
	(0.13)	(0.020)	(0.036)
Constant	-0.907***	-0.963***	-0.971***
	(2.97)	(3.18)	(2.93)
Year	NO	YES	YES
Key Person Fixed Effect	NO	NO	YES
Observations	87	87	87
Pseudo R^2	0.1020	0.1231	.

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