The Dissertation Committee for Johan Arifin Sulaeman
certifies that this is the approved version of the following dissertation:

Essays on the Impact of Institutional Investors on Market Efficiency and Corporate Policies

Committee:

Aydoğan Altı, Co-Supervisor

Sheridan Titman, Co-Supervisor

Jennifer Huang

Thomas S. Shively

Laura T. Starks

Essays on the Impact of Institutional Investors on Market Efficiency and Corporate Policies

by

Johan Arifin Sulaeman, B.S.E.; M.F.E.

Dissertation

Presented to the Faculty of the Graduate School of

the University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

May 2008

Dedication

In the memory of my father

Thank you for giving me the opportunities that you never had.

For my mother

Thank you for your unconditional love and support.

For Deserina

Thank you for your unwavering support, understanding and countless sacrifices on a journey you did not knowingly sign up for.

Acknowledgements

I have been remarkably privileged and will forever be grateful to have the support and guidance of my committee members in exploring my ideas and writing this dissertation.

In particular, my deepest gratitude is to my co-chairs, Aydoğan Altı and Sheridan Titman. Without Sheridan's valuable guidance and continuous support, this dissertation may not have been possible. In addition to his insightful comments, I am deeply grateful to him for carefully reading countless revisions of the second chapter of this dissertation. I am continually amazed by his enthusiasm and dedication to his students, and I hope that I can pay him forward in the future.

Aydoğan allowed me to consume a great deal of his time, advice, and outstanding comments. I am especially grateful to him for holding me to a high standard and pushing me to become a better researcher. His boundless enthusiasm and patience make my experience at Texas a truly enjoyable one.

I would like to recognize Laura Starks for allowing me to borrow her extensive knowledge and experience in the subject matter of this dissertation. I am also grateful for her support throughout my stay in Texas.

In addition to being a mentor, Jennifer Huang has provided numerous insightful comments at different stages of my research.

I am also grateful to Tom Shively, John Griffin, Andres Almazan, Jay Hartzell, and the rest of the finance faculty at Texas. Their comments and advice have greatly benefited this dissertation and its author.

Lastly, I would like to recognize a great group of colleagues (and friends) who helped me improve my understanding and ideas. In particular, I would like to recognize Michael Yates, Chris Parsons, Ronnie Shah and Tao Shu.

Essays on the Impact of Institutional Investors on Market Efficiency and Corporate Policies

Publication No. _________

Johan Arifin Sulaeman, Ph.D.
The University of Texas at Austin, 2008

Co-Supervisors: Aydoğan Altı and Sheridan Titman

In this dissertation, I explore the determinants and implications of the preferences of institutional investors. First, I examine whether institutional investors' preference for local investments is related to informational advantage. Analyzing the equity holdings of a large sample of actively managed mutual funds, I find evidence consistent with the mutual fund industry having a perception that local funds have an informational advantage. However, the portfolio of mutual funds' local holdings does not display significant superior performance relative to the portfolio of their distant holdings. Using

a parsimonious model, I hypothesize that the profitability of local informational advantage will be low due to the price impact of trading when there is a relatively large population of local agents who trade on similar private information. Consistent with this hypothesis, I find that funds do earn superior returns on local stocks for which local capital is limited and hence the price impact of local trades is likely to be small.

Second, I examine the preferences of institutional investors for firm policies and the relationship between these preferences and firm decisions. I find that institutional investors exhibit systematic differences in their preferences for financial and investment policies. Furthermore, these preferences are related to subsequent changes in the financial and investment policies of the firms they invest. In particular, a firm is more likely to decrease (increase) its leverage ratio if its current leverage is higher (lower) than the preferences of its institutional shareholders. A firm is also more likely to increase (decrease) its investment if its current investment ratio is lower (higher) than the preferences of its institutional shareholders. These findings suggest that the preferences of institutional shareholders are important determinants of corporate policies.

Contents

List of Tables

List of Figures

1. Introduction

As the market share of institutional investors has increased from below 10 percent in 1950 to more than 60 percent in the recent years, they have become the dominant players in the U.S. stock market. Given the continuous growth of this group of investors both in the U.S. and in the rest of the world, understanding their role in the determination of asset prices as well as their influence on corporate behavior and performance has potentially important implications for investors and policymakers.

The ever-growing institutional ownership may have a significant impact on the determination of asset prices as the investment decisions of these investors are likely to have significant effects on asset prices due to the informational advantage they possess relative to other investors. The shift in corporate ownership structure due to the increase in institutional ownership can also have a significant impact on corporate decision-making and governance as their larger holding sizes and relative independence provide institutional investors with stronger incentives to deal with managerial moral hazard.

This dissertation includes two essays that contribute to these broad research questions. In particular, I examine the effects of the preferences of institutional investors on (1) the investment decisions and performance of these investors and (2) the role of these investors in corporate decisions.

First, I explore the role of institutional investors' preference for local stocks in their investment decisions and the performance of their portfolios. I find that mutual fund managers exhibit systematic preference for local stocks; more precisely, fund managers tend to invest more in local stocks than what is warranted by the market portfolio weights of these stocks. The most natural explanation for this local bias is that fund managers possess a local informational advantage due to easier and/or less costly access to private information about local firms. However, I find that fund managers do not perform better in local stocks relative to distant stocks.

Second, I explore the role of institutional investors on corporate decisions. I find that institutional investors reveal systematically diverse preferences for corporate investment and financing policies. For example, some institutional investors tend to hold stocks of firms that appear to be underlevered and others tend to hold stocks that are overlevered. Moreover, I find that the preferences of the institutional investors that hold a firm's stock influence the firm's financial and investment policies.

1.1. Do Local Investors Know More?

The literature documents evidence of local bias in which investors hold disproportionately more local stocks both in international settings and within national boundaries.[-1] The most natural explanation for this local bias is that

[-1]French and Poterba (1991), Cooper and Kaplanis (1994), and Tesar and Werner (1995) provide international evidence of investors' domestic bias, while Coval and Moskowitz (1999),

local investors possess an informational advantage due to easier and/or less costly access to private information about local firms. However, there is no apparent consensus in the literature on whether local investors have any informational advantage.[0] In the most closely related study to this study, Coval and Moskowitz (2001) find that fund managers earn substantial superior returns in nearby investments; however, they do not report the corresponding statistic for distant holdings. Using similar methodology and definitions for local and distant stocks, I find that this superior mutual fund performance is not limited to local stock selection: distant mutual fund holdings outperform other distant stocks by a margin similar to local abnormal performance.[1]

Both this study and Coval and Moskowitz (2001) use mutual fund holdings data to calculate fund returns and performance. Since funds only report holdings at quarterly intervals, holdings-based returns do not pick up any abnormal performance from intra-quarter trading decisions. This is particularly important if mutual funds trade aggressively on their private information resulting

Ivković and Weisbenner (2005), and Zhu (2002) provide evidence of U.S. investors' local bias in domestic stocks.

[0]Hau (2001), Dvořák (2005), and Choe, Kho, and Stulz (2005) find that distant investors are at a disadvantage, while Seasholes (2004), Grinblatt and Keloharju (2000), Froot and Ramadorai (2005), and Coval and Moskowitz (2001) find that distant investors do better than local investors and Kang and Stulz (1997) find no difference in the performance of local and distant investors.

[1]The literature also documents conflicting evidence on the performance of local and distant individual U.S. investors. Using a similar methodology to that used by Coval and Moskowitz (2001), Ivković and Weisbenner (2005) find local investments of individual investors outperform distant investments significantly in non-S&P 500 stocks but only marginally in S&P 500 stocks. Using the same data set but a different methodology, Zhu (2002) finds that investors with greater local bias do not outperform investors with smaller local bias.

in most (or all) of their private information being incorporated in prices by the time the holdings are reported. Instead of focusing on the comparison between mutual funds' local and distant performance, this study develops a parsimonious model of investor trading behavior similar to that in Brennan and Cao (1997) to produce cross-sectional return prediction for local and distant holdings as well as additional testable predictions.

In particular, I test the following cross-sectional return prediction of the model: the average returns of local agents should be negatively correlated with the relative size of these agents in the population. If there is a larger group of local agents in the population, these agents will compete more fiercely to take advantage of their private information. Consequently, the impact of their trading on market prices will be more severe and the average returns from their private information will be lower. In the context of this study, this prediction translates to a hypothesis that the superior performance of local holdings should be more prominent in stocks with relatively low local fund population. Consistent with local mutual funds having superior information and relatively low price impact in these stocks, I find that local mutual fund positions in these stocks outperform distant fund positions by 2.57% annually. Adjusting for other stocks with low mutual fund population that were not held by mutual funds, local mutual fund positions outperform distant positions by 3.01%.

The model produces other testable implications that have not been thoroughly explored in the literature:

- Local investors are more likely to trade earlier and more aggressively.
- Local investors are less likely to chase return trends.
- Distant investors are more likely to initiate positions in stocks that experienced an increase in local holdings.

The basic ingredients of the models are: (1) local investors have informational advantage relative to distant investors, and (2) local investors are risk averse or have diversification objectives. In particular, local investors are assumed to receive a private signal that is not available to distant investors. When local investors receive a positive private signal on a particular stock, they will revise their expectation of the asset's payoff upwards. The higher expectation will cause them to buy more of the asset than distant agents who do not receive any private signal. Since these local agents have diversification objectives, a subsequent public revelation of their private signal will cause them to try to lock in some gains by unwinding some of their existing positions. In equilibrium, distant agents without private signal will be on the other end of this trade. Since the revelation of a positive private signal is likely to be associated with a price increase, the trades of local investors with private signal resemble contrarian trades, while the distant agents resemble trend chasers. Moreover, distant agents' trades will also seem to mimic local agents because distant agents are buying from local agents who bought the asset in the earlier trading period.

These implications are tested on the trading decisions of actively managed U.S. mutual funds in U.S. stocks. By using domestic U.S. data, the analysis abstracts from any barriers to international investments and the possibility of varying information gathering capabilities. As each fund enters the analysis as a local investor in some stocks and a distant investor in others, the findings in this study are more likely to be caused by the differences in investors' information about local vs. distant investments instead of the differences in investors' ability and availability of resources.

Consistent with the first testable implication from the model, I find that local position initiations are associated with larger stock positions than distant initiations. Moreover, local funds also tend to buy earlier: position initiations in local stocks are associated with lower pre-initiation institutional ownerships than position initiations in distant stocks. Consistent with the second prediction, I find that mutual fund managers are less likely to chase return trends in local stocks. While previous quarter's return has a significantly positive effect on the initiation probability of distant stocks[2], this effect is significantly weakened or even reversed for local stocks. Examining whether distant fund managers perceive that local fund managers have better information, I find

[2]This finding is consistent with the findings in Brennan and Cao (1997), Froot, O'Connell, and Seasholes (2001), Griffin, Nardari, and Stulz (2004), and Kaminsky, Lyons, and Schmukler (2004) that foreign fund flows are positively correlated with lagged returns.

that distant funds are more likely to initiate new positions in stocks that experienced an increase in local holdings in the previous period. Although changes in local holdings are positively correlated with stock returns, the results from multivariate regressions show that this mimicking behavior is separate from the trend-chasing behavior. Not only are distant funds chasing return trends, they are also chasing local funds. This finding suggests that distant funds perceive local funds to be more likely to receive private information. Overall, the findings point to a perception in the mutual fund industry that local funds have an informational advantage.

Taken as a whole, the model and the empirical findings in this study suggest that while local managers perceive themselves and are perceived by other managers to have some informational advantage, detecting this advantage in the data is not trivial because fund managers' aggressiveness in exploiting any advantage that may exist exacerbates the problem of limited data availability.

1.2. Do Shareholder Preferences Affect Corporate Policies?

It is well understood that different institutional investors have different investment styles and tend to hold stocks with different characteristics - e.g., value versus growth. In this study, I document that the investment choices of institutional investors also reveal heterogeneous preferences for financial and operating characteristics. In particular, some institutional investors tend to invest in firms that are underleveraged relative to other firms in their industries with similar characteristics, while others tend to invest in firms that are overleveraged. I also find that the preferences of the institutional investors that hold a firm's stock predict the firm's future financial and investment policies.

Institutional investors can have heterogeneous preferences regarding the investment and financial policies of the firms they include in their portfolios for a variety of reasons. Investors can have different opinions on the economic outlook, which can affect their preferences through several different channels. For example, investors may have different opinions about a firm's investment strategy, preferring a more aggressive investment strategy when they have confidence in management and believe the economy is growing but a less aggressive investment strategy when they have less confidence in both management and the economic growth prospects. Similarly, investors with a negative opinion on growth prospects may prefer a higher amount of debt to reduce the availability of free cash flow and the flexibility managers have in investing in negative NPV projects (Jensen (1986)). Of course, the beneficial effect of debt in reducing managerial flexibility to take value-destroying projects comes at a cost as managers saddled with too much debt may underinvest and pass up positive NPV projects due to debt overhang (Myers (1977), Stulz (1990), and Hart and Moore (1995)).

My analysis indicates that institutional investors display systematic differences in their preferences. I measure each institutional investor's preference as the average characteristic of the stocks in its portfolio. The null hypothesis that the preferences for leverage (i.e., the average portfolio debt ratios) of all institutional investors are the same is strongly rejected both for the raw debt ratios and when the debt ratios are measured relative to the expected debt ratios based on industry and firm characteristics. When institutions are sorted into quintiles based on the average leverage of their holdings, institutions in the top quintile hold stocks that have, on average, 13 percentage points higher leverage than the stocks held by institutions in the bottom quintile after controlling for various industry and firm characteristics. I confirm using a simulation approach that this difference is significantly higher than what one would observe if institutional investors picked stocks randomly. Moreover, the heterogeneity persists when institutional investors initiate new positions: the new stocks initially purchased by institutions currently holding underleveraged stocks are more underleveraged relative to the new stocks purchased by institutions holding overleveraged stocks.

After documenting the heterogeneity in the leverage preferences of institutional investors, I analyze the extent to which these preferences influence future corporate decisions. I first infer a particular firm's institutional preference by aggregating the preferences of all of its institutional shareholders. I then examine whether this aggregated preference is related to future policy decisions of the firm. In particular, I ask whether a firm held by investors that prefer lower (higher) leverage subsequently makes financial decisions that decrease (increase) its debt ratio after controlling for various determinants of debt ratio. I find that this is indeed the case: about 17 percent of the gap between the aggregated preference of institutional shareholders and the firm's current debt ratio is closed within the first year after controlling for various firm and industry characteristics. Quantitatively, the estimated effect of institutional preferences on capital structure choices is as strong as the reversion to the target leverage proxy previously used in the literature.

I also examine whether this relationship is more pronounced in firms with certain characteristics. In particular, I focus on firm characteristics that are related to the likelihood that firm managers accommodate the preferences of their shareholders. If the relationship between institutional preferences and future firm decisions is driven by institutional influence, this relationship should be less pronounced when firm managers are less likely to accommodate the preferences of institutional shareholders. Consistent with this hypothesis, the effect of institutional preferences is less pronounced when the firm is a constituent of S&P 500 (and therefore has a relatively larger potential shareholder base), larger, older, or managed by these CEOs with weaker career concerns due to their age or their dual position as the chairman of the board.

Lastly, I examine the potential motivation for firms to incorporate the preferences of institutional shareholders in their policy choices. In particular, I focus on whether ignoring the preferences of institutional shareholders has any negative effects on stock prices. I find that firms that change their leverage ratios in the opposite direction of their shareholders' preferences experience a higher institutional exit rate and lower stock returns than firms that change their leverage ratios in the direction of their shareholders' preferences. Firms ignoring the preferences of their shareholders underperform those following the preferences of their shareholders by 6.12% in the year after the capital structure decisions were made (after controlling for size, B/M, and momentum factors). This gap in stock performance is not reversed in the subsequent years, which suggests that the inferior stock performance is reflecting a permanent change in firm valuation and not due to short-term price pressures.

This study is related to the long line of literature covering investors' preferences and clienteles. Researchers in this area have documented the preferences of institutional investors for stocks with certain characteristics, such as stocks with high volatility, high-price stocks, liquid stocks, and stocks of large firms (Falkenstein (1996), Bennett, Sias, and Starks (1998), Gompers and Metrick (2001), Badrinath, Kale, and Ryan (1996) and Del Guercio (1996)). The current study extends this literature in two ways. First, while the literature have examined the the preference of institutional investors as a monolithic group (either for the whole universe of institutional investors or for each type of institutional investors), the analysis in this study focuses on the distinct preference of each institutional investor. Second, the current study is the first to examine the heterogeneous preferences of institutional investors for financial and investment characteristics.[3]

[3]The current study is also indirectly related to the literature on dividend clienteles (Grinstein and Michaely (2005)). Although the current study does not analyze firm payout decisions, the methodology used in this study can be extended to examine institutional investors'

This study also extends the vast literature on the role of institutional investors as potential monitors of firm managers.[4] The methodology used in this study allows for an examination of the influence of institutional investors using a considerably broader sample than previous studies that focus on shareholder proposals or targeting by specific institutions/institution groups.[5,6] Furthermore, the aggregated preference of institutional investors provides a benchmark to measure the extent of these investors' influence in firm decisions through both direct actions (such as shareholder proposals or proxy voting), indirect actions (the possibility of selling (Parrino, Sias, and Starks (2003))), and, more importantly, unobservable communications between these investors and firm management. In addition to the leverage and investment decisions explored in this study, this benchmark can be applied to other types of firm decisions to gain useful insights on the general role of institutional investors

heterogenous preferences for dividend and their potentially conflicting effects on firm payout policy. These heterogeneous preferences can be driven by both agency-related reasons (e.g., investors may disagree on the optimal payout policy that minimizes the potential costs of agency issue) and tax-related reasons (e.g., tax-exempt institutions may be attracted by firms that pay dividends as hypothesized by Allen, Bernardo, and Welch (2000)).

[4]This monitoring role can be both direct and indirect. Indirectly, institutional investors can facilitate monitoring through the market for corporate control by facilitating takeovers (Brickley, Lease, and Smith (1988), Jarrell and Poulsen (1987), and Agrawal and Mandelker (1992)). Institutional investors holding large stakes can also act as direct monitors by influencing the actions of firm managers (Shleifer and Vishny (1986) and Admati, Pfleiderer, and Zechner (1994)).

[5]A partial list of studies focusing on shareholder proposals includes Karpoff, Malatesta, and Walkling (1996), Daily, Johnson, Ellstrand, and Dalton (1996), Bizjak and Marquette (1998), Del Guercio and Hawkins (1999), Gillan and Starks (2000), Prevost and Rao (2000), and Matvos and Ostrovsky (2006).

[6]Gillan and Starks (2007) provide a recent survey of the strand of literature that focuses on specific institutional investor groups. The studies in this literature include Nesbitt (1994), Wahal, Wiles, and Zenner (1995), Smith (1996), Strickland, Wiles, and Zenner (1996), Wahal (1996), and Carleton, Nelson, and Weisbach (1998).

in corporate policy decisions.

This study is closely related to several recent studies. Focusing on firm acquisition decisions, Harford, Jenter, and Li (2007) document that cross-holdings by a firm's shareholders affect its choice of takeover targets. In the most closely related study to this study, Cronqvist and Fahlenbrach (2007) document the heterogeneity of blockholders in terms of the financial, investment, and executive compensation policies of the stocks they hold. Although the current study also documents the heterogeneity of investors' holdings in financial and investment policies, it differs from Cronqvist and Fahlenbrach (2007) in several important ways. First, this study focuses on the relationship between investors' preferences and future changes in firm policies. Second, the wide availability of institutional holdings data (all publicly traded U.S. stocks since 1980) allows this study to examine a considerably broader sample of firms for a longer period of time than Cronqvist and Fahlenbrach (2007)'s blockholder sample for the 1996-2001 period. Third, the approach used in this study allows for an examination of (1) the dynamics of the relationship between institutional investors and firm managers, and (2) whether the influence of institutional investors has a positive effect on firm valuation.

In summary, I find that institutional investors play a significant role in firms' financial and investment policies. For example, a firm is more likely to increase leverage through share repurchases if its current leverage is lower than the aggregate preference of its institutional shareholders. Moreover, firms that change leverage ratios in the opposite direction of the aggregate preferences of their shareholders experience lower stock returns than those that follow the aggregate leverage preferences of their institutional investors. In addition to the reported empirical results, this study also offers a novel empirical approach to infer the heterogenous preferences of institutional investors. Applying this approach to other types of firm decisions (financial or otherwise) can provide more insights on the role of institutional investors in corporate policy decisions.

2. Do Local Investors Know More? Evidence from Mutual Fund Location and Investments

This chapter develops a model and provides empirical findings on the role of institutional investors' preference for local stocks in their investment decisions and the performance of their portfolios. The chapter is structured as follows. In the first subsection, I present the model. Subsection 2 describes the data used in this study. Subsection 3 exhibits and discusses evidence on the variation in mutual funds' holdings and trading behaviors as a function of geographical proximity to investments. This subsection also investigates the relationship between local funds' holdings and distant funds' investment decisions. Subsection 4 provides evidence on the relationship between geographical proximity and mutual funds' performance as well as the cross-sectional variations of geographically-related performance differential. Subsection 5 concludes.

2.1. Model

2.1.1. Setup

The model is a two-period general equilibrium model that follows the noisy rational expectations model of Hellwig (1980). The basic premise of the model is similar to that of Brennan and Cao (1997): local investors have an informational advantage relative to distant investors. The economy is assumed to have a single asset whose payoff, $\tilde{x}$, is realized at time t=2 and is normally distributed with mean $\bar{x}$ and precision ϕ^x. There are three types of traders in the market: liquidity/noise (N), informed local (L) and uninformed distant (D) traders. Noise traders are characterized by their aggregate demand, $\tilde{d}_t^N$, which is normally and independently distributed with mean 0 and precision ϕ_t^N. Informed local traders and uninformed distant traders are characterized by exponential utility functions defined over time t=2 consumption with common risk tolerance τ. The mass of distant traders in the economy is normalized as 1 and the mass of local traders is α. All traders can trade in two trading sessions which are held at times t=0 and t=1. The prices, $\tilde{P}_t$, are set as a function of traders' demands.

Unlike distant traders, local traders receive a private signal about the asset's payoff $\tilde{x}$ prior to the first trading session at t=0:

$$\tilde{s}_0^L = \tilde{x} + \tilde{\epsilon}_0^L, \tag{1}$$

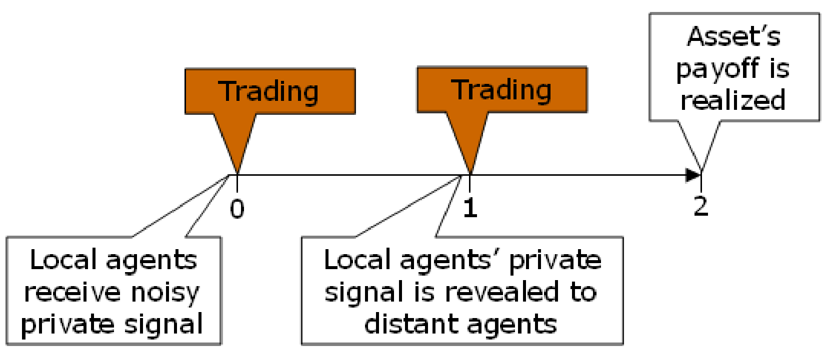
where $\tilde{\epsilon}_0^L$ is normally and independently distributed with mean 0 and precision ϕ_0^L. Since all agents are not endowed with any asset, each agent's holding after t=0 trading ($\tilde{h}_0^i$) equals to her demand ($\tilde{d}_0^i$), which is a function of her information set:

$$\begin{aligned} F_0^L &= \{\bar{x}, \tilde{s}_0^L, \tilde{P}_0\} \\ F_0^D &= \{\bar{x}, \tilde{P}_0\} \end{aligned}$$

Immediately prior to the second trading session at t=1, the private signal is revealed to the distant traders. After the second trading session, each agent's holding ($\tilde{h}_1^i$) equals to her holding after the first trading session plus her demand in the trading session at t=1 ($\tilde{d}_1^i$) which is a function of her information set:

$$F_1^L = F_1^D = \{\bar{x}, \tilde{s}_0^L, \tilde{P}_0, \tilde{P}_1\}$$

I will first solve for the market equilibria at t=0 and at t=1, respectively, and then calculate the expected trading profit of local and distant agents. The timeline of these events are presented below.



2.1.2. Market Equilibrium (t=0)

Right before the trading session at t=1, agent i holds $\tilde{h}_0^i$ of the asset as a result of the trading at t=0. In order to maximize her expected utility at t=2, she adjusts her holding to take into account the new information (in the case of distant agents) and trading price. Her demand in the trading session at t=1 is given by:

$$\begin{aligned} \tilde{d}_1^i &= \tilde{h}_1^i - \tilde{h}_0^i & (2) \\ &= \tau \frac{E[\tilde{x}|F_1^i] - \tilde{P}_1}{Var(\tilde{x}|F_1^i)} - \tilde{d}_0^i, i \in \{L, D\}, & (3) \end{aligned}$$

where each agent's information set is as follow:

$$F_1^L = F_1^D = \{\bar{x}, \tilde{s}_0^L, \tilde{P}_0, \tilde{P}_1\}$$

Taking her potential demand at t=1 into account, each agent's demand at t=0 is as follow:[7]

$$\begin{aligned} \tilde{d}_0^L &= \tilde{h}_0^L = \tau \frac{E[\tilde{x}|F_0^L] - \tilde{P}_0}{Var(\tilde{x}|F_0^L)} = \tau\{\phi^x(\bar{x} - \tilde{P}_0) + \phi_0^L(\tilde{s}_0^L - \tilde{P}_0)\} & (4) \\ \tilde{d}_0^D &= \tilde{h}_0^D = \tau \frac{E[\tilde{x}|F_0^D] - \tilde{P}_0}{Var(\tilde{x}|F_0^D)} = \tau\{\phi^x(\bar{x} - \tilde{P}_0)\} & (5) \end{aligned}$$

The trading price at t=0, $\tilde{P}_0$, can be calculated using the market clearing condition,

$$\alpha \tilde{d}_0^L + \tilde{d}_0^D + \tilde{d}_0^N = 0, \quad (6)$$

[7]This demand function may seem surprising given that agents should maximize their expected utility at t=1 instead of t=2. The proof is provided in Section 2.6.

and is given by

$$\tilde{P}_0 = \frac{\phi^x \bar{x} + \frac{\alpha}{\alpha+1}\phi_0^L \tilde{s}_0^L + \frac{\tilde{d}_0^N}{\tau(\alpha+1)}}{\phi^x + \frac{\alpha}{\alpha+1}\phi_0^L}. \tag{7}$$

Similar to price functions in other noisy rational expectation equilibrium models, the equilibrium price is a weighted average of the unconditional expectation of the payoff (ϕ^x), private signal, and the demand of liquidity traders. Moreover, the sensitivity of price to the private signal of local agents is positively correlated to α, the relative population size of these agents. In other words, as the relative size of local agents in the population increases, these agents compete more fiercely to take advantage of their private signal. This overzealous trading pushes the price closer to the signal. Consequently, the private information of local agents is more quickly incorporated into prices, which reduces their trading profit. I will discuss the sensitivity of trading profit to the population size of local agents in more details in Section 2.4.

Plugging the price function back to the local and distant agents' demand functions and examining the difference between those demand functions give rise to the following proposition.

Proposition 1. *The equilibrium demand of local agents is higher than the equilibrium demand of distant agents if the following condition is satisfied:* $\tilde{s}_0^L > \bar{x} + \frac{\tilde{d}_0^N}{\tau(1+\alpha)\phi^x}$.

Since the demand from noise traders ($\tilde{d}_0^N$) is zero on average, local agents have higher expected demand than distant agents when their private signal is relatively higher than the unconditional prior. The proof is provided in Section 2.6. The intuition behind this proposition is that local agents with a positive private signal have a higher valuation of the asset's payoff than distant agents with no private signal. Consequently, local agents are more likely to buy the asset at t=0 after receiving a relatively positive private signal.

2.1.3. Market Equilibrium (t=1)

The trading price at t=1, $\tilde{P}_1$, can be calculated using the market clearing condition,

$$\alpha \tilde{d}_1^L + \tilde{d}_1^D + \tilde{d}_1^N = 0. \tag{8}$$

and is given by the following equilibrium price function:

$$\tilde{P}_1 = \frac{\phi^x \bar{x} + \phi_0^L \tilde{s}_0^L + \frac{\tilde{d}_0^N + \tilde{d}_1^N}{\tau(\alpha+1)}}{\phi^x + \phi_0^L}. \tag{9}$$

Plugging $\tilde{P}_1$ back to the demand function and simplifying some terms lead to the following proposition.

Proposition 2. *The equilibrium demands of local and distant agents in the* *trading session at t=1 are given by*

$$
\begin{aligned}
\tilde{d}_1^L &= -\kappa(\tilde{P}_1 - \tilde{P}_0) \\
\tilde{d}_1^D &= \alpha\kappa(\tilde{P}_1 - \tilde{P}_0) - \tilde{d}_1^N
\end{aligned}
$$

respectively, where $\kappa = \tau(\phi_0^L + \phi^X) > 0$. *Therefore, the demand of local agents is less likely to be positively correlated with the price change* $(\tilde{P}_1 - \tilde{P}_0)$.

The proof is provided in Section 2.6.

In order to describe the dynamics of the model more clearly, consider an example in which local agents receive a positive private signal. After observing the positive private signal, local agents revise their expectation of the asset payoff upwards such that it is higher than that of distant agents. Consequently, local agents have higher demands for the asset at any price than do distant agents. Since the noise traders have zero demand on average, the price is set such that local agents buy some of the asset from distant agents at t=0.

Since the private signal is revealed to distant agents at t=1, the price at t=1 will move in the same direction as the private signal. The signal revelation will have an *expectation* effect: distant traders are more likely to revise their expectations upwards and hence increase their holdings. The price increase will have a *risk-sharing* effect on the local agents who are holding more of the assets. Since their private information is revealed to distant agents and incorporated into the price at t=1, these risk-averse agents will try to share the risk and reduce the volatility of their portfolio by selling some of their existing positions. The combination of these two effects and the assumption of zero average demand of the liquidity traders result in local agents selling to distant agents after a price increase. Consequently, an empiricist will observe local agents behaving as contrarians (selling after a price increase) and distant agents as trend-chasers (buying after a price increase).

2.1.4. Trading Profits and Price Impact

When local agents receive a positive private signal, they demand a positive amount of the asset. As the relative size of local agents increases in the population of informed agents, they will compete more fiercely to take advantage of their shared private signal. Since all traders are price-takers, the more intense local competition results in a higher aggregate demand of local traders. Since the market-clearing price is an increasing function of the aggregate demand, the higher local traders' demand will result in a higher trading price on average. In other words, a higher relative size of local agents in the population will result in a higher purchase price and a lower realized trading profit for these agents.

Proposition 3. *Given a relatively positive private signal, the price impact of local agents is positively correlated with the relative size of these agents in the* *population:*

$$\tilde{s}_0^L > \bar{x} + \frac{\tilde{d}_0^N}{\tau(\alpha+1)} \Rightarrow \frac{\partial \tilde{P}_0}{\partial \alpha} > 0.$$

Since the average noise traders' demand ($\tilde{d}_0^N$) is zero, the condition is usually satisfied when the private signal ($\tilde{s}_0^L$) is significantly higher than the prior ($\bar{x}$).[8] The proof of this proposition is provided in the Section 2.6.

Proposition 4. *The average trading profit of local agents is negatively correlated with the relative size of these agents in the population.*

While a closed-form solution for each agent's expected trading profit is not attainable, numerical simulations are used to calculate the expected trading profit for various levels of parameter values. In particular, this study is interested in the abnormal returns of local agents relative to those of distant agents as a function of α, the relative size of local agents in the population. For simplicity of exposition I vary local agents' informational advantage (ϕ_0^L) and their relative size in the population (α) while fixing the other parameters.

Figure 2.1 (2.2) reports the average abnormal trading profits (returns) of local agents relative to those of distant agents as a function of local agents'

[8]This condition is identical to the one in Proposition 1. In other words, the price impact of local agents is increasing in the relative size of these agents when the demand of local agents is higher than the demand of distant agents.

informational advantage and their relative size in the population. The trading returns are calculated as the trading profits divided by the sum of the absolute value of each agent's position after each trading session. The horizontal axes represent the parameters of interest: the relative size of local agents in the population and the difference in information quality. The other parameters are fixed at the following values: $\bar{x} = 0$, $\phi^x = 10$, $\phi_0^N = \phi_1^N = 15$, $\phi_1 = 10$, and τ (risk tolerance) $= 10$. It is important to note that local agents are assumed to have superior information relative to distant agents throughout both figures.

Figure 1 shows that the average trading profits of local agents is decreasing with their relative size in the population. This relationship obtains for each level of informational advantage. Although the average trading profits of local agents are higher than those of distant agents throughout the whole graph, local agents have significantly higher average profits than distant agents only in situations in which local agents make up a relatively small part of the population (i.e., the lighter-shaded area in the left-hand portion of the graph). Similarly, Figure 2 shows that the average trading returns of local agents is decreasing with their relative size in the population. The average returns of local agents are only marginally higher than distant agents (i.e., the darker-shaded area in the right-hand portion of the graph) once local agents make up a relatively large part of the population.

2.1.5. Testable Implications

In the context of this study, mutual funds are conjectured to perceive their information quality about local stocks to be higher than about distant stocks. To test this conjecture, I focus on the trading behavior of growth and aggressive-growth mutual funds, and, in particular, their stock position initiations. Relative to other types of mutual funds, growth and aggressive-growth mutual funds are more likely to have active portfolio managers that rely on stock-picking ability. Moreover, their initiation decisions are more likely to be related to information than changes to ongoing positions which may be related to diversification, profit realization, and/or fund flows.[9]

The first two hypotheses are related to mutual funds' perception of their informational advantage in local vs. distant stocks. The first hypothesis is an adaptation of Proposition 1 for stock initiations.

H. 1. ***(Position Size)*** *Position initiations in local stocks are associated with:*

- *earlier initiations (proxied by lower pre-initiation institutional ownership), and*
- *larger stock positions*

[9]Badrinath and Wahal (2002) find that institutions act as momentum traders when they initiate (enter) stocks but as contrarian traders when they terminate (exit) stocks or make adjustments to ongoing holdings. They also find that the tendency to buy winners is relatively stronger for position initiations relative to changes to ongoing holdings. On the other hand, Johnson (2007) finds evidence suggesting that individual mutual fund shareholders behave as momentum traders in their initiations, terminations, and changes to ongoing holdings.

than position initiations in distant stocks.

Since private signals are not directly observable, I use pre-initiation institutional ownership to proxy for the likelihood that a particular initiation is driven by private signal. If the pre-initiation institutional ownership is relatively low, the initiation is more likely to be driven by private signal. On the other hand, an initiation with relatively high pre-initiation institutional ownership is more likely to be associated with publicly available signals.

Adapting proposition 2 gives rise to the following hypothesis.

H. 2. ***(Trend-Chasing)*** *Mutual funds are more likely to be trend-chasers in distant stock initiations than in local stock initiations.*

In addition to testing the trend-chasing hypothesis which is related to each mutual fund's perception of its own information quality, I also examine whether distant funds perceive local funds to have higher information quality. If this is the case, distant funds will behave as if they are chasing local funds' holdings.

H. 3. ***(Mimicking)*** *The probability of distant stock initiations is positively correlated with last period's local fund demand.*

While mutual funds may perceive their information quality about local stocks to be higher than about distant stocks, it is still an empirical question whether their local investments perform better than their distant investments.

Since the model does not give a directional prediction, I focus on the following cross-sectional return prediction of the model instead: the profitability of private signal received by local agents is negatively correlated with the relative population size of these local agents. As the population of local investors increases, more local investors will try to take advantage of the local informational advantage. This increased competition will increase the price impact of their trading since their aggregate demand will divulge more information and push the market price closer to their private signal. The higher purchase price will reduce the profitability of local information when the population size of local agents are relatively high.

H. 4. ***(Cross-Sectional Return Difference)*** *The difference in average returns of local and distant investments will be higher in stocks with relatively low local mutual fund population.*

2.2. Data

In this study, I combine five databases: the Thomson Financial mutual fund holdings database (formerly known as the CDA Spectrum holdings database), the monthly CRSP stock database, Compact Disclosure database, Nelson's 1988, 1994 and 2000 Directories of Investment Managers, and US Census Bureau's 1999 Zip Code database. To ensure that the funds in the sample are actively managed equity funds, the sample is limited to funds whose objectives are identified by Thomson Financial as growth (IOC=2) or aggressive growth (IOC=3).

Compact Disclosure and Nelson's Directory provide the information on firms' and mutual funds' headquarter zip codes. Using the Zip Code file, these zip codes are translated into latitude and longitude coordinates, which are then used to calculate the distance between firm and mutual fund headquarters. Each stock located within 100 km of a particular fund is categorized as local stocks for that fund; stocks located outside the 100 km radius are categorized as distant.[10] Although the economic location of a firm may be more accurately captured by the location of its operations, the firm's headquarter location represents the location where most of its managerial decisions are made. On the other hand, a mutual fund's headquarter location may not be where its fund managers are located. This is particularly problematic for large funds with sub-advisors located in various parts of the country. This problem can be alleviated using NSAR forms in which mutual funds report the name and location of each of its subadvisors. Since NSAR forms are only available in the later half of the sample, the reported results in this study are calculated using only fund headquarter location. However, the results for the later half of the sample are very similar if the location of fund sub-advisors obtained from NSAR forms are used instead.

As the fund location data is hand-collected from Nelson's 1988, 1994 and 2000 Directories, my sample period is limited to 1985–2004.[11] Snapshots of the

[10]The threshold distance of 100 km is chosen to match the one used in Coval and Moskowitz (1999) and Coval and Moskowitz (2001). The results reported in this study are robust to changing the threshold to 50 km or 200 km. The data sets used in this study are also used in those papers.

[11]The results are quantitatively similar if the data from 1988–2000 is used instead.

geographical distribution of mutual funds and firms in my sample is displayed in Figures 2.3 and 2.4, respectively. Contrary to the geographically dispersed distribution of firm headquarters, mutual funds seem to be highly concentrated in major metropolitan areas, particularly the I-95 corridor between Boston and Philadelphia, Chicago, San Francisco Bay area, and Los Angeles. The mutual fund industry seems to become more geographically diverse over time as many new funds locate outside the major metropolitan areas. However, this may reflect the growth of the mutual fund industry as a whole since the proportion of funds located in the major metropolitan areas actually increase slightly over time: the increase in the number of funds in the remote areas is offset by an even larger increase in the already crowded areas.

2.3. Location and Investment Decisions

2.3.1. Local Bias

I first examine the prevalence of local bias in my sample. Consistent with the findings in Coval and Moskowitz (1999), I find that funds tend to invest more heavily in local stocks than in distant stocks. More precisely, mutual funds hold a higher portfolio weight of local stocks than the portfolio weight suggested by the combined market capitalization of their local stocks. This result is obtained by employing a methodology similar to the one used in Coval and Moskowitz (2001). For fund f, the *local bias* variable, LB_f, is calculated as the difference between the cumulative portfolio weight of local holdings (based on dollar invested) and the cumulative market portfolio weight of local investments (based on market capitalization):

$$LB_t^f = \sum_{s \in L^f} w_{s,t}^f - \sum_{s \in L^f} w_{s,t}^M,$$

where L^f is the set of all local stocks available to fund f, $w_{s,t}^f$ is fund f's portfolio weight of stock s at the end of quarter t, $w_{s,t}^M$ is stock s's market portfolio weight at the end of quarter t. Cross-regional variations in local bias are measured by calculating the asset-weighted average across funds in various metropolitan areas:

$$LB_t^R = \frac{\sum_{f \in F^R} A_t^f \cdot LB_t^f}{\sum_{f \in F^R} A_t^f},$$

where F^R is the set of all funds in metropolitan region R, LB_t^f is fund f's local bias, and A_t^f is fund f's asset under management. The local bias of the entire mutual fund industry is calculated as the asset-weighted average across all funds in the sample:

$$LB_t = \frac{\sum_f A_t^f \cdot LB_t^f}{\sum_f A_t^f}.$$

As reported in Table 2.1, an average fund displays a local bias as the average local portfolio weight is 0.54% higher than the average market portfolio weight. Although funds in most major metropolitan areas display a local bias, there are significant variations in the degree and the existence of local bias among different metropolitan areas. In six out of the top eleven metropolitan areas (San Francisco, Los Angeles, Seattle, Boston, Washington and Houston), mutual funds display a significant local bias. Funds in four other major metropolitan areas (Dallas, Chicago, Philadelphia, and Atlanta) show no or weak local bias. On the other hand, New York funds show a high degree of distant bias as their average local portfolio weight is 4.11% lower than what is warranted by the market capitalizations of local New York stocks. This is in stark contrast to funds in the San Francisco Bay area whose average local portfolio weight is 5.65% higher than what is warranted by the market capitalizations of their local stocks. The degree of local bias in other metropolitan areas and rural areas (1.77%; the last row in Panel C) is also slightly higher than the average for all mutual funds.

2.3.2. Position Initiation

In this subsubsection, I first examine whether local funds tend to initiate stock positions earlier than distant funds. If local fund managers perceive their private information to be more precise, they should initiate stock positions earlier than distant fund managers. Since mutual funds tend to move in and out of stocks repeatedly, comparing the average time variables (year or quarter) of local and distant initiations does not provide a clear test of whether local funds initiate stock positions earlier than distant funds. Instead, I examine the average pre-initiation institutional ownership for local and distant initiations. If mutual funds perceive their private local information to be more precise than their distant information, local initiations should be preceded by relatively lower shares of institutional ownerships when compared to distant initiations. In order to compare the institutional ownership variable across stocks, each stock's quarterly institutional ownership is normalized by the average of its institutional ownership over the previous year. Consistent with local fund managers perceiving their private information to be more precise, the first line in Panel A of Table 2 reveals that the average pre-initiation normalized institutional ownership of local stocks is 1.48% lower than that of distant stocks.

Continuing in the same vein, I test Hypothesis 1 which states that position initiations in local stocks are associated with larger stock positions than position initiations in distant stocks. I define the initiation size of mutual fund i in stock j, $\Delta_{i,j}$, as the dollar value of fund i's initial investment in stock j divided by the dollar value of fund i's aggregate stock holdings. Panel B of Table 2 reports the geographical variation in stock initiation size. As reported in the first row, local initiation size are, on average, 0.13% larger than distant initiation size. Since the median fund size in my sample is around $85M, this 0.13% difference translates to a $111,285 difference in initiation size. This difference is slightly reduced after controlling for the following stock and fund characteristics: the stock's market value at the beginning of the initiation quarter, the initiation quarter stock return, the initiation quarter stock turnover, and the size of the fund at the beginning of the initiation quarter. Controlling for fund and quarter fixed effects reduces the difference even more to 0.03%

which is still statistically significant. Although this approach is conservative since it only includes funds that initiate both local and distant stocks in the same quarter, the point estimate of 0.03% is around 3% of the typical initiation size[12] and translates to an average difference in initiation size of $22,327 between local and distant initiations. Taken together, the results in this subsubsection are consistent with mutual funds perceiving their local information to be more precise than their distant information.

2.3.3. Trend-Chasing

Several papers have examined the trend-chasing tendency of institutional investors and its cross-sectional variations across investors with different characteristics. Grinblatt, Titman, and Wermers (1995) document that mutual funds systematically buy stocks that were past winners, but do not systematically sell past losers. Their evidence also indicates that growth and aggressive-growth funds have the highest tendency to engage in momentum investing, with around 57% of these funds systematically buy past winners. Using a larger and more recent sample, Wermers (1999) finds that mutual funds (in particular, aggressive growth and growth funds) tend to buy past "winners" as a herd.

Badrinath and Wahal (2002) confirm these findings for other types of institutional investors.[13] They find that institutions act as momentum traders

[12] The average initiation size is around 1% of the aggregate dollar value of stock holdings.

[13] Their sample includes pension funds, mutual funds, investment advisors, insurance companies, commercial banks and trusts, investment banks and brokers, and colleges and foun-

when they initiate (enter) stocks but as contrarian traders when they terminate (exit) stocks or make adjustments to ongoing holdings. They also find that the tendency to buy winners is relatively stronger for position initiations relative to changes to ongoing holdings. Moreover, they find that institutions with growth objectives are momentum traders, but that institutions with value objectives are contrarian traders. The equity growth funds in their sample deviate from the null of random selection by 10%, while the equity value funds deviate by negative 8%. Griffin, Harris, and Topaloglu (2003) provide evidence of institutional trend chasing using daily data. They show that institutions are more than 20% more likely to buy stocks in the top decile of prior day's stock return than those in the bottom decile.

This study differs from the above studies in that its primary focus is how information is related to trend-chasing tendencies. In particular, I assume that local funds perceive their information quality to be higher and test whether this perception causes the observed trend-chasing tendencies to be different between local and distant initiations. In an informal test, I calculate the proportion of stocks initiated by mutual funds that had earned higher than median returns in the previous quarter. If past returns do not systematically enter into mutual funds' stock initiation decisions, they should be equally likely to initiate stocks with returns above or below the median. A positive deviation suggests a trend-chasing tendency, while a negative deviation suggests a contrarian behavior. I find that the actively-managed equity growth funds in

dations.

my sample exhibit trend-chasing behavior in their stock initiations as 59.49% of the stocks they initiate have returns higher than the median return in the previous quarter.[14]

Local funds' perceived information advantage may reduce the likelihood of trend-chasing even more. Indeed, the last line of Panel A in Table 2 reveals that 58.69% of initiated local stocks have returns higher than the median return in the previous quarter. This figure is 1.19% lower than the percentage of initiated distant stocks with returns higher than the median. Although this difference may seem trivial, it represents 12% of the deviation of mutual funds' initiation decisions from the null hypothesis of random selection.[15] This seems to suggest that although equity growth funds as a whole tend to chase return trends in their stock initiations, this trend-chasing tendency is weaker in local stocks.

To allow for more appropriate control groups and more complete specifications of control variables, I test Hypothesis 2 (Trend-Chasing) using probit regressions of the likelihood of stock initiation as a function of past stock return and other control variables. The dependent variable is 1 if a fund initiates a position in quarter t and 0 otherwise. To reduce the number of stocks under consideration, the candidates for initiations are restricted to stocks that are in-

[14]This result is qualitatively consistent with prior evidence in the literature. Using different methodologies, Grinblatt, Titman, and Wermers (1995) document 7% deviation in their sample of growth and aggressive-growth funds, and Badrinath and Wahal (2002) find that equity growth funds in their sample deviate from the null of random selection by 10%.

[15]The difference is slightly larger (1.30%) in the second half of my sample (1995-2004).

cluded in the Russell 3000 index but are not currently held by each fund during each period. Since the membership lists of Russell indices are only available starting in the mid 1990s, I generate two copycat Russell lists that consist of the 1000 largest stocks (Russell 1000) and the next 2000 stocks (Russell 2000), respectively, for each year in which the lists are not available.

The main independent variable of interest is the excess stock return in quarter t–1 after adjusting for CRSP value-weighted index. To isolate the prevalence of trend-chasing within each geographical proximity category, I use a "local" dummy variable that takes a value of 1 for "local" stocks whose headquarters are located within 100 km, and 0 for "distant" stocks whose headquarters are located further than 100 km from the mutual fund headquarter. Both the dummy variable and its interaction with the excess stock return in t–1 are included in the regressions. The other control variables are fund size at the beginning of quarter t–1, market value of the stock at the beginning of quarter t–1, fund returns for the last 12 months (up to the end of quarter t–1), and fund flow in quarter t–1. In the spirit of Fama-MacBeth (1973), I divide the sample into annual subsamples and run annual probit regressions since the number of fund-stock observations becomes excessively large in a pooled specification. The marginal effects of annual regressions are then used to obtain the time-series averages and standard errors. The regressions are run separately for Russell 1000 stocks and Russell 2000 stocks to control for potential non-linear size effects.

As reported in Table 3, the stocks in Russell 1000 are more than twice as likely to be initiated as Russell 2000 stocks. Consistent with the local bias evidence, stocks are also more than twice more likely to be initiated by local funds than by distant funds. More importantly for the purpose of this study, the trend-chasing results for Russell 1000 stocks in column (1) are quite striking: although trend-chasing is prevalent for both local and distant Russell 1000 stocks, the trend-chasing behavior in local stocks is 84 percent weaker than in distant stocks. While a one standard deviation increase in the previous quarter return of a Russell 1000 stock increases its likelihood of initiation by distant funds by 36.67% from its unconditional mean, its likelihood of initiation by local funds is only increased by 2.85%.

Even more strikingly, the results for Russell 2000 stocks in column (2) show that although trend-chasing is still prevalent in smaller distant stocks, the effect is completely canceled out in smaller local stocks: the attenuation of local trend-chasing tendencies in these stocks is such that the effect of stock returns on initiation probability is negative and not statistically significant. A one standard deviation increase in previous quarter return increases the likelihood of distant (local) Russell 2000 stock initiation by 70.65% (−19.62%) from its unconditional mean. The weaker (or non-existent) trend-chasing tendency in local stock initiations suggests that mutual funds perceive their local information quality to be higher.

An ardent reader may notice that while the findings so far are consistent with mutual funds having more confidence in their information about local stocks than distant stocks, some of the findings are also consistent with local familiarity bias (Merton (1987) and Kang and Stulz (1997)). If mutual fund managers only invest in stocks that are familiar to them and they are more likely to be familiar with local stocks, it is not surprising to see that mutual fund managers hold more local stocks and therefore have a local bias. Moreover, familiarity bias may also drive the trend-chasing results if distant investors' familiarity with a particular stock is more highly correlated with the stock's past return than local investors' familiarity. In other words, while a particular stock's high return does not affect the initiation decisions of local investors who are already familiar with the stock, the high return may compel distant investors to familiarize themselves with the stock and potentially initiate a position.

However, the familiarity bias is not consistent with larger local initiation size. Since mutual funds will only initiate (local and distant) stocks they are familiar with, the familiarity bias does not predict larger initiation size for local stocks. Moreover, I also find that the attenuation of trend-chasing behavior in local stocks also exists in the subsample of stocks that were recently held by each mutual fund. Since these stocks are already familiar to the fund managers, any relationship between past returns and initiation decisions in this subsample should not be driven by geographical variations in familiarity.

2.3.4. Mimicking

Distant funds may chase local funds' holdings if distant funds perceive local funds as having higher information quality in local investments. In order to examine the prevalence of mimicking behavior of this type and formally test Hypothesis 3, I investigate the initiation probabilities of stocks grouped by the excess stock returns and changes in local (distant) fund ownership in the previous quarter. Local (distant) mutual fund ownership in a particular stock is defined as the aggregate percentage ownership of local (distant) funds in that stock. Panel A of Table 4 presents the initiation probability of distant stocks as a function of past returns (measured as the previous quarter excess stock returns) and changes in local fund ownership. Although stock return is positively correlated with contemporaneous change in fund ownership, the number of stocks in each subsample is similar suggesting that the correlation is not strong enough to affect the inference. The result suggests that distant funds are more likely to initiate a new position after an increase in local ownership regardless of whether the stock's previous quarter's excess return is negative or positive. Therefore, the mimicking behavior of distant funds is likely to be distinct from trend-chasing.[16]

In order to check whether there is an inverse effect in which the changes in distant fund ownerships affect the initiation decisions of local funds, I sort

[16] Although funds are only required to report their holdings once every six months, many funds file a report every quarter. Moreover, many funds report their holdings within 45 days of the end of the quarter, giving distant funds at least 45 days to analyze and mimic local funds' previous quarter's trades.

stocks into two groups based on the ownership position change of distant funds and measure the average local initiation probability of stocks within each group. Panel B of Table 4 presents the initiation probability of local stocks as a function of past return and changes in distant fund ownership. The result suggests that local funds are more likely to initiate a new position after an increase in a particular stock's distant fund ownership only when the stock's excess return is positive in the previous quarter. Consequently, any observed mimicking behavior from local funds is likely to be related to trend-chasing.

To control for trend-chasing behavior as well as other potential motivations for initiation, I employ a similar framework as the one used in the previous section. Panel C of Table 4 presents the results from Fama-MacBeth style multivariate probit regressions of initiation probability on both distant and local ownership changes as well as past returns and other control variables. Consistent with the bivariate results, the multivariate results reveal that the mimicking behavior of distant funds is separate from trend-chasing. After controlling for return effects, a one standard deviation increase in the local mutual fund demand of a particular stock in the previous quarter increases its initiation likelihood by distant funds by 2.06% from its unconditional mean. Similarly, local initiations are also affected by previous changes in local ownership. In other words, local mutual funds display some herding behavior. On the other hand, distant ownership changes do not significantly affect the initiation decisions of local and distant funds. Overall, the results in Table 4 are consistent with a perception in the mutual fund industry that local funds have an informational advantage.

2.4. Location and Performance

2.4.1. Local and Distant Returns

In this subsubsection, the focus of analysis is on whether local investments of mutual funds have abnormally superior performance. Following Coval and Moskowitz (2001), fund's holdings at the end of quarter t–1 are split into two portfolios: local and distant. Since this study is interested in the stock-picking ability of these agents, a benchmark-adjusted return is calculated for each stock quarterly following the methodology suggested by Daniel, Grinblatt, Titman, and Wermers (1997):

$$\hat{r}_{s,t} = r_{s,t} - r_{p_s,t},$$

where $r_{s,t}$ is the raw return of stock s in quarter t, and $r_{p_s,t}$ is the return of a benchmark portfolio which contains stocks with similar size, book-to-market and momentum. The benchmark portfolios are constructed by running a triple dependent sort on size (market value of equity), book-to-market ratio, and momentum. First, firms in the sample are sorted into five size quintiles using NYSE breakpoints. Firms within each of the five size quintiles are then sorted into five B/M quintiles. Finally, firms within each of the 25 size-B/M portfolios are sorted into five momentum quintiles. The portolio that contains stock s is designated as its benchmark portfolio, p_s.[17]

I then calculate the average benchmark-adjusted return of local and distant portfolios for each fund in quarter t, weighting each stock by the value of the fund's holding in that stock:

$$\hat{r}_t^{f,L} = \frac{\sum_{s \in L^f} w_{s,t-1}^f \cdot \hat{r}_{s,t}}{\sum_{s \in L^f} w_{s,t-1}^f} \text{ and } \hat{r}_t^{f,D} = \frac{\sum_{s \notin L^f} w_{s,t-1}^f \cdot \hat{r}_{s,t}}{\sum_{s \notin L^f} w_{s,t-1}^f},$$

where L^f is the set of local stocks available to fund f, $w_{s,t-1}^f$ is fund f's portfolio weight of stock s at the end of quarter $t-1$, and $\hat{r}_{s,t}$ is DGTW-adjusted return of stock s in quarter t. To arrive at the figures reported in the first row of each panel in Table 5, I take the average returns of local and distant portfolios across funds for quarter t weighted by the size of each fund's equity holdings, annualized the returns, and then calculate the time-series average of these annualized returns.

Coval and Moskowitz (2001) reports that local investments earn 1.18% more (in annualized returns) than distant holdings after adjusting for size, market-to-book and momentum. Although the return relationship is quite strong in the first half of their sample (2.32%; 1975–1984), it is almost nonexistant in

[17]In order to avoid benchmark return miscalculations, I compare my portfolios with the portfolio assignments available on Russ Wermers' website (`http://www.smith.umd.edu/faculty/rwermers/ftpsite/Dgtw/coverpage.htm`) which uses a slightly modified version of Daniel, Grinblatt, Titman, and Wermers (1997) as described in Wermers (2003). I find that my portfolio assignment is very similar to Wermers' assignment; the results presented in this section are almost identical using either assignment.

the second half (1985–1994). Replicating the latter finding using a different dataset, I find that the difference in performance is virtually zero (0.09% annualized) during the second half of their sample period as reported in the first line in Panel B of Table 5. In the following decade (1995–2004), local investments outperform distant investments by an almost identical amount (0.08%; Panel C of Table 5), which is neither statistically nor economically significant. The first line in Panel A of Table 5 shows that local holdings outperform distant holdings by only 0.09% during the entire sample period from 1985 to 2004.[18]

2.4.2. Local and Distant Performance

A cleaner test for the quality of information may be through fund selectivity: do stocks mutual funds hold perform better than those they do not hold? In this study, funds' selectivity is measured by the difference between the returns of the stocks in their holdings and those not in their holdings. This difference will be referred to as performance for the rest of this section is calculated as follows:

$$P_t^f = \frac{\sum_{s \in S_{t-1}^f} (w_{s,t-1}^f \cdot \hat{r}_{s,t})}{\sum_{s \in S_{t-1}^f} w_{s,t-1}^f} - \frac{\sum_{s \notin S_{t-1}^f} (w_{s,t-1}^M \cdot \hat{r}_{s,t})}{\sum_{s \notin S_{t-1}^f} w_{s,t-1}^M}$$

[18]The numbers in the first line of each panel in Table 5 correspond to the Characteristic Selectivity (CS) measure in Daniel, Grinblatt, Titman, and Wermers (1997). CS measure is defined as: $CS_{i,t} = \sum_{j=1}^{N} \tilde{w}_{i,j,t-1}(\tilde{R}_{j,t} - \tilde{R}_t^{b_{j,t-1}})$, where $\tilde{w}_{i,j,t-1}$ is fund i's portfolio weight on stock j at the end of quarter $(t-1)$, $R_{j,t}$ is the quarter t return of stock j, and $\tilde{R}_t^{b_{j,t-1}}$ is the quarter t return of the characteristic-based passive portfolio that is matched to stock j at the end of quarter t–1. Daniel, Grinblatt, Titman, and Wermers (1997) report that the CS measure of growth (aggressive growth) funds is 1.03% (1.49%) in the 1975 to 1994 period. Following the same methodology, Kacperczyk, Sialm, and Zheng (2005) report that the CS measure of actively managed mutual funds is 0.96% in the 1984 to 1999 period.

where S^f_{t-1} is the set of stocks held by fund f at the end of quarter $t-1$, $w^f_{s,t-1}$ is fund f's portfolio weight of stock s at the end of quarter $t-1$, $w^M_{s,t-1}$ is stock s's market portfolio weight at the end of quarter $t-1$, and $\hat{r}_{s,t}$ is DGTW-adjusted return of stock s in quarter t. The last line in Panel A of Table 5 reports the difference between the annualized (characteristics-adjusted) returns of stocks held and not held by mutual funds. Column (1) on this line reveals that growth and aggressive-growth mutual funds as a group perform superbly even after characteristics adjustments as the stocks they hold outperform those they do not hold by 1.29% annually.

Given this superior performance of mutual funds in this sample, the more relevant question is whether this is due to superior local performance or superior distant performance. In other words, are funds better in picking local stocks than they are in picking distant stocks? I measure funds' selectivity in local (distant) stocks by calculating the difference in the returns from local (distant) holdings and the returns from local (distant) stocks not held by mutual funds as follow:

$$\begin{aligned} P^{L,f}_t &= \frac{\sum_{s\in S^f_{t-1}, s\in L^f_{t-1}} (w^f_{s,t-1}\cdot \hat{r}_{s,t})}{\sum_{s\in S^f_{t-1}, s\in L^f_{t-1}} w^f_{s,t-1}} - \frac{\sum_{s\notin S^f_{t-1}, s\in L^f_{t-1}} (w^M_{s,t-1}\cdot \hat{r}_{s,t})}{\sum_{s\notin S^f_{t-1}, s\in L^f_{t-1}} w^M_{s,t-1}}, \text{ and} \\ P^{D,f}_t &= \frac{\sum_{s\in S^f_{t-1}, s\notin L^f_{t-1}} (w^f_{s,t-1}\cdot \hat{r}_{s,t})}{\sum_{s\in S^f_{t-1}, s\notin L^f_{t-1}} w^f_{s,t-1}} - \frac{\sum_{s\notin S^f_{t-1}, s\notin L^f_{t-1}} (w^M_{s,t-1}\cdot \hat{r}_{s,t})}{\sum_{s\notin S^f_{t-1}, s\notin L^f_{t-1}} w^M_{s,t-1}}, \end{aligned}$$

where S^f_{t-1} is the set of stocks held by fund f at the end of quarter $t-1$, L^f_{t-1} is the set of local stocks available to fund f, $w^f_{s,t-1}$ is fund f's portfolio weight of stock s at the end of quarter $t-1$, $w^M_{s,t-1}$ is stock s's market portfolio weight at the end of quarter $t-1$, and $\hat{r}_{s,t}$ is DGTW-adjusted return of stock s in quarter t. Each quarter, the average local performance, $\overline{P^L_t}$ ($\overline{P^D_t}$), is calculated as the cross-sectional dollar-weighted average of the local (distant) performance of all mutual funds in the sample. The figures reported in the last line of each panel in Table 5 correspond to $\overline{P^L}$ and $\overline{P^D}$, the time series average of $\overline{P^L_t}$ and $\overline{P^D_t}$, respectively.

This approach is compelling because it takes into account the geographical variations in stock returns. Although Coval and Moskowitz (2001) find that local holdings outperform local stocks that are avoided by mutual funds by 2.04% (= $\overline{P^L}$) during the 1985-1994 period, they do not report the average funds' performance in distant stocks ($\overline{P^D}$). Consequently, they do not draw any conclusion on whether funds are better in picking local vs. distant stocks. Using my sample, I find that local holdings outperform other local stocks by 1.87% (= $\overline{P^L}$) during the 1985–1994 period (as reported in column (2) on the last line of Panel B of Table 5). However, distant holdings of mutual funds also outperform distant stocks not held by mutual funds by 1.63% (= $\overline{P^D}$) during this period. The annualized difference between local and distant performance is only 23 basis points between 1985 and 1994. Moreover, I observe a negative local performance during the second subperiod of my sample: local holdings slightly underperform relative to other local stocks between 1995 and 2004. In the aggregate sample (1985–2004), local and distant outperformances are not significantly different: local outperformance is lower than distant outperformance by 0.49%.[19,20] In summary, mutual funds' superior stock-picking ability is not limited to local stocks; if anything, their distant holdings contribute more to their performance than do their local holdings. The findings so far suggest that although mutual funds are more confident in their local information, there is no evidence of superior local performance in their stockholdings.

2.4.3. Price Impact and Performance

In this subsubsection I focus on the performance differential between local and distant investments in circumstances in which the expected price impact of local mutual fund is low. To proxy for the expected price impact of local mutual funds' trading, I first use the following variable which is the aggregate asset size of mutual funds located within 100 km of each stock divided by the market capitalization of that stock:

$$LocalMoney_{s,t} = \frac{\sum_{f \in L^s} Asset_t^f}{MarketCap_{s,t}},$$

where L^s is the set of all local funds that can invest stock s, $Asset_t^f$ is fund f's assets at the end of quarter t, $MarketCap_{s,t}$ is stock s's market capitalization at the end of quarter t. This variable is intended to capture the likelihood of local investments in a particular stock: a high value of this variable proxies for

[19] Mutual funds may have restrictions that prevent them from holding some stocks. In an unreported analysis, I exclude stocks with smaller market capitalizations than the smallest stock in each mutual fund's holdings. The results are quantitatively similar.

[20] Quantitatively similar results are obtained when funds located in Boston and New York are excluded.

a higher likelihood of local investments.[21] Second, I use a *mutual fund density* variable which is measured as as the number of mutual funds located within 100 km of a particular fund divided by the number of all mutual funds in the sample for that quarter. This variable is intended to proxy for the level of local competition for a particular fund: a high value of this variable proxies for a higher level of local competition.

To measure the impact of local money on the performance of local investments, stocks are sorted quarterly into two halves based on their *LocalMoney* variable. Panel D of Table 5 reports mutual funds' holding returns and performance in stocks in the bottom half of *LocalMoney*. Consistent with the hypothesis that the difference in the returns of local and distant investments will be higher in stocks with relatively low local investor population, mutual funds' local holdings of low *LocalMoney* stocks outperform their distant holdings of these stocks by 2.57% after DGTW adjustment. Moreover, mutual funds also show better local selectivity in low *LocalMoney* stocks as local low *LocalMoney* stocks held by mutual funds outperform local low *LocalMoney* stocks not held by 3.22%. The difference between local and distant performance in low *LocalMoney* stocks is a statistically significant 3.01% (t=2.05).[22]

[21] I also try a similar variable which is measured as the weighted sum of the asset size of mutual funds located within 100 km of each stock. In order to take the local investment opportunities of each fund into account, each mutual fund is weighted by the inverse of its aggregate local stock market capitalization. The results using this variable are similar to the reported results using the *LocalMoney* variable.

[22] Although its statistical significance is reduced when the sample is separated into two 10-year subperiods, this result is robust as the difference in performance is similar between the two subperiods.

In order to measure the effect of local fund competition on the profitability of local investments, each fund is categorized quarterly as either a remote fund or a high-density fund using its mutual fund density. To ensure that funds located in the major metropolitan areas that are associated with high mutual fund population (e.g., New York/New Jersey and Boston) are categorized as such, I choose a cutoff density of 2.5 per cent. Funds located within 100 km of more than 2.5 per cent of mutual funds in each quarter is classified as high-density funds. The rest are categorized as remote funds. The local and distant performance of remote funds are reported in Panel E of Table 5. Consistent with the hypothesis that the difference in returns of local and distant investments will be higher for remote funds, these funds tend to do better in local stocks. Local stocks held by these funds outperform both distant stocks held by these funds (by 53 bps) and the local stocks not held by these funds (by 3.42%). More importantly, the average annualized local performance of these funds is 2.88% (t=1.76) higher than their average distant performance. Taken as a whole, the findings in Panels D and E of Table 5 are consistent with the hypothesis that local performance is negatively correlated with the expected price impact of local funds.

2.5. Concluding Remarks

This study provides evidence on the relationship between investment location and performance. Analyzing the equity holdings of a large sample of actively managed mutual funds, I find that mutual funds as a group do not perform markedly better in their local holdings relative to their distant ones. This finding is in line with the lack of consistent supportive evidence for local superior performance in the literature. The absence of superior local performance does not by itself rule out the possibility that local funds actually have better private information. This study exploits the geographical variations in mutual fund trading behavior to provide evidence supporting a new explanation for the absence of superior local performance.

The main premise of this explanation is that local investors do have some informational advantage, but the price impact associated with their presence in the market limits their ability to profit from this advantage. After developing a parsimonious model that formalizes this explanation, I show that mutual funds perceive their local information quality to be higher by testing two hypotheses from the model. First, consistent with the hypothesis that mutual funds perceive their local information quality to be higher, local stock initiations are associated with larger initiation positions and lower pre-initiation institutional ownerships. Second, consistent with the hypothesis that a higher perception of information quality reduces the prevalence of trend-chasing behavior, mutual funds are less likely to chase return trends in local stock initiations than in distant stock initiations. Moreover, distant funds also seem to perceive local funds as having superior information because the former appear to mimic the latter by buying stocks that had experienced an increase in local fund holdings. These findings are consistent with a perception in the mutual fund industry that local funds have an informational advantage.

Since this perception is not borne out in the relative performance of local and distant mutual fund holdings, I test and find evidence for the model's prediction that superior local performance should obtain in situations in which the expected price impact of local mutual funds is low. This finding is consistent with local funds possessing some actual information advantage. Taken as a whole, the model and the empirical findings suggest that local mutual funds may have some informational advantage but their ability to profit from this advantage is limited by the price impact of their trading.

2.6. Proofs

2.6.1. Proof of Equations (5) and (6)

Given her optimal demand at t=1, the expected utility of agent i after the trading session at t=1 is:

$$E[U^i|F_1^i] \;=\; E\left[-exp\left[-\frac{h_0^i(\tilde{P}_1-\tilde{P}_0)}{\tau}-\frac{h_1^i(\tilde{x}-\tilde{P}_1)}{\tau}\right]|F_1^i\right] \tag{10}$$

The first term inside the bracket is the profit from t=0 to t=1, while the second term is the profit from t=1 to t=2.

The optimal trading strategy of agent i at t=0 is one that maximizes the expected utility at t=0, $E[U^i|F_0^i]$. Using the law of iterated expectations, this expected utility can be written as:

$$E[U^i|F_0^i] = E[E[U^i|F_1^i]|F_0^i] \tag{11}$$

$$= E[E[U^i|F_0^i,(\tilde{P}_1 - \tilde{P}_0)]|F_0^i] \tag{12}$$

$$= E[E[E[U^i|F_0^i,(\tilde{P}_1 - \tilde{P}_0),(E[\tilde{x}|F_1^i] - \tilde{P}_1)]|F_0^i,(\tilde{P}_1 - \tilde{P}_0)]|F_0^i] \tag{13}$$

Since all the random variables are normally distributed and each agent's utility function has an exponential form, a closed-form solution can be obtained for each conditional expectation.[23] Taking the first order condition of the resulting equation with respect to h_0^i (which is equal to d_0^i) followed by a further simplification give rise to equations (3) and (4). ■

2.6.2. Proof of Proposition 1

The difference between local agents' and distant agents' demands is the difference between equations (3) and (4):

$$\tilde{d}_0^L - \tilde{d}_0^D = \tau\{\phi^x(\bar{x} - \tilde{P}_0) + \phi_0^L(\tilde{s}_0^L - \tilde{P}_0)\} - \tau\{\phi^x(\bar{x} - \tilde{P}_0)\} \tag{14}$$

$$= \tau\{\phi_0^L(\tilde{s}_0^L - \tilde{P}_0)\} \tag{15}$$

[23] The resulting equation is very similar to the one in Brennan and Cao (1997).

Using the equilibrium price function in equation (8), we can rewrite this equation as:

$$\tilde{d}_0^L - \tilde{d}_0^D = \tau\phi_0^L(\tilde{s}_0^L - \frac{\phi^x\bar{x} + \frac{\alpha}{\alpha+1}\phi_0^L\tilde{s}_0^L + \frac{\tilde{d}_0^N}{\tau(\alpha+1)}}{\phi^x + \frac{\alpha}{\alpha+1}\phi_0^L}) \tag{16}$$

Therefore, local agents' demand is higher than distant agents' demand in equilibrium if the terms in parentheses is positive:

$$\tilde{s}_0^L - \frac{\phi^x\bar{x} + \frac{\alpha}{\alpha+1}\phi_0^L\tilde{s}_0^L + \frac{\tilde{d}_0^N}{\tau(\alpha+1)}}{\phi^x + \frac{\alpha}{\alpha+1}\phi_0^L} > 0. \tag{17}$$

Simplifying the terms gives rise to the following condition:

$$\tilde{s}_0^L > \bar{x} + \frac{\tilde{d}_0^N}{\tau(\alpha+1)\phi^x}. \tag{18}$$

It is important to note that the noise traders' demand is zero on average. Therefore, local traders with private signal higher than the unconditional prior demand more asset, on average, than distant traders at t=0. ■

2.6.3. Proof of Proposition 2

Using the demand function in equation (5), we can rewrite the demand of local agents at t=1 in equation (4) as:

$$\tilde{d}_1^L = \tau(\phi^x + \phi_0^L)(\tilde{P}_0 - \tilde{P}_1) \quad (19)$$

$$= -\tau(\phi^x + \phi_0^L)(\tilde{P}_1 - \tilde{P}_0). \quad (20)$$

Using the market clearing condition, distant agents' demand function can be rewritten as:

$$\tilde{d}_1^D = \alpha\tau(\phi^x + \phi_0^L)(\tilde{P}_1 - \tilde{P}_0) - \tilde{d}_1^N. \quad (21)$$

■

2.6.4. Proof of Proposition 3

The derivative of time 0's price function in equation (8) with respect to α is as follows:

$$\frac{\partial \tilde{P}_0}{\partial \alpha} = \frac{\phi_0^L \left[\phi^x(\tilde{s}_0^L - \bar{x}) - \frac{\tilde{d}_0^N}{\tau(\alpha+1)}\right]}{(\alpha+1)^2(\phi^x + \frac{\alpha}{\alpha+1}\phi_0^L)^2}$$

Since the denominator is positive, the derivative is positive if the following condition is satisfied:

$$\phi^x(\tilde{s}_0^L - \bar{x}) - \frac{\tilde{d}_0^N}{\tau(\alpha+1)} > 0$$
$$\Leftrightarrow \tilde{s}_0^L > \bar{x} + \frac{\tilde{d}_0^N}{\phi^x \tau(\alpha+1)}.$$

■

Table 2.1
Local Bias
This table reports the fraction of fund assets invested in stocks located within 100 kilometers. The first column reports the number of unique funds within each group. The second column reports the asset-weighted average of mutual funds' local portfolio weights. The third column reports the percentage of market portfolio located within 100 kilometers of each fund. The last column reports the difference and the t-stat (adjusted following Newey and West (1987) using a lag of 4 quarters; in parentheses). Panel A reports the average weights for all funds in the sample. Panel B reports the subperiod averages, while Panel C reports the averages for funds located in various metropolitan areas (sorted by local market portfolio weight).

Panel A. All Funds

	Number of Unique Funds	Local Fund Weight	Local Market Weight	Difference
All Funds	1761	8.93%	8.39%	0.54% (3.97)

Panel B. Subperiods

	Number of Unique Funds	Local Fund Weight	Local Market Weight	Difference
1985–1994	441	8.61%	8.01%	0.60% (2.97)
1995–2003	1518	9.27%	8.81%	0.46% (2.73)

Panel C. Metropolitan Areas

	Number of Unique Funds	Local Fund Weight	Local Market Weight	Difference
New York (incl. NJ and CT suburban area)	429	22.95%	27.06%	-4.11% (-7.00)
San Francisco Bay Area	93	13.55%	7.90%	5.65% (5.91)
Chicago	71	6.99%	7.04%	-0.05% (-0.08)
Philadelphia	82	5.88%	6.10%	-0.22% (-0.48)
Atlanta	25	4.34%	4.59%	-0.25% (-0.64)
Los Angeles	60	5.32%	4.07%	1.26% (2.26)
Seattle	28	5.17%	3.04%	2.13% (3.98)
Dallas	12	4.74%	3.03%	1.72% (1.43)
Boston	286	4.97%	2.97%	2.00% (11.52)
Washington, DC (incl. MD and VA suburban area)	16	10.98%	2.40%	8.58% (1.73)
Houston	42	4.39%	2.34%	2.05% (4.46)
Other metropolitan areas and rural areas	653	5.08%	3.31%	1.77% (9.23)

Table 2.2

Pre-Initiation Statistics and Initiation Size

This table reports the pre-initiation stock characteristics as well as the initiation size as a function of geographical proximity to the initiating mutual fund. For each fund, a stock whose headquarter is located less than 100 km from that fund's location is categorized as a local stock. Otherwise, the stock is categorized as a distant stock. Panel A reports the pre-initiation institutional ownership normalized by the institutional ownership in the year prior to initiation, average and median market-adjusted stock returns in the pre-initiation quarter, and the percentage of stocks with positive abnormal return in the pre-initiation quarter.

Panel B reports the average size of new stock positions as a percentage of the aggregate dollar value of fund's stock holdings. The second row reports the estimated parameter for the local dummy variable (which takes the value of one for local stocks and zero for distant stocks) obtained from regressing initiation size on stock and fund characteristics. The characteristics include the stock's market value at the beginning of the initiation quarter, the initiation quarter stock return, the initiation quarter stock turnover, and the size of the fund at the beginning of the initiation quarter. The third row reports the estimated parameter for the local dummy variable obtained from adding fund and quarter fixed effects to the regression in the second row. The appropriate statistical tests (*t* /Wilcoxon rank-sum/binomial) are reported in parentheses.

Panel A. Pre-Initiation Stock Characteristics

	Local Initiation	Distant Initiation	Difference
Normalized Institutional Ownership	9.36%	10.84%	-1.48% (2.87)
Average Abnormal Return	7.19%	8.58%	-1.38% (2.95)
Median Abnormal Return	3.67%	4.68%	-1.01% (3.85)
Percent with Positive Abnormal Return	58.69%	59.88%	-1.19% (1.80)

Panel B. Initiation Size

As a Percent of All Stock Investments	1.09%	0.96%	0.13% (7.90)
Controlling for Characteristics			0.11% (9.07)
Controlling for Characteristics and Fixed Effects			0.03% (3.39)

Table 2.3

Fama-MacBeth Style Probit Regression of Initiation Probability

This table presents the marginal effects from probit regressions of the likelihood of stock initiation. The probit marginal effects are calculated annually, and the time-series averages (and t-stats) are reported. The dependent variable is one if a fund initiates a position in quarter t and zero otherwise. The main independent variables are local dummy (which takes a value of one if the the fund-firm pair is located within 100km), stock return in quarter *t* -1 and their interaction. The control variables are fund size and stock market cap at the beginning of *t* fund returns for the last year (ending at the end of *t* -1), and fund flow in *t* -1.

Column (1) reports the estimates for Russell 1000 stocks, while column (2) reports the estimates for Russell 2000 stocks. The largest one thousand stocks by market capitalization (that meets the requirements described in Frank Russell Company's website) are included in Russell 1000, while the next two thousand stocks are included in Russell 2000. Since the Russell lists are not available for years prior to 1994, market capitalization is used to assign stocks to Russell 1000 and Russell 2000 pseudo portfolios in those years. The total number of observations and average pseudo R-square are reported at the bottom of each panel. Numbers are reported in percentages, and *, **, and *** indicates statistical significance at 10%, 5% and 1% level, respectively.

	Russell 1000 **(1)**	**Russell 2000** **(2)**
Average	0.776	0.322
Intercept	0.612***	0.262***
	(11.30)	(7.78)
Local	0.626***	0.453***
	(3.38)	(6.41)
$Return_{t-1}$	0.851***	0.702***
	(4.99)	(4.66)
$Return_{t-1}$	-0.717*	-1.039**
***Local**	(-1.73)	(-2.29)
Log(Market Value)	0.294***	0.097***
	(11.12)	(4.78)
Log(Fund Size)	0.100***	0.038***
	(4.34)	(3.17)
Fund Return	-0.604	-0.003
	(-1.13)	(-0.02)
Fund Flow	-0.053	-0.049
	(-0.32)	(-0.41)
N	7,207,173	8,329,539
Pseudo R^2	3.64%	3.08%

Table 2.4
Mimicking

This table present the evidence on mimicking behavior of mutual funds. Panel A (B) presents the initiation probabilities of distant (local) stocks sorted by the return in the past quarter and the changes in local (distant) ownership. Local (distant) mutual fund ownership is defined as the aggregate percentage ownership of local (distant) funds in a particular stock. Panel A presents the initiation probability of distant stocks (those with headquarters located outside the 100 km radius from the fund headquarters) as a function of past return and changes in local ownership. Panel B presents the initiation probability of local stocks (those with headquarters located within 100 km) as a function of past return and changes in distant ownership. The initiation probabilities are calculated each quarter and the time-series averages, differences and t-stats are reported.

Panel C presents the marginal effects from probit regressions of the likelihood of stock initiation. The probit marginal effects are calculated annually, and the time-series averages (and t-stats) are reported. The dependent variable is one if a fund initiates a position in quarter t and zero otherwise. The main independent variables of interest are changes in local and distant mutual fund ownerships in the previous quarter. The control variables are stock return in quarter t-1, fund size and stock market cap at the beginning of t-1, fund returns for the last year (ending at the end of t-1), and fund flow in t-1. The coefficients for the last four control variables are not reported. Column 1 reports the estimates for local stocks, while column 2 reports the estimates for distant stocks. The total number of observations and average pseudo R-square are reported at the bottom of each column. Numbers are reported in percentages, and *, **, and *** indicates statistical significance at 10%, 5% and 1% level, respectively.

Panel A. Probability of Distant Initiation in Quarter t (Average=0.87%)

	Change in Local Ownership in t-1		
Past Quarter Return	*Negative*	*Positive*	*Difference*
Negative	0.67%	0.84%	0.17% (t =4.89)
Positive	1.17%	1.29%	0.12% (t =2.97)
Difference	0.50% (t =8.32)	0.45% (t =6.35)	

Panel B. Probability of Local Initiation in Quarter t (Average=1.02%)

	Change in Distant Ownership in t-1		
Past Quarter Return	*Negative*	*Positive*	*Difference*
Negative	0.86%	0.89%	0.04% (t =0.44)
Positive	1.28%	1.46%	0.19% (t =1.58)
Difference	0.42% (t =3.67)	0.57% (t =4.43)	

Panel C. Marginal Effects from Fama-Macbeth Probit Regression

	Local Stocks	*Distant Stocks*
Intercept	0.783***	0.683***
	(14.71)	(19.12)
Distant Ownership Change $_{t-1}$	1.574	0.493
	(0.43)	(0.47)
Local Ownership Change $_{t-1}$	2.746**	1.358**
	(2.05)	(2.18)
Return $_{t-1}$	0.548***	1.020***
	(2.79)	(9.41)
N	601,780	5,462,440
Pseudo R^2	4.18%	4.69%

Table 2.5

Comparison of Local and Distant Mutual Fund Performance

This table reports the time series average of DGTW-adjusted quarter t's returns for stocks held and not held by mutual funds based on quarter t-1's reported fund holdings. Dollar-weighted (first line of each panel; $r_{H,\$}$) average returns are calculated for fund holdings and adjusted for each fund, and then averaged across funds (value-weighted by fund asset value) each quarter. For stocks not held, value-weighted average returns are calculated and adjusted for each fund, then averaged across funds (value-weighted by fund asset value) each quarter, and reported in the second line of each panel ($r_{NH,MC}$ reports. The mutual fund performance ($r_{H,\$} - r_{NH,MC}$) is reported in the last line of each panel. The first column presents the figures for all funds, while the second (third) column reports the figures for local (distant) holdings of mutual funds with positions in both local (<100 km) and distant (>100 km) stocks. The time-series averages are reported. All numbers are reported in annualized percentages. Time-series t-stats are in parentheses.

Panel A reports the figures for the whole sample, while Panels B and C report the subsample averages. Panel D reports the averages and differences for the subsample of stocks in the bottom half of local money, which is measured as the size of local mutual fund assets divided by the market capitalization of the stock. Panel E reports the figures for funds located in remote areas, which are areas with less than 2.5% of mutual fund population within 100 km radius in each quarterly sample.

Panel A. Whole Sample (1985–2004)		**All Stocks**	**Local**	**Distant**	**Local – Distant**
		(1)	(2)	(3)	(4)
Held by Mutual Fund	$r_{H,\$}$	1.15	1.22	1.13	0.09 (t=0.10)
Not Held by Mutual Fund	$r_{NH,MC}$	-0.14	0.35	-0.23	0.58
Difference	(= $r_{H,\$} - r_{NH,MC}$)	1.29	0.87	1.36	-0.49 (t=-0.55)
Panel B. 1985–1994					
Held by Mutual Fund	$r_{H,\$}$	1.73	1.79	1.70	0.09 (t=0.08)
Not Held by Mutual Fund	$r_{NH,MC}$	0.06	-0.08	0.06	-0.14
Difference	(= $r_{H,\$} - r_{NH,MC}$)	1.66	1.87	1.63	0.23 (t=0.19)
Panel C. 1995–2004					
Held by Mutual Fund	$r_{H,\$}$	0.50	0.58	0.51	0.08 (t=0.06)
Not Held by Mutual Fund	$r_{NH,MC}$	-0.37	0.82	-0.56	1.38
Difference	(= $r_{H,\$} - r_{NH,MC}$)	0.87	-0.24	1.06	-1.30 (t=-0.99)
Panel D. Stocks with Relatively Scarce Local Money					
Held by Mutual Fund	$r_{H,\$}$	0.44	2.75	0.18	2.57 (t=1.94)
Not Held by Mutual Fund	$r_{NH,MC}$	-0.07	-0.46	-0.03	-0.44
Difference	(= $r_{H,\$} - r_{NH,MC}$)	0.51	3.22	0.21	3.01 (t=2.05)
Panel E. Funds in Relatively Remote Are					
Held by Mutual Fund	$r_{H,\$}$	0.57	1.05	0.52	0.53 (t=0.26)
Not Held by Mutual Fund	$r_{NH,MC}$	-0.26	-2.37	-0.02	-2.35
Difference	(= $r_{H,\$} - r_{NH,MC}$)	0.83	3.42	0.54	2.88 (t=1.76)

Figure 2.1
<u>Average Trading Profits as a Function of the Relative Size of Local Agents</u>

This figure reports the average abnormal trading profits of local agents relative to those of distant agents as a function of local agents' informational advantage and their relative size in the population. The bottom-left axis (Relative Size) corresponds to α, the relative population of local agents, while the bottom-right axis (Local Information Advantage) corresponds to the precision of local agents' private signal (ϕ_0^L). The other parameters are fixed at the following values: $\bar{x} = 0$, $\phi^x = 10$, $\phi_0^N = \phi_1^N = 15$, $\phi_1 = 10$, and $\tau = 10$.

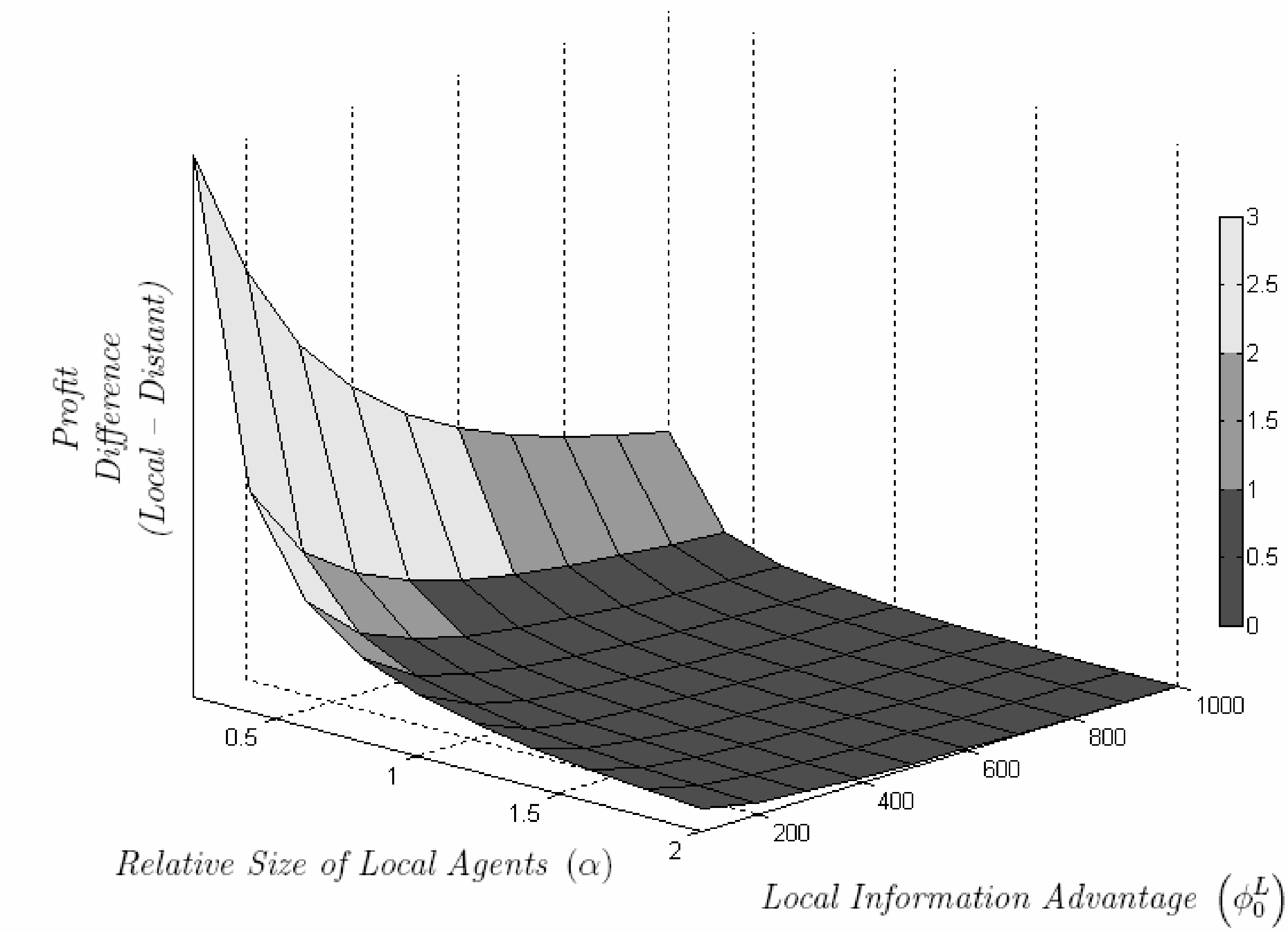


Figure 2.2
Average Trading Returns as a Function of the Relative Size of Local Agents

This figure reports the average abnormal trading profits of local agents relative to those of distant agents as a function of local agents' informational advantage and their relative size in the population. The trading returns are calculated as the trading profits divided by the sum of the absolute value of each agent's position after each trading session. The bottom-left axis (Relative Size) corresponds to α, the relative population of local agents, while the bottom-right axis (Local Information Advantage) corresponds to the precision of local agents' private signal (ϕ_0^L). The other parameters are fixed at the following values: $\bar{x} = 0$, $\phi^x = 10$, $\phi_0^N = \phi_1^N = 15$, $\phi_1 = 10$, and $\tau = 10$.

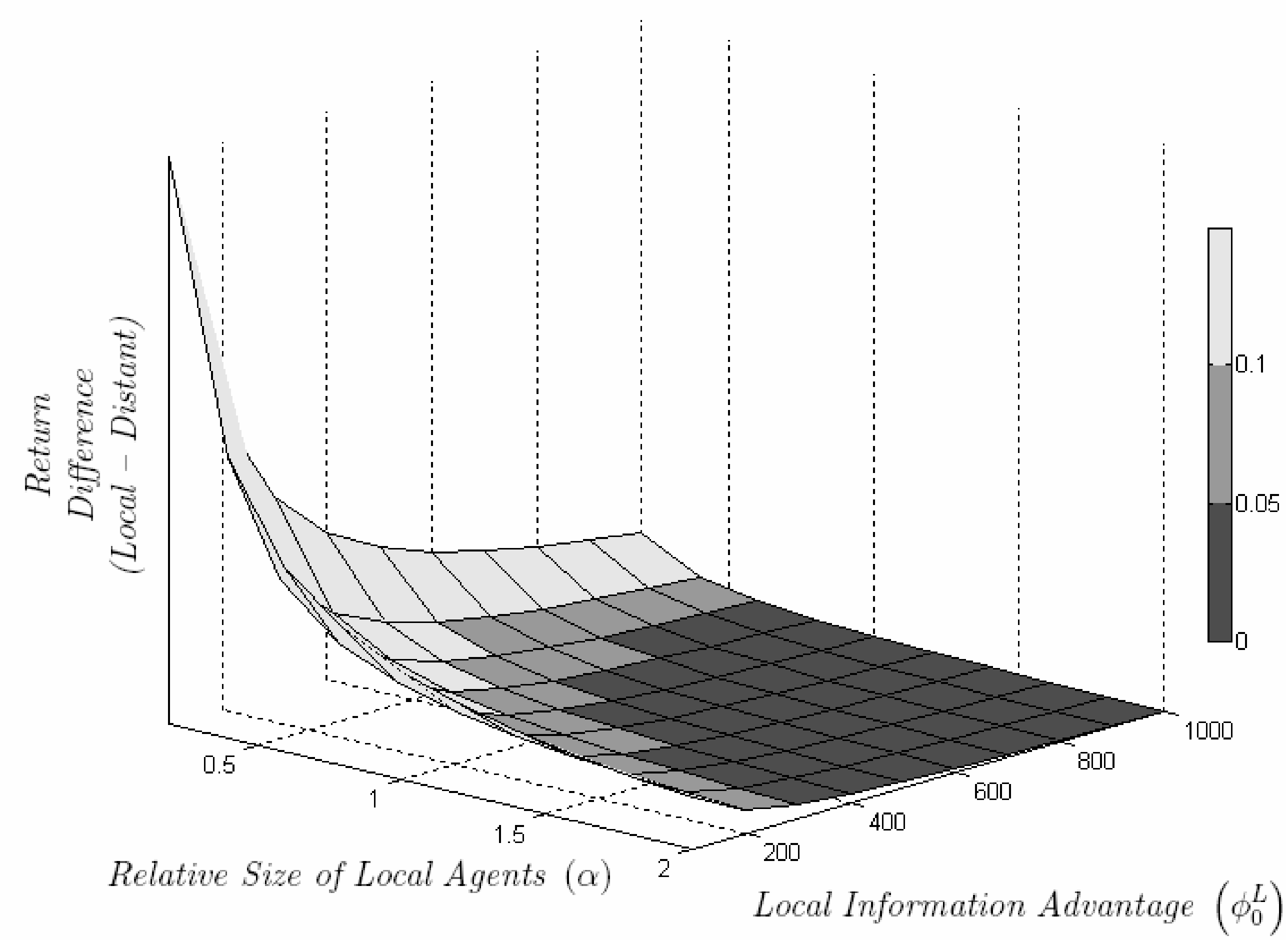
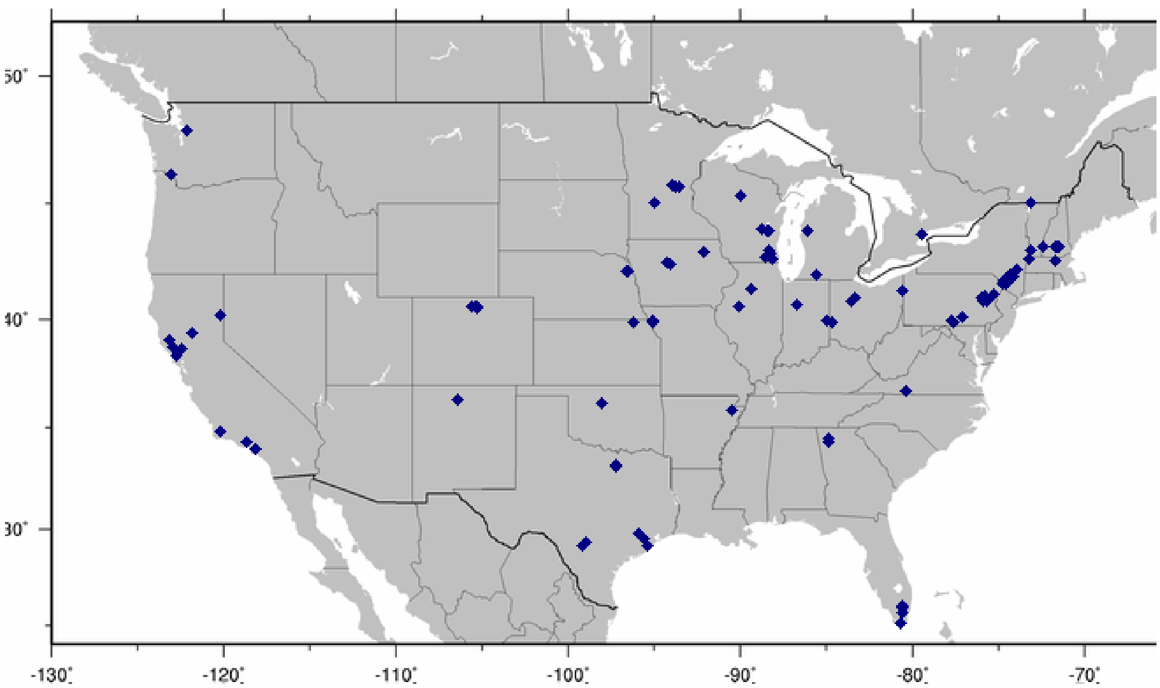


Figure 2.3
Mutual Fund Locations

Panel A. 1988



Panel B. 2000

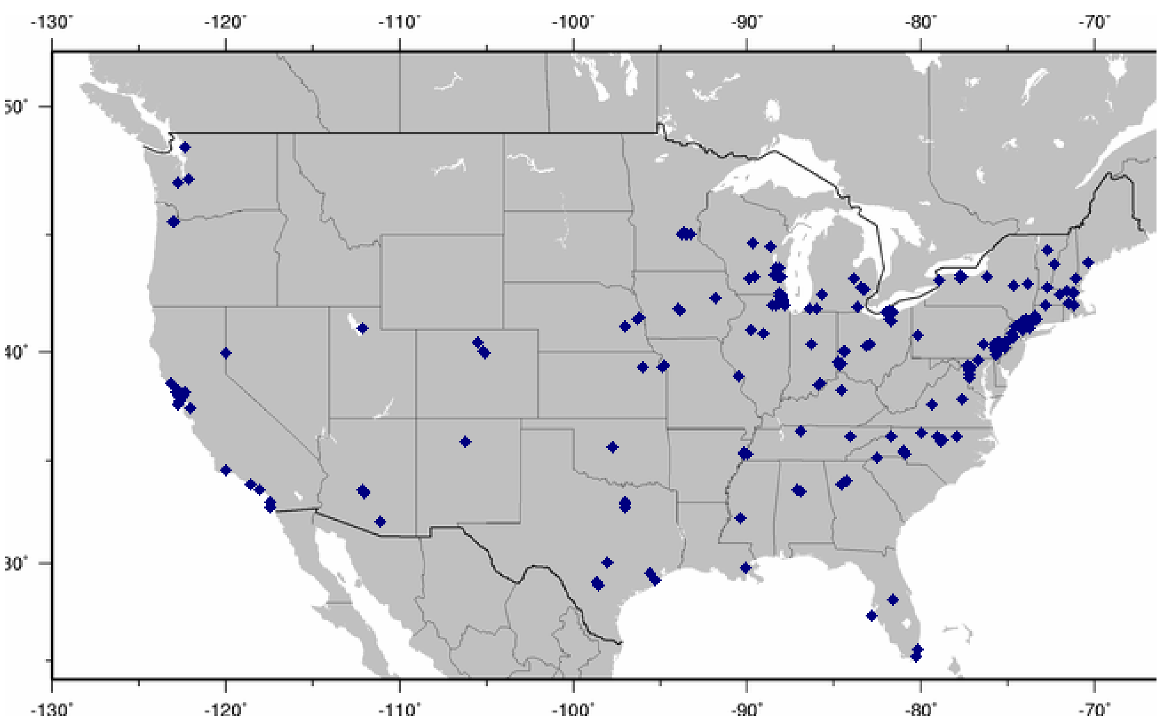
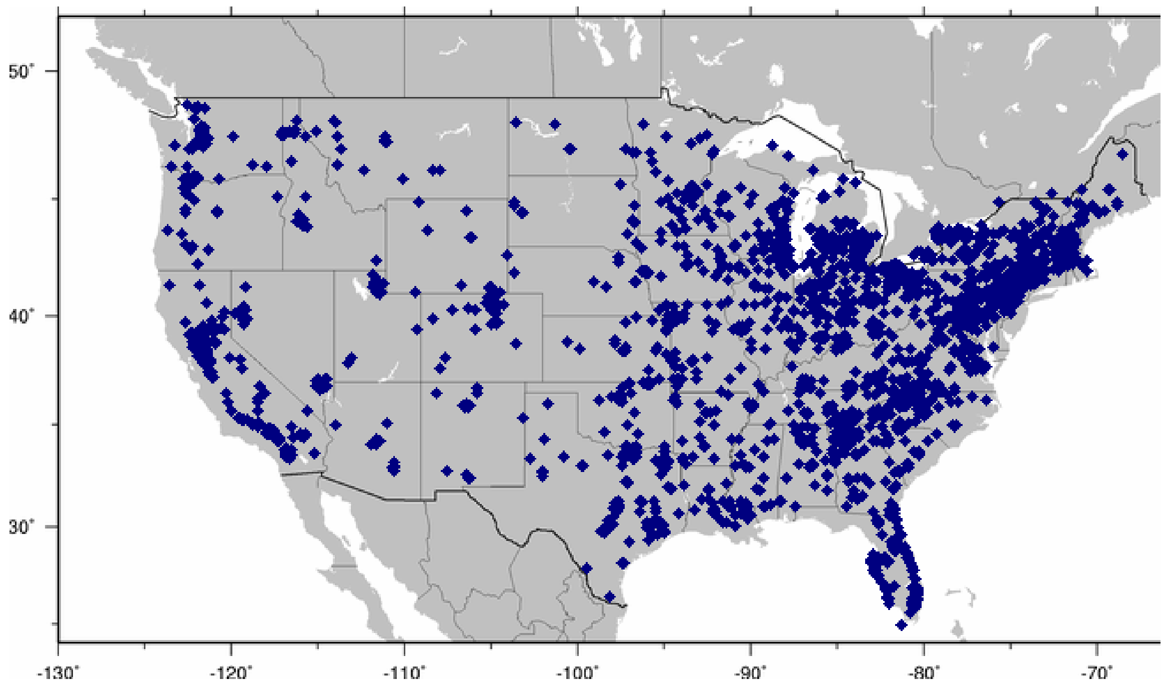
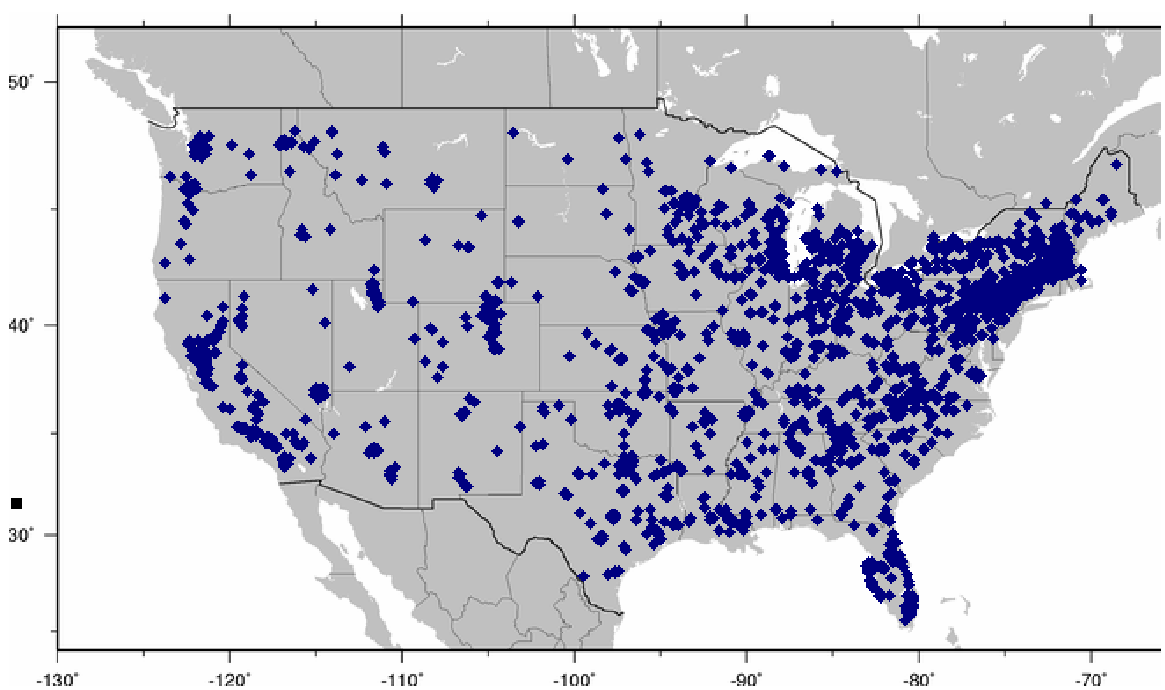


Figure 2.4
Firm Locations

Panel A. 1991



Panel B. 2000



3. Do Shareholder Preferences Affect Corporate Policies?

This chapter is structured as follows. Subsection 1 describes the data and methodology. Subsection 2 presents and discusses the evidence on the heterogeneity of institutional preference for financial policies. Subsection 3 documents the role of institutional preference on firm financial policy choices. Subsection 4 documents the potential motivations for firms to incorporate institutional preference in their financial policy choices. Subsection 5 discusses the evidence on institutional preferences for operating policies. Subsection 6 concludes.

3.1. Data and Definitions

3.1.1. Sample Construction

In this study, I use three main databases: the Thomson Financial 13F Institutional Holdings database (formerly known as the CDA/Spectrum s34 database), the annual COMPUSTAT database and the monthly CRSP stock returns database. I restrict the sample to exclude financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4949) since these industries are highly regulated. Although Thomson (CDA/Spectrum) provides quarterly snapshots of institutional investors' portfolios extracted from 13F reports filed with the

SEC[24], most of the analyses in this study focus only on reports corresponding to the institutional holdings in the fourth quarter since I use annual COMPUSTAT data to calculate firm financial and operating characteristics. The sample is limited to the 1980–2005 period since institutional holdings are only available on the Thomson database since 1980.

Throughout the analysis, I use book leverage as my main measure of leverage. Book leverage is defined as (total asset minus book equity) divided by total asset. Although all of the results are robust to replacing book leverage by market leverage, book leverage is used to abstract from the changes in leverage that are driven by the changes in the market valuation of firm equity which in turn may be related to institutional trading.

3.1.2. Industry- and Characteristics-adjusted Leverage

The literature documents evidence that firms in the same industry and those with similar characteristics tend to have similar leverages.[25] Since institutional investors may have heterogeneous preferences for industry and firm characteristics, I employ the following methodology to abstract from the effects of these

[24] As stated in SEC's website (`http://www.sec.gov/answers/form13f.htm`), "institutional investment managers who exercise investment discretion over $100 million or more in must report their holdings on Form 13F with the SEC [on a quarterly frequency]. [...] Section 13(f) securities generally include equity securities that trade on an exchange or are quoted on the Nasdaq National Market, some equity options and warrants, shares of closed-end investment companies, and some convertible debt securities."

[25] Schwartz and Aronson (1967) document evidence that firms within the same industry show no significant differences in debt ratios. Leverage ratios are also related to various firm characteristics; for example, leverage is negatively related to research and development expenditures (Long and Malitz (1985)), growth opportunities (Smith and Watts (1992)), and profitability (Kester (1986)).

preferences on their leverage preference. First, I estimate the predicted leverage for each firm based on its industry and firm characteristics using a Tobit regression. The residual from this regression is the component of leverage that is orthogonal to these industry and firm characteristics. In other words, the residual is the industry- and characteristics-adjusted leverage. Although their preferences for raw leverage may partly reflect their preferences for these characteristics, the preference for industry- and characteristics-adjusted leverage should not be affected by these characteristics. Consequently, the rest of the analyses use this industry- and characteristics-adjusted leverage instead of the raw leverage.

As suggested by Hovakimian, Opler, and Titman (2001), a Tobit regression with the following specification is employed in the first stage:

$$D/A_t^f = \alpha + \beta' X_t^f, \tag{22}$$

where X_t^f is a vector of firm characteristics that have been used in other capital structure studies: total assets, profitability, intangible asset, collateral, market-to-book ratio, age, capital expenditure, R&D expenditure, SGA expenditure, and stock return for the past two years. To control for potential time-series variations in the condition of financial markets and industries that may affect firm financial policies, the dependent and independent variables are defined as the differences from the three-digit SIC industry means for a given year.[26]

The estimated coefficients from this regression are reported in the first column of Table 3.1.[27] For the rest of this study, the focus will be on the adjusted leverage, $\widehat{D/A}_t^f$, which is the residual from the Tobit regression. The next two subsections describe how these adjusted leverages are aggregated to approximate the institutional preferences at the institution level and at the firm level.

3.1.3. Institutional Preference

Since institutional investors' preferences for firm financial policies are not directly observable, I infer these preferences from their shareholdings. In particular, institution i's preference for characteristic-adjusted leverage, $\overline{D/A}_{i,t}$, is measured as the dollar-weighted average of the characteristics-adjusted leverage ratio of each stock in its holdings:

$$\overline{D/A}_{i,t} = \sum_{f \in F_{i,t}} (\$_{i,t}^f \cdot \widehat{D/A}_t^f) \Big/ \sum_{f \in F_{i,t}} \$_{i,t}^f \,,$$

where $F_{i,t}$ is the set of all stocks held by institution i at the end of year t and $\$_{i,t}^f$ is the dollar amount of institution i's fund allocated to the stocks of firm f.

[26]The results are robust to using other industry definitions such as two-digit SIC or Fama-French 49-industry classification.

[27]The coefficients for market-related variables (M/B and stock returns) are considerably different from the ones in Hovakimian, Opler, and Titman (2001) since I use book leverage instead of market leverage.

3.1.4. Firm-Level Institutional Preference

The firm-level institutional preference is measured as the share-weighted average of the preference of each institution holding its stocks:

$$\overline{\overline{D/A}}_t^{Inst,f} = \sum_{i \text{ s.t. } f \in F_{i,t}} (\$_{i,t}^f \cdot \overline{D/A}_{i,t}) \Bigg/ \sum_{i \text{ s.t. } f \in F_{i,t}} \$_{i,t}^f \ ,$$

where $\overline{D/A}_{i,t}$ is the institutional preference of institution i as defined above. This firm-level aggregate preference will be referred to as *institutional preferred leverage ratio* for the rest of the study.

3.2. Heterogeneity in Institutional Leverage Preference

3.2.1. Heterogeneity in Institutional Holdings

To examine whether there is heterogeneity in institutional leverage preference, I start by testing the null hypothesis that the average debt ratios of all institutional portfolios are the same. This null hypothesis is strongly rejected for each year in my sample both for raw debt ratios and when the debt ratios are measured relative to target debt ratios based on industry and firm characteristics.

In order to more directly measure the degree of heterogeneity in institutional preference for leverage[28], I sort institutions into annual quintiles based

[28] An astute reader may argue that each investor can substitute home-made leverage for firm-made leverage by borrowing/lending on her own. This is not necessarily true for the

on their revealed preferences ($\overline{D/A}_{i,t}$) and examine how their shareholdings evolve. The average leverage of stocks held by institutions within each quintile is reported in Panel A of Table 3.2. The average adjusted leverage of firms held by institutions in the top leverage preference quintile is 6.09%, which is more than 13 percentage points higher than the average leverage of firms held by institutions in the bottom quintile.

Although the observed heterogeneity in the leverage of institutional holdings is quite significant, this heterogeneity may not be caused by the active decisions of these institutions. In other words, if institutions were assigned stocks randomly, some institutions would end up with high leverage stocks while others would end up with low leverage stocks. To examine this possibility, I simulate the distribution of average debt ratios of institutional portfolios by replacing each stock in each institution's year-t portfolio with a random stock. These hypothetical portfolios are sorted annually into leverage quintiles based on the average leverage ratios of the (random) stocks in these portfolios. The time-series average of the spread between the top and bottom quintiles is calculated for each simulation run. Panel A of Figure I reports the cumulative distribution of these simulated averages from 10,000 simulation runs. The observed spread (13.16%) is higher than 99% of the simulated spreads, which suggests that the the observed heterogeneity in the leverage of institutional

institutional investors in my sample because they may have restrictions on their investment strategies (e.g., they may only hold equity only or a certain minimum amount of equity). In this sense, the degree of heterogeneity we observe in the data is related to how binding these restrictions are for the institutions in my sample.

holdings is not likely to be caused by random stock selections.

In order to have a better understanding of the extent of institutional preference for leverage, I examine whether institutions whose current holdings have high (low) leverages are more likely to hold and purchase stocks with high (low) leverages in the future. Panel B of Table 3.2 reports the average leverage of stocks held in the year following the ranking year (t+1) by institutions within each leverage quintile in Panel A. After controlling for industry and firm characteristics, the stocks held by institutions in the highest leverage preference quintile in the preceding year have on average 8.66% higher leverage than the stocks held by institutions in the lowest leverage preference quintile. This observed spread is higher than 98% of the simulated spreads reported in Panel B of Figure I.[29]

While the persistence in the average leverage of institutional holdings may be driven by persistent leverage preferences of institutional investors, it may also be driven by the persistence in their holdings: each institution may hold a relatively unchanged portfolio for several years. As leverage ratios tend to be similar from one year to the next, the average debt ratio of each institution's portfolio may be similar as well. To control for the persistence in holdings, I examine the average leverage of stocks initially purchased (holding initiations) by institutions within each preference quintile.

[29]As institutional portfolios tend to show some persistence, the random replacement stock in Panel B is held constant if the stock being replaced is held by a particular institution at t and t+1.

Panel C of Table 3.2 reports the average leverage of stocks initiated in the year following the ranking year (t+1) by institutions within each year-t leverage preference quintile. The stocks purchased by institutions in the highest quintile have on average 3.22% higher leverage than the stocks purchased by institutions in the lowest quintile. This difference is almost 25 percent of the difference between the average leverage of firms currently held by institutions in the top and bottom leverage preference quintiles. As this spread should be close to zero if institutions do not take leverage into account in their portfolio selection decisions, the observed spread is higher than almost all of the simulated spreads reported in Panel C of Figure I. The results so far suggest that the equity holdings and purchasing patterns of institutional investors display some persistent heterogeneous preferences for firm leverage.

While the discussion so far has focused on the levels of leverage, changes in leverage may also affect institutional portfolio choices. In particular, institutional purchases may be related to expected changes in leverage ratios. To proxy for these (unobserved) expectations, I examine the relationship between institutional purchases and the recent and future changes in leverage ratios. In particular, I ask whether institutional investors that currently hold stocks with high leverage are more likely to purchase new stocks that (i) had increased their leverage in the recent past or (ii) tend to increase their leverage in the future. If institutional investors purchase stocks based on the pattern of past (expected) leverage changes, a relationship between leverage preferences and recent (future) changes in firm leverage should be observed in institutional purchases. I find that the patterns of institutional purchases across institutions with different leverage preferences are not related to recent, contemporaneous and future changes in firm leverage.

Contrary to the observed heterogeneous preference for the level of debt ratios, the stock selections of institutional investors do not seem to be correlated with the expected changes in debt ratios. I find that the patterns of recent, contemporaneous and future changes in firm leverage are similar for stocks purchased by institutions in the top and bottom leverage preference quintiles.

3.2.2. Institution Types

As alluded to in the introduction, institutional preference for leverage may be a result of their beliefs on the economic outlook and the optimal amount of of debt to alleviate agency issues. The extent to which these beliefs actually affect the equity holdings and purchases of an institutional investor depends on the importance of these beliefs relative to this investor's other investment objectives. For example, Brickley, Lease, and Smith (1988) establish that insurance companies and banks may have either existing or potential business relationships with firms. These investors may view maintaining these relationships as the main objective of their stock investments. Consequently, their shareholdings may not fully reflect their preferences for leverage.

Additionally, Bushee (1998) suggests that institutional investors may have different incentives depending on their investment horizons and investment sizes. An investor that invests heavily in each of her holdings will only hold stocks that match her preference; consequently, her preference will be revealed strongly in her holdings. On the other hand, the preference of an investor that aims for a diversified portfolio may not be fully reflected in his holdings since he may not be able to find enough stocks that match his preference and has to invest in other stocks.

Contrary to the clear prediction for the effect of investment size on revealed preferences, the prediction for investment horizon is ambiguous. For example, an investor with a long investment horizon may or may not reveal her preference in her portfolio. As stocks in this portfolio tend to be held for a relatively long time, it is reasonable to expect these stocks to match her preference; however, her current portfolio may not reflect her actual preference as each long-held stock in her portfolio may have changed its characteristics over time. Similarly, the portfolio of an investor with a short investment horizon may not reveal his preference since stocks in this portfolio may not be selected according to his preference given that they are only held for a short horizon.

To examine these predictions, I divide institutional investors into two groups based on each of the following three classifications. First, I use the classification of institutional investors provided by Thomson Financial. Following the literature[30], I separate institutions into two groups: *Active* institutions,

[30] Brickley, Lease, and Smith (1988), Almazan, Hartzell, and Starks (2005), and Chen, Harford, and Li (2006).

which include investment advisers and investment companies, and *Passive* institutions, which include bank trust departments and insurance companies. The active investors according to this classification are not necessarily activist investors who take over the firm as in Bethel, Liebeskind, and Opler (1998) or Denis and Serrano (1996). Moreover, they are also not necessarily activist investors in the mold of public pension funds as in Carleton, Nelson, and Weisbach (1998) and Wahal (1996). As reported in columns (1) and (2) of Table 3.2, banks and insurance companies have considerably weaker revealed preferences for leverage in their holdings and their purchases than investment advisers and companies.[31]

I also use two other distinct classifications to capture the investment strategies of institutional investors as motivated by Bushee (1998). First, institutions are classified based on the stability of their portfolios to capture their investment horizons. For each institution, I calculate a *Stability* variable which is measured as the percentage of equity holding held continuously over the previous eight quarters.

$$Stability = \frac{\left(\sum w_{s,t} \cdot I_{\widetilde{w}_{s,t}>0\%}\right)}{\sum w_{s,t}},$$

[31]This evidence is also consistent with banks and insurance companies having more homogenous beliefs about the magnitude of financial distress costs or the efficacy of debt in reducing agency issues. Additionally, banks and insurance companies may have relatively larger holdings of corporate bonds which may reduce the incentive to reveal their preferences for leverage through their shareholdings.

where $w_{s,t}$ is the institutional investor's portfolio weight in firm s at the end of quarter t and $I_{\widetilde{w}_{s,t}>0\%}$ is an indicator variable that takes a value of one if stock s has been held continuously by the institutional investor for the previous two years and zero otherwise. Institutions with high *Stability* tend to hold similar stocks for a long period, while those with low *Stability* tend to replace stocks in their portfolio frequently.

Second, institutions are classified based on the concentration of their holdings. For each institution, I calculate a *Block* variable which is measured as the percentage of holding that makes up more than 5% of equity under the institution's management.

$$Block = \frac{\left(\sum w_{s,t} \cdot I_{w_{s,t}>5\%}\right)}{\sum w_{s,t}},$$

where $w_{s,t}$ is the institution's portfolio weight in firm s at the end of quarter t and $I_{w_{s,t}>5\%}$ is an indicator variable that takes a value of one if $w_{s,t}$ is greater than 5% and zero otherwise. Institutions with high *Block* tend to have concentrated holdings, while those with low *Block* tend to have diversified portfolio.

I divide institutional investors into two groups based on each of these classifications. Institutions with *Stability* greater than 1/3 are classified as *Stable* institutions, while the rest of the institutions are classified as *Dynamic* institutions. Similarly, institutions with *Block* greater than 1/3 are classified as as *Concentrated* institutions and the rest are classified as *Diversified* institutions.[32] Consistent with the prediction that institutions that invest heavily in each of their holdings will reveal stronger preference in their holdings, columns (5)-(6) of Table 3.2 report that institutions with concentrated portfolios tend to have considerably stronger revealed preferences for leverage in their holdings and their purchases. As reported in columns (3)-(4) of Table 3.2, institutions with relatively short investment horizon (low *Stability*) have considerably stronger revealed preferences for leverage in their holdings and their purchases. This suggests that the flexibility these institutions have in constructing their portfolios results in stronger revealed preferences than the intention of long-horizon institutions to hold stocks according to their preference.

3.2.3. Intensity and Persistence of Institutional Preference

In order to further examine how well institutional investors' holdings represent their preferences, this section explores the relationship between the intensity and the persistence of institutional investors' revealed preferences. In particular, I first construct a proxy for the intensity of institutional investors' revealed preferences, and then test whether this proxy is positively correlated with the persistence of these revealed preferences.

[32]The threshold of 1/3 is arbitrarily chosen such that the number of institutions in each classification is similar. The results reported here are robust to changing this threshold.

I estimate the intensity of each institutional investor's leverage preference by measuring the dispersion in the excess leverage ratios of the stocks in its portfolio. An institutional investor with a strong preference for a particular level of leverage will hold stocks with similar leverage ratios. On the other hand, the leverage ratios of stocks held by an institutional investor with a weak leverage preference will tend to look different from each other.

After sorting institutional investors into two annual groups on the leverage dispersion of its portfolio, I sorted institutions within each group into annual quintiles based on the average excess leverage of the stocks in their year t's portfolios. The within-quintile averages of excess leverage of (1) stocks held at the end of year t, (2) stocks held at the end of year t+1, and (3) holdings initiated in year t+1, t+2, t+3, and t+4, respectively, are reported in Table 3.3. Panel A reports the averages for institutions with above-median portfolio leverage dispersion, while Panel B reports the averages for below-median institutions.

The descriptive statistics of the sorting variable are reported in the first column ("Residual D/A_t of Holdings at t"). Comparing the numbers in this column for Panel A vs. Panel B suggests that institutional investors with above-median dispersion tend to have weaker revealed preferences as the gap between the top and bottom quintile is narrower for these institutions relative to the low-dispersion institutions. This pattern persists for the holdings of these institutions in the following year.

More importantly, this pattern persists for the stocks that these institutions initially purchased in the following years. As reported in Panel C, there are significant differences in the patterns of stocks initially purchased by low-dispersion institutions vs. high-dispersion institutions. Low-dispersion institutions tend to show more persistence in their revealed preferences: the correlation between stocks initially purchased by low-dispersion institutions and the stocks in their portfolio is higher than the respective measure for high-dispersion institutions.

In summary, the result in this section suggests that there is some heterogeneity in the revealed preferences of institutional investors for leverage. Moreover, this heterogeneity tends to persist for (at least) several years, in particular for institutional investors with stronger revealed preferences for leverage.

3.3. Institutional Preference and Financial Decisions

3.3.1. Leverage Ratio Changes

In this section, the focus is on the role of institutional preference in firms' decision to change their leverage. In particular, I ask whether (and to what extent) a firm whose leverage ratio is considerably different from the preference of its institutional shareholders attempts to reduce the difference. To answer this question, I assign each firm into one of five annual quintiles based on the difference between its industry- and characteristics-adjusted leverage ratio ($\widehat{D/A}_t^f$) and the aggregate revealed preferences of its institutional shareholders ($\overline{\overline{D/A}}_t^{Inst,f}$). If institutional preference affects firms' capital structure decision, a firm whose leverage ratio is higher (lower) than the preference of its institutional shareholders should reduce (increase) its leverage ratio.

Panel A of Table 3.4 reports the results from this univariate analysis. Firms with low leverage ratios relative to the aggregate preferences of their institutional shareholders (first line) tend to increase their leverage, and vice versa. The difference in leverage change between firms in the highest leverage quintile and those in the bottom quintile is 8.84%. Moreover, the effect is quite persistent: the difference in the leverage change in the following year (5.40%) is more than half of the difference in the first year.

In order to control for the potential effects of other firm characteristics on the changes in leverage ratio, I employ a multivariate regression with the following specification:

$$\left(\widehat{D/A}_{t+1}^f - \widehat{D/A}_t^f\right) = \beta\left(\overline{\overline{D/A}}_t^{Inst,f} - \widehat{D/A}_t^f\right) + \gamma' X_t^f, \tag{23}$$

where D/A_t^f is firm f's industry- and characteristics-adjusted leverage ratio at year t, $\overline{\overline{D/A}}_t^{Inst,f}$ is the institutional preferred leverage ratio (i.e., the aggregate revealed preferences of its institutional shareholders), and X_t^f is a vector of firm characteristics that includes financing deficit, total asset, market-to-book ratio, profitability, intangible asset, collateral, capital expenditure, R&D expenditure, SGA expenditure, and stock return for the past two years. Year fixed effects are also included in this regression to allow for potential time-series variations in the condition of financial markets that may affect firms' financial decisions.

Panel B of Table 3.4 reports the coefficient estimates from the multivariate analysis. The effect of institutional preference on changes in leverage ratios is robust to the inclusion of firm characteristics. In particular, the point estimate of β (0.172) corresponds to a 4.36% difference in the change of leverage ratio for a one standard deviation change in the difference between the institutional and firm leverage. Column (2) in Panel B reports that the effect of institutional preference on changes in leverage ratios is slightly weaker for S&P 500 firms. This suggests that managers of S&P 500 firms are less accommodating to the preferences of their shareholders relative to managers of non-S&P 500 firms. This point will be discussed in more detail below.

One may argue that if the institutional preferred leverage ratio is in the same direction as the target leverage (i.e., zero adjusted leverage), a leverage change in the direction of the preferred leverage ratio may be driven by the firm managers' desire to adjust towards target leverage. In order to control for this possibility, column (3) reports the coefficients for a regression that includes the firm's current adjusted leverage:

$$\left(\widehat{D/A}_{t+1}^{f} - \widehat{D/A}_{t}^{f}\right) = \beta\left(\overline{\overline{D/A}}_{t}^{Inst,f} - \widehat{D/A}_{t}^{f}\right) + \theta\left(\widehat{D/A}_{t}^{f}\right) + \gamma' X_{t}^{f}. \quad (24)$$

If firms are adjusting towards their institutional preference, the estimate for β should be positive. If firms are adjusting towards the target leverage, the estimated coefficient on their current leverage, θ, should be negative. In order to avoid multicollinearity, only firms for which the institutional preferred leverage ratio has the same sign as but is larger in magnitude than the firm leverage ratio (see Figure II) are included in this regression. As only about 11% of firm-year observations are in this category, the standard errors in this regression are larger than in the regression in column (1). The coefficient for the difference between institutional preferred and firm leverage ratios in column (3) is about half of that in column (1) but still significant. This coefficient has a similar magnitude as the coefficient for the current leverage ratio, suggesting that the effect of institutional investors' preference is about as strong as firm managers' adherence to target leverage.

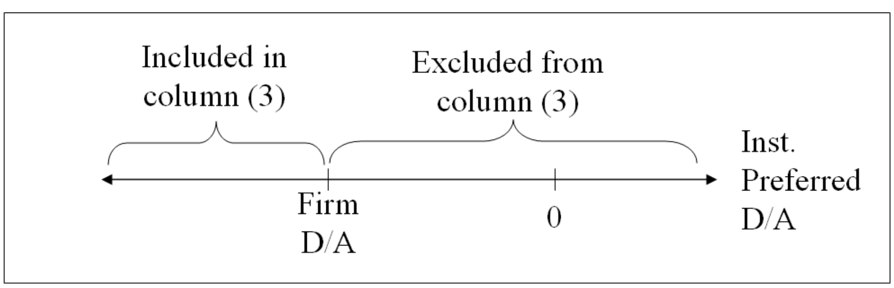


Figure II. Description of firms included in column (3) of Table III

The last set of results (column (4)) in Panel B suggests that the effect of institutional preference on changes in leverage ratios is quite persistent. The parameter estimate for the variable corresponding to institutional preference in the multivariate regressions in which the independent variable is the leverage ratio change over the subsequent year is still strongly significant. The point estimate of β (0.119) corresponds to a 2.03% difference in the change of leverage ratio for a one standard deviation change in the difference between the institutional and firm leverage.

3.3.2. Cross-Sectional Analysis: Institution Types

As the results in Table 3.2 suggest that different types of institutional investors may have different preferences, e.g., active institutional investors (investment advisors and managers) tend to have stronger revealed preferences than passive institutional investors (banks and insurance companies), it is reasonable to expect that their preferences may have different effects on firm's financial decisions. Since the preferences of different groups of institutional investors in a particular firm may be similar to each other, I employ three multivariate regressions with the following specifications to separate the effects of the respective preferences of these investors:

$$\begin{aligned} \left(\widehat{D/A}_{t+1}^{f} - \widehat{D/A}_{t}^{f}\right) &= \beta_A \left(\overline{\overline{D/A}}_{t}^{TypeA,f} - \overline{\overline{D/A}}_{t}^{TypeB,f}\right) \\ &\quad + \beta_B \left(\overline{\overline{D/A}}_{t}^{TypeB,f} - \widehat{D/A}_{t}^{f}\right) + \gamma' X_t^f, \quad (25) \end{aligned}$$

where $\overline{\overline{D/A_t}}^{TypeA,f}$ is the aggregate preferences of firm f's $TypeA$ institutional shareholders, $\overline{\overline{D/A_t}}^{TypeB,f}$ is the aggregate preferences of firm f's $TypeB$ institutional shareholders, and $(TypeA,\ TypeB) \in \{(Active,\ Passive), (Stable, Dynamic), (Diversified,\ Concentrated)\}$. The coefficient estimates from these regressions are reported in Table 3.5.

As $\overline{\overline{D/A_t}}^{TypeB,f}$ appears in both the first and second independent variables, its estimated effect on firm leverage change is $(\widehat{\beta_B} - \widehat{\beta_A})$. Consequently, the difference between the estimated effect of $TypeA$ shareholders $(\widehat{\beta_A})$ and that of $TypeB$ shareholders is:

$$\widehat{\beta_A} - (\widehat{\beta_B} - \widehat{\beta_A}) = 2 \cdot \widehat{\beta_A} - \widehat{\beta_B}.$$

For *Active* vs. *Passive* shareholders, the difference is 0.056 ($p = 0.19$). While this difference is not statistically significant, the difference between *Stable* and *Dynamic* shareholders [0.069 ($p = 0.06$)] and between *Diversified* and *Concentrated* shareholders [0.170 ($p < 0.01$)] are statistically significant and larger in magnitude.

While institutions with more flexibility in their holdings (concentrated and dynamic institutions) have considerably stronger revealed preferences for leverage, the results in Table 3.5 suggest that less-flexible institutions (i.e., stable and diversified institutions) tend to have stronger impacts on firm's financial policy. This seems to suggest that the latter institutions try to make up for their inability to select stocks based on their preferences and fully reveal their preferences in their shareholdings by exerting their preferences more forcefully on the firms in their portfolios.

3.3.3. Intra-Firm Heterogeneity in Institutional Preferences

In this section, I explore the hypothesis that firm managers will be more (less) likely to accommodate the preferences of their shareholders if the preferences of these investors are more similar (heterogeneous). The heterogeneity in the institutional shareholders' preferences of each firm is proxied using three variables: (1) the inter-quartile range of the preferences of institutional shareholders, (2) the standard deviation of these preferences, and (3) the number of institutional shareholders. At the end of year t, each firm is assigned into quintiles based on each of these three variables. Panel A of Table 3.6 reports the pair-wise quintile correlations among these variables.

Panel B reports the coefficients from the regression of the change in excess leverage on various firm characteristics and year fixed effects. The dependent variable is the change in excess leverage in year $t+1$. In addition to the explanatory variables included in Table 3.4, two indicator variables are included in each of these regressions: "Low Heterogeneity" which takes the value of one if the heterogeneity proxy is in the lowest quintile and zero otherwise, and "Medium Heterogeneity" which takes the value of one if the heterogeneity proxy is in the middle three quintiles and zero otherwise. The main variables of interest are the interactions between these indicator variables and the gap between the firm's institutional preferred leverage and its excess leverage ratios. More precisely, I run the following regressions:

$$
\begin{aligned}
\left(\widehat{D/A}^{f}_{t+1} - \widehat{D/A}^{f}_{t}\right) \;=\;& \beta\left(\overline{\overline{D/A}}^{Inst,f}_{t} - \widehat{D/A}^{f}_{t}\right) \\
&+ \beta_L\left[I_{LowHeterogeneity}\cdot\left(\overline{\overline{D/A}}^{Inst,f}_{t} - \widehat{D/A}^{f}_{t}\right)\right] \\
&+ \beta_M\left[I_{MediumHeterogeneity}\cdot\left(\overline{\overline{D/A}}^{Inst,f}_{t} - \widehat{D/A}^{f}_{t}\right)\right] \\
&+ \alpha_L I_{LowHeterogeneity} + \alpha_M I_{MediumHeterogeneity} + \\
&\quad + \gamma' X^{f}_{t}. \qquad (26)
\end{aligned}
$$

Consistent with the hypothesis that firms whose shareholders have similar preferences are more likely to accommodate the preferences of their shareholders relative to firms whose shareholders have heterogenous preferences, firms with low values of investor heterogeneity proxies exhibit stronger correlations between aggregate shareholder preferences and financial decisions. The point estimates of β_{LH} suggest that the effect of institutional preferences on corporate policies is about 15% higher for firms with low values of heterogeneity proxies relative to the corresponding effect for firms with high values of heterogeneity proxies.

While the coefficient estimates of β_{LH} are statistically significant, the economic magnitude seems to suggest that the effect of institutional investors preference on corporate policies is achieved mostly through the aggregate preference as the effect of institutional investors preference on corporate policies is still relatively strong (about 15%) for firms with high values of heterogeneity proxies. This seems to suggest that the effect of institutional investors on corporate policies comes through trading as opposed to voting or direct influencing.

3.3.4. Cross-Sectional Analysis: Firm Characteristics

Column (2) in Panel B of Table 3.4 reports that the relationship between institutional preference and future changes in leverage ratios is slightly weaker for S&P 500 firms. As S&P 500 firms tends to have larger (potential) investor bases than other firms, their managers may be less likely to accommodate the preferences of their current shareholders. This observation motivates the following hypothesis: firm managers will be less likely to accommodate the preferences of their shareholders when they have lower incentives to do so. To formally test this hypothesis, I divide firms into five quintiles each year based on size (i.e., total asset) and age (i.e., number of years since first appearance in COMPUSTAT). Firms in the top size quintile are categorized as "Large" firms, while those in the bottom quintile are categorized as "Small". Similarly, firms in the top age quintile are categorized as "Old", while those in the other extreme quintile are categorize as "Young".[33] The indicator variables for these categories are then interacted with $\left(\overline{\overline{D/A}}_t^{Inst,f} - \widehat{D/A}_t^f\right)$ to identify the variation in institutional effects on firms from different size/age groups. In

[33]This threshold (i.e., quintiles) is admittedly arbitrary. However, the results are similar if thirds, quartiles, or deciles are used instead.

particular, I run the following regressions:[34]

$$\begin{aligned}
\left(\widehat{D/A}^{f}_{t+1} - \widehat{D/A}^{f}_{t}\right) &= \beta\left(\overline{\overline{D/A}}^{Inst,f}_{t} - \widehat{D/A}^{f}_{t}\right) \\
&\quad + \beta_{Large}\left[I_{Large}\cdot\left(\overline{\overline{D/A}}^{Inst,f}_{t} - \widehat{D/A}^{f}_{t}\right)\right] \\
&\quad + \beta_{Small}\left[I_{Small}\cdot\left(\overline{\overline{D/A}}^{Inst,f}_{t} - \widehat{D/A}^{f}_{t}\right)\right] \\
&\quad + \gamma' X^{f}_{t}, \qquad (27)
\end{aligned}$$

$$\begin{aligned}
\left(\widehat{D/A}^{f}_{t+1} - \widehat{D/A}^{f}_{t}\right) &= \beta\left(\overline{\overline{D/A}}^{Inst,f}_{t} - \widehat{D/A}^{f}_{t}\right) \\
&\quad + \beta_{Old}\left[I_{Old}\cdot\left(\overline{\overline{D/A}}^{Inst,f}_{t} - \widehat{D/A}^{f}_{t}\right)\right] \\
&\quad + \beta_{Young}\left[I_{Young}\cdot\left(\overline{\overline{D/A}}^{Inst,f}_{t} - \widehat{D/A}^{f}_{t}\right)\right] \\
&\quad + \gamma' X^{f}_{t}. \qquad (28)
\end{aligned}$$

I hypothesize that managers of older and larger firms are less likely to accommodate the preferences of their current shareholders since these shareholders are more easily replaceable due to the larger potential investor bases of these firms.

Consistent with this hypothesis, columns (1) and (2) of Table 3.7 report that the coefficients on the interaction terms with Large (β_{Large}) and Old (β_{Old}) are significantly positive. On the other hand, the coefficients on the interaction

[34] The indicator variables are not included by themselves in the regressions since X^{f}_{t} includes the continuous versions of these variables: log(Size) and log(Age). The results are similar whether these indicator variables are included or not. Similar results also obtain if the continuous variables are used instead of the indicator variables in the interactions.

terms with Small (β_{Small}) and Young (β_{Young}) are negative. The point estimates of β_{Large} and β_{Small} suggest that the effect of institutional preferences of corporate debt ratio is reduced by 18% for large firms and increased by 48% for small firms (relative to firms in the middle three size quintiles). Similarly, the effect of institutional preferences is reduced by 31% for old firms and increased by 30% for young firms (relative to firms in the middle three age quintiles).

The previous test is an indirect test of how the relative powers of institutional investors and firm managers affect their interaction. To more directly test the effect of relative powers on the shareholder-manager relationship, I identify CEOs with weaker career concerns by constructing the following proxy using data from ExecuComp:[35]

$$I_{\text{Powerful CEO}} = \begin{cases} 1, & \text{if the firm's CEO is over 60 years old and} \\ & \quad\text{also holds the chairman position} \\ 0, & \text{otherwise} \end{cases}$$

In order to test whether these *Powerful CEOs* are less likely to accommodate the preferences of their shareholders due to their weaker career concerns, I

[35]Since ExecuComp only tracks S&P 1500 firms from 1992, the sample is much smaller than the full sample. More importantly, the ExecuComp sample consists of relatively older and larger firms than the full sample.

employ the following regression:

$$\begin{aligned}\left(\widehat{D/A}_{t+1}^{f} - \widehat{D/A}_{t}^{f}\right) &= \beta\left(\overline{\overline{D/A}}_{t}^{Inst,f} - \widehat{D/A}_{t}^{f}\right) \\ &\quad + \beta_{PowerfulCEO}\left[I_{PowerfulCEO}\cdot\left(\overline{\overline{D/A}}_{t}^{Inst,f} - \widehat{D/A}_{t}^{f}\right)\right] \\ &\quad + \gamma_{PowerfulCEO}\ I_{PowerfulCEO} + \gamma' X_{t}^{f}. \qquad (29)\end{aligned}$$

As reported in column (3) of Table 3.7, the presence of a CEO with weaker career concerns reduces the effect of institutional preference on future leverage decisions. Overall, the results in this section suggest that institutional investors play a less significant role in corporate decisions when their positions are relatively weaker.

3.3.5. Debt-Equity Choices

Although the results in previous sections suggest that firms tend to reduce (increase) their leverage ratios when these ratios are higher (lower) than the aggregate preferences of their institutional shareholders, these results do not indicate whether institutional preferences affect firms' financing choices when they raise new funding or retire/repurchase existing capital. If institutional preferences affect security choices, firms needing new capital should be more (less) likely to issue debt than to issue equity when their leverage ratios are lower (higher) than the aggregate preferences of their institutional shareholders, and vice versa. Similarly, firms with excess capital should be more (less) likely to repurchase shares than to repay debt when their leverage ratios are lower (higher) than the aggregate preferences of their institutional shareholders.

In order to examine the extent to which institutional preferences affect security choices, I focus on firms that issue/repurchase debt or equity. Firms are defined as issuing (repurchasing) a security when the net amount issued (repurchased) exceeds 5% of the book value of assets. Each issuer/repurchaser is assigned into one of three groups (top, middle three, and bottom quintiles) based on the difference between its characteristics-adjusted leverage ratio ($\widehat{D/A}_t^f$) and the institutional preferred leverage ratio ($\overline{\overline{D/A}}_t^{Inst,f}$) within each year. The first two columns of Panel A in Table 3.8 report the probability that a firm in each group chooses to take a leverage-increasing action (issue debt/repurchase shares) instead of a leverage-reducing action (issue equity/repay debt) when it raises new funding or reduces its capital. Panel B reports the marginal effects from a multivariate probit regression that includes target leverage (from Tobit regression in Table 3.1) and other firm characteristics that are related to the debt-equity decision.

The results in Panel A suggest that firms are more likely to take leverage-increasing actions (issue debt or repurchase shares) than to take leverage-decreasing actions (issue equity or repay debt) when their leverage ratios are below the aggregate preferences of their institutional shareholders, and vice versa. These institutional effects are weaker when firms need capital (col. 1) than when they distribute extraneous capital (col. 2). These results are robust to the inclusion of firm characteristics that may affect the firm's financing decisions in Panel B.

Motivated by the above results, I also examine how institutional preference affect firms' debt-equity choice when they do not raise new capital. In particular, I examine the probability that firms recapitalize by increasing leverage (issuing debt to repurchase shares) instead of decreasing leverage (issuing equity to repay debt). If institutional preferences affect this choice, firms should be more (less) likely to undertake leverage-increasing recapitalization when their leverage ratios are lower (higher) than the aggregate preferences of their institutional shareholders, and vice versa. The last column in Panel A reports the probability that a firm in each group chooses to take leverage-increasing actions (issue debt *and* repurchase shares) instead of leverage-reducing actions (issue equity *and* repay debt) when it rearrange its capital structure. The results here suggest that firms are more likely to undertake leverage-increasing than leverage-decreasing recapitalization when their leverage ratios are low relative to the aggregate preferences of their institutional shareholders. This result is robust to the inclusion of firm characteristics in Panel B.

Overall, the results in Table 3.8 suggest that institutional preferences play an important role in the debt-equity decisions. However, these preferences tend to play a more significant role when firms are not in need of capital. This result may seem counterintuitive if one expects the existing shareholders to be the potential source for the new capital. Consequently, this result seems to suggest that firm managers ignore current shareholders' preferences because they need to attract additional and different investors when they issue equity.

3.4. Institutional Preference, Firm Actions, and Stock Returns

While the results so far suggest that institutional preferences affect firms' leverage decisions, this section examines potential motivations for firm managers to heed these preferences. One channel through which institutional investors can voice their displeasure when firm managers ignore their preferences is by selling their shares. Although firm managers may not give attention to the resulting change in the shareholder composition per se, institutional selling tend to be accompanied by negative price pressure which firm managers may want to avoid for a variety of reasons.

Alternatively, heeding institutional preferences may add value if institutions act as monitors and help firm managers choose the optimal financial decisions. Although Wohlstetter (1993) argues that institutional fund managers lack the ability to effectively monitor management, whether or not this is true is an empirical question. If institutional investors act as monitors and their aggregate preference corresponds to a more efficient strategy than the current policy of a particular firm, firm value should increase (decrease) as the firm managers follow (act against) the aggregate preference of its institutional shareholders. In contrast to the negative price pressure hypothesis, no price reversal should be observed as the reduction in firm value due to the reduction in monitoring should be permanent.

In this section, I focus on the price changes and institutional exits accompanying financing decisions that are consistent with (or against) institutional preferences. In particular, I use a portfolio approach to estimate the return effect of following/ignoring institutional preference. Firms are sorted into three annual portfolios based on the leverage changes made in year t relative to the difference between its institutional preferred leverage ratio and its excess leverage ratios at the beginning of year t. The first two portfolios include firms that make major leverage changes, defined as more than 5% of the gap between the institutional preferred leverage ratio and the excess leverage ratio at the beginning at t: the first portfolio includes firms that make changes in the direction of institutional preferred ratio ("Follow"), and the second portfolio includes firms that make changes in the opposite direction ("Ignore").[36] The last portfolio includes firms that make no or minor leverage changes of less than 5% of the gap in either direction.

If there is a negative price reaction due to institutional selling following financing decisions that are against the preferences of these institutional investors, firms with high leverage ratios relative to the institutional preferred

[36]It is important to note that "Follow" portfolios include both firms that take leverage-increasing actions (such as debt issuance, share repurchase, and recapitalization by issuing debt and repurchasing shares) and firms that take leverage-decreasing actions. This is true for "Ignore" portfolios as well.

leverage ratio should be more likely to experience negative price change if these firms increase their leverage ratios. In other words, firms in the "Follow" portfolio should outperform those in the "Ignore" portfolio. Moreover, we should see a long-run reversal of this outperformance if this superior performance is due to the price pressure associated with institutions selling stocks in the "Ignore" portfolio.

In the first column of Panel A of Table 3.9, I report the three- and four-factor alphas of each of these annual (equal-weighted) portfolios as well as a portfolio consisting of a long position in the "Follow" portfolio and a short position in the "Ignore" portfolio. After controlling for risk, firms that make changes in the direction of institutional preferred ratio outperform those that make changes in the opposite direction by more than 22 bps per month. As illustrated in the rest of Table 3.9, the superior performance of firms that make changes in the direction of the preference of their institutional investors is concentrated in firms whose leverage gap is relatively large (more than 10% of assets).

In an unreported analysis, I also find that institutional investors are the most likely to exit firms with low leverage ratios (relative to the preferences of their institutional investors) that decreases its leverage. Although this evidence is consistent with price pressure associated with institutional selling, the cumulative four-factor alpha difference of 3.54% in the first year after the decision is not reversed in the following years. This absence of price reversal suggests that institutional investors add positive value through monitoring.

3.5. Institutional Preference and Investment Decisions

While the discussion so far has focused on the relationship between institutional preference and firm financial decisions, institutional investors may also affect the investment decisions of firms in their portfolios. Bushee (1998) finds that managers are less likely to cut R&D to reverse an earnings decline when institutional ownership is high. On the other hand, Bushee also finds that a relatively high ownership by institutions with high portfolio turnover significantly increases the probability that managers reduce R&D to reverse an earnings decline. As these results suggest that institutions may have heterogeneous preferences for investment policy, this section examines how institutional preference affect both capital investment (capital expenditures) and R&D expenditure.

3.5.1. Institutional Preference for Investment and R&D

The institutional preferences for investment and R&D are calculated in a similar fashion as their preference for leverage. In order to control for institutional investors' heterogeneous preferences for industry and firm characteristics, I use the residuals from multivariate regressions which include firm characteristics and in which the dependent and independent variables are defined as the differences from three-digit SIC industry means for a given year.

The coefficients from these regressions are reported in the last columns (2) and (3) of Table 3.1.

In order to measure the degree of heterogeneity in institutional preference for investment and R&D, I sort institutions into annual quintiles based on the revealed preferences extracted from their equity holdings. The average investment (R&D) preference for institutions within each investment (R&D) preference quintile is reported in the first column of Panel A (B) of Table 3.10. The average industry- and characteristics-adjusted investment ratio of firms held by institutions in the top investment preference quintile is 1.92%, which is 3.33 percentage points higher than the average investment ratio of firms held by institutions in the bottom quintile. Similarly, the average adjusted R&D ratio of firms held by institutions in the top R&D preference quintile is 3.31 percentage points higher than that of firms held by institutions in the bottom quintile.

Table 3.10 also reports the average adjusted investment and R&D ratios of firms held by institutions in the top, middle three and bottom preference quintiles in the year following the ranking year (t+1). The stocks held by institutions with investment preference in the highest quintile in the preceding year have on average 1.25% higher investment ratio than those held by institutions with investment preference in the lowest quintile. This spread is 37.49% of the difference in the ranking year (3.33%), which is relatively low compared to the corresponding spread in R&D ratio as reported in Panel B of Table 3.10 (58.09%=1.92%/3.31%) and in leverage as reported in Table 3.2 (65.90%=8.66%/13.16 %).

The stocks initially purchased by institutions with investment preference in the highest quintile at the end of the preceding year have on average 0.14% higher investment ratio than those initially purchased by institutions with investment preference in the lowest quintile. This spread is only marginally significant and corresponds to only 4.18% of the difference in the ranking year. The preference for R&D is only slightly stronger: stocks initially purchased by institutions with high R&D preference at the end of the preceding year have on average 0.26% higher R&D ratio than those initially purchased by institutions with low R&D preference. In summary, both investment and R&D preferences are significantly weaker relative to the leverage preference reported in Table 3.2.

3.5.2. Investment and R&D Decisions

This section examines whether (and to what extent) a firm whose investment/R&D ratio is considerably different from the preference of its institutional shareholders attempts to reduce this difference. To control for the potential effects of other firm characteristics on the changes in investment and R&D ratios, I employ multivariate regressions with the following specifications for investment:

$$\left(\widehat{Inv/A}^{f}_{t+1} - \widehat{Inv/A}^{f}_{t}\right) = \beta_{Inv,1}\left(\overline{\overline{Inv/A}}^{Inst,f}_{t} - \widehat{Inv/A}^{f}_{t}\right) + \gamma'_{Inv,1}X^{f}_{t}, \tag{30}$$

$$\left(\widehat{Inv/A}^{f}_{t+2} - \widehat{Inv/A}^{f}_{t+1}\right) = \beta_{Inv,2}\left(\overline{\overline{Inv/A}}^{Inst,f}_{t} - \widehat{Inv/A}^{f}_{t}\right) + \gamma'_{Inv,2}X^{f}_{t}, \tag{31}$$

and the following specifications for R&D:

$$\left(\widehat{R\&D/A}^{f}_{t+1} - \widehat{R\&D/A}^{f}_{t}\right) = \beta_{R\&D,1}\left(\overline{\overline{R\&D/A}}^{Inst,f}_{t} - \widehat{R\&D/A}^{f}_{t}\right) + \gamma'_{R\&D,1}X^{f}_{t}, \tag{32}$$

$$\left(\widehat{R\&D/A}^{f}_{t+2} - \widehat{R\&D/A}^{f}_{t+1}\right) = \beta_{R\&D,2}\left(\overline{\overline{R\&D/A}}^{Inst,f}_{t} - \widehat{R\&D/A}^{f}_{t}\right) + \gamma'_{R\&D,2}X^{f}_{t}, \tag{33}$$

where $\widehat{Inv/A}^{f}_{t}$ and $\widehat{R\&D/A}^{f}_{t}$ is firm f's industry- and characteristics-adjusted investment and R&D ratios, respectively, at year t, $\overline{\overline{Inv/A}}^{Inst,f}_{t}$ is the institutional preferred investment ratio (i.e., the aggregate revealed preferences of its institutional shareholders), $\overline{\overline{R\&D/A}}^{Inst,f}_{t}$ is the institutional preferred R&D ratio, and X^{f}_{t} is a vector of firm characteristics that includes financing deficit, total asset, market-to-book ratio, profitability, intangible asset, collateral, and firm age. Year fixed effects are also included in these regressions to allow for potential time-series variations in market condition that may affect firm investment or R&D decisions.

The estimated coefficients from these regressions are reported in Table 3.11. The point estimates of $\beta_{Inv,1}$ (0.537) and $\beta_{Inv,2}$ (0.181) correspond to firms removing 71.8% of the difference between the actual and institutional preferred investment ratios within two years. The point estimates of $\beta_{R\&D,1}$ (0.329) and $\beta_{R\&D,2}$ (0.040) correspond to firms removing 36.9% of the difference between the actual and institutional preferred R&D ratios within two years.

These effects are relatively stronger and more immediate than the institutional effect on leverage. While the institutional effect on leverage in the second year after the institutional preference is measured is about 60% of the effect in the first year, the corresponding figures for investment and R&D are 33.76% and 12.26%, respectively. As these results suggest that institutional investors have the ability to influence investment and R&D decisions more quickly than they do with leverage decisions, it is not surprising to see that institutions buy stocks without paying too much attention to how these stocks fit their investment and R&D preferences (in Table 3.10). In other words, the results seem to suggest that institutions are more likely to initiate equity positions in firms according to their preferences if these preferences are less likely to be heeded once the firms are in their portfolios.

If we assume that managers have more control over the investment and R&D ratios relative to leverage ratios, these results are also similar to the earlier result that managers follow institutional preferences more readily when they have funds to disbursed than when they are in need of new funding: managers are more likely to accommodate institutional preferences when it is easier for them to do so.

3.6. Concluding Remarks

The role of institutional investors in the corporate policy decisions of firms in their portfolios is still not well understood in the literature. Using the revealed preferences of institutional investors from their equity holdings, I find that institutional investors play a significant role in firms' financial and investment policies. For example, a firm is more likely to increase leverage through share repurchases if its current leverage is lower than the aggregate preference of its institutional shareholders. Moreover, firms that change leverage ratios in the opposite direction of the aggregate preferences of their shareholders experience lower stock returns than those that follow the aggregate leverage preferences of their institutional investors.

In addition to the reported empirical results, this study also offers a novel empirical approach to infer the heterogenous preferences of institutional investors. Applying this approach to other types of firm decisions (financial or otherwise) can provide more insights on the role of institutional investors in corporate policy decisions.

Table 3.1

Multivariate Regressions Predicting Leverage, Investment and R&D Ratios

The table presents the coefficient estimates from multivariate Tobit regressions of book leverage, investment and R&D ratios on various firm characteristics. All variables are demeaned by the three-digit SIC industry annual means. The Tobit specification is used because the dependent variables are bounded. Column (1) reports the regression coefficients for leverage, column (2) for investment (capital expenditure), and column (3) for R&D. The last column reports the definition for each independent variable (with # denoting the annual Compustat item number). Standard errors are reported in parentheses. Single (*), double (**) and triple asterisks (***) denote statistical significance at the 10%, 5% and 1% levels, respectively.

Independent Variables	Debt/Asset (1)		Cap. Exp./Asset (2)		R&D/Asset (3)		Definition
Intercept	0.007***	(0.0006)	-0.003***	(0.0002)	0.000	(0.0002)	
Book Leverage(D/A)			-0.011***	(0.0013)	-0.014***	(0.0014)	(Total asset - book equity) divided by total asset
Log(Asset)	0.018***	(0.0004)	0.001***	(0.0001)	0.001***	(0.0002)	Total asset, in M [#6]
ROA	-0.145***	(0.0040)	0.031***	(0.0014)	-0.141***	(0.0014)	#13/#6
Intangible	0.237***	(0.0062)	-0.025***	(0.0022)	-0.084***	(0.0025)	#33/#6
Collateral	0.209***	(0.0042)	0.084***	(0.0015)	-0.042***	(0.0017)	(#3+#8)/#6
Log(M/B)	-0.014***	(0.0012)	0.017***	(0.0004)	0.016***	(0.0005)	(Total asset - book equity + mkt. equity) / total asset
Log(Age)	-0.004***	(0.0011)	-0.009***	(0.0004)	-0.003***	(0.0004)	Years since 1st appearance in Compustat plus one
Capital Expenditure	0.056***	(0.0098)			-0.000***	(0.0000)	#128/#6
SGA Expenditure	-0.001***	(0.0001)	0.000***	(0.0001)	0.016***	(0.0039)	#189/#12
R&D Expenditure	-0.066***	(0.0096)	0.015**	(0.0034)			#46/#12
Two-year Stock Return	0.001***	(0.0004)	0.002***	(0.0002)	-0.002***	(0.0002)	Stock returns (2-year period ending in Dec.of year *t*)
OLS R^2	0.083		0.084		0.159		
N	83,574		83,600		83,574		

Table 3.2

Institutional Leverage Preference

The table reports the leverage preferences of institutional investors. The leverage preference of each institution is measured as the dollar-weighted average of the excess leverage ratios of stocks held by that institution. At the end of year *t*, institutions are sorted into five quintiles based on their excess leverage preference. The industry- and characteristics-adjustment is described in details in Table I. Panel A reports the average excess leverage of stocks held at the end of year *t* by institutions within each preference quintile. "*Investment Companies*" institutions include CDA types 3 (investment companies) and 4 (investment advisors); "*Bank & Insurance*" include CDA types 1 (banks) and 2 (insurance companies). "*Stable*" institutions are those with more than 1/3 of their holdings continuously held over two years; the rest are categorized as "*Dynamic*" institutions. "*Diversified*" institutions are those with less than 1/3 of their holdings making up more than 5% of equity under management; the rest are categorized as "*Concentrated*" institutions. Panel B (C) reports the average excess leverage of stocks held at the end of year *t*+1 (initiated during year *t*+1) by institutions within each year *t*'s preference quintile. All reported figures are in percentages. The t-statistics reported in parentheses are adjusted using Newey-West correction for heteroscedasticity and serial correlation. Single (*), double (**) and triple asterisks (***) denote statistical significance at the 10%, 5% and 1% levels, respectively. The p-values in square brackets are obtained from simulations reported in Figure II.

Institutional Leverage Preference Quintile (at *t*)	All Institutions	Investment Companies (1)	Bank & Insurance (2)	(1) minus (2)	Stable (3)	Dynamic (4)	(3) minus (4)	Diversified (5)	Concentrated (6)	(5) minus (6)
Panel A. Excess D/A_t of Holdings at *t*										
High	6.09	6.65	6.60		7.24	7.36		6.03	13.45	
Middle Three	-0.31	-0.22	1.42		1.10	-0.29		0.09	0.55	
Low	-7.07	-7.21	-3.69		-5.53	-7.76		-6.36	-10.50	
High minus Low	13.16***	13.86***	10.29***	3.57***	12.77***	15.11***	-2.34***	12.40***	23.95***	-11.55***
	[p=0.0028]	(12.57)	(18.06)	(6.05)	(12.04)	(12.74)	(19.91)	(12.07)	(17.75)	(-20.46)
Panel B. Excess D/A_{t+1} of Holdings at *t*+1										
High	4.19	4.36	5.56		5.98	4.79		4.46	9.35	
Middle Three	0.01	0.08	1.80		1.53	0.00		0.44	0.86	
Low	-4.47	-4.49	-1.83		-3.45	-4.29		-4.03	-5.15	
High minus Low	8.66***	8.85***	7.40***	1.45***	9.42***	9.09***	0.34	8.49***	14.49***	-6.01***
	[p=0.0148]	(9.60)	(12.36)	(3.66)	(9.68)	(10.02)	(0.23)	(8.80)	(13.89)	(-11.05)
Panel C. Excess D/A_{t+1} of Stocks Initiated in year *t*+1										
High	0.65	0.34	-0.21		0.15	0.55		0.12	0.94	
Middle Three	-0.59	-0.67	-1.00		-0.42	-0.82		-0.85	-0.08	
Low	-2.57	-2.05	-1.24		-1.35	-1.81		-1.95	-2.15	
High minus Low	3.22***	2.39***	1.03**	1.36***	1.50***	2.36***	-0.85**	2.07***	3.09***	-1.02***
	[p<0.0001]	(6.60)	(2.30)	(2.83)	(4.04)	(5.66)	(-2.30)	(4.69)	(7.45)	(-2.78)

Table 3.3

Institutional Preference as a Function of Portfolio Dispersion

The table reports the leverage preferences of institutional investors as a function of the dispersion in the excess leverage of their portfolios. For each institutional investor, its portfolio dispersion is measured as the (dollar-weighted) standard deviation of the excess leverage of the stocks in its portfolio. Institutional investors are sorted into two annual groups of above- and below- median dispersions. The within-group averages of excess leverage of (1) stocks held at the end of year *t*, (2) stocks held at the end of year *t*+1, and (3) holdings initiated in year *t*+1, *t*+2, *t*+3, and *t*+4, respectively, by institutions within each year *t*'s preference quintile are reported in Panels A and B. Panel C reports the difference between the last rows of Panels A and B. All reported figures are in percentages. The t-statistics reported in parentheses are adjusted using Newey-West correction for heteroscedasticity and serial correlation.

Panel A. Institutions with *Above*-Median Dispersions

Institutional Leverage Preference Quintile (at *t*)	**Residual D/A_t of Holdings**		**Residual D/A_t of Stocks Initiated**			
	at *t*	**at *t*+1**	**at *t*+1**	**at *t*+2**	**at *t*+3**	**at *t*+4**
High	4.80	3.90	0.14	-0.04	-0.70	-0.86
Middle Three	-0.17	-0.13	-1.09	-1.50	-0.70	-0.50
Low	-5.92	-4.04	-1.56	-0.97	-1.11	-1.15
High minus Low	10.73	7.94	1.70	0.94	0.41	0.29
			(3.62)	(3.21)	(2.20)	(1.22)

Panel B. Institutions with *Below*-Median Dispersions

Institutional Leverage Preference Quintile (at *t*)	**Residual D/A_t of Holdings**		**Residual D/A_t of Stocks Initiated**			
	at *t*	**at *t*+1**	**at *t*+1**	**at *t*+2**	**at *t*+3**	**at *t*+4**
High	7.77	4.77	1.37	0.27	-0.01	-0.26
Middle Three	0.13	0.12	-0.25	-0.67	-0.75	-1.22
Low	-9.19	-5.16	-2.63	-2.11	-1.75	-1.89
High minus Low	16.95	9.93	4.00	2.38	1.75	1.63
			(4.53)	(4.12)	(3.72)	(3.52)

Panel C. Diff-in-Diff

	Residual D/A_t of Holdings		**Residual D/A_t of Stocks Initiated**			
	at *t*	**at *t*+1**	**at *t*+1**	**at *t*+2**	**at *t*+3**	**at *t*+4**
Low minus *High* Dispersion	6.22	1.99	2.30	1.44	1.34	1.34
			(3.21)	(2.52)	(2.34)	(2.21)

Table 3.4

Institutional Preferences and Subsequent Leverage Changes

The table reports the relationship between institutional investors' leverage preferences and firms' subsequent leverage changes. The institutional preferred leverage ratio of a particular firm is measured as the share-weighted average of the excess leverage preferences of the firm's institutional shareholders. At the end of year *t*, each firm is assigned into one of three leverage groups based on the difference between its institutional preferred leverage and excess leverage ratios. Panel A reports the average percentage change in leverage in year *t*+1 and *t*+2 for each leverage group. Panel B reports the coefficients from the regression of the change in excess leverage on various firm characteristics and year fixed effects. The dependent variable is the change in leverage in year *t*+1 in columns (1) through (3); and the change in leverage in year *t*+2 in column (4). The main independent variable in all columns is the difference between a firm's institutional preferred leverage and excess leverage ratios at the end of year *t*. Column (2) includes only S&P 500 firms. Column (3) includes only firms for which the institutional preferred leverage ratio has the same sign as but is larger in magnitude than the firm leverage ratio. The definitions for the explanatory variables are provided in Table I. The standard errors reported in parentheses are clustered at the firm level. Single (*), double (**) and triple asterisks (***) denote statistical significance at the 10%, 5% and 1% levels, respectively.

Panel A. Univariate Sort

(Institution - Firm Excess D/A$_t$) Quintile	Δ Excess D/A (*t* to *t*+1)	Δ Excess D/A (*t*+1 to *t*+2)
High	4.39	2.67
Middle Three	0.47	0.46
Low	-4.45	-2.73
High minus Low	8.84	5.40

Panel B. Multivariate Analysis

Independent Variables (measured at *t*)	Δ Excess D/A (*t* to *t*+1) All (1)		Δ Excess D/A (*t* to *t*+1) S&P (2)		Δ Excess D/A (*t* to *t*+1) Diff. (3)		Δ Excess D/A (*t*+1 to *t*+2) (4)	
Institution - Firm D/A	**0.172*****	**(0.0040)**	**0.145*****	**(0.0099)**	**0.072****	**(0.0361)**	**0.090*****	**(0.0034)**
Firm D/A					-0.067*	(0.0364)		
Financing Deficit	0.009***	(0.0027)	0.079***	(0.0216)	0.008	(0.0103)	-0.002	(0.0020)
Log(Asset)	-0.001***	(0.0003)	0.003***	(0.0010)	-0.001**	(0.0004)	0.001**	(0.0003)
Profitability	0.010	(0.0090)	0.045**	(0.0205)	-0.022**	(0.0108)	-0.099***	(0.0077)
Intangible	-0.051***	(0.0058)	-0.073***	(0.0115)	-0.033***	(0.0079)	0.021***	(0.0053)
Collateral	-0.017***	(0.0036)	-0.026***	(0.0086)	-0.007	(0.0046)	0.005*	(0.0031)
Log(M/B)	0.002*	(0.0012)	-0.003	(0.0030)	0.003	(0.0018)	-0.009***	(0.0013)
Log(Age)	-0.001	(0.0008)	0.005**	(0.0023)	0.000	(0.0011)	-0.001*	(0.0007)
Capital Expenditure	-0.027***	(0.0097)	-0.061**	(0.0303)	-0.024*	(0.0139)	0.028***	(0.0091)
R&D Expenditure	-0.014	(0.0148)	-0.004	(0.0318)	0.036**	(0.0178)	0.016	(0.0134)
SGA Expenditure	0.001***	(0.0002)	0.021**	(0.0084)	0.001	(0.0011)	-0.001	(0.0005)
Two-Year Stock Return	-0.002***	(0.0006)	-0.002	(0.0021)	-0.001	(0.0007)	0.001*	(0.0005)
Year Fixed Effects	Yes		Yes		Yes		Yes	
Adj. R^2	0.084		0.090		0.016		0.043	
N	43,013		4,803		4,764		35,125	

Table 3.5

Institutional Preferences and Subsequent Leverage Changes as a Function of Institutional Investor Characteristics

The table reports the relationship between the leverage preferences of different groups of institutional investors and firms' subsequent leverage changes. The institutional preferred leverage ratio of a particular firm is measured as the share-weighted average of the leverage preferences of the firm's institutional shareholders. This table reports the coefficients from the regression of the change in excess leverage on various firm characteristics and year fixed effects. The dependent variable is the change in leverage in year *t*+1. The main independent variables in column (1) are (a) the difference between the leverage preference of "Bank & Insurance" and the firm's excess leverage ratios; and (b) the difference between the leverage preference of "Investment Companies" vs. that of "Bank & Insurance". The main independent variables in column (2) are (a) the difference between the leverage preference of "Dynamic" institutional investors and the firm's excess leverage ratios; and (b) the difference between the leverage preference of "Stable" investors vs. that of "Dynamic" investors. The main independent variables in column (3) are (a) the difference between the leverage preference of "Concentrated" institutional investors and the firm's excess leverage ratios; and (b) the difference between the leverage preference of "Diversified" investors vs. that of "Concentrated" investors. The definition for each of these institutional investor groups is provided in Table II. The definitions for other explanatory variables are provided in Table I. The standard errors reported in parentheses are clustered at the firm level. Single (*), double (**) and triple asterisks (***) denote statistical significance at the 10%, 5% and 1% levels, respectively.

Independent Variables (measured at *t*)	Δ Excess D/A (*t* to *t*+1)					
	(1)		(2)		(3)	
InvestmentCo. – Bank&Ins.	0.114***	(0.0219)				
Bank&Ins. – Firm D/A	0.171***	(0.0042)				
Stable – Dynamic			0.121***	(0.0186)		
Dynamic – Firm D/A			0.173***	(0.0043)		
Diversified – Concentrated					0.171***	(0.0113)
Concentrated – Firm D/A					0.172***	(0.0056)
Financing Deficit	0.009***	(0.0028)	0.008***	(0.0027)	0.031***	(0.0067)
Log(Asset)	0.000	(0.0004)	0.000	(0.0004)	0.001	(0.0005)
Profitability	-0.002	(0.0101)	0.009	(0.0103)	0.008	(0.0110)
Intangible	-0.049***	(0.0059)	-0.050***	(0.0060)	-0.052***	(0.0068)
Collateral	-0.015***	(0.0038)	-0.016***	(0.0039)	-0.020***	(0.0047)
Log(M/B)	0.003**	(0.0013)	0.003**	(0.0014)	-0.002	(0.0018)
Log(Age)	0.000	(0.0009)	-0.001	(0.0009)	0.000	(0.0010)
Capital Expenditure	-0.030***	(0.0101)	-0.033***	(0.0104)	-0.021	(0.0135)
R&D Expenditure	-0.018	(0.0162)	-0.011	(0.0165)	0.003	(0.0201)
SGA Expenditure	0.001***	(0.0002)	0.001***	(0.0003)	0.001***	(0.0001)
Two-Year Stock Return	-0.002***	(0.0006)	-0.002***	(0.0006)	-0.002**	(0.0008)
Year Fixed Effects	Yes		Yes		Yes	
Adj. R^2	0.084		0.084		0.089	
N	38,754		36,554		20,978	

Table 3.6

Heterogeneity in Institutional Preferences and Leverage Changes

The table reports the effect of the heterogeneity in the preferences of a particular firm's institutional shareholders on the relationship between the aggregate institutional preference and the firm's subsequent leverage change. The heterogeneity in the institutional shareholders' preferences of a particular firm is proxied using three variables: (1) the inter-quartile range of the preferences of institutional shareholders, (2) the standard deviation of these preferences, and (3) the number of institutional shareholders. At the end of year *t*, each firm is assigned into quintiles based on each of these three variables. Panel A reports the pair-wise quintile correlations among these variables. Panel B reports the coefficients from the regression of the change in excess leverage on various firm characteristics and year fixed effects. The dependent variable is the change in excess leverage in year *t*+1. The main independent variable is the difference between a firm's institutional preferred leverage and excess leverage ratios at the end of year *t*. In addition to the explanatory variables included in Table 3.4 (whose coefficients are suppressed in this table), four additional variables are included in each of these regressions: "*Low Heterogeneity*" ("*Medium Heterogeneity*"), an indicator variable that takes the value of one if the heterogeneity proxy is in the lowest quintile (middle three quintiles) and zero otherwise, and their interactions with the main independent variable. Each column uses a different proxy for heterogeneity: (1) the inter-quartile range, (2) the standard deviation, and (3) the number of institutional shareholders. The standard errors reported in parentheses are clustered at the firm level. Single (*), double (**) and triple asterisks (***) denote statistical significance at the 10%, 5% and 1% levels, respectively.

Panel A. Quintile Correlation of Heterogeneity Proxies

Proxy for Dispersion	Inter-quartile Range	Std. Deviation
Std. Deviation	0.149	
Number of Holders	0.248	0.765

Panel B. Multivariate Analysis

	Δ Excess D/A (*t* to *t*+1)					
Heterogeneity Proxy	Inter-quartile Range (1)		Std. Deviation (2)		Number of Holders (3)	
Independent Variables (measured at *t*)						
Institution - Firm D/A	0.151***	(0.0086)	0.155***	(0.0083)	0.141***	(0.0103)
* Medium Heterogeneity	0.011	(0.0102)	0.005	(0.0100)	0.026**	(0.0115)
*** Low Heterogeneity**	**0.026****	**(0.0117)**	**0.025****	**(0.0115)**	**0.025***	**(0.0130)**
Medium Dispersion	0.001	(0.0018)	0.002	(0.0018)	-0.002	(0.0024)
Low Dispersion	0.001	(0.0022)	0.008***	(0.0026)	0.003	(0.0035)
(Other explanatory variables are included, but their coefficients are suppresed)						
Year Fixed Effects	Yes		Yes		Yes	
Adj. R^2	0.091		0.090		0.090	
N	43,013		43,013		43,013	

Table 3.7

Institutional Preferences and Subsequent Leverage Changes as a Function of Firm Characteristics

The table reports the relationship between institutional leverage preference and subsequent changes in debt ratios of various types of firms. This table reports the coefficients from the regression of the change in excess leverage on various firm characteristics and year fixed effects. The dependent variable is the change in leverage in year *t*+1. The main explanatory variables are (a) the difference between the debt ratio preferred by its institutional investors and the firm's excess leverage ratio; and (b) its interaction with the following dummy variables. "Large" ("Small") takes a value of one if the firm is in the top (bottom) annual quintile of total asset, and zero otherwise. "Old" ("Young") takes a value of one if the firm is in the top (bottom) annual age quintile, and zero otherwise. Age is measured as the number of years since the firm's first appearance in Compustat. "Powerful CEO" takes a value of one if the firm's CEO is over 60 years old and also holds the chairman position. The definitions for other explanatory variables are provided in Table I. The standard errors reported in parentheses are clustered at the firm level. Single (*), double (**) and triple asterisks (***) denote statistical significance at the 10%, 5% and 1% levels, respectively.

Independent Variables (measured at *t*)	Δ Excess D/A (*t* to *t*+1)									
	Full Sample				ExecuComp Firms					
	(1)		(2)		(3)		(4)		(5)	
Institution - Firm D/A	0.161***	(0.0047)	0.184***	(0.0049)	0.177***	(0.0117)	0.179***	(0.0148)	0.185***	(0.0139)
* Large	-0.029***	(0.0084)					-0.011	(0.0157)		
* Small	0.078***	(0.0118)					0.414*	(0.2367)		
* Old			-0.057***	(0.0078)					-0.023	(0.0160)
* Young			0.056***	(0.0168)					0.011	(0.0366)
* Powerful CEO					-0.034**	(0.0158)	-0.030*	(0.0159)	-0.030*	(0.0158)
Powerful CEO					-0.001	(0.0021)	-0.001	(0.0021)	-0.001	(0.0021)
Institutional Ownership	-0.019***	(0.0025)	-0.019***	(0.0025)	-0.015**	(0.0058)	-0.015**	(0.0059)	-0.014**	(0.0059)
Financing Deficit	0.009***	(0.0028)	0.009***	(0.0028)	0.050***	(0.0191)	0.051***	(0.0188)	0.050***	(0.0190)
Log(Asset)	0.000	(0.0004)	0.000	(0.0004)	0.002***	(0.0008)	0.002***	(0.0008)	0.002***	(0.0008)
Profitability	0.014	(0.0090)	0.014	(0.0090)	0.041**	(0.0187)	0.044**	(0.0177)	0.041**	(0.0187)
Intangible	-0.048***	(0.0057)	-0.050***	(0.0058)	-0.070***	(0.0094)	-0.070***	(0.0094)	-0.070***	(0.0095)
Collateral	-0.015***	(0.0036)	-0.017***	(0.0036)	-0.014**	(0.0067)	-0.014**	(0.0067)	-0.013*	(0.0066)
Log(M/B)	0.004***	(0.0012)	0.004***	(0.0012)	-0.001	(0.0027)	-0.001	(0.0027)	-0.001	(0.0027)
Log(Age)	0.000	(0.0008)	0.000	(0.0008)	0.000	(0.0016)	0.000	(0.0016)	0.001	(0.0016)
Capital Expenditure	-0.023**	(0.0097)	-0.023**	(0.0097)	-0.089***	(0.0237)	-0.085***	(0.0239)	-0.090***	(0.0237)
R&D Expenditure	-0.004	(0.0148)	-0.010	(0.0148)	-0.023	(0.0265)	-0.024	(0.0261)	-0.022	(0.0265)
SGA Expenditure	0.001***	(0.0002)	0.001***	(0.0002)	0.001	(0.0028)	0.002	(0.0028)	0.001	(0.0028)
Two-Year Stock Return	-0.002***	(0.0006)	-0.002***	(0.0006)	-0.002*	(0.0014)	-0.002*	(0.0014)	-0.002*	(0.0014)
Year Fixed Effects	Yes		Yes		Yes		Yes		Yes	
Adj. R^2	0.088		0.087		0.089		0.089		0.089	
N	42,839		42,839		7,752		7,752		7,752	

Table 3.8

Institutional Preference and Debt-Equity Choice

The table reports the relationship between institutional leverage preference and firms' subsequent debt-equity choice. At the end of year *t*, each firm is assigned into one of three leverage groups based on the difference between its institutional preferred leverage and excess leverage ratios: top, medium three, and bottom quintiles. Panel A reports the following probabilities for each group: (1) issuing debt vs. issuing equity; (2) debt repayment vs. share repurchase; and (3) recapitalization by issuing debt and repurchasing shares vs. by issuing shares and repaying debt. Firms are defined as issuing (repurchasing/repaying) a security when the net amount issued (repurchased/repaid) divided by the total assets exceeded 5%. Firms that do both or neither of each of these pairs of actions in the same year are omitted from the analysis. A higher percentage corresponds to a higher likelihood of firms in each group taking leverage-increasing actions. Panel B reports the marginal effects from multivariate probit regressions on various firm characteristics. The dependent variables take a value of one if a firm takes a leverage-increasing action. The main independent variable is the difference between the institutional leverage preference and the firm's excess leverage ratio. The definitions for other explanatory variables are provided in Table I. The standard errors are reported in parentheses. Single (*), double (**) and triple asterisks (***) denote statistical significance at the 10%, 5% and 1% levels, respectively.

Panel A. Univariate Sort

(Institution - Firm D/A$_t$) Quintile	Debt Issue (1) vs. Equity Issue (0)	Equity Repurchase (1) vs. Debt Reduction (0)	Recapitalization by Issuing Debt (1) vs. Issuing Equity (0)
High	68.751	45.484	56.123
Middle Three	67.399	30.178	41.472
Low	56.349	17.080	20.662
High minus Low	12.401	28.404	35.461

Panel B. Multivariate Analysis

Independent Variables	dy/dx		dy/dx		dy/dx	
Institution - Firm D/A	0.203***	(0.0285)	1.014***	(0.0393)	0.754***	(0.0806)
Financing Deficit	-0.028*	(0.0169)	0.159***	(0.0290)	-0.158**	(0.0625)
Log(Asset)	0.042***	(0.0031)	0.046***	(0.0038)	0.067***	(0.0088)
Profitability	0.502***	(0.0344)	1.406***	(0.0703)	2.003***	(0.1753)
Intangible	0.257***	(0.0411)	-0.987***	(0.0513)	-0.505***	(0.1104)
Collateral	0.198***	(0.0283)	-0.845***	(0.0380)	-0.584***	(0.0871)
Log(M/B)	-0.160***	(0.0095)	0.154***	(0.0138)	-0.011	(0.0325)
Log(Age)	0.063***	(0.0075)	0.082***	(0.0099)	0.119***	(0.0212)
Capital Expenditure	0.281***	(0.0593)	-0.131	(0.1045)	-0.089	(0.1750)
R&D Expenditure	-0.073***	(0.0269)	0.223***	(0.0507)	-0.477**	(0.1970)
SGA Expenditure	0.001	(0.0009)	0.078***	(0.0143)	0.119**	(0.0473)
Two-Year Stock Return	-0.012***	(0.0028)	-0.022***	(0.0042)	-0.064***	(0.0128)
Year Fixed Effects	Yes		Yes		Yes	
Pseudo R^2	0.2376		0.3443		0.3922	
N	11,165		8,115		1,739	

Table 3.9

Institutional Preference, Financial Decisions, and Stock Returns

The table reports the effect of institutional preference and firms' leverage changes on stock returns in the subsequent years. After observing the leverage change in year *t*, each firm is assigned into three groups based on whether the firm makes a leverage change of (1) more than 5% of the "leverage gap" (the difference between its institutional preferred leverage ratio and its current excess leverage ratios) in the direction of the aggregate institutional preferences ("*Follow*"), (2) more than 5% of the gap in the opposite direction ("*Ignore*"), or (3) relatively "*minor changes*" of less than 5% of the gap in either direction. The three-factor and four-factor value-weighted portfolio alphas are then calculated from the beginning of July of year *t*+1 to the end of June of year *t*+2 for portfolios formed at the beginning of July of year *t*+1. Panel A reports the alphas for all sample firms, while Panel B (C) report the alphas for firms with above- (below-) median market cap at the beginning of July of year *t*+1. The second (third) column of each panel reports the alphas for firms whose gaps are more (less) than 10 percent of the firm's asset at the beginning of year *t*. The *t*-statistics are reported in parentheses. Single (*), double (**) and triple asterisks (***) denote statistical significance at the 10%, 5% and 1% levels, respectively.

	All Firms		**|Gap| > 10%**		**|Gap| ≤ 10%**	
	Panel A. All Firms					
A.1. Three-Factor Alphas						
Follow	**0.36*****	(3.77)	**0.50*****	(4.76)	0.20*	(1.91)
Minor Changes	**0.40*****	(3.61)	0.25*	(1.90)	**0.69****	(4.72)
Ignore	0.14	(1.29)	-0.06	(-0.46)	**0.25****	(2.30)
Follow minus *Ignore*	**0.22*****	(3.18)	**0.56*****	(5.35)	-0.05	(-0.62)
A.2. Four-Factor Alphas						
Follow	0.16	(1.55)	**0.31*****	(2.72)	0.00	(0.02)
Minor Changes	0.20*	(1.67)	0.03	(0.18)	**0.55*****	(3.78)
Ignore	-0.13	(-1.02)	**-0.36****	(-2.39)	0.01	(0.10)
Follow minus *Ignore*	**0.29*****	(4.20)	**0.67*****	(6.33)	**-0.01**	(-0.13)
	Panel B. Large Firms (Above-Median Market Cap)					
B.1. Three-Factor Alphas						
Follow	0.00	(-0.01)	0.11	(0.99)	-0.10	(-0.92)
Minor Changes	**0.32*****	(3.11)	0.14	(1.24)	**0.59*****	(4.04)
Ignore	-0.06	(-0.61)	**-0.30****	(-2.32)	0.04	(0.34)
Follow minus *Ignore*	0.06	(0.86)	**0.41*****	(3.46)	-0.14	(-1.58)
B.2. Four-Factor Alphas						
Follow	-0.17	(-1.62)	-0.07	(-0.59)	**-0.27****	(-2.32)
Minor Changes	0.19*	(1.85)	0.01	(0.07)	**0.50*****	(3.49)
Ignore	**-0.32****	(-2.71)	**-0.59*****	(-4.02)	-0.20	(-1.64)
Follow minus *Ignore*	**0.15****	(2.10)	**0.53*****	(4.44)	-0.07	(-0.84)
	Panel C. Small Firms (Below-Median Market Cap)					
C.1. Three-Factor Alphas						
Follow	**0.76*****	(4.66)	**0.91*****	(5.05)	**0.57*****	(3.13)
Minor Changes	**0.50****	(2.52)	0.40*	(1.84)	**0.72*****	(2.72)
Ignore	0.34*	(1.88)	0.15	(0.73)	**0.50*****	(2.65)
Follow minus *Ignore*	**0.42*****	(3.64)	**0.75*****	(4.56)	0.07	(0.42)
C.2. Four-Factor Alphas						
Follow	**0.53*****	(3.15)	**0.70*****	(3.81)	0.32*	(1.70)
Minor Changes	0.23	(1.14)	0.10	(0.44)	**0.56****	(2.13)
Ignore	0.07	(0.36)	-0.15	(-0.66)	0.25	(1.29)
Follow minus *Ignore*	**0.46*****	(4.13)	**0.85*****	(5.20)	0.07	(0.44)

Table 3.10

Institutional Investment and R&D Preferences

The table reports the investment and R&D preferences of institutional investors. The *investment (R&D) preference* of a particular institution is measured as the dollar-weighted average of excess investment- (R&D-) to-asset ratios of stocks held by that institution. At the end of year *t*, institutions are sorted into five quintiles based on their investment (R&D) preference. The industry- and characteristics-adjustment is described in details in Table I. Panel A (B) reports the average investment (R&D) ratios for each investment (R&D) preference group. The first column in each panel reports the average for stocks held at the end of year *t* by institutions within each preference quintile. The second column reports the average of stocks held at the end of year *t*+1, while the third column reports the average for stocks initially purchased during year *t*+1 by institutions in each year *t*'s preference quintile. All reported figures are in percentages. The *t*-statistics reported in parentheses are adjusted using Newey-West correction for heteroscedasticity and serial correlation. Single (*), double (**) and triple asterisks (***) denote statistical significance at the 10%, 5% and 1% levels, respectively.

Panel A. Investment

Institutional **Investment** Preference Quintile (at *t*)	Excess Inv/A_t of year *t*'s holdings	Excess Inv/A_{t+1} of year *t*+1's holdings	Excess Inv/A_{t+1} of stocks initially purchased in year *t*+1
High	1.92	0.83	0.34
Middle Three	0.29	0.23	0.20
Low	-1.41	-0.42	0.20
High minus Low	3.33***	1.25***	0.14*
	(20.12)	(8.12)	(1.72)

Panel B. R&D

Institutional **R&D** Preference Quintile (at *t*)	Excess R&D/A_t of year *t*'s holdings	Excess R&D/A_{t+1} of year *t*+1's holdings	Excess R&D/A_{t+1} of stocks initially purchased in year *t*+1
High	1.34	0.57	0.07
Middle Three	-0.38	-0.43	-0.14
Low	-1.96	-1.35	-0.20
High minus Low	3.31***	1.92***	0.26**
	(6.95)	(5.96)	(2.50)

Table 3.11

Institutional Preference and Subsequent Changes in Investment and R&D

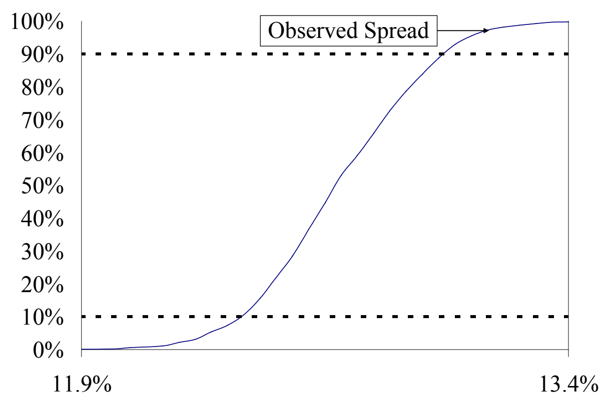
The table reports the effect of institutional investors' investment and R&D preference on firms' investment decisions. The *institutional preferred investment ratio* of a particular firm is measured as the share-weighted average of the excess investment-to-asset ratios of other stocks held by institutions holding the firm's shares. The *institutional preferred R&D ratio* is the share-weighted average of excess R&D-to-asset ratios of other stocks held by institutions holding the firm's shares. The table reports the coefficients from a regression of change in excess investment and R&D on various firm characteristics and year fixed effects. The dependent variable is the change in investment in year *t*+1 and *t*+2 in columns (1) and (2), resp.; and the change in R&D in year *t*+1 and *t*+2 in columns (3) and (4), resp. The main independent variable in columns (1) and (2) is the difference between institutional preferred investment ratio and the firm's excess investment ratio. The main independent variable in columns (3) and (4) is the difference between the institutional preferred R&D ratio and the firm's excess R&D ratio. The definitions for the explanatory variables are provided in Table I. The standard errors reported in parentheses are clustered at the firm level. Single (*), double (**) and triple asterisks (***) denote statistical significance at the 10%, 5% and 1% levels, respectively.

	Δ Excess Investment/A				Δ Excess R&D			
Independent Var.'s (measured at *t*)	*t* to *t*+1 (1)		(*t*+1 to *t*+2) (2)		(*t* to *t*+1) (3)		(*t*+1 to *t*+2) (4)	
Institution - Firm Investment$_t$	0.537***	(0.0137)	0.181***	(0.0111)				
Institution - Firm R&D$_t$					0.329***	(0.0310)	0.040**	(0.0198)
Log(Asset)	0.000	(0.0002)	0.000*	(0.0001)	-0.001***	(0.0002)	0.001***	(0.0001)
Profitability	0.014***	(0.0030)	0.008***	(0.0029)	0.021***	(0.0083)	-0.041***	(0.0072)
Intangible	-0.004**	(0.0020)	0.001	(0.0015)	0.006**	(0.0030)	-0.004	(0.0023)
Collateral	-0.020***	(0.0018)	0.001	(0.0015)	-0.005**	(0.0021)	-0.002	(0.0015)
Log(M/B)	-0.004***	(0.0007)	0.000	(0.0006)	-0.002*	(0.0010)	0.003***	(0.0009)
Log(Age)	0.002***	(0.0005)	0.001***	(0.0004)	-0.003***	(0.0005)	0.000	(0.0004)
Year Fixed Effects	Yes		Yes		Yes		Yes	
Adj. R^2	0.295		0.037		0.198		0.024	
N	28,994		23,282		29,048		23,332	

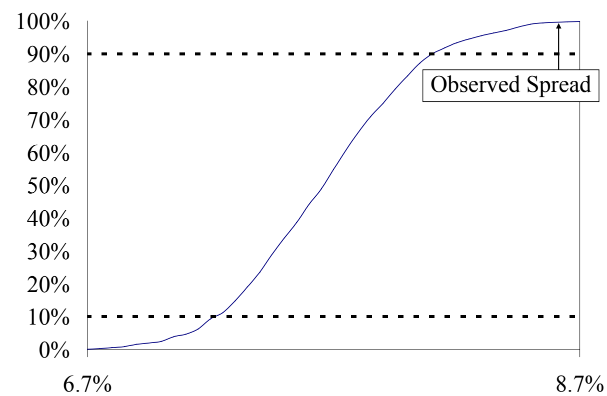
Figure 3.1
“Simulated” Leverage Preference

The figure reports the “simulated” cumulative distributions of the spreads in leverage preferences of institutional investors. The simulated distribution is obtained from 10,000 runs of the following simulation. In year *t*, each institution is assigned a simulated portfolio annually by randomly replacing each stock in its year-*t* portfolio with a different stock. Institutions are sorted annually into five leverage quintiles based on the dollar-weighted average leverage ratios of stocks in their simulated portfolios. Panel A displays the distribution of the difference in the average leverage of simulated portfolios in the top vs. bottom leverage quintiles. Panel B (C) displays the distribution of the difference in the average leverage of simulated portfolios of stocks held at the end of year t+1 (initiated during year t+1) by institutions with simulated portfolios in the top vs. bottom leverage quintiles at year *t*. As the holdings of institutional investors tend to show some persistence, the replacement stock is held constant in Panel B if the original stock is held by a particular institution at *t* and *t*+1. The observed spreads are those reported in the first column (“All Institutions”) of Table II.

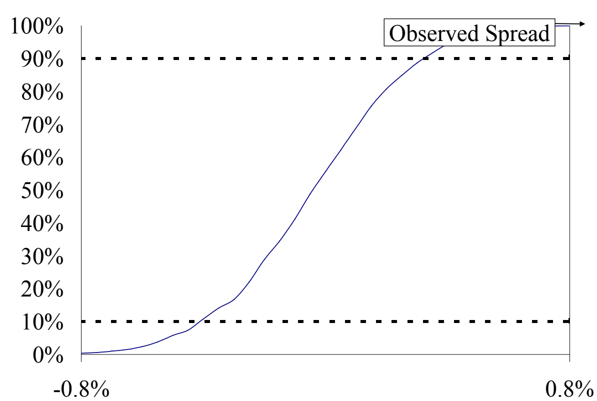
Panel A. Current Holdings (at year t)



Panel B. Holdings at year t+1



Panel C. Stocks Initiated in year t+1



References

Admati, A. R., P. Pfleiderer, and J. Zechner, 1994, "Large Shareholder Activism, Risk Sharing, and Financial Market Equilibrium," *Journal of Political Economy*, 102, 1097–1130.

Agrawal, A., and G. N. Mandelker, 1992, "Shark Repellents and the Role of Institutional Investors in Corporate Governance," *Managerial and Decision Economics*, 13, 15–22.

Allen, F., A. E. Bernardo, and I. Welch, 2000, "A Theory of Dividends Based on Tax Clienteles," *Journal of Finance*, 55, 2499–2536.

Almazan, A., J. C. Hartzell, and L. T. Starks, 2005, "Active Institutional Shareholders and Costs of Monitoring: Evidence from Executive Compensation," *Financial Management*, 34, 5–34.

Badrinath, S., and S. Wahal, 2002, "Momentum Trading by Institutions," *Journal of Finance*, 57, 2449–2478.

Badrinath, S. G., J. R. Kale, and H. E. Ryan, Jr., 1996, "Characteristics of Common Stock Holdings of Insurance Companies," *Journal of Risk and Insurance*, 63, 49–75.

Bennett, J. A., R. W. Sias, and L. T. Starks, 1998, "Greener Pastures and the Impact of Dynamic Institutional Preferences," *Review of Financial Studies*, 16, 1203–1238.

Bethel, J. E., J. P. Liebeskind, and T. Opler, 1998, "Block Share Purchases and Corporate Performance," *Journal of Finance*, 53, 605–634.

Bizjak, J. M., and C. J. Marquette, 1998, "The motivation and impact of pension fund activism," *Journal of Financial and Quantitative Analysis*, 33, 499–521.

Brennan, M. J., and H. H. Cao, 1997, "International Portfolio Investment Flows," *Journal of Finance*, 52, 1851–1880.

Brickley, J. A., R. C. Lease, and C. Smith, Jr., 1988, "Ownership structure and voting on antitakeover amendments," *Journal of Financial Economics*, 20, 267–291.

Bushee, B. J., 1998, "The Influence of Institutional Investors on Myopic R&D Investment Behavior," *The Accounting Review*, 73, 305–333.

Carleton, W. T., J. M. Nelson, and M. S. Weisbach, 1998, "The influence of institutions on corporate governance through private negotiations: evidence from TIAA-CREF," *Journal of Finance*, 53, 1335–1362.

Chen, X., J. Harford, and K. Li, 2006, "Monitoring: Which Institutions Matter?," *Journal of Financial Economics*, forthcoming.

Choe, H., B.-C. Kho, and R. M. Stulz, 2005, "Do Domestic Investors Have an Edge? The Trading Experience of Foreign Investors in Korea," *Review of Financial Studies*, 18, 795–829.

Cooper, I., and E. Kaplanis, 1994, "Home Bias in Equity Portfolios, Inflation Hedging, and International Capital Market Equilibrium," *Review of Financial Studies*, 7, 45–60.

Coval, J. D., and T. J. Moskowitz, 1999, "Home Bias at Home: Local Equity Preference in Domestic Portfolios," *Journal of Finance*, 54, 2045–2073.

Coval, J. D., and T. J. Moskowitz, 2001, "The Geography of Investment: Informed Trading and Asset Prices," *Journal of Political Economy*, 109, 811–841.

Cronqvist, H., and R. Fahlenbrach, 2007, "Large Shareholders and Corporate Policies," Working Paper, The Ohio State University.

Daily, C. M., J. L. Johnson, A. E. Ellstrand, and D. R. Dalton, 1996, "Institutional Investor Activism: Follow the Leaders?," Working Paper, Purdue University.

Daniel, K., M. Grinblatt, S. Titman, and R. Wermers, 1997, "Measuring Mutual Fund Performance with Characteristic Based Benchmarks," *Journal of Finance*, 52, 1035–1058.

Del Guercio, D., 1996, "The Distorting Effect of the Prudent-Man Laws on Institutional Equity Investments," *Journal of Financial Economics*, 40, 31–62.

Del Guercio, D., and J. Hawkins, 1999, "The motivation and impact of pension fund activism," *Journal of Financial Economics*, 52, 293–340.

Denis, D. J., and J. M. Serrano, 1996, "Active investors and management turnover following unsuccessful control contests," *Journal of Financial Economics*, 40, 239–266.

Dvořák, T., 2005, "Do Domestic Investors Have an Information Advantage? Evidence from Indonesia," *Journal of Finance*, 60, 817–839.

Falkenstein, E. G., 1996, "Preferences for Stock Characteristics as Revealed by Mutual Fund Portfolio Holdings," *Journal of Finance*, 51, 111–135.

French, K. R., and J. M. Poterba, 1991, "Investor Diversification and International Equity Markets," *American Economic Review*, 81, 222–226.

Froot, K. A., P. G. J. O'Connell, and M. S. Seasholes, 2001, "The Portfolio Flows of International Investors," *Journal of Financial Economics*, 59, 151–193.

Froot, K. A., and T. Ramadorai, 2005, "The Information Content of International Portfolio Flows," Working Paper, Oxford University.

Gillan, S. L., and L. T. Starks, 2000, "Corporate governance proposals and shareholder activism: the role of institutional investors," *Journal of Financial Economics*, 57, 275–305.

Gillan, S. L., and L. T. Starks, 2007, "Corporate governance proposals and shareholder activism: the role of institutional investors," *Journal of Applied Corporate Finance*, 19, 55–73.

Gompers, P. A., and A. Metrick, 2001, "Institutional Investors and Equity Prices," *Quarterly Journal of Economics*, 116, 229–259.

Griffin, J. M., J. H. Harris, and S. Topaloglu, 2003, "The Dynamics of Institutional and Individual Trading," *Journal of Finance*, 58, 2285–2320.

Griffin, J. M., F. Nardari, and R. M. Stulz, 2004, "Are Daily Cross-Border Equity Flows Pushed or Pulled?," *Review of Economics and Statistics*, 86, 641–657.

Grinblatt, M., and M. Keloharju, 2000, "The Investment Behavior and Performance of Various Investor Types: A Study of Finlands Unique Data Set," *Journal of Financial Economics*, 55, 43–67.

Grinblatt, M., S. Titman, and R. Wermers, 1995, "Momentum Investment Strategies, Portfolio Performance and Herding: A Study of Mutual Fund Behavior," *American Economic Review*, 85, 1088–1105.

Grinstein, Y., and R. Michaely, 2005, "Institutional Holdings and Payout Policy," *Journal of Finance*, 60, 1389–1426.

Harford, J., D. Jenter, and K. Li, 2007, "Conflicts of Interests Among Shareholders: The Case of Corporate Acquisitions," Working Paper, University of Washington.

Hart, O., and J. Moore, 1995, "Debt and Seniority: An Analysis of the Role of Hard Claims in Constraining Management," *American Economic Review*, 85, 567–585.

Hau, H., 2001, "Location Matters: An Examination of Trading Profits," *Journal of Finance*, 56, 1959–1983.

Hellwig, M. F., 1980, "On the Aggregation of Information in Competitive Markets," *Journal of Economic Theory*, 22, 477–498.

Hovakimian, A., T. Opler, and S. Titman, 2001, "The Debt-Equity Choice," *Journal of Financial and Quantitative Analysis*, 36, 1–24.

Ivković, Z., and S. Weisbenner, 2005, "Local Does as Local Is: Information Content of the Geography of Individual Investors Common Stock Investments," *Journal of Finance*, 60, 267–306.

Jarrell, G. A., and A. B. Poulsen, 1987, "Shark repellents and stock prices: The effects of antitakeover amendments since 1980," *Journal of Financial Economics*, 19, 127–168.

Jensen, M. C., 1986, "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers," *American Economic Review*, 76, 323–329.

Johnson, W. T., 2007, "The Information Content of International Portfolio Flows," Working Paper, University of Oregon.

Kacperczyk, M., C. Sialm, and L. Zheng, 2005, "On the Industry Concentration of Actively Managed Equity Mutual Funds," *Journal of Finance*, 60, 1983–2011.

Kaminsky, G., R. K. Lyons, and S. L. Schmukler, 2004, "On the Industry Concentration of Actively Managed Equity Mutual Funds," *Journal of International Economics*, 60, 113–134.

Kang, J.-K., and R. M. Stulz, 1997, "Why is There Home Bias? An Analysis of Foreign Portfolio Equity Ownership in Japan," *Journal of Financial Economics*, 46, 3–28.

Karpoff, J., P. Malatesta, and R. Walkling, 1996, "Corporate governance and shareholder initiatives: Empirical evidence," *Journal of Financial Economics*, 42, 365–395.

Kester, W. C., 1986, "Capital and Ownership Structure: A Comparison of United States and Japanese Manufacturing Corporations," *Financial Management*, 15, 5–16.

Long, M. S., and I. Malitz, 1985, "Investment Patterns and Financial Leverage," *Corporate Capital Structure in the United States*, National Bureau of Economic Research.

Matvos, G., and M. Ostrovsky, 2006, "Strategic Proxy Voting," Stanford University Working Paper.

Myers, S. C., 1977, "The determinants of corporate borrowing," *Journal of Financial Economics*, 5, 147–175.

Nesbitt, S. L., 1994, "Long-term rewards from shareholder activism: A study of the "CalPERS Effect"," *Journal of Applied Corporate Finance*, 6, 75–80.

Parrino, R., R. W. Sias, and L. T. Starks, 2003, "Voting with their feet: institutional ownership changes around forced CEO turnover," *Journal of Financial Economics*, 68, 3–46.

Prevost, A. K., and R. P. Rao, 2000, "Of What Value Are Shareholder Proposals Sponsored by Public Pension Funds?," *Journal of Business*, 73, 177–204.

Schwartz, E., and J. R. Aronson, 1967, "Some Surrogate Evidence in Support of the Concept of Optimal Financial Structure," *Journal of Finance*, 22, 10–18.

Seasholes, M. S., 2004, "Re-examining Information Asymmetries in Emerging Stock Markets," Working Paper, U.C. Berkeley.

Shleifer, A., and R. W. Vishny, 1986, "Large Shareholders and Corporate Control," *Journal of Political Economy*, 94, 461–488.

Smith, Jr., C. W., and R. L. Watts, 1992, "The investment opportunity set and corporate nancing, dividend, and compensation policies," *Journal of Financial Economics*, 32, 263–292.

Smith, M. P., 1996, "Shareholder Activism by Institutional Investors: Evidence from CalPERS," *Journal of Finance*, 51, 227–252.

Strickland, D., K. W. Wiles, and M. Zenner, 1996, "A requiem for the USA: Is small shareholder monitoring effective?," *Journal of Financial Economics*, 40, 319–338.

Stulz, R., 1990, "Managerial Discretion and Optimal Financing Policies," *Journal of Financial Economics*, 26, 3–26.

Tesar, L. L., and I. M. Werner, 1995, "Home Bias and High Turnover," *Journal of lnternational Money and Finance*, 14, 467–492.

Wahal, S., 1996, "Pension Fund Activism and Firm Performance," *Journal of Financial and Quantitative Analysis*, 31, 1–23.

Wahal, S., K. Wiles, and M. Zenner, 1995, "Who Opts Out of State Antitakeover Protection?: The Case of Pennsylvania's SB 1310," *Financial Management*, 24, 22–39.

Wermers, R., 1999, "Mutual Fund Herding and the Impact on Stock Prices," *Journal of Finance*, 54, 581–622.

Wermers, R., 2003, "Is Money Really "Smart"? New Evidence on the Relation Between Mutual Fund Flows, Manager Behavior, and Performance Persistence," Working Paper, University of Maryland.

Wohlstetter, C., 1993, "Pension fund socialism: Can bureaucrats run the blue chips?," Harvard Business Review 71.

Zhu, N., 2002, "The Local Bias of Individual Investors," Working Paper, Yale School of Management.

Vita

Johan Arifin Sulaeman was born in Sukabumi, Indonesia. After completing his work at Regina Pacis High School, Bogor, Indonesia, in 1995, he entered the University of Michigan in Ann Arbor, Michigan. He received the degree of Bachelor of Science in Engineering (Computer Engineering) from the University of Michigan in August 1999. After working for several years as a software QA engineer for Hughes Network Systems in Germantown, Maryland, he joined the Master's in Financial Engineering program at the Haas School of Business at the University of California at Berkeley in Berkeley, California. He received the degree of Master of Financial Engineering from the University of California at Berkeley in March 2001. In July 2002, he entered the doctoral program in finance at the McCombs School of Business at the University of Texas at Austin in Austin, Texas.

Permanent Address: 2004 Elk Ridge Cove, Round Rock, TX 78665

This dissertation was typed by the author.