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BOARD OF DIRECTOR CONFIGURATIONS IN MUTUAL FUND SPONSORS: A BOARD-LEVEL ANALYSIS OF DIRECTOR PERFORMANCE AND OWNERSHIP

by

STEVEN P. FRASER

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Finance
College of Business Administration
University of South Florida

Major Professor: Scott Besley, D.B.A.
Ninon Kohers, Ph.D
Christos Pantzalis, Ph.D
James Pappas, Ph.D

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ABSTRACT

This study examines the manner in which boards of directors of mutual fund sponsors are configured, and whether board configuration is associated with fund performance. Today we see two prominent board governance configurations in the mutual fund industry. In one governance configuration, a single board is responsible for overseeing multiple investment funds; referred to in this study as a Single Board Configuration (SBC). With the other governance configuration, each board is responsible for overseeing a single investment fund (or a cluster of funds); referred to as a Multiple Board Configuration (MBC). In a sample of the largest open-end mutual fund sponsors, I find MBC boards have significantly higher board-level objective-adjusted excess returns than SBC boards. I find no evidence that board composition, as measured by the total number of directors or the percent of directors that are non-interested, is significantly associated with excess returns. This study also includes an analysis of ownership of fund shares by members of the board of directors. The findings here suggest that smaller, *less independent* boards are more likely to be those where each of the non-interested directors has a large equity stake in the fund complex; however, there appears to be no relationship between this characterization of board ownership and board-level performance.

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Chapter One

Introduction

This study examines whether the configurations of boards of directors of mutual funds affect the performance of the funds. Boards of directors can affect fund performance in two ways. First, performance is directly affected through the fees that are paid to the investment advisor, which are approved each year by the board. Second, boards can affect performance indirectly through the ongoing monitoring function with which they are charged. Today we see two prominent board governance configurations in the mutual fund industry. In one governance configuration, a single board is responsible for overseeing multiple investment funds; referred to in this study as a Single Board Configuration (SBC). With the other governance configuration, each board is responsible for overseeing a single investment fund (or a cluster of funds); referred to as a Multiple Board Configuration (MBC). In this study, board configuration is examined relative to fund performance to determine whether a particular configuration or set of board characteristics is more successful than some other configuration or set of characteristics.

Measuring just under $7 trillion in assets, in over 8,000 funds at year-end 2001, the mutual fund industry comprises a very important part of today's financial landscape. As a result, the nature of mutual fund operations is of considerable interest for

researchers, practitioners, and investors.[1] A financial services firm such as Fidelity Investments, which is called the fund's *sponsor*, creates a mutual fund.[2] The fund sponsor selects the original board of directors that governs the fund and attempts to attract investors. The Investment Company Act of 1940 (the Act) and the Securities and Exchange Commission (SEC) regulate the structure and operation of mutual funds. According to the Act, boards have fiduciary duties to the fund and its shareholders in the sense that they are "expected to exercise sound business judgment, establish procedures, and undertake oversight and review of the performance of the investment advisor and others that perform services for the fund."[3] One of the most important responsibilities of the board is to select the fund's investment advisor and approve the annual fees paid to this advisor. It is the fund advisor that selects the individual fund manger and conducts the day-to-day operations of the fund. More often than not, boards simply hire the sponsor as the fund's advisor. Critics argue that this practice results in cases where boards are nothing more than token symbols of governance.

The mutual fund board environment differs somewhat from that of a traditional firm in that a mutual fund board has at least as many unique groups of shareholder as they have funds under their purview. For a corporation, shareholders elect the directors who in select the managers to run the firm. In a similar manner, mutual fund shareholders elect a board that selects the investment advisor to manage the fund. The difference lies

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[1] Mutual Fund Fact Book, Investment Company Institute, 2002.
[2] Many terms pertaining to mutual funds are used with differing meanings depending on the context or print medium. In this study, the terms fund sponsor and fund family are used interchangeably. Similarly, because a mutual fund can also be structured as a trust, the terms director and trustee are synonymous.
[3] Mutual Fund Fact Book, Investment Company Institute, 2002, p2.

in the fact that in the case of the firm, there is one group of shareholders who elect a single board. Whereas for a mutual fund, there may be many different shareholder groups, or one for each fund, that might elect the same board. Arguments exist that support both of the mutual fund board configurations studied here. Proponents of the SBC argue that most of a board's duties are the same, regardless of whether the board governs one fund or several funds. As a result, the use of a single board to oversee multiple funds should capture economies of scale by eliminating redundant activities, which in turn should result in lower relative operating expenses. In addition, an SBC board might possess greater leverage in negotiations than an MBC board because there is a greater number of funds and assets under management, which could significantly enhance the SBC board's position when negotiating lower fees for all funds. For example, in his examination of fund mutual cost elasticities, Latzko (1999) finds that mutual fund expenses increase less than proportionately with fund assets, which implies that economies of scale do exist. Tufano and Sevick (1997) examine the relationship between board structure and the fees charged by a fund to its shareholders. They found that fees are lower when fund boards are smaller and have more independent directors, and when directors are members of a large fraction of the sponsor's other fund boards. They also found that a fund's past performance does not seem to be related to the level of fees, which suggests that boards do not reward advisors based on past performance. According to these results, a fund sponsor should use a single, small, and predominantly independent board to oversee all of its investment funds.

However, boards do more than simply approve fees each year. Directors also are responsible for monitoring the investment performances of the funds they oversee. Critics of the SBC argue that such boards are responsible for evaluating the ongoing performance of too many funds, which might result in directors overlooking the interests of shareholders of the individual funds. For example, if an investment advisor manages 10 funds, and eight of the 10 funds outperform their respective benchmarks, in all likelihood the board would renew the investment advisory agreement for all 10 funds, which might not be in the best interests of shareholders of the two poor performing funds.

The monitoring role of the board and the potential influence of this oversight on fund performance should not be taken lightly. Elton and Gruber (1997) highlight why researchers should care at all about performance. They note that in an efficient market we would expect performance to be random. While some funds may outperform a passive benchmark or strategy, there are other funds that underperform, and the difference should be strictly random. They highlight however, that if superior management exists, and unless performance is reflected in higher fees, we might find persistence in performance. There is some evidence of persistence in mutual fund returns. For example, Hendricks, Patel and Zeckhauser (1993) find support for what they call a 'hot hands' phenomenon, where funds that perform well in the recent past also perform well in the short-term future. Because we know that mutual funds do not raise fees to reflect performance, (Tufano and Sevick (1997)), and that there is evidence that fees are lower for higher performing funds (Carhart (1997)), Elton and Gruber (1997) posit superior management should be reflected in persistence of fund performance.

There are several studies that examine the potential influences on the persistence of mutual fund returns. Carhart (1997) utilizes an asset-pricing framework to describe abnormal returns. Others have examined the relationship between individual fund performance and characteristics of the fund or fund manager. In one example, Chevalier and Ellison (1999) find funds whose fund manager attended higher SAT undergraduate institutions have higher excess returns.

The question as to what role a board plays in the excess returns of mutual funds remains unanswered. In this study, I aggregate the performance of the funds within a board's monitoring purview to derive a board-level performance measure; and examine the relationship of board characteristics with board-level performance. I argue that better oversight results in better objective-adjusted performance, either through ongoing interactions with the advisor, lower expenses, or both. As suggested previously, many earlier studies dealing with mutual fund boards have focused on what I refer to in this study as a board's *composition*, which are the number of total directors (or board size) and the percentage of those directors that are non-interested or independent. In addition to the board composition factors, I investigate whether board *configuration* is associated with higher board-level excess returns, providing indirect evidence as to whether board configuration can improve fund governance.

The results of this study suggest that the configuration of boards used by fund complexes of the largest fund sponsors does matter. The data suggest board-level excess returns for MBC boards are significantly higher than the excess returns for SBC boards. Furthermore, MBC boards govern fewer funds and have more focused portfolios in terms

of the objectives of the funds in their portfolio. MBC boards also have a larger percentage of "winning funds", or those with positive excess returns. With respect to board composition, the findings here suggest there is no relationship between either the size of the board, or its degree of independence, and the board's excess return measure.

This study also includes an analysis of ownership of fund shares by members of the board of directors. Ownership by management and directors is often professed in the corporate finance literature as a means to better align the interests of managers and directors with the interests of shareholders. Similar to the question as to whether board configuration is associated with fund performance, I investigate the relationship of fund performance with director ownership to determine whether greater ownership better aligns directors' interests and improves governance as exhibited through higher board-level excess returns. The general findings suggest that smaller, *less independent* boards are more likely to have non-interested directors who have large equity stakes in their funds; but there appears to be no relationship between this characterization of director ownership and board-level performance.

This examination of board configuration is important. For the finance field, this research: (1) moves the analysis to the board-level of mutual fund governance; (2) introduces the investigation of board configuration as a governance factor; and (3) evaluates the relationship of mutual fund performance with ownership stakes of the board of directors now possible due to new disclosure laws. For fund sponsors, any evidence that might lead to better fund performance is of special interest. SBC sponsors might consider moving to a MBC as better performing funds will attract new investment

dollars. Further, the results here that suggest a relationship exists between board configuration and performance, that provides evidence against the argument made in the popular press that fund boards are no more than "rubber stamps" for the investment advisor. A board, in part due to their configuration, affects performance. Finally, for individual investors, this research provides further guidance on selecting a particular fund or fund sponsor. Investors may want to check the back cover of the annual report to determine how the fund's board is configured when evaluating the choice of a particular mutual fund.

This study is structured as follows: Chapter 2 provides a review of the literature relevant to this research; Chapter 3 develops the specific hypotheses examined in this study and the methodology used to test the relationships of interest; Chapter 4 presents and discusses the results; and Chapter 5 provides a summary of the research, contributions to the extant literature, and implications for further research.

Chapter Two

Literature Review

Individuals invest their money in hopes that they will get a positive return on their investment. As far back as Adam Smith's 1776 *Wealth of Nations* (Cannan (1976)), it was recognized that investors could not expect a manager to oversee investors' money in the same manner as the manager might oversee his own funds. Berle and Means (1932) formalize this concept in terms of the separation of ownership and control of resources within the modern corporation. Denis (2001) describes the potential problems that arise from this separation as the field of corporate governance. While the governance field covers a broad spectrum of firm relationships, here the focus is more on the specific relationship between the owners and those who act as their agents, the managers.

Those who work in the fields of finance and economics have long researched the nature of the agency relationships between managers and shareholders, and the subsequent impact of agency issues on such firm attributes as capital structure and firm value. In this chapter, I review the theory of and empirical evidence on, the agency relationship, focusing primarily on the roles of the board of directors. Also, I include a discussion of the literature relevant to the unique nature of the mutual fund environment. In Section A, I review sources of agency problems, as well as mechanisms used to mitigate their impact. Section B examines the relevant literature related to the role of the board of directors. Section C follows with a discussion of the agency relationships for

mutual funds, mutual fund performance, as well as a review of the empirical literature that studies mutual fund governance issues. Finally, Section D concludes this chapter with a summary outlining how this research contributes to the understanding of the role of the board of directors within the context of the mutual fund industry.

A. The Agency Problem

Jensen and Meckling (1976) provide a straightforward model of agency costs for a firm that is a "black box" or "legal fiction," the results from a nexus of contracting relationships. According to their model, if a manager does not own 100 percent of a firm, there is the possibility that he will not always act in the best interests of those who provide the funds. The most common example used to illustrate this point is the case of management's consumption of perquisites where managers enjoy 100 percent of the benefits but do not incur 100 percent of the costs. For example, often executives use corporate jets for both business and pleasure. In such cases, potential conflicts between managers and shareholders clearly exist.

A.1 Sources of the Problem

Denis (2001) reviews potential sources for the agency problems encountered between managers and shareholders. Not surprisingly, managers want to remain managers. If a management team performs to shareholder expectations, there is apt to be little conflict. However, if shareholders feel a different management team could better serve their interests, conflicts between the two groups will certainly arise. Problems can also arise when management compensation is tied specifically to the dollar value of individual operating segments or divisions. These compensation schemes provide

incentives for management to grow their divisions for the sake of expanding, which might not be in the best interests of shareholders.

Another source of conflict occurs when managers and shareholders do not possess the same levels of risk tolerance with respect to the activities of the firm. The most prominent example is the amount of human capital at stake for the manager. Managers who depend on the firm for their livelihood generally have considerably more to lose than shareholders who hold the firm's stock as part of a large diversified portfolio. As a result, managers with a lower risk tolerance might not accept risky projects with positive net present values (NPVs).

Finally, there exists the problem of free cash flows. Managers have a choice of what to do with free cash flows generated by the firm's operations—invest the cash flows in the firm or return them to shareholders. If managers do not have acceptable projects available (those with positive NPVs) and do not return the cash flows to shareholders, they are subject to the overinvestment problem, where managers might take on wasteful projects. Managers may invest free cash flows to expand their span of responsibility, or fund a pet project, either of which might not benefit shareholders. Jensen (1986) argues a firm's use of debt in financing decisions can reduce the overinvestment problem by forcing managers to payout excess cash to service the debt, reducing the free cash flows available to managers.[4] No matter the source, agency problems exist whenever managers' private benefits outweigh their associated private costs, which misalign managers' interests and stockholders' interests.

[4] Easterbrook (1984) suggests that paying dividends has a similar effect.

A.2 Methods and Mechanisms

After recognizing that agency conflicts exist, the task becomes to identify mechanisms that firms can use to mitigate the risks associated with agency costs. Denis (2001) suggests three methods by which firms can address these conflicts of interest. First, stakeholders can bind managers with some type of contract. For example, debt instruments often contain covenants or other provisions that require a firm to maintain a certain level of financial stability. Although not owners per se, debt holders do provide the firm with investment capital, and these covenants can specifically restrict management's activities, such as maintaining certain profitability or accounting ratios. Smith and Warner (1979) find support for this costly contracting hypothesis, because the benefits of such contractual arrangements generally outweigh the costs.

The second approach to mitigate agency costs suggested by Denis (2001) is to provide proper incentives to management. In corporations, this is accomplished generally through performance incentives for the CEO and senior executives that provide higher compensation for executives the better the firm performs. Mehran (1995) finds support for the use of incentive compensation. He finds that the form, rather than the level of compensation is the factor that motivates managers, and concludes firm performance is positively related to the percentage of management compensation that is equity-based. Yermack (1995) examines a wide range of agency hypotheses as they apply to executive compensation and finds few have any explanatory power for patterns of CEO stock option awards. In later work, Yermack (1997) finds that the award of stock options for executives is followed by "good news" announcements by the same firms. In reviewing

these findings, Shleifer and Vishny (1997) opine that it is not clear if firm performance improves after the awarding of options or that options provide a mechanism for self-dealing by managers.

A final approach to mitigate the costs of the agency relationships is through some type of monitoring function. This action can and does take many forms in the traditional corporate framework. For one, large blockholders or institutional investors monitor firms. Such shareholders often have considerable influence with company management. In this capacity, large blockholders provide a first-line monitoring function that benefits all shareholders. More prominent is that firms are required to have boards of directors that are responsible for hiring senior executives, setting executive compensation, and providing overall guidance to senior management. The ability of a board of directors to mitigate the impacts of the agency relationship between owners and mangers is the focus of Section B.

B. The Board of Directors and the Agency Relationship

While there is a vast body of empirical research on corporate governance, Hermalin and Weisbach (2002) suggest that there is a vacuum of formal theory with respect to the board of directors. They note however, this void has not prohibited the field from learning much about board relationships, nor changed the fact there is much more to learn. In this section I review the empirical evidence on the composition of the board (degree of independence and total number of directors) as well as on the ownership levels of board members. Of particular interest for this study is the relationship of these board attributes with firm performance.

B.1 Board Composition

One area of governance literature attempts to determine whether the degree of a board of directors' independence (the ratio of the number of independent directors to the number of total directors on the board) is associated with various variables of interest, such as firm value or executive compensation.[5] Boards with low levels of independence are thought to be more influenced by the CEO, and therefore might not be effective monitors. Some argue, however, that insiders are more knowledgeable in the firm's operations and therefore might be in a better position to identify problems before they adversely impact firm operations.

The empirical evidence that examines the effectiveness of boards as monitors is mixed. Notable studies include Hermalin and Weisbach (1991) who find no relationship between board composition and firm performance, whereas Agrawal and Knoeber (1996) find a significant negative relationship between the percentage of directors that were non-officers and firm performance. The latter study also finds interdependence amongst several governance mechanisms (i.e. ownership of insiders, institutions, blockholders, etc.), which suggest that examining the relationship between firm performance and a single mechanism might be misleading. Cotter, Shivdasani and Zenner (1997) find that initial tender offer premiums, the bid premium revision, and total gains to target

[5] The terms independent, outside, and non-interested, when describing director affiliation are used interchangeably throughout this study. An independent director cannot be an employee of the investment advisor, a family member of an employee, be an employee or a 5 percent shareholder of a broker-dealer, or be affiliated with the fund's legal counsel. *Understanding the Role of Mutual Fund Directors*, Investment Company Institute, 1999.

shareholders during the offer period are greater when boards are comprised of a majority of independent directors.

Another area of the governance literature addresses the size of the board. If a board is too small, there might not be a sufficient number of directors to ensure the required array of expertise exists. On the other hand, it might be difficult for the directors to work effectively as a group to accomplish its monitoring duties. Lipton and Lorsch (1992) recommend limiting the size of boards because greater numbers of directors may prevent meaningful dialogue in the boardroom. Jensen (1993) notes that board culture is an important component of board functionality. The ability of directors to effectively govern requires candid discussions; more so when there are differing opinions amongst board members. Constructive dialogue can be hindered in the boardroom if there is an emphasis on courtesy at the expense of frankness. Consistent with the notion that smaller groups work better together, Yermack (1996) examines the relationship between board size and firm value. Using Tobin's Q as a measure of firm value, He finds a significant inverse relationship between the size of the board and firm value, and that the negative relationship decreases as board size increases. For example, the marginal loss in firm value is greatest when the board grows from small (~ 6 members) to medium (~ 12 members).

B.2 Board Ownership

In addition to the composition of the board, research suggests that ownership of firm shares by board members could be a contributing factor to the effectiveness of a board's monitoring function. Hermalin and Weisbach (1991) suggest the idea that stock

ownership by management can reduce agency costs because ownership by management serves to align their interests more closely with those of shareholders. Morck, Shleifer and Vishny (1988) find that firm value, as measured by Tobin's Q, first rises, then declines, and then rises again as ownership by the board of directors rises. Mehran (1995) finds firm performance is positively related to both the percentage of equity owned by managers as well as the percentage of managerial compensation that is equity-based. Taking a different approach, Rosenstein and Wyatt (1997) examine *changes* to board composition and report results using Morck, et al. (1988) ownership breakpoints. They find that there is a negative stock price reaction if an outside director is added who owns less than 5 percent of the outstanding stock, a positive reaction if the new director owns between 5 and 25 percent, and an insignificant reaction when the added director owns more than 25 percent. Their findings suggest that the initial rise represents convergence of interests with shareholders whereas ownership beyond the 5 percent level might support entrenchment effects. Those managers with substantial ownership stakes are less susceptible to external control and may pursue self-serving and not necessarily value enhancing projects. Bhagat, Carey and Elson (1999) also find a positive relationship between the amount of stock owned by outside directors and firm performance, whereas Himmelberg, Hubbard and Palia (1999) suggest that managerial ownership and performance are endogenously determined and they *cannot* conclude that changes in managerial ownership affect performance.

To this point I have examined the following: (1) the agency issue, to include sources of conflict and mechanisms for mitigating the effects; (2) the board's role in the

agency relationship; and (3) some of the empirical evidence of studies investigating the relationships of board characteristics with firm performance. The research on board composition suggests that smaller and more independent boards are associated with higher firm values. With respect to managerial ownership, the research suggests ownership by management is positively related to firm performance (at least at some levels) with the caution that such conclusions might be misleading if performance or firm value and ownership are assumed to be jointly determined. I turn to the study of these governance factors within the context of the mutual fund environment next.

C. The Mutual Fund Arena

The nature of the mutual fund environment allows the analysis of the agency problem to be examined in a different context.

> *In theory, a mutual fund is owned by its shareholders who hire independent directors to run it. The directors, in turn, select various service providers, including an investment advisor, to manage the fund. In reality, a mutual fund is usually created, sponsored, and operated by the advisor. It is the investment advisor's services, not the directors, that investors buy.*[6]

This apparent difference between theory and reality raises many points of interest for mutual fund research and specifically the impact of the board of directors.

C.1 Mutual Fund Structure

A financial services firm such as Fidelity Investments, which is called the fund's *sponsor*, creates a mutual fund. The fund sponsor selects the original board of directors that governs the fund and attempts to attract investors. Figure 1 outlines the structure of a

[6] Sturms (1999), p.104.

typical mutual fund as well as the two configurations of boards of directors considered in this study. The individual fund itself has no employees per se and the board hires separate entities to handle each of the investment management, distribution, and custodial functions required for each fund. The entity that provides the investment management function is referred to as the investment advisor in this study. The individual fund managers, or team of managers, that make the actual security selection decisions, are employees of the investment advisor. Most often, a fund's board of directors simply hires subsidiary units of the fund sponsor to provide these services, including that of the investment advisor. This structure of a fund is depicted in Panel A of Figure 1.

Recently, the SEC adopted new rule changes regarding certain aspects of mutual fund governance.[7] The highlights of the new SEC rules include a call for changing the percentage of required independent directors (from 40 percent to a majority), denoting a process for nominating new independent directors (new independent directors to be nominated by current independent directors), and specifying new disclosure requirements to include a director's age, term and tenure of service, and the scope of director duties within and outside a fund complex. This action followed a review of governance issues by the SEC, one component of which was a two-day roundtable discussion of these issues by industry leaders that was conducted in early 1999. Participants included SEC officials, representatives from major mutual fund sponsors, as well as individuals with experience serving as independent directors. One panelist, Professor Ron Gilson, put the governance of mutual funds issue into this context:

[7] Final Rule: Role of Independent Directors of Investment Companies, SEC, 17 CFR Parts 239, 240, 270, and 274, effective February 15, 2001.

> *...the discussion of mutual fund governance is typically confused. The reason why it's confused is that there's a rather consistent failure to distinguish between, on the one hand, corporate governance, and on the other, mutual fund governance, and as I'm going to suggest to you, they are quite different things. Essentially, mutual fund governance, I'm going to suggest, is composed of three parts, only one of which is corporate governance in the sense that we normally speak about it...We've got corporate governance, the relationship between the shareholders on one hand and the directors on the other; regulatory governance, which reflects the relationship between the SEC and the directors; and finally, contractual governance, which reflects the relationship between the directors and the advisor.*[8]

Common to each of these aspects of fund governance is the board of directors. This study focuses on the board and moves the empirical analysis to the level of the board.

C.2 Mutual Fund Agency Relationships

C.2.1 Sources

Mutual funds are subject to many of the same sources of potential agency conflicts as those experienced by corporations. In fact, a fund group might be more susceptible to agency problems as a result of the unique structure of a mutual fund. A mutual fund board has as many different shareholder groups as the number of funds it oversees. As such, there are times when the interests of the different fund shareholders might not be the same. I address the added potential agency problems inherent with the structure of boards governing several funds separately below. Further, agency issues might surface due to the lack of more traditional governance mechanisms available for mutual funds.

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[8] The Role of the Independent Investment Company Directors-Part 2, February 23 and 24, 1999, p. 53.

C.2.2 Methods and Mechanisms

While many sources of potential agency problems for mutual funds are similar to those of corporations, the mechanisms to deal with the issues are somewhat more limited. Previously, I addressed the contractual methods, incentive compensation, and monitoring mechanisms discussed by Denis (2001). Here I briefly address the suitability of these methods and highlight notable differences for mutual funds.

The contractual mechanism example illustrated in the previous section for corporations does not directly apply for mutual funds. A mutual fund does not necessarily assume debt instruments that might contain restrictive covenants. Funds simply issue and redeem shares as required. However, as the comments from the SEC roundtable alluded to above suggest, there are contractual and regulatory aspects of mutual fund governance. In the regulatory realm, the SEC regulates such aspects as board composition (discussed in more detail below) as well as outlining asset allocation criteria for such factors as when a fund may use the term "global" or "international" in the name of the fund. From a contractual standpoint, the board has the opportunity to address agency issues in the service agreements it writes with all of the service providers that support the fund's operations.

The second avenue discussed was the use of incentive compensation for senior management. The investment advisor of a mutual fund might be seen as the equivalent to the CEO of a corporation. Often firms will attempt to reduce agency problems through the use of incentive compensation arrangements. However, The Investment Advisors

Act[9] restricts the use of performance fees for advisors. Performance fees, also called incentive fees, are those where the advisor receives a base fee plus a bonus for exceeding a specified benchmark. What is allowed however, is what is known as a fulcrum fee arrangement. The investment advisor's payoff with a fulcrum fee is symmetric around the benchmark; that is, the fee decreases for under performing the benchmark and increases for exceeding it. Das and Sundaram (1999) find that investors could actually be better off from a welfare standpoint under asymmetric incentive fee arrangements. Most investment advisor compensation arrangements are fee-based—that is, they receive fees as a percentage of the total assets under management. Because of these relationships, advisors often seek to maximize fund fees. If fees rise without improved performance, it can certainly add to a board's agency concerns.

The final mechanism discussed was that of monitoring management. In addition to the board, corporations might have large institutional blockholders who can also monitor management. For mutual funds, the funds themselves are institutional investors and play the role of monitor in cases where the fund owns a large block of an individual firm's shares. While limited to the amount they may own in any one firm, the role of mutual funds as shareholder activists, and therefore monitors of the firms in which they have a stake, is gaining interest in the business press.[10]

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[9] Similar to the requirement of mutual funds to register as a "Registered Investment Company" under the Investment Company Act of 1940, the Investment Advisors Act of 1940 provides regulatory guidance for advisors.

[10] Josh Friedman, "Vanguard to Turn More Activist in Proxy Voting," *Los Angeles Times,* August 22, 2002. Vanguard stated it would withhold votes for non-independent directors who serve on audit, compensation, or nominating committees of a board and would not vote for any directors whose election would make the majority of the board made up of insiders.

Jensen (1993) suggests another aspect of disciplining management is the market for corporate control. Again, the situation for mutual funds is somewhat different. Whereas mutual fund sponsors might be subject to this external control mechanism, individual funds do not "take over" other funds. More often, funds are closed to new investors, merged with another fund, or liquidated. Jayaraman, Khorana and Nelling (2002) find that within-family mergers appear to be motivated by the need to disguise poor fund performance. This process essentially eliminates the record of the previous fund and any negative impact the merged fund's performance might have on the sponsor's ability to market and sell other funds within the family.

Mutual funds do however, compete for investment dollars with other investment vehicles such as traditional stocks, bonds, or more directly, with exchange-traded funds (ETFs). Most often mutual funds market themselves as a vehicle that allows the individual investor to invest in the same aforementioned assets while simultaneously offering diversification for each dollar invested. However, competition affects the sponsors who offer the funds on two levels. First, sponsors compete against each other for market share. Second, sponsors need to be aware of how individual funds compete against other funds *within* their own family of funds. Khorana and Servaes (2002) find mutual fund families that charge lower fees relative to the industry have a higher market share. Families that perform better, offer a wider range of products, and start more funds relative to the competition also have higher market share. However, extremely high levels of new starts can lead to cannibalization of existing funds. In this latter case, if a sponsor's new fund takes assets from existing funds, the impact on existing funds might

come in the form of higher expenses as the level of total assets in the existing funds decrease. The above discussions bring to light the fact that outside of redeeming their shares in the fund, the board is essentially the first, last, and only line of defense in monitoring the investment advisor for shareholders.

C.3 Board Configuration

From the previous discussion it is clear the board is a key piece of the governance puzzle for mutual funds. However, the ability of a board to monitor and thus mitigate agency problems can largely be affected by the nature and characteristics of the sponsor organization that offers the individual fund. As outlined previously, the focus of this research is on the *configuration* of boards within a fund sponsor. Today we see two prominent board governance configurations in the mutual fund industry. In one governance configuration, a single board is responsible for overseeing multiple investment funds; referred to in this study as a Single Board Configuration (SBC). With the other governance configuration, each board is responsible for overseeing a single investment fund (or a cluster of funds); referred to as a Multiple Board Configuration (MBC). An important factor in this analysis is the consideration of the numbers and types of funds overseen by a board. There is no unified agreement among the courts, investment professionals, or academicians as to whether the board of a mutual fund can better serve the interests of fund shareholders if it has oversight for an individual fund, a cluster of funds, or the overall spectrum of funds offered by a sponsor. While a majority of sponsors utilize a single board to oversee all their funds, there are a considerable number of sponsors that choose some variation of the multiple board configuration.

A comparison of the two mutual fund board configurations is depicted in Panel B of Figure 1. In the following sections, I discuss various aspects of the mutual fund arena in greater detail. First, I address why the board of directors is the appropriate level of analysis. Next, I examine the differing viewpoints on the number of funds a board should oversee, followed by a closer look at mutual fund returns and expenses. Finally, I examine the unique aspects of funds that offer multiple classes of the same fund.

C.3.1 Board-Level Analysis

While boards of directors clearly play an extremely important role in the governance of mutual funds, we know little about how fund sponsors configure their boards. At the heart of the configuration decision is an even more basic question, that is, what is the appropriate level of analysis to examine mutual fund governance? Should fund-level attributes or sponsor-level factors be analyzed? I argue here that the answer does not lie at those extremes. Instead, I suggest the appropriate level to investigate mutual fund governance is at the level of the board of directors.

A mutual fund, or family of funds, is a product of a fund sponsor, and mutual fund operations often represents only a small piece of the financial services offered by the sponsor. Many fund sponsors also have brokerage units, research arms, or consulting branches. Different sponsors might be able to obtain different synergies based on their other activities. Furthermore, there are really no shareholders at the "family of funds" level. Being a shareholder of the fund sponsor, as opposed to an individual fund shareholder, encompasses the investment advisory aspect of mutual fund operations as well as other activities such as a brokerage business. Because of these varying

contributions of the role of mutual funds within a sponsor's total financial services portfolio, the "sponsor" level might not necessarily be the appropriate level to examine the governance relationships of an individual fund. Furthermore, a fund sponsor will have a separate board of directors that oversees all the activities the sponsor. An argument can be made that both the board overseeing the funds (the board elected by fund shareholders) and the board of the sponsor might influence a fund or family of funds. This situation is only more complex when a sponsor uses a multiple board configuration to oversee all of its funds.

At the opposite end of the governance spectrum is the individual fund itself. From this viewpoint, the individual fund is of primary interest to the fund shareholder. While availability or access to other financial services offered by the sponsor might play a role in his or her initial selection of the fund, ultimately the investor is concerned with fund performance. If all mutual funds have their own individual board of directors, we might learn a great deal from investigating funds at the fund level. In such cases, the "fund" and "board" levels of analysis are one and the same. The decisions and oversight of a mutual fund board are directly comparable. This is what we see in the research of boards in corporations. However, in the case where a fund is one of many funds under the auspices of a SBC board, the fund is itself only a piece of the board's larger portfolio of funds. Decisions that affect expense rates and services of the funds are not necessarily made at the fund level (explained in greater detail below). This study offers a new perspective from which to analyze mutual funds. Here the focus is on the *configuration* of the board(s) *within* a fund sponsor. This allows us to investigate the relationship

between the structure of boards of directors and fund performance aggregated at the board level.

Much of the early research on mutual funds is focused on individual funds. This fund-level framework has been used in the study of relationships between fund performance and fund manager turnover,[11] characteristics of fund managers,[12] the relationship between various board characteristics and fund fees,[13] and a fund's choice of investment advisor.[14] More recently we have seen a move to examining mutual funds from the sponsor level. Khorana and Servaes (1999) find that sponsors that perform better, offer a wider range of products, and start more funds relative to the competition also have higher market share. Similarly, Siggelkow (2002) finds that U.S. mutual funds that belong to more focused fund providers outperform similar funds offered by more diversified providers. Ciccotello, Miles and Walsh (2002) find more focused families have a larger percentage of winning funds (those where the fund's performance is above the median for the objective category). Sirri and Tufano (1998) find that membership in a large complex is an important determinant of fund flows, and cautions that future research needs to recognize that structure and organization of the industry affect the decisions that investors make. This study specifically addresses their caution.

C.3.2 The Board and The Number of Funds

A major consideration in the board configuration question concerns the number of funds a board governs. At the most basic level, the number of funds a board can

[11] See Khorana (1996)
[12] See Chevalier and Ellison (1999)
[13] See Tufano and Sevick (1997)
[14] See Deli (2002)

effectively oversee involves a trade-off between the additional marginal workload of adding a fund to the board's portfolio versus the benefit from any economies of scale gained from fund administration costs and expenses. There is clearly disagreement on the subject within the industry itself. Professor John Coffee, another academic panel member of the SEC roundtable, opined:

> *If you serve on 40 boards for one investment advisor, you begin to see yourself as, in effect, the director for the parent corporation that has 47 subsidiaries. Once you start to do that, once you start saying "I'm working this on an across-the-board basis," you tend necessarily to trade off the interests of Fund 1 with Fund 16. You may say: "We've had a terrific year on 32 of these funds, therefore, we should keep the investment advisor in place, even though at two of these funds, we've had a terrible year." And that subordinates the interests of the investors in the two funds that have lost money to the much greater number of funds who made money. Those shareholders in those two funds that have lost money would do better if they had a more independent board that wasn't engaging in that kind of global tradeoff. That, I think, is the problem, and I think it occurs anytime you have some level of identity with the investment advisor.*[15]

Further evidence that the issues and priorities of a board might differ between funds in the same complex or sponsor can also be seen from the following excerpt taken from one fund family's Statement of Additional Information (SAI). It reads:

> *Each fund operates for many purposes as if it were an independent company. Each fund has its own objectives, policies, strategies and portfolio managers, among other characteristics.*[16]

Arguments are also made in support of the model where directors serve on multiple boards. Because the primary role of mutual fund directors is to hire and negotiate the fees of the investment advisor, some argue that the more funds that an

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[15] The Role of the Independent Investment Company Directors-Part 2, February 23 and 24, 1999, p. 68.
[16] SAI, Heritage Equity Funds, January 2, 2002.

independent director oversees, the larger the amount of negotiating leverage the board has when reviewing the advisory contract. Most in the industry refer to this as a benefit from economies of scale at the sponsor level. Latzko (1999) examines mutual fund costs and finds that mutual fund expenses increase less than proportionately with fund assets implying economies of scale do exist. The fee structure in many advisory contracts contain breakpoints so as to, at least on the surface, pass benefits from economies on to investors. Discussing this point at the SEC Roundtable, and specifically on whether there is a finite number of funds a director can oversee, Fidelity director Gerald McDonough commented:

> *...our directors at Fidelity, we oversee 285 or more boards and it's no burden at all if you stop and consider what our responsibilities are and the extent to which there are very few items that are unique to a single fund. Clearly the performance can only be measured on a fund basis, and the expenses can only be addressed on a fund basis. And I don't think other than if there were to be compliance issues of that type which would be very, very periodic in nature and timing, everything else that any one of us do if we have more than one fund under our oversight, are things that when you do them you are doing them for all funds simultaneously. Therefore, I don't know where the finite number is, frankly. We haven't reached it in our view at Fidelity yet. They open new funds and we put them right under our wing.*[17]

For boards with more than one fund in their portfolio, the board has as many different sets of different shareholders as they have funds; and presumably all the shareholders have identical interests. When the board is negotiating the advisory contract, it is safe to assume that all shareholders would like the board to set expenses so as to maximize expected returns. When monitoring activity is concerned, it is not clear

[17] The Role of the Independent Investment Company Directors-Part 2, February 23 and 24, 1999, p. 81.

that all shareholders of all the different funds will have the same priorities for the board. Tate (2000) notes that one such occurrence is where the board provides oversight of the advisor's use of soft dollars.[18] Because shareholders desire the lowest executable brokerage commissions, paying any amount higher than the market cost results in the shareholder effectively paying too much. If the fund receives benefits from the higher commission, such as research products, the added cost may be in line with the best interests of shareholder. However, if soft dollars are earned from brokerage across all funds of a board's portfolio of funds, unless each fund benefits equally from the research, each set of individual fund shareholders will not share similar interests. The more diverse the type of funds governed by a board, the less likely the research benefits each fund equally. The end result might be that certain mutual fund board structures actually *add* to the agency problem that they are in place to reduce.

There are additional factors that might impact the number of funds a board can effectively oversee as well. One factor is the individual objective of the funds themselves. Often a sponsor establishes an individual board to cover general categories of funds—that is, one board each for equity, bonds, or money market funds. Consider two boards each governing 12 funds. Is it reasonable to assume the scope of oversight is the same if one board oversees 12 money market funds, while the other board oversees eight equity funds, two bond funds, and two money market funds? It is understandable that the two boards might benefit from having different cores of expertise available from its members. Another factor to consider is the type of management involved or required

[18] Soft dollars are what results when an advisor's pays higher than market commission rates to a brokerage firm who executes the portfolio's trades in exchange for research products.

for each type of fund. Boards that oversee predominantly passively managed funds—that is, index funds—will likely have fewer monitoring responsibilities than boards that oversee only actively managed funds. All else being held constant, we might expect a board that oversees funds that are only passively managed is able to handle more funds than a board that oversees actively managed funds. These factors are controlled for in this study.

An interesting consequence of the single board configuration is whether the structure affects the "independence" of independent directors. Carter (2001) highlights a recent court case where the independence of directors is called into question simply by the structure of the boards used by the mutual fund sponsor. In *Strougo V. Scudder, Stevens, & Clark, Inc.,* investors sued both the investment advisor and the board of directors.[19] The case involved the situation where a fund offered existing shareholders the right to purchase shares of a new stock in the fund. The advisory relationship in place at the time called for Scudder's fees to be paid based on a percentage of assets managed. Here Strougo argued that the rights offering caused harm in diluting the pro rata holding of stocks within the fund allocated to the fund shares while increasing assets so as to increase fees for Scudder. The fund in question was a Brazilian fund that had recently seen assets decrease significantly due to the "Tequila Effect" during most of 1995. Due to the suit, the board was required to appoint a litigation committee made up of at least two independent directors to investigate the claims. At the time, Scudder employed a system of clustered boards that Strougo argued, could not impartially prosecute action

[19] Carter (2001) highlights that while this case involves a closed-end fund, the argument is analogous to open-end funds.

against Scudder or themselves. Because six of the seven independent directors served on other Scudder boards, the court considered the six "interested" and therefore could not serve on a litigation committee, which required two non-interested directors. Ultimately, the fund hired an additional outside director that could serve on a litigation committee that then performed its role in the suit. Later, the court agreed the new committee acted appropriately and the suit was eventually dismissed. The key to this case is that within the legal environment, the "independence" of an independent director was called into question simply due to the fact a director served on multiple boards (or one board that oversees more than one fund in the context of this study). Although, the results of *Strougo V. Scudder* could have significantly changed the landscape of mutual fund board complexes, this has not been the case. While not eliminating the complex structure, it would have required at least two independent directors sit on the board of each fund, both of whom do not sit on another fund board of the sponsor in order to comply with the potential legal requirements.[20]

C.3.3 Mutual Fund Returns and Expenses

The research into mutual fund returns and expenses is considerably more developed than that on mutual fund governance. Only recently has there been progress in the area of linking mutual fund returns and expenses to the boards that oversee the

[20] Hanks (1999) provides a comprehensive review of the *Strougo V. Scudder* case. The *Strougo V. Scudder* case involved a Maryland corporation, and the legislature later changed the laws effectively overturning *Strougo V. Scudder*. The Maryland law change effectively redefined the term of independent director under Maryland law to be consistent with the Investment Company Act. Massachusetts later passed similar legislation in 1998. Investors have apparently now changed their legal basis in these suits. By the Fall of 1998, at least five suits had been brought challenging the independence of directors on multiple boards under the Investment Company Act rather than state laws.

activities of the funds. The preponderance of mutual fund performance literature deals with the question of market efficiency, and more specifically, examining whether actively managed funds perform better than unmanaged indices or benchmarks. In sum, the empirical evidence is mixed.

Ippolito (1989) tests for efficiency in capital markets when information is costly to obtain. He finds evidence consistent with optimal trading in efficient markets. Risk-adjusted returns in the mutual fund industry, net of fees and expenses, are comparable to returns available by investing in index funds. Further, he finds portfolio turnover and management fees are unrelated to fund performance. Mutual funds with higher turnover, fees, and expenses earn rates of return sufficiently high to offset the higher charges.[21] Hendricks, et al. (1993) suggest a 'hot-hands' phenomenon exists, where funds that have performed well in the past also perform well in the future. They find the relative performance of no-load growth oriented funds persist in the near term, particularly over the one-year horizon. Malkiel (1995) reexamines whether mutual funds earn excess returns (or achieve positive alphas in a capital asset pricing model (CAPM) framework). He finds that the positive alphas found in Ippolito (1989) disappear, when the survivorship bias of databases is taken into account. Mutual funds that perform poorly are often closed or merged with other funds, masking the record of the poor performing fund, suggesting that any time-series analysis on existing funds at any given time are biased as the sample represents a larger proportion of successful funds. He also finds the that the persistence identified by Hendricks, et al. (1993) diminishes in the 1980s. When

[21] A fund's turnover captures the rate at which assets in the portfolio are bought and sold and is often used as a proxy for the level of active management within a fund.

returns from all funds (including those eliminated or merged) are analyzed, Malkiel (1995) finds that mutual funds tend to underperform the market, not only after management expenses have been deducted, but also gross of all reported expenses except load fees. When specifically examining the relationship between returns and fees, he finds limited evidence of a negative relationship between the total expense ratio and net performance. He concludes there is no relation between gross investment returns and expenses; and it appears that investors do not get their money's worth from investment advisory expenditures.

Carhart (1997) reexamines mutual fund persistence with data on equity funds from 1962-1993 using both the CAPM and a four-factor model.[22] He also finds positive excess return values when portfolios are formed on lagged one-year returns. Furthermore, these portfolios exhibit a wide variation in average returns. The top funds outperform the bottom funds by 1 percent per month. Even within deciles, there was a considerable difference in returns. In the top decile the return spread was12 basis points per month while the variation within the bottom decile was 50 basis points per month. He finds the CAPM does not explain the relative returns of the portfolios (that is, he finds similar betas across all deciles), while the four-factor model performs much better. He then investigates the persistence of returns by evaluating the claim of mutual fund managers that expenses and turnover do not reduce performance, because investors are paying for the quality of the manager's information and managers trade only to increase

[22] The CAPM approach is similar to Ippolito (1989) and the four-factor model is an extended version of the Fama and French (1993,1996) three-factor model (with factors accounting for the market, size, and book-to-market equity), with a fourth factor added to account for the Jegadeesh and Titman (1993) short-term momentum anomaly.

expected returns net of transaction costs. As a result, expenses and turnover should not have a negative effect on performance, as the average statistics suggest, but rather a neutral or positive effect should be evident.

The results from Carhart (1997) show a strong relationship between performance and size, expense ratios, turnover, and load fees, which suggests that mutual funds on average do not recoup their investment costs through higher returns. He argues that persistence in expense ratios explains any persistence in mutual fund performance. The final conclusion from Carhart (1997) is that expenses have at least a one-for-one negative impact on fund performance, and that turnover and load fees also negatively impact performance. Finally, holding expense ratios constant, load funds under perform no-load funds. Malhotra and McLeod (1997) and Deli (2002) find higher turnover leads to higher expenses. Recently, Wermers (2000) adds to the debate when he provides evidence that mutual funds hold stocks that do outperform the market, again suggesting there is value in the active management of funds.

There are studies that examine the relationship of mutual fund boards of directors and the fees that boards approve for investment advisors. Melms (1994) finds a significant inverse relationship between the percentage of independent directors and a fund's expense ratio. Boards with greater independence have lower expense ratio. Tufano and Sevick (1997) examine whether there is any relationship between board composition and the shareholder fees that boards approve each year. They conclude: (1) there exist economies of scale (fees are inversely related to fund size); (2) there is little evidence that *prior* fund performance (12, 24 or 36 months) is related to fund fees;

(3) funds with a larger percentage of independent directors have lower fees; and (4) the percentage of sponsor assets a director oversees is negatively associated with fund fees. This last result suggests that boards are not "captured" by the sponsors. If boards were indeed serving at the whim of the sponsor, we might expect fees to be positively associated with the percentage of sponsor assets overseen by the board. Alternatively, this finding might suggest that when a sponsor offers a wide array of financial services and products, they are less reliant on fees collected from mutual fund operations. The point of emphasis as it relates to the current study is their finding about fund fees and performance. The finding using *prior* performance suggests that boards do not reward sponsors that exhibit strong past performance with higher fees. Previously, Elton, Gruber and Blake (1996) find that expenses account for only a portion of the differences in performance across funds. Thus, there must be factors associated with better performance that do not necessarily influence returns through the factors relationship with the fund's expense ratio.

Elton and Gruber (1997) highlight why researchers should care at all about performance. They note that in an efficient market we would expect performance to be random. While some funds may outperform a passive benchmark or strategy, there are other funds that under perform, and the difference should be strictly random. They highlight however, that if superior management exists, and unless performance is reflected in higher fees, we might find persistence in performance. Because we know that mutual funds do not raise fees to reflect performance, (i.e. Tufano and Sevick (1997)), and that fees are lower for higher performing funds (i.e. Carhart (1997)), They posit

superior management should be reflected in persistence of fund performance. If the claims that mutual fund returns demonstrate persistence are true, it is possible that superior management may exist as well.

Dowers (1997), in one of the first studies to investigate board characteristics and fund performance, finds no relationship between the size of the board or a board's percentage of independent directors and a fund's abnormal performance. He uses various measures of abnormal performance from different asset pricing methods similar to those used by Carhart (1997). He also finds limited evidence that boards with a greater percentage of independent directors have lower fees. In this study, I extend Dowers (1997) work by first introducing board-level performance as a proxy for board monitoring. While there may exist a relationship between board composition and fund-level performance, any relationship suggests little about how the board of directors may perform their monitoring role as a "board,"—that is, the board's performance across all funds within its purview.

C.3.4 Mutual Funds with Multiple Share Classes

Another aspect of fund operations that must be addressed is when fund sponsors offer funds with multiple share classes (MSC), or funds with separate classes with claims on the same underlying assets. Multiple share classes have become commonplace since the introduction of SEC Rule 18f-3 in 1995. Most MSC funds differ only in the payment of fund expenses. Most often one class will have a front-end load, another class will have back-end load, a third class has no front- or back-end load yet has a higher annual expense ratio, and finally a fourth class is available only for institution investors. Many

sponsors offer the MSC funds to appeal to different investors with different investment horizons. Lesseig, Long and Smyth (2002) highlight the attraction of MSC funds to sponsors is that a sponsor can charge different fee structures on the same portfolio of securities without the costs of establishing a new fund altogether. O'Neal (1999) provides evidence that brokers might in fact have incentives to sell the class of shares that is *least* advantageous to investors. This finding shows the possibility that the mere existence of MSC funds can introduce additional agency problems. Lesseig, et al. (2002) find support for this in that any gains from lower total expenses obtained from the implementation of MSC structures are captured by sponsors and not passed on to investors.

C.4 Board Ownership

The examination of director ownership of mutual funds is fertile territory for academic research. It was only with the SEC's new rule effective in 2001 that fund companies were required to disclose the dollar values of fund shares owned by independent directors in the funds that they govern. Only after considerable debate between fund sponsors, the industry trade group, and government regulators was a final decision reached on the form of this disclosure. In short, individual funds report the dollar value of fund shares owned by independent directors in levels at both the fund and complex level served by the director. The levels are:

1) None
2) $1-$10,000
3) $10,001-$50,000
4) $50,001-$100,000
5) >$100,000

Much of the debate on director disclosure centers on the value of such disclosure to investors balanced with concerns of privacy for individual directors.

The question as to whether there is meaningful information for investors in this disclosure is an interesting one. On one hand, traditional thought on agency theory posits that greater ownership by managers and directors better aligns incentives with those of shareholders. However, in the mutual fund arena, each fund within a director's portfolio of funds might not be an appropriate investment. Consider a director who serves on a board that governs 10 funds. Is it important that the director hold shares in each fund, or is it sufficient that there is some investment across the complex of 10 funds? One critical consideration in this question is the objectives of the funds that make up the director's portfolio of funds. A director's holdings might reasonably differ if the 10 funds in the director's portfolio are made up of funds with varied investment objectives—a money fund, a couple of bond funds, and the remaining funds spread over various equity objectives—as compared to a portfolio of 10 state tax-exempt municipal funds. One might expect a larger ownership position across the complex in the former case because the funds under the director's purview represent a more diversified portfolio. It is unlikely to assume the latter group of funds represents a diversified portfolio for any investor, let alone one of the directors. This new disclosure requirement provides a window of opportunity to extend the research on boards of directors within the mutual fund arena.

D. The Current State

The purpose of this chapter has been to review the nature of the agency problem in the mutual fund context and demonstrate that research into mutual fund board configuration and ownership levels of board is an avenue of promising research. First, I examined the sources of agency problems for traditional firms and the methods and mechanisms available to mitigate their impact. Second, I reviewed the specific role of the board of directors, as it is this component that is essentially the first, last, and only line of monitoring for mutual funds. Third, I walked through the structure and configuration of mutual fund boards and their operations as well as the unique challenges that result from a board overseeing more than one fund. Along the way, I reviewed the empirical research that provides the foundation from which this study builds. Taken in sum, the empirical evidence suggests that board composition is significantly associated with fund expenses. Boards with a larger percentage of non-interested directors approve lower fees and expenses. The findings also suggest board composition is not associated with fund performance. More importantly for the context of this study, none of the previous studies utilize a board-level performance measure nor considers board configuration or director ownership in the analyses.

With reasonable arguments both for and against a board configuration with independent directors serving on multiple boards, it is not clear which configuration provides the best service to fund shareholders. Nor has the industry adopted a uniform board structure. Interestingly, the Investment Company Institute (ICI) recommends in its best practices that directors serve on all boards of a fund sponsor rather than on the board

of an individual fund. An advisory group formed by ICI to review the role of independent directors concluded that service on boards overseeing more than one fund provides directors with an avenue to become more familiar with fund operations that are complex-wide in nature. The ICI group also highlights a concern about the ability to attract qualified directors if their service is limited to only one fund within a complex. There is no evidence that the advisory group evaluated any empirical evidence in rendering their recommendations, relying instead on anecdotal evidence collected from members, as well as from interviews with those who have extensive experience in the field. The Hermalin and Weisbach (2002) survey concludes with recommendations for future research. One specific suggestion calls for studies that examine boards of organizations other than large publicly traded corporations. This study responds to this call.

Chapter Three

Research Design

Chapter 1 introduced the basic question as to whether the configuration of boards of directors within a mutual fund sponsor is associated with fund performance. Sponsors utilize either a single board that is responsible for overseeing multiple investment funds; referred to in this study as a Single Board Configuration (SBC); or sponsors use more than one board where each board is responsible for overseeing a single investment fund (or a cluster of funds); referred to as a Multiple Board Configuration (MBC). While boards have many precise duties and responsibilities, ultimately they are charged with monitoring the investment advisor on behalf of the individual fund shareholders. The review in Chapter 2 showed there exists unique agency relationships between owners and managers in the mutual fund arena, and these agency conflicts only elevate the importance of the role of board of directors for fund owners. Prior research shows board *composition* (the number of directors and percent of those that are non-interested) are associated with the board's major duty, that of selecting and approving the fees of the investment advisor. Earlier studies suggest smaller and more independent boards are associated with lower fees. However, boards have an ongoing monitoring function as well, and we know little as to how effectively they serve in this capacity. Here, I examine the monitoring ability of individual boards by investigating the relationships of board composition and configuration with board-level performance.

This chapter develops the hypotheses and methodologies, defines the variables, and provides a description of the sample used to examine (1) board-level performance, (2) the relationship of board-level performance with the configuration of boards used by fund sponsors, and (3) whether ownership levels by fund directors is associated with higher fund performance. The individual research questions can be depicted in the following manner:

$$BXR = F\left(BCV;\ OWN;\ CONTROL\right) \tag{1}$$

BXR is a board's excess return measure. This value captures the aggregate relative performance of a board's portfolio of funds with respect to the individual fund's investment category. BCV is the board configuration variable, OWN is vector of variables describing the ownership levels of a board's independent directors, and CONTROL is the series of board composition, board portfolio, and board-level fund-derived vectors of control variables. All the variables are fully defined in Section B along with their predicted a priori relationships with BXR. BCV and the variables in the OWN vector are the variables of interest. Findings of significant coefficients on the variables of interest suggest that a fund sponsor's board configuration or the levels of ownership by directors of a board are associated with an individual board's excess return. Such findings provide evidence as to whether board configuration or ownership in the fund complex by board members leads to improved monitoring.

A. Hypotheses and Methodology

The first contribution this research makes is through the use of board-level performance to proxy as a measure of a board's monitoring capability. At this point I

want to address why a board-level excess return measure is a good proxy for the ongoing monitoring capability of a board. First, investors value performance, and investors are certainly interested in identifying any factors involved with fund governance that are associated with better fund performance. In the case of this research, I examine governance from the board perspective because it is at the board level that many decisions regarding fund operations are made. Most importantly, the board approves the fee structure paid to the advisor. Second, board-level performance offers an interesting perspective for analysis in the context of whether there is superior management (i.e. fund managers with superior stock picking ability), or more specifically in this case, whether there exists superior monitoring for mutual funds (i.e. where boards have more funds that perform better). Recall from Chapter 2 that we would expect performance to be random in an efficient market. However, Elton and Gruber (1997) note that evidence of persistence in mutual fund returns suggests the possibility of superior management. Here I examine whether there exists board-level factors associated with differences in fund performance, even in the existence of efficient markets. If so, there may be evidence of superior management in terms of better monitoring.

Using a cross-sectional sample of fund complexes within the largest 25 mutual fund sponsors at year-end 2000, I investigate the relationship between board-level performance and board configuration in four general frameworks. First, I analyze the sample based on the type of board configuration. In this framework I conduct simple difference-in-means tests to determine whether there is any evidence of differing levels of performance between boards overseeing all of a sponsor's funds (boards in a SBC) and

those overseeing some subset of the sponsor's funds (boards in a MBC). Second, I characterize the sample in terms of an "optimization matrix" and conduct a probit analysis in an effort to determine the characteristics of fund boards that are associated with boards that have higher probabilities of higher excess returns and lower excess expenses. Third, I conduct an Ordinary Least Squares (OLS) regression analysis to identify whether board configuration is associated with better performance when controlling for variables that have been identified as affecting mutual fund returns. Finally, I address the concern of the endogeneity of governance factors that plague studies of this nature.

A.1 Difference-in-Means

The first analysis of the sample involves simply looking across the two types of board configurations—SBC and MBC. I divide the sample into two subgroups—one contains those boards within SBC sponsors and the second group contains those boards within MBC sponsors. For each of the board-level variables of interest, as well as for those contained in the board composition, board portfolio, and board-level fund-derived control vectors, I test the significance of the difference in means.

A.2 Optimization Matrix

Each of the funds and boards is evaluated in terms of what I define as an "optimization matrix." Each fund, and subsequently each board, is characterized by its excess return and a similarly calculated expense measure as shown in the matrix in Figure 2. I designate a fund or board as "optimal" if it has positive excess returns and negative excess expenses. Similarly, those funds or boards with negative excess return

and positive excess expense values are "sub-optimal." Optimal funds should be associated with reduced agency and better monitoring.

After the funds and boards have been characterized using the "optimization matrix," I perform the following probit analysis to assess the probability that the variables of interest, including the control variables, will lead to a board being classified as optimal—that is, a board that has both positive excess returns and negative excess expenses. I evaluate "optimal" boards in this framework because the primary level of interest in this study is that of the board of directors.

$$OPT = \alpha_0 + \alpha_1 BCV + \alpha_j CONTROL + \varepsilon \quad (2)$$

Where OPT is a dummy variable set equal to one if the fund or board is designated optimal; zero otherwise. BCV is the board configuration variable set equal to one for a MBC boards; zero otherwise. CONTROL is the series of board composition, board portfolio, and board-level fund-derived vectors of control variables as described in Section B.

A.3 Regression Analysis

The primary method for investigating the relationships between board-level performance and both board configuration and director ownership is through least squares regression. The general regression framework is depicted in Equation (3).

$$BXR = \alpha_0 + \alpha_1 BCV + \alpha_j OWN + \alpha_j CONTROL + \varepsilon \quad (3)$$

The relationship of BXR with each of the control vectors is examined, with and without the board configuration variable (BCV). For example, the initial model examines the relationship between BXR and the board composition variables (NODIRS and BIND—defined with all variables in Section B). The next model adds the configuration variable.

The following model investigates the relationship of BXR with the board portfolio control variables. This regression structure is continued until the full model is reached which includes BCV and the board composition, board portfolio, and board-level fund-derived control variables. Each of the models utilizes robust standard errors to correct for the presence of heteroschedasticity.

B. Variable Discussion

The variables for this cross-sectional study are depicted in Table 2. Variables are grouped according to their role in the analysis. Panel A contains the specific variables interest. They are BXR, BCV, and the variables within the vector OWN. Panel B shows the control variables broken down into those representing board composition, board portfolio characteristics, and board-level fund-derived control variables derived form the individual funds in the board's portfolio. Each vector of control variables is defined below.

B.1 Variables of Interest

The first variable of interest is the Board Configuration Variable (BCV). The configuration of a sponsor's board or boards is represented by a dummy variable set to one if the sponsor utilizes a MBC; zero otherwise. A significant coefficient on the BCV variable suggests that board configuration is related to performance, whereas an insignificant BCV coefficient suggests that board configuration is not associated with performance.

The second variable of interest, and the primary dependent variable, is board-level excess return (BXR). Similar to the sponsor performance variable calculated by Khorana

and Servaes (2002), I calculate an individual board's excess return. Specifically, a board's BXR value is calculated using the following model:

$$BXR = \sum_{i=1}^{N} \left[w_i \left(R_i - \sum_{j=1}^{M} w_j R_j \right) \right] \quad (4)$$

where w_i = weight of the fund i within all funds of board's portfolio
w_j = weight of fund within all funds in sample with objective j
R_i = return of the individual fund (one year cumulative total return)
R_j = return of the fund in objective category used to compute weighted-average
M = the number of funds in objective category to compute weighted-average
N = number of funds in a board's portfolio

In order to compute this measure, I first compute the weighted-average return of each investment objective j, where the weight (w_j) is the relative size of the fund within all funds with the objective j in the sample across all sponsors. Next, for all funds I subtract the weighted-average return for objective j from the return of each fund with objective j. This process results in each fund in the sample having an excess return measure (XR) that is the fund's return in excess of its objective's weighted-average return. Finally, for each board, I compute the weighted-average of these excess returns across all funds governed by the specific board, where the weight (w_i) is the relative size of each fund within all funds assigned to the board.

Individual fund data for this study comes from Lipper. Lipper categorizes mutual funds into two broad 'universes' (equity and fixed-income), 15 broad classifications, and 128 specific objectives. In this research, I designate the 15 broad classifications as the *major objective* level. Table 1 outlines the Lipper Classification scheme and definitions of the equity categories. Four separate forms of BXR are calculated depending on whether the return is further adjusted, and which level of fund objective is used to

calculate the weighted-average objective return. BXR is first calculated using a weighted-average of a fund's individual specific objective resulting in the variable BEXRET (Board EXcess RETurn). BXR is then calculated using averages formed at a fund's major objective level to form the variable BMEXRET. Following Khorana and Servaes (2002) and Ciccotello, et al. (2002), I standardize each of the BXR variables by dividing the objective (or major objective) weighted-average by the standard deviation of the returns within the classification scheme used. For the objective and major objective levels, the standardized versions of the BEXRET and BMEXT variables are identified as BSEXRET and BMSEXT respectively.

The final variable of interest seeks to capture the degree of ownership of an individual board of directors. As mentioned in Chapter 2, funds are now required to disclose the investments of directors in the funds they govern. This information is reported in a fund's Statement of Additional Information (SAI) at both the fund and the complex level for each director. It is not necessarily the directors' ownerships in any particular fund, as opposed to how much is invested across all the funds in the directors' portfolio that better represents whether a director has a stake in the fund group. In short, does a board's level of investment in the fund complex affect monitoring? The goal of this portion of the research is to determine: (1) whether individual directors in the board have an investment stake in the complex they oversee; (2) the breadth of ownership levels across directors on a single board; and (3) whether these measures are related to a board's excess return measure.

Most of the existing literature on managerial and director ownership utilizes a continuous variable that measures either the dollar value or percentage of the firm owned by management. Unfortunately, the new SEC rule does not require disclosure of precise director ownership levels. Instead, director ownership is reported across a spectrum of five value ranges from 'None' to '> $100,000'. Due to this restraint, the effect of director ownership is captured through a series of dummy variables. First, I identify the cases where all of the board's independent directors have some investment (BALLOWN). Second, I capture the case where at least one of the independent directors has an investment in the top range (>$100,000; BONETOP). Next, I capture the case where the entire board has some investment and at least one director has an investment in the group greater than $100,000 (BOWNTOP), an interactive dummy variable defined as BALLOWN*BOWNTOP. Finally, I capture the case where all directors have investments in the fund complex in the highest range (BALLTOP). This framework allows the investigation to differentiate among those boards where not all members have some level of investment in their fund group and those boards where all the directors have investments greater than $100,000 in the fund complex.

B.2 Control Variables

Here I outline the CONTROL series of vectors (board composition, board portfolio, and board-level fund-derived controls) designed to account for a different aspects of mutual fund operations. Each of the vectors contains variables that have been either hypothesized or demonstrated to influence mutual fund returns either directly or indirectly through expenses as discussed in Chapter 2.

B.2.1 Board Composition Controls (NODIRS and BIND)

The first vector of control variables captures the composition of the board in terms of the number of directors who sit on the board (NODIRS), and the degree of independence of the board, measured as the ratio of non-interested directors to total directors (BIND). These measures are the variables of interest in much of the governance literature. They are included here primarily as controls, but also to investigate their relationship with a board's excess returns as suggested by prior studies. As shown in Chapter 2, there is no clear evidence as to the whether the degree of independence is associated with fund performance, whereas there is evidence that boards with greater independence are associated lower fees (Tufano and Sevick (1997)). Dowers (1997) does not find evidence to suggest that the degree of board independence is related to fund returns at the individual fund level. Lipton and Lorsch (1992) recommend limiting the size of boards because greater numbers of directors might prevent meaningful dialogue in the boardroom. Jensen (1993) recommends that boards limit the inside directors to only the CEO. Yermack (1996) finds evidence that smaller boards are associated with higher firm values as measured by Tobin's Q.

B.2.2 Board Portfolio Controls (BFDS, BFOC, and BAREA)

The variables in this vector provide different methods to measure the scope of monitoring responsibilities required of the board. The first variable is the number of funds (BFDS) a board oversees. As discussed in Chapter 2, the number of funds overseen by a board involves a trade-off between the potential benefits from economies of scale (possibly lower expenses) and the marginal increase in the monitoring activity workload.

A significant positive finding implies that the benefits from any economies outweigh a higher monitoring workload for directors. Similarly, a significant negative finding suggests that any economies do not outweigh a board's larger governing responsibilities.

Another component of boards that describes the magnitude of monitoring is related to the objectives of the funds a board oversees. If a board oversees several funds in one objective category, the members will in all likelihood better understand details of individual fund operations than if the board oversees funds across several objectives. Here, I compute two variables designed to capture the breadth of fund objectives overseen by a particular board. The first variable measures the concentration of fund objectives in the board's portfolio (BFOC). BFOC is a Herfindahl index defined as the ratio of the summation of the number of funds in major objective category squared to the quantity of the number of funds overseen by the board squared.

$$BFOC = \frac{\sum_{i=1}^{N} \left(No.of\ \ funds\ in\ major - objective \right)_i^2}{\left(No.of\ \ funds \right)^2} \tag{5}$$

For example, assume a board oversees three funds. If each fund is in a different major objective, BFOC assumes the value $(1^2 + 1^2 + 1^2)/ 3^2 = 0.33$. If each fund is within the same major objective, BFOC is equal to $(1 + 1 + 1)^2 / 3^2 = 1.00$. The degree of focus of the funds offered by a sponsor appears to matter. Funds that belong to more focused families outperform similar funds offered by more diversified providers (Siggelkow (2002)). Khorana and Servaes (2002) find families that offer a wider range of products have greater market share. Ciccotello, et al. (2002) find more focused families have a larger percentage of winning funds (those where the fund's performance is above the

median for the objective category). In this view, BFOC may proxy for the level of knowledge a board may possess about fund operations. I suggest the greater the level of knowledge of the board, the greater the monitoring capability. As a result, all else held constant, the degree of concentration of funds overseen by a board should be positively related to the board's excess return.

The second measure I use to capture the scope of monitoring takes into account the *types* of objectives of funds in a board's portfolio as opposed to the range of objectives. This measure, BAREA, captures the simple percentage of funds in a board's portfolio that are designated as equity funds. Following Deli (2002), volatility of fund returns can proxy for the difficulty of monitoring advisor actions. Furthermore, Khorana (1996) shows that returns for equity funds are more volatile than returns for fixed income funds. If volatility of fund returns proxies for the degree of monitoring difficulty, I expect an inverse relationship between BAREA and BXR. Alternatively, in order to achieve higher returns, one must assume higher risk. If boards benefit from higher excess returns due to the fact the funds in their portfolio take more risk, the relationship between BAREA and BXR might be positive.

B.2.3 Board-Level Fund-Derived Controls (BXP, BLDRATE, B12B-1, BMSC, BTNA, BTURN, and BWIN)

The final vector of control variables account for those factors associated with the board's individual fund operations. The first variable captures the effect of expenses. Expenses represent a complex variable in the mutual fund environment and differ not only among sponsors and funds, but also among separate classes of the *same* fund. Recall

that a fund that offers multiple share classes results in separate funds with claims to the same underlying assets. The differences between classes are only in how the various expense elements (loads, 12b-1 fees, and so forth) are allocated. At the most basic level, mutual fund expenses come in three basic forms—one-time sales charges (loads), ongoing management expenses (advisory and administrative costs), and marketing and distribution expenses (Rule 12b-1 fees). I address each component of these expenses in turn.

The first type of expense is known as a load. Loads are sales charges that investors pay simply to acquire or dispose of shares of the fund (commissions). Front-end loads are charged at the time of purchase, whereas back-end loads are charged when investors redeem shares. Back-end loads are also known as contingent deferred sale charges (CDSCs) that often decrease or go to zero depending on the holding period. Not all funds charge such loads. Much of the difficulty in characterizing mutual fund returns net of expenses involves assuming various holding periods by investors in order to account for the ultimate impact of any loads charged on realized fund performance. To the extent that these loads are simply transaction costs similar to the brokerage charge incurred by investors purchasing a stock or bond, they need not be specifically considered. However, sponsors often view mutual fund expenses in total; that is, as a combination of sales loads as well as management expenses and 12b-1 fees discussed below. In that regard, loads must be accounted for in any analysis. Here, the presence of loads at the board level will be handled by the percentage of funds in the board's purview that have loads (BLDRATE).

The second type of expense is management expense, composed of advisory and other fees. Advisory fees are those fees paid to the advisor for the day-to-day management of the fund, and include such expenses as research costs. Costs in the "other" category include administrative costs and other services contracted for the fund by the board (i.e. custodian, transfer agent functions, and so forth). All these expenses are reported as part of a fund's expense ratio. Similar to the method used to calculate a board's excess return (BXR) in Equation (4), I calculate a board's excess expense ratio (BXP). Each fund has an excess expense value (XP) that is used to form a board's BXP. BXP takes two forms depending on the investment category (objective or major objective) that the weighted-average is computed. Excess expenses calculated using the specific objectives are denoted BEXEXP, and those calculated using the major-objective classification are denoted BMEXEXP.

The final type of expense is marketing and distribution fees, or 12b-1 fees. Rule 12b-1 allows funds to use assets to make continuing payments to those who sell and distribute the funds. These 12b-1 fees must be approved by a majority of the independent directors of the fund's board. The rule allows sponsors greater flexibility in how they compensate those who sell the funds while at the same time creating confusion for investors on the true cost of ownership. CDSCs are often used in combination with 12B-1 fees as an alternative to high front-end sales loads. A fund can collect the same fees from investors through a combination of an annual 1 percent 12b-1 fee and a CDSC of 6 percent that declines 1 percent per year rather than charging a 6 percent front-end

load.[23] The impact of 12b-1 fees is captured at the board level by calculating the potential value of the fees to the advisor and/or distributor. Because 12b-1 fees are charged as a percentage of assets, the board-level variable B12B1 captures the total value of 12b-1 fees by summing the product of a fund's 12b-1 charge by the value of the assets for each fund that charges a 12b-1 fee.

In sum, the nature of mutual fund expenses is complex at best. Despite the best efforts of the SEC to standardize the reporting of the impact of fund expenses on investors in publications such as prospectuses and annual reports, the true nature and impact to the individual investor remains elusive. Much of the literature concludes that no matter how they are measured, fund expenses are negatively related to fund performance. Carhart (1997) finds that expenses have at least a one-for-one negative impact on fund performance; and when expense ratios are held constant, load funds under perform no-load funds. As a result, all else held constant, and regardless of the treatment of expenses (BLDRATE, BXP, and B12B1), expenses should be inversely related to the board's excess return.

A second fund-derived control variable captures the instances where a board utilizes a multiple share class (MSC) structure. In order to capture this attribute, I introduce a dummy variable to account for the presence of a MSC structure. Commercial data sources consider each class of a multiple share class fund an individual fund. In this study, any analysis at the fund level considers each class a separate fund observation. When board-level variables are considered, all classes of an MSC fund are considered a

[23] Division of Investment Management, 1992, Protecting Investors: A Half Century Of Investment Company Regulation, (Securities and Exchange Commission, Washington D.C.)

single fund. For example, if a sponsor offers 10 funds each with four classes, fund-level analysis utilizes 40 observations, while board-level investigations consider the family to be comprised of 10 funds. As discussed in Chapter 2, most MSC funds differ only in the payment of fund expenses. Recall O'Neal (1999) provides evidence that brokers might in fact have incentives to sell the class of shares that is least advantageous to investors. This finding shows the possibility that the use of a MSC structure by a fund can introduce additional agency problems. Lesseig, et al. (2002) find support for this in that any gains from lower total expenses obtained from the implementation of MSC structures are captured by sponsors and not passed on to investors. As a result, all else held constant, an inverse relationship should exist between the use of MSC structures and the board's excess return.

The third fund-derived control variable captures the value of assets under management. The size of a fund refers to the amount of assets within the fund or a fund's total net asset (TNA) value. In this study, a board-level TNA is simply the sum of the TNA values of all the funds a board oversees (BTNA). TNA is a factor for the primary reason that most advisory contracts are based on the value of assets under management. The more assets an advisor manages, the more the sponsor collects in fees. If fund assets grow simply because of increases in the prices of the securities held by the fund, it is likely there will be little or no increase in the advisory effort, and thus economies do exist. In contrast, if a fund's asset base grows simply due to inflows of new money and accounts, such benefits will not be on the same scale as if prices of assets in the portfolio simply rose. Sirri and Tufano (1998) find higher inflows go to funds with higher

performance. As discussed previously, many argue there exist potential economies of scale in the advisory compensation agreements that can be passed on to shareholders. In the case where a sponsor utilizes multiple boards, the size of the assets under the auspices of one board relative to the size of the assets of other boards might capture a board's level of leverage with the sponsor. If economies exist at all levels, more assets under management should lead to lower overall expenses and potentially higher returns.

The fourth fund-derived control variable that affects a board's monitoring function concerns portfolio turnover. Turnover is used as a method to capture the management approach a particular fund uses to obtain its investment objective. Approaches are often classified as active or passive based on the role the fund manager plays in the selection of securities. The level of analysis and skill of security selection performed by the manger of a fund that tracks the S&P 500 index is not nearly the same as for an aggressive growth fund that tries to identify the next Microsoft or Dell. Those funds with high turnovers involve more buying and selling of securities, which suggests the funds are not passively managed. Not all funds have reported turnovers in the Lipper database; turnover is only reported on equity funds. To capture the effect of turnover at the board level, I calculate a board's turnover measure as the weighted-average of the turnover value for those funds with reported turnovers multiplied by the board's percentage of assets with reported turnovers to total board assets.

$$BTURN = \left[\frac{TURNTNA}{BTNA}\right] \times \left[\sum_{j=1}^{n}\left(\frac{TNA_j}{TURNTNA}\right) \times TURNOVER_j\right] \quad (6)$$

where TURNTNA is the sum of a board's total net asset values (TNA) for funds with TURNOVER reported. BTNA is the sum of the TNA values for *j* funds within board purview, and TURNOVER is the reported turnover rate reported by Lipper.

Carhart (1997) finds an inverse relation between turnover and fund performance while Malhotra and McLeod (1997) and Deli (2002) find higher turnover leads to higher expenses. On the other hand, Ippolito (1989) finds turnover is not related to fund performance.

The final variable in this vector of board-level fund-derived controls captures the percentage of funds within a board's purview that have positive excess returns. The rationale for including this variable is to examine whether a board's return is driven by the strong performance of one or a small number of the board's fund. If the board-level return is driven by a single or small percentage of funds the board oversees, the return might come at the expense of other funds in the board's portfolio. If a board's governance practices are similar across all funds, a greater percentage of top performing funds should lead to higher board-level performance.

B.3 The Sample

The sample includes fund complexes offered by the largest 25 mutual fund groups at year-end 2000 as depicted in Pozen (2002).[24] He shows this group represented

[24] Due to mergers of fund sponsors, the largest sponsors include over 30 individual fund families or complexes. For example, AIM Funds and INVESCO Funds are considered two separate fund families in this research, while each is a unit of AMVESCAP PLC, considered a single sponsor.

approximately 71% of mutual fund market.[25] In this study a fund complex, or family of funds, is one whose funds are offered and marketed under a common name. Although a unit of a fund sponsor is normally the advisor for all of the funds within a sponsor family, at times outside investment advisors are employed. Most often, they work as a sub-advisor, retaining the sponsor's own unit as the primary investment advisor. Very seldom does a fund select an outside advisor to act as the primary advisor. In this study, a fund is considered part of the family under whose name the fund is marketed to the public. For example, If Merrill Lynch is an advisor for a Vanguard fund but the fund is marketed by Vanguard; the fund is considered part of the Vanguard family of funds.

The data for this study come from a variety of sources. The Lipper Directors' Analytical Data report (LDAD First Edition 2002) provides basic board information (numbers of directors and compensation) by fund complex, and the Lipper Fund Analyzer (LFA) provides return data and various fund characteristics—that is expenses, loads, turnover, and so forth. Return data are total cumulative returns based on changes in net asset values (NAVs) assuming all distributions are reinvested. A fund's NAV is simply the market value of the securities held by the fund divided by the number of shares outstanding. The expense ratio includes all expenses charged with the exception of sales loads. Loads are designated as front-, back-end, level, or institutional load. The LFA also reports the maximum 12b-1 fees (if in place) a fund can charge as indicated in the

[25] Pozen notes the 2000 figures include assets held by mutual fund products available through variable annuity assets. While annuity assets are specifically excluded here as they are not readily available to all investors and must usually be purchased as part of an insurance contract, these fund sponsors represent the majority of mutual fund assets. The largest 25 fund sponsors represented 76% of the market in 1990 and did not include annuity assets.

fund prospectus. Because the actual expense incurred from the 12b-1 is charged daily, it is reflected in the fund's NAV and therefore the impact is contained within the fund's return. It is important to note that brokerage fees and transaction costs are not included in a fund's expense ratio. Similar to the 12b-1 fees, these costs are accounted for prior to the fund calculating its daily NAV. The LFA also reports the specific objective of each fund.

Unfortunately, neither the LDAD nor LFA provides sufficient information to match a specific board of directors with the fund or funds that a board might oversee. This can only be accomplished by a review of the Statement of Additional Information (SAI) for each fund. For each family, I generate a list of open-end mutual funds from the LFA. I then collect the most recent SAI (dated in 2001 or the first half of 2002) for all funds in the sample from the sponsors or the Securities and Exchange Commission (SEC). From the SAIs, I annotate the composition of the board of each fund to include the number of total directors and the number of non-interested directors. For each unique combination of non-interested directors, I establish a unique board identifier. In cases where a fund family has more than one unique board, I classify the sponsor as utilizing a multiple board configuration. Conflicts between the various sources are clarified by contacting the fund sponsor directly.[26]

[26] Common disconnects between data sources occur due to fund mergers, fund name changes, or apparent conflicts due to the timing of the fund documentation. Some sponsors use one SAI to cover multiple funds while others use a single SAI for each fund. Depending on the fiscal years of the individual funds and how the sponsor organizes its fund documentation, matching a fund to a board can be a considerable challenge. Where possible, confirmation of the configuration used in this study was sought from fund sponsor representatives.

In this research, I conduct a cross-sectional analysis of the relationship between board configuration and director ownership with fund performance aggregated at the board level as described earlier. Because the board's major duty involves the annual approval of the advisor's fees, it would be best if the performance of the individual funds were measured for the 12-month period following the board's approval of fees. However, the date the board approves the annual agreement is not widely available. Where the agreement date is available, it may not be a reliable indicator of when fees are actually changed, because as one sponsor related, fees might change at other times during the year even though they were approved previously. And while the board approves them, an investor (or this researcher) may not necessarily have insight into the change from publicly available documentation.

C. Tests of Robustness

C.1 Treatment Effects Model

Hermalin and Weisbach (2002) note that variables such as some of those used in this study are endogenous, resulting in an "Achilles heel" for much of the research in governance issues. This study is no exception. Agrawal and Knoeber (1996) find interdependencies among several governance mechanisms and find the significance of many relationships all but disappear when endogeneity is considered. This research is focused on the relationship of board-level excess returns and board configurations used by a fund sponsor. Added to this analysis is the level of ownership in a fund group by the board of directors. To this point, the relationship between director or board ownership levels and fund returns is assumed to be one-way—that is, board-level returns might be

dependent on the level ownership by the board members. However, as highlighted by Agrawal and Knoeber (1996), and more recently by Bhagat and Jefferis (2002), governance factors might be jointly determined.

One approach to account for the possibility of endogeneity is to consider the level of director ownership as a choice variable. If directors choose their level of ownership based on expectations about returns of the funds they govern, the ownership variable will be correlated with the errors from Equation (3) and thus OLS will be biased. In other words, director ownership might not simply help explain board-level returns, but rather returns might provide incentives for directors to invest, and thus returns subsequently help explain levels of director ownership. In order to account for the potential endogenous relationship between ownership and board-level performance, I complete two treatment effects models that estimate the effect of a binary endogenous treatment (Maddala (1983)). "Treatment" in this context is the notion that some of the board-level returns in the sample receive the "treatment" of being governed by a board where all the independent directors have investments valued in the top range (BALLTOP), while other boards do not. BALLTOP is used as the ownership variable as it captures the strongest level of director investment and provides for the largest degree of discrimination. The model takes the form illustrated in Equations (7) through (10).

$$BXR = \alpha_0 + \alpha_1 BCV + \alpha_i BALLTOP + \alpha_j CONTROL + \varepsilon \quad (7)$$

$$BALLTOP^* = \beta Z + \upsilon \quad (8)$$

$$BALLTOP = 1 \text{ if } BALLTOP^* > 0 \quad (9)$$

$$BALLTOP = 0 \text{ if } BALLTOP^* < 0 \quad (10)$$

The first treatment effect method is similar to the Heckman (1979) two-stage procedure. The first stage estimates a probit model on Equation (8) to calculate the probability that a board will have an ownership stake as represented by BALLTOP. These estimates of β, together with the ratio of the density and cumulative density functions for the standard normal (the hazard function or inverse of Mills ratio) are substituted into Equation (7) where α_i on BALLTOP is estimated using least squares regression. Here BALLTOP* is not observed; however, what is observed is the structure of ownership represented by BALLTOP. The vector Z represents board characteristics that affect the choice of ownership by directors. The second treatment effect model utilizes the same framework and implements the method of maximum likelihood (ML). In this case, the joint probability density function is created as the product of the individual density functions to form the likelihood function. The parameters of the likelihood function are obtained by maximizing the likelihood function. ML is included here only as an additional robust check. The usual incentive to utilize the desirable asymptotic properties of the technique is not present due to the limited sample size.

C.2 Board-Level Analysis (Ex Money Market Funds)

Another concern of the board-level analysis involves the role that money market funds play in overall board performance. Many studies of mutual funds specifically exclude money market funds either due to data limitations or by research design (Ciccotello, et al. (2002)). Money funds are specifically included in this study, even though they can constitute a large portion of the assets governed by a board, because the board is the primary level of analysis. However, not all boards will oversee investments

in money market funds. One reason may be simply that the sponsor does not offer money funds. Another reason, and more of a concern due to the focus in this study on configuration, is that some boards may not oversee money market funds *because* of the board configuration used by the sponsor. If a sponsor offers money market funds and uses a single board, then the single board will oversee those funds *by design*. In contrast, those sponsors that use more than one board might only use one board to oversee its money market funds. In an effort to evaluate whether the main results of this research are driven by the returns of a board's money market funds, I construct a new sample that specifically excludes money market mutual funds. If the assets held in money market funds drive the primary results, the findings from this analysis should differ from those results found for the full sample.

C.3 Fund-Level Relationships

A final evaluation of the robustness of the main results involves examining the relationship of board configuration with returns at the fund-level. To this point, all the analysis is conducted using board-level variables. However, just as investors cannot purchase "sponsor-level" returns, neither can they buy "board-level" returns. As an additional check of the robustness of results, I examine the relationship of board configuration and director ownership with fund-level excess returns. Significant findings from this analysis suggest board configuration and director ownership are factors for individual investors to consider when choosing between funds and fund families.

Chapter Four

Results

The evaluation of the relationship between board configuration and board-level performance suggests boards operating within a Multiple Board Configuration (MBC) have significantly higher board-level objective-adjusted excess returns than boards operating in a Single Board Configuration (SBC). In this chapter I discuss the results of the analysis detailed in Chapter 3. Section A summarizes the data and presents the summary and descriptive statistics; Section B presents the results from the difference-in-means tests; Section C presents the optimization matrix analysis; Section D discusses the results from the regression analysis; Section E examines the impact of director ownership in the analysis; and Section F describes alternative methods used to evaluate the robustness of the results including the examination of the relationship of board configuration with fund-level excess returns.

A. Description of the Sample

The review of sponsor documentation and funds' Statements of Additional Information (SAIs) for the largest 25 fund sponsors provides sufficient information to match individual funds with a specific board for 23 fund complexes, covering nearly 1,500 funds, with over $3.25 trillion in assets under management at year-end 2001.[27] The

[27] Appendix A contains the list of sponsors included in the sample. The sample comprises over 3500 individual fund observations when funds with multiple share classes are considered separately.

average fund family manages over $140 billion in assets, and 65 percent of the sponsors in the sample utilize a SBC (15 of 23). Sponsors using a single board offer as few as 11 funds and as many as 229 funds. Alternatively, sponsors using more than one board in a MBC offer as few as 29 funds and as many as 103. The full sample is described in Panel A of Table 3.

The eight families utilizing a MBC have a total of 41 individual boards. Together with the 15 boards from the SBC sponsors, the resulting dataset consists of 56 board-level observations.[28] The average board has 9.5 directors, over 70 percent of who are considered non-interested parties. This is a particularly interesting finding given the recent emphasis to increase board independence. Previously, boards were required to have at least 40 percent non-interested directors. A new SEC rule calls for boards to be comprised of a majority of independent directors. Within this sample, only one board has less than 60 percent independent directors (57 percent), suggesting the new rule might do little more than formalize what is already practiced used throughout the industry. Alternatively, the findings might indicate fund sponsors anticipated the SEC's action and already increased the percentage of directors that are non-interested accordingly. In either case, all boards within this study contain a majority of non-interested directors. The average board oversees 26 funds with nearly $60 billion in assets under management. Panel B in Table 3 shows summary statistics for all of the variables for the 56 sample boards. Nearly half (49 percent) of an average board's funds (at the individual class-level) have positive excess returns. Both excess return and excess expense values,

[28] Appendix B identifies the individual boards, the number of funds governed, and assets under management of each board.

regardless of whether they are measured against the individual specific objective or at the major objective level, are positive when measured at the board level. Boards either have a greater proportion of assets in funds generating positive excess returns, or those funds with positive excess returns and fewer assets have much greater relative excess returns than the other funds in the board's portfolio. This is also the case for excess expenses. While boards on average have positive excess returns, it is not clear that these returns cover their positive excess expenses.

B. Difference-In-Means Tests

The first level of analysis involves the comparison of the means between boards that are classified as SBCs versus boards classified as MBCs. The results in Table 4 show the average SBC board oversees almost $150 billion in assets that are contained in approximately 60 funds. MBC boards, on the other hand, average just under $25 billion in assets under management in approximately 14 funds. The most notable finding for the variables of interest is the result that all four of the excess return measures (BXRs) are *negative* for SBC boards, while the BXR measures are *positive* for the MBC boards. All of the differences in excess return measures are statistically significant at the 10 percent level except BMEXRET, the excess return measure using the major-objective average that is not standardized by the standard deviation of the category's returns.

There is little difference in board composition between the two board configurations. Although SBC boards are larger and more independent than their MBC counterparts, the differences are not statistically significant. There are, however, significant differences between control variables contained within the board portfolio and

board-level fund-derived control vectors of variables. Within the board portfolio controls, MBC boards are significantly more focused than SMC boards. Sponsors with multiple boards appear to align boards at least partially by fund objective, perhaps attempting to match specific director expertise with a fund type. Within the fund-derived controls, it is not surprising that total board assets (BTNA) and board-level 12b-1 fees (B12B1) are significantly different given that the number of funds between board types is significantly different.[29] The correlation between these three variables is significantly different from zero as shown in the correlation matrix (Appendix C). The difference in the percentage of funds with positive excess returns within a board's portfolio (BWIN) is also significant. This might be expected due to the high correlation between BWIN and the return variable BSEXRET. SBC boards, on average, have 32 percent of the funds in their portfolios with positive excess returns, whereas 55 percent of MBC board's funds have positive excess returns. In contrast to the significant differences that exist for the various measures of excess returns between the two board types, there are no significant differences in the excess expense measures. Combined, the findings for excess return and expense measures suggest that returns at the board-level are more than simply a function of expenses.

C. Optimization Matrix Analysis

The optimization matrix portion of the analysis provides a different lens through which to examine the potential differences between boards operating in either a SBC or MBC environment. Recall that an optimal fund or board is one with a positive excess

[29] In the regressions, a board's TNA and 12b-1 variables are transformed to their log forms to account for the skewed distributions.

return and a negative excess expense. The categorization of optimal funds is depicted in Table 5. With over 3,500 funds in the sample (all classes of MSC funds being individual funds I this analysis), there appears to be little difference in the percentage of optimal funds. The pattern of percentages in each category differs little between board configuration types. However, the results at the fund level are in stark contrast to the results observed at the board level. Table 6 shows only 13 percent of boards are optimal in the SBC type while between 29 and 37 percent of the MBC boards are optimal performers depending on how excess returns are measured. A similar disparity exists for those boards identified as "sub-optimal." Approximately one quarter of the MBC boards are non-optimal, while by some measures, more than 50 percent of the SBC boards are labeled "sub-optimal." One explanation for the disparity between the percentages of optimal funds and boards could be due in part to the finding that MBC boards have a significantly higher percentage of funds with positive excess returns. So while on average, the percentages are similar at the fund level, with MBC boards managing a larger percentage of funds with positive excess returns, it follows that more MBC boards will be optimal.

In an effort to identify those characteristics of boards that might lead to a higher probability that a board will find the optimal quadrant of the optimization matrix, I conduct a probit analysis where the dependent variable is set equal to one if the board is defined as optimal and zero otherwise. Each of the variables of interest and those within the control vectors are added as outlined in Chapter 3, and the results are presented in Table 7. Models (i) and (ii) show that neither board composition variable (NODIRS and

BIND) is significantly associated with a higher probability of a board being optimal. Models (iii) and (iv) show the coefficients on the BFDS and BFOC variables are positive and significant within the board portfolio control vector of variables (BFDS, BFOC, and BAREA). This finding suggests that a more concentrated portfolio might be easier for a board to monitor. Models (v) and (vi) include both control vectors. The findings are consistent with BFDS and BFOC being significantly associated with an optimal board. Models (vii) through (x) add the board-level fund-derived control variables (BTNA, BLDRATE, B12B1, BMSC, and BTURN) to the analysis. With the exception of a board's turnover level (BTURN) and the use of multiple share classes (BMSC), none of the other fund-derived controls is significant, suggesting boards with higher turnover and those that use MSC(s) are *less* likely to be optimal boards. In the full model, only BCV and BFOC remain significant at the 5 percent level. The most important result from this probit analysis on optimal boards is the relationship of BCV with optimum boards. In each model, when BCV is added, the coefficient is positive and significant. MBC boards have a higher probability of being "optimal" and therefore are associated with better overall performance.[30]

D. Configuration Regression Analysis

Regression analysis is used to determine what, if any, relationship exists between a board's excess return measure and the board configuration utilized by a sponsor, controlling for the variables within the board composition, board portfolio, and board-level fund-derived control vectors. As described in Chapter 3, each of the variables of

[30] Similar results are obtained using a logit model.

interest and control vectors is examined in a different regression framework, and the results are shown in Table 8. The BXR depicted in the Table 8 regressions is BSEXRET; which is the board-level excess return utilizing excess objective-average returns standardized by the standard deviation of the returns within each objective as described in Chapter 3. A simple regression of board returns on the BCV variable confirms the difference of means found and described earlier in Section B. Models (i) and (iii) regress BXR against the board composition and board portfolio controls respectively. Neither board composition variable is significant and only the concentration variable (BFOC) of the board portfolio controls is significant. Models (ii) and (iv) add the board configuration variable to the models. In each case, BCV is positive and significantly associated with BXR, suggesting MBC boards are associated with higher board-level excess returns.

Recall from Chapter 2 that the primary competing arguments for the two mutual fund board configurations are the benefit of potential economies of scale for SBC boards versus less identity with the sponsor (more independence) and more identity with fund shareholders for MBC boards. If there are fundamental underlying differences in the way the boards operate, then board portfolio characteristics might affect the two board types differently. As a result, I introduce a series of interaction variables to assess the impact of the portfolio controls on each of the separate board configurations. Model (v) shows the relationship of the board portfolio controls together with the interaction terms. The uses of interaction variables change the interpretation of the coefficients. The interaction terms estimates the extent to which the effect differs by configuration. The most notable

observation is the differing relationship between the number of funds in a board's portfolio and the board's BXR. The data suggest that the number of funds a board oversees affects each board type differently. The relationship between the numbers of funds a SBC board oversees and BXR is significant and positive, which is consistent with the economies of scale argument for SBC boards. For MBC boards, the coefficient is *negative* and significant suggesting the benefit of an additional fund for MBC boards is lower than for SBC boards.[31]

Models (vi) through (x) combine the board composition and board portfolio controls (with interaction terms). The results from these tests consistently find the BCV positive and significantly related to BXR when introduced to the respective model. The number of funds overseen by a board continues to appear to be associated differently for each board type, and there remains no relationship between either of the board composition variables and BXR. Models (xi) and (xii) examine the relationship between the board-level fund-derived control variables, board configuration, and BXR. Only board-level excess expenses are significantly related to board-level excess returns. When the configuration variable is added to the regression framework, BCV remains positive and significant at the 1 percent level.

An additional variant of the board-level fund-derived control vector adds the percentage of funds within a board's portfolio with positive excess returns (BWIN). This control seeks to account for those instances where a board's BXR might be driven by the

[31] I also run separate regressions for each configuration of boards. The coefficient on BFDS is significant and positive for SBC boards while significant and negative for MBC boards. However, due to the limited number of observations for SBC boards, such results must be interpreted with caution.

performance of a single fund, perhaps where a board has a single large fund, compared to the other funds in the portfolio, that dominates the board's BXR. The results are shown in models (xiii) and (xiv). As expected, the higher the percentage of funds with positive excess returns, the higher BXR. Including BWIN in the model results in a substantial increase in the R^2 values. This is not surprising due to the strong correlation between BWIN and BSEXRET. All aspects of the above analysis are combined in models (xv) through (xvii). BCV remains positive in the full models. Only when BWIN is included, is the significance of BCV diminished. Taken in sum, the regression analysis of board-level excess returns and board configuration suggests that MBC boards (BCV=1) are associated with higher BXR. There is no consistent significant relationship between any of the board composition, board portfolio, and board-level fund-derived control variables and BXR.

This entire analysis is repeated using BMSEXRET in place of BSEXRET as the dependent variable BXR. Recall from Chapter 3, this measure calculates a board's excess return based on a fund's *major-objective* average as opposed to the specific individual objective average. The major-objective category combines a much wider array of fund types into one group. For example, Table 1 shows small-cap growth funds and large-cap value funds are both contained in the major objective category "U.S. Diversified Equity". The results from the analysis using BMSEXRET are consistent with those described above, with two notable exceptions. First, the significance of BCV is diminished, although it is still positive and significant in models (ii), (v), and (xii). Due to the greater variability of the returns in these wider asset classifications, the percentage of a board's

funds that are equity funds (BAREA) becomes significant. Boards with a greater percentage of equity funds are associated with a higher BXR.

The results in Table 8 suggest that board configuration matters. However, it is not clear exactly what aspect of governance is being captured by the configuration variable. One possibility discussed in Chapter 2 is that use of multiple boards provides a board with more autonomy, or greater independence from the sponsor. In an effort to examine this possibility, three different proxies of the BCV variable are tested in the full regression model used earlier (model (xvi) in Table 8). The first measure is FUNDRAT, the ratio of the number of funds overseen by a board to the number of funds offered by the sponsor.[32] A lower ratio is associated with greater independence in the context used here. The second measure is the number of boards a sponsor utilizes to govern its funds. A larger number of boards is associated with greater independence. Finally, I use BLEV, the ratio of assets under management for a particular board to the total assets in the sponsors fund complex. Similar to FUNDRAT, a lower ratio implies greater independence from the sponsor. The results from adding these measures are presented in Table 9. Model (i) is simply model (xvi) from Table 8 replicated for a baseline. In each instance, when the new proxies are added, the signs on the coefficients are significant and the signs are consistent with the notion that separation from the sponsor is associated with higher board-level excess returns.

An alternative explanation for the significance of the BCV variable is that MBC boards have directors who are more specialized. Recall that there is a significant

[32] The log of FUNDRAT is used due to skewness of the variable.

difference in the focus variable (BFOC). The concentration of objectives for MBC boards is significantly higher than the concentration of objectives for SBC boards. As such, sponsors using a MBC structure might be able to form their boards by matching the particular skills or experience of a board member with a particular mutual fund objective type. This matching of director skills might lead to better monitoring as indicated by higher board-level excess returns.

E. Ownership Analysis

An important contribution of this research is that it provides an examination of the relationship between ownership levels of mutual fund directors and mutual fund returns. For this portion of the research, the number of boards in the sample is reduced to 47. Observations are lost for two reasons. First, there are cases where a director retired at the end of 2001. Because the new SEC rule did not require disclosure until 2002, if a director retired at the end of 2001 ownership data are not available.[33] For example, the sponsor MFS offers 89 total funds governed by three separate boards. Three of the sponsor's board members retired at the end of 2001 so ownership data are unavailable for these directors. In this case, each retired director held a seat on one of the three separate boards, so the data for each of these boards are incomplete. Additionally, a board is dropped form the sample if the board oversees funds that offer only institutional class funds. In these instances, the ownership by directors might differ due to the nature of the investment requirements for funds within the board's portfolio.

[33] Attempts to obtain information directly from the sponsor proved unsuccessful.

A summary of the ownership statistics is presented in Table 10. In 41 of the 47 boards in the sample, all of the non-interested directors have some level of investment in the fund complex (BALLOWN). All of the funds in the sample have at least one outside director with investments in the complex valued in the top range (BONETOP). As a result, the same 41 boards where all directors have an investment in the complex are the same for the interaction variable BOWNTOP. The most discriminating measure of director ownership is the case where all directors have investments in the complex valued in the top range (BALLTOP). Approximately 50 percent of boards in the sample have the BALLTOP variable set equal to one. The percentages between the different board configurations are similar. Six of the 11 SBC boards, and 18 of the 36 MBC boards, have all non-interested directors with investments in the highest range.

The regression analysis for the ownership data follows the same pattern and methodology used in the earlier analyses. The relationship of each control vector with a board's BXR is examined; only now, the ownership variable BALLTOP is included. Models (i) through (x) mirror those from the configuration analysis shown in Table 8, and the results are essentially the same as those found earlier. In each case, BCV is positive. The relationship is statistically significant at the 1 percent level in models (ii), (iv), (vii), and (x). Here too, the association between the numbers of funds a board oversees appears to differ by configuration as seen from the coefficients of the interaction terms. It is interesting that the coefficient on the BALLTOP variable is *negative* in each model, which implies that boards where all independent directors have investments in the complex valued in excess of $100,000 have lower board-level excess returns. None of

the BALLTOP coefficients, however, is statistically significant. Models (xi) through (xvii) again follow the previous methodology and introduce the board-level fund-derived control variables. Throughout these progressive models, the pattern of relationships between variables is consistent. The BCV variable remains significant, BALLTOP remains insignificant, and the BWIN variable is highly significant when added to the model. The results from the series of regressions using the most discriminating measure of independent director ownership (BALLTOP) as the dependent variable suggest there is no significant relationship between director ownership and a board's BXR.

While director ownership in a fund complex and the board's BXR appear unrelated, it is worth examining whether there are observable board characteristics that might be associated with a board having the level of ownership captured by BALLTOP. Table 12 shows the results from a probit analysis of board composition and board portfolio variables that examines the probability that all independent directors have investments in the complex in excess of $100,000. The framework for this analysis is consistent with that used throughout this study. In the examination of the influence of board composition on board ownership, models (i) and (ii) suggest that both NODIRS and BIND are negatively and significantly associated with BALLTOP. Larger and *more* independent boards are likely to have independent directors who do *not* have substantial investments. The significance level does not diminish when the board portfolio controls are added. Interestingly, there is no relationship between BALLTOP and the configuration variable in this analysis. Boards where all independent directors own in the highest range are more likely when the board is smaller, *less* independent, and has a

larger, more focused portfolio of funds.[34] Directors on boards with fewer members and a greater relative percentage of interested directors might feel more pressure to invest in the complex. This is consistent with the thought that board culture, as influenced by board composition, influences directors as suggested by Jensen (1993).

F. Results from the Tests of Robustness

F.1 Treatment Effects Model

Due to the concern that ownership (BALLTOP) and excess returns (BSEXRET) may be endogenous, I conduct a treatment effects model that allows for the binary variable BALLTOP to be endogenously determined. In this framework, I take the variables found to be associated with BXR in the previous analyses (i.e. BCV, BFDS and BWIN) and add BALLTOP, which is considered a treatment in the context that some boards receive oversight treatment from a board where all non-interested directors have major investments in the fund complex. Based on the results from Table 12, I use the complete set of board composition and board portfolio controls to estimate the probability of the treatment. This analysis is conducted using both a two-stage estimation technique as well as with the method of maximum likelihood described in Chapter 3. Models (i) through (iii) in Table 13 show the results of the two-stage process while models (iv) through (vi) depict the results using maximum likelihood as described in Chapter 3.

In all models the BCV variable remains positive and significant, even in the cases where the BWIN variable is included. The results for the BALLTOP estimates are consistent across the methods used here as well as with results obtained previously.

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[34] Similar results are obtained using a logit model.

NODIRS, BIND, and BFDS remain consistently significant. It does not appear that there is strong evidence that BALLTOP is associated with BSEXRET, even when these variables are allowed to be jointly determined using the methods used here. There is weak evidence that any relationship between BSEXRET and BALLTOP might be *negative*. The results from these robust tests support the primary findings of the earlier analyses. MBC boards appear to be associated with higher board-level excess returns, and there is no strong and significant relationship with these returns and the ownership levels by the non-interested directors on the board.

F.2 Board-Level Analysis (Ex Money Market Funds)

Recall from Chapter 3 that there may be a concern that board-level returns may be driven by particularly large proportions of a board's assets under management found within the board's money market funds. Excluding money market funds from the analysis does not change the initial conclusions. MBC boards continue to have significantly higher board-level objective-adjusted excess returns than SBC boards. Four of the boards in the sample have money market assets that comprise greater than 50 percent of their total portfolio. Thirty of the 56 boards have no money market assets. This is not surprising because a fund sponsor that uses a single board, and offers any money market funds, will *by design* have such funds in its board's portfolio of funds. However, in an MBC sponsor, perhaps only one of the sponsor's boards will oversee money market assets. This may specifically be the case if the sponsor forms boards based on fund objectives. Tables 15 and 16 provide the summary statistics and difference-in-means data for this reduced sample. Tables 15 and16 are analogous to Tables 5 and 6 for

the full sample. Table 14 shows the average sponsor size is reduced by approximately $30 billion ($40 billion for SBC boards and $17 billion for MBC boards). The table also shows that each sponsor offers on average 10 fewer funds. Table 15 shows the results from the difference-in-means tests. As stated above, MBC boards have significantly higher excess return values. Similar to the full sample, there are significant differences in the values for BFDS, BFOC, and BWIN. The configuration regression analysis (results not reported) shows a similar pattern in terms of significance of the configuration variable as well as those associated with the various control vectors. BCV remains significantly and positively associated with excess returns suggesting that MBC boards have higher board-level excess returns than SBC boards.

F.3 Fund-Level Relationships

While the results that have been reported thus far suggest board configuration matters at the board level, individual investors do not actually buy board-level returns. As such, it is valuable to examine the nature of the relationship between the board configuration variable and the excess returns of the individual funds, controlling for the appropriate board portfolio, board composition, and fund-level characteristics. One concern of using OLS in this portion of the analysis involves the likely correlation of error terms. Even though each class of a multiple share class fund has claims on the same portfolio of underlying securities, each is a unique observation. Viewed in this light, the return of each individual class-level fund is not independent of the returns from other classes of the same "fund". As a result; the regression methodology must account for this occurrence. Here I utilize a generalized regression model that relaxes the OLS

assumption of independence and allows the clustering of observations into different groups. In this model, the error terms can be correlated within groups, while remaining independent across groups. Table 16, shows the results of the analyses of the relationship of individual fund standardized excess returns (SEXRET) with the same board composition and board portfolio controls using the clustering option where the "group" is the fund level. I also modify fund-level variables as appropriate for this analysis. I add the log of the size of the individual fund (TNA), a dummy variable indicating the presence of a load (FLOAD), as well as a dummy variable for the presence of a 12b-1 fee in excess of 25 basis points (DISTFEE). The regression framework used is consistent with that used in the board-level analysis.

Virtually all of the models suggest that MBC boards (BCV=1) are positive and significantly associated with an individual fund's excess return. In the full models, it is clear that a fund's excess expenses and the presence of a 12b-1 fee in excess of 0.25 percent reduce a fund's excess return. The data also suggest that the presence of a load is positively related to a fund's excess return. Because I utilizing a dummy variable for the presence of a load and make no assumption concerning an investor's holding period, I am not able to ascertain whether the excess return of a fund is sufficient to cover the amount of the load. The most telling result from this analysis is that individual funds benefit from being components of a successful portfolio as measured by either BWIN or the board-level return BSEXRET.

In an effort to further investigate the results reported here, the sample is reduced to include only those funds with a single class. This eliminates the need to cluster MSC

classes of the same fund. The resulting sample is reduced from 3,515 observations to 594, which includes 22 of the 23 sponsors and 36 of the 56 boards. For this sample, I cluster observations at the level of the board. This is consistent with the notion that there are attributes across boards that are related to all of the funds within a board's portfolio. The results from this smaller sample are presented in Table 17. In the full models (xiii) through (xviii), the data suggest that excess expenses and the presence of 12b-1 fees at the fund level are the significant factors in determining a fund's excess return. Board composition and board portfolio controls do not appear to be driving factors. BWIN and BSEXRET remain positive and significant when they are introduced into the model. Due to the correlation of these variables with BCV, it is likely that at least indirectly, BCV matters at the individual fund level. MBC boards have higher BSEXRET and BWIN values, and individual fund's benefit from being included in these portfolios.

The final piece of this fund-level look into the role of board configuration adds the ownership piece to the puzzle. Here again the regressions have the modified variance-covariance structure to allow correlation of errors within each board. The results are presented in Table 18. The reduced ownership sample includes 17 different sponsors and 29 individual boards. The first series of models including the board composition and board portfolio controls suggest fund excess returns are greater when all independent directors on the board have investments in the complex of more than $100,000. In the full models, funds that charge a 12b-1 or distribution fee are associated with lower excess return values. Consistent with the findings from Table 17, a fund still benefits from being

a component of a successful portfolio, which is evident from the significance of the BWIN or BSEXRET factors.

This chapter presented the results from examining the relationship between a board-level performance measure and the configuration of the board that oversees the funds and the investment levels in the funds by members of the board. In a sample of the largest open-end mutual fund sponsors, I find MBC boards have significantly higher board-level objective-adjusted excess returns than SBC boards. I find no evidence that board composition, as measured by the total number of directors or the percent of directors that are non-interested, is significantly associated with excess returns. In the analysis of ownership of fund shares by members of the board of directors, the findings here suggest that smaller, *less independent* boards are more likely to be those where each of the non-interested directors has a large equity stake in the fund complex; however, there appears to be no relationship between this characterization of board ownership and board-level performance.

Chapter Five

Conclusions and Implications for Further Research

This study examines whether the configurations of boards of directors of mutual funds affect the performance of the funds. Boards of directors can affect fund performance in two ways. First, performance is directly affected through the fees that are paid to the investment advisor, which are approved each year by the board. Second, boards can affect performance indirectly through the ongoing monitoring function with which they are charged. The results from the analysis described in Chapter 3 and reported in Chapter 4 suggest when a board is responsible for overseeing a single investment fund (or a cluster of funds); referred to as a Multiple Board Configuration (MBC), it has significantly higher board-level objective-adjusted excess returns than the case where a single board is responsible for overseeing all funds for a sponsor; referred to as a Single Board Configuration (SBC). I also examine whether or not there exists a relationship between director ownership and board-level performance. The findings here suggest that no significant relationship exists. In this chapter, I reconcile these findings with the governance theory and empirical evidence presented in Chapter 2. This chapter is structured as follows: Section A talks about performance at the board level; Section B summarizes the role of board configuration; Section C reviews the findings of the director ownership analysis; and Section D concludes with some closing remarks and thoughts on future research.

A. Board-Level Performance

The first aspect of this research examines the nature of mutual fund performance at the board level. I propose that the board of directors is the appropriate level of analysis because the board is the primary governance level for mutual funds. Shareholders do not select fund managers. Instead, fund owners select the directors who both hire the investment advisor and approve the advisor's compensation and fee structure. Aggregating mutual fund returns at the board level provides a more appropriate measure of a board's monitoring ability for *all* of its shareholder groups. In the corporate finance arena, the research examining the relationship between firm performance and board governance factors is mixed. Hermalin and Weisbach (1991) find no relationship between firm performance and board composition (either the size of the board or percentage of directors who are non-interested) while Yermack (1996) finds an inverse relationship between board size and firm value. In the closest study to the one conducted here, Dowers (1997) finds no relationship between board composition and the performance of an individual mutual fund. Consistent with both Dowers (1997) and Hermalin and Weisbach (1991), I find no evidence that board composition is related to board-level performance.

B. Board Configuration

An important contribution of this research is the examination of board configuration within a mutual fund sponsor. I find two-thirds of 23 fund complexes offered from the largest 25 fund sponsors studied here utilize a SBC. Particularly noteworthy, MBC boards have significantly higher board-level objective-adjusted excess

returns (BXR). The regression analysis suggests that BXR is not related to board composition, board portfolio, or board-level fund-derived control variables. However, these results leave us with the lingering question as to what aspect of governance is captured by the board configuration variable. Based on the follow-on analysis depicted in Table 9, I suggest that board configuration represents, at least in part, the independence of a mutual fund board. Here I imply that it is a board's independence *from* the sponsor (or the degree that it is not 'captured'), as opposed to the simple percentage of non-interested directors that measures board independence. Boards with a greater degree of independence in this context, provide a better monitoring environment as suggested by higher board-level excess returns.

An alternative explanation is that the configuration variable is a proxy for the manner in which sponsors may form boards. Specifically, fund sponsors that use multiple boards might better match the skills and experience of directors with the funds they monitor. If MBC sponsors can effective match the right directors with the appropriate focused portfolio of funds, the combination might result in higher board-level performance. Here, MBC boards are found to have significantly more focused portfolios than SBC boards. This interpretation is consistent with Siggelkow (2002) who finds that U.S. mutual funds that belong to more focused fund providers (sponsors) outperform similar funds offered by more diversified providers.

Certainly an important component of the configuration decision by a sponsor is the number of funds offered by a sponsor. For sponsors that offer just a few or a relatively small number of funds, a single board is perhaps the appropriate choice due to

the cost and administrative burden of implementing more than one board. The ability to acquire qualified board members may also factor into this choice. However, for the large sponsors with many funds, as is the case in this sample of the largest fund sponsors, the board configuration decision may be key determinant of returns generated for fund shareholders. The data suggests the impact of the number of funds within a board's portfolio differs for each configuration. For the MBC boards, the data is consistent with idea that more funds involve a greater monitoring task, and therefore, performance measured at the board level suffers the greater the number of funds. For SBC boards, it appears there is some support for the economies of scale position in that board-level performance is higher for boards that oversee a higher number of funds.

Taken together, the evidence supports the assertion that monitoring involves more than the simple approval of fees. There is no significant difference in excess expense measures between MBC board and SBC boards nor are board-level excess expenses significant is explaining board-level excess returns. MBC boards are associated with higher objective-adjusted excess returns, and such boards might be described as boards: (1) that "identify" less with the sponsor; (2) are less "captured" by the sponsor; or (3) are more "independent" from a sponsor in that a sponsor must interact with more than one board.

Evidence from the fund-level analysis supports the notion that board configuration plays a role in fund performance. The results suggest an individual fund's excess return is positively associated with the success of the portfolio of which it is included (measured either by a higher board-level return (BSEXRET) or a higher percentage of funds with

positive excess returns (BWIN)). As both of these variables are correlated with BCV, it is likely that at least indirectly, BCV matters at the individual fund level. MBC boards have higher BSEXRET and BWIN values, and individual funds benefit from being included in MBC portfolios.

C. Director Ownership

A second contribution from this research is that it provides a first look at director ownership within the mutual fund environment. In the corporate literature, there is evidence that ownership is related to performance. Mehran (1995) finds a positive relation between firm performance and the percentage of equity held by managers; and Morck, et al. (1988) find a significant non-monotonic relationship between board ownership and firm performance. Bhagat, et al. (1999) find a significant correlation between the percentage of equity owned by outside directors and firm performance. The mutual fund setting however, is considerably different. As discussed in Chapter 2, a board has as many different shareholder groups as they have funds in their portfolio. While the data available on mutual fund director fund ownership is surely not of the fidelity desired, it does allow us to take a first look at relating board ownership to performance. The findings here suggest that smaller and *less* independent boards (as measured by the simple percentage of non-interested directors) are more likely to be those boards where all outside directors have substantial investments in the complex. Apart from any relationships that might characterize board ownership, there appears to be no relationship between a mutual fund board's level of investment in their complex and the board's board-level objective-adjusted excess return. Even when ownership is allowed to

be endogenously determined as suggested by Agrawal and Knoeber (1996) and Himmelberg, et al. (1999), there is only weak evidence that any significant relationship exists. If any relationship is present, the findings are inconsistent with the results found in the corporate literature. Here, the results suggest that ownership levels by non-interested mutual fund board members and a board's excess returns might be *inversely* related. I posit that director ownership in the fund group has less to do with aligning the interests of directors with fund shareholders, and more to do with the increased visibility on directors. A director might be more concerned with the perceived importance of their ownership levels by the investing public, than with how investing personal funds in the complex might alter or improve their monitoring ability.

D. Closing Thoughts

I close out this study with some final thoughts on how the results of this research might influence future academic research, as well as the potential implications for regulators, mutual fund sponsors, and individual investors. These comments come both from the *results* of the research, as well as from my *experience* in the data collection process. The area of mutual fund governance remains fertile ground for further research. This is specifically applicable for future work on director ownership issues, as the quality and quantity of the data will only improve. The supposition that board configuration is relevant to the performance of a board's portfolio of funds echoes the call for more formal theory in this area noted and highlighted by Hermalin and Weisbach (2002). Furthermore, an examination into how board configuration *changes over time* may provide greater insight into the operation of fund sponsors, and how they may respond to

fund and portfolio past performance. The role of configuration in the setting of advisory fees in the context of Tufano and Sevick (1997) remains to be explored as well. Unfortunately, any endeavor utilizing board configuration requires a tremendous effort to match individual funds with the boards that oversee them. The challenges I met in matching individual funds with boards for this study leads to some recommendations for both regulators and sponsors.

The SEC has the daunting task of regulating the mutual fund industry. While their intentions may be on target, the result of their policies do not always have the intended outcomes. The findings here as well as from studies by others in this area, confirm that mutual fund boards already have a majority of independent directors. The new rule requiring a majority was either properly anticipated by sponsors, or the formalization of an established best practice. Additionally, the level of disclosure on director ownership may be little more than window dressing for investors. In order to gain any information from the ownership data, regulators might revisit the trade-off with privacy issues discussed in detail in Chapter 2. Based on the experience of conducting the research, I see potential for improvements, in both the manner and content, of fund disclosure issues. While each fund is required to have a Statement of Additional Information (SAI), the SEC might consider providing better guidance on how they should be produced. Some fund families have a single SAI for all funds in the complex while others have a separate SAI for each fund. Most SAIs are in excess of 50 pages each, and a significant portion of the content is either 'boilerplate' or at least common amongst all

funds within the family[35]. Any possible streamlining in this area might provide dividends for fund sponsors and investors.

Secondly, the agency may want to standardize the definitions and terminology used in the documentation. Many 'funds' are organized as 'trusts' or operate as separate investment companies that may be comprised of one or a series of individual funds. Many of these 'trusts' have names that are in no way related to the name of the fund. Unless someone is intimately familiar with a particular sponsor's funds and operations, one may not even know what specific documents to request to learn more about a fund. The added line in every prospectus that copies of the SAI may be obtained from the SEC Reading Room may satisfy the requirement of making more information available to the public; however, the point should be to make them useful. If an investor does not know what to ask for, there is little likelihood they will get what they are looking for, even if they go through the trouble of trying to ask.

Further, in the spirit of learning more about a fund, the current disclosure requirements, including the new guidelines specifically regarding directors, should be readdressed. Picking up just one SAI for a particular fund within a sponsor family does not give the reader an accurate picture of the governance relationships of the fund. Even after a review of all of the SAIs within a complex (if possible to obtain), the governance structure of a fund may not be clear. The even more recent discussions in the business

[35] It is interesting to note the many errors that were found within the 'common areas' of SAIs reviewed for this study. I found cases where information for the wrong board of directors was cut and pasted from one SAI to another, or cases where compensation was provided for one board with ownership information provided for a different board.

press about disclosing fund proxy voting records I suspect will only add to this documentation problem.

My recommendation for fund sponsors addresses both their internal operations and their external relations with the investor community. First, based on the results from the analysis in this study, large fund sponsors offering many funds might reconsider the configuration decision. As discussed previously, MBC boards appear to have a larger percentage of funds with positive excess returns, and are significantly associated with higher board-level excess returns. Boards appear to be more than a 'rubber stamp', and sponsors should carefully consider the board configuration decision's potential impact on fund returns. Better fund returns will in all likelihood lead to more investors and ultimately more financial gains to the sponsor.

In terms of a fund sponsor's relationship with individual investors, I think there could be some improvement across all aspects of sponsor-investor interface. I interacted in many ways with virtually all of the fund sponsors within the sample. The responses to my requests for information varied greatly. Some were extremely professional and helpful while others were more focused on whether or not I would be writing them a check soon. I was surprised to find the number of fund sponsor representatives on the front lines (i.e. phone representatives) that did not know that a mutual fund even had a Statement of Additional Information. Several times I needed to read the last page of a fund prospectus to a representative, specifically where it indicates the reader should call them to obtain an SAI. It was also interesting to note the differing levels of accessibility to sponsor representatives who were more knowledgeable in the contents of an SAI.

These levels ranged from: (1) not finding an individual who was knowledgeable who would speak to me; (2) to having to work through third part representatives to speak with representatives in legal and compliance divisions (*as to imply the contents of an SAI were shrouded in some degree of secrecy*); and (3) to being able to speak with the president of the investment advisor. While it may be an old theme, educating those on the front lines might prove beneficial to fund sponsors. Certainly, any changes the SEC can make to consolidate, standardize, or streamline the SAI documentation requirements may alleviate this problem. A final note to fund sponsors is the simple remainder that anyone who calls an 800 number may be a potential client.

My final recommendation is for those that pick up the phone and call the 800 numbers in the search of information from fund sponsors to help with the investment decision. My experience (*of the largest fund sponsors)* suggests you should check the back cover of the prospectus. Do not look to see if the directors are owners, as that may be little more than a different flavor of the window dressing you see in the portion of the report that depicts the fund's holdings. The findings here suggest a MBC board will have a higher percentage of funds with positive excess returns and a higher board-level portfolio return, which I argue is associated with improved governance. So instead, check to see if the board oversees all of the funds offered by the sponsor...that is, if you can tell.

Table 1

Lipper Fund Classifications

EQUITY				FIXED INCOME - TAXABLE					
US Diversified Equity	Sector Equity	World Equity	Mixed Equity	MM Taxable	Ultra-Short Obl	Short/Int US Govt & Treas	Short/Int Inv Grade	General Domestic Tx FI	World Income
LCGE	H	AU	FX	MM	USO	SUT	SID	GUT	SWM
LCCE	NR	GL	GX	UST		SUS	SII	GUS	GLI
LCVE	TK	GS	B	ITM		SIU	IID	ARM	INI
MLGE	TL	IF	BT	USS		IUT		GNM	EMD
MLCE	UT	IS	CV	IUS		IUG		USM	
MLVE	FS	EU	I	IMM				A	
MCGE	RE	PC						BBB	
MCCE	S	JA						GB	
MCVE		XJ						MSI	
SCGE		CH						HY	
SCCE		EM						FLX	
SCVE		LT						TM	
SPSP		CN							
EIEI									
SESE									

FIXED INCOME - TAX EXEMPT								
Municipal MM	Single State Tax-Ex MM	Short/Int Municipal Debt	General Municipal Debt	Single State Municipal Debt				
TEM	CAM	SMD	GM	AL	FLI	MA	OHT	OST
ITE	CTM	SIM	MDI	AZ	FL	MI	OH	OTH
	MAM	IMD	HM	CAT	GA	MN	OR	OSS
	MIM			CAI	HI	MO	PAT	
	NJM			CAG	KS	NJ	PA	
	NYM			CAS	KY	NYT	SC	
	OHM			CO	LA	NYI	TN	
	PAM			CT	MD	NY	TX	
	OTM			FLT	MAT	NC	VA	

Source: Lipper Inc.

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Table 1

Lipper Fund Classifications (Continued)
Equity Objective Definitions

US Diversified Equity		Sector Equity		World Equity	
LCGE	Large Cap Growth	H	Health/Biotech	AU	Gold Oriented
LCCE	Large Cap Core	NR	Natural Resources	GL	Global
LCVE	Large Cap Value	TK	Science & Technology	GS	Global Small Cap
MLGE	Multi Cap Growth	TL	Telecommunications	IF	International
MLCE	Multi Cap Core	UT	Utility	IS	International Small Cap
MLVE	Multi Cap Value	FS	Financial Services	EU	European Region
MCGE	Mid Cap Growth	RE	Real Estate	PC	Pacific Region
MCCE	Mid Cap Core	S	Specialty & Misc	JA	Japan
MCVE	Mid Cap Value			XJ	Pacific Ex-Japan
SCGE	Small Cap Growth		Mixed Equity	CH	China
SCCE	Small Cap Core	FX	Flexible Portfolio	EM	Emerging Markets
SCVE	Small Cap Value	GX	Global Flexible	LT	Latin America
SPSP	S&P 500 Index®	B	Balanced	CN	Canadian
EIEI	Equity-Income	BT	Balanced Target Maturity		
SESE	Specialty Diversified	CV	Convertible Securities		
		I	Income		

Size Definitions

Large Cap	Invest 75 percent of equity assets in companies with market caps greater than 300 percent of median cap of middle 1,000 securities of S&P SuperComposite 1500 Index®
Multi Cap	Invest in a variety of market cap without concentrating 75 percent of equity assets in any one range.
Mid Cap	Invest 75 percent of equity assets in companies with market caps less than 300 percent of median cap of middle 1,000 securities of S&P SuperComposite 1500 Index®
Sm Cap	Invest 75 percent of equity assets in companies with market caps less than 250 percent of median cap of smallest 500 of the middle 1,000 securities of S&P SuperComposite 1500 Index®

Style Definitions

Growth	Above average P/E, price-to-book, and three-year sales growth compared to S&P 500 Index®
Core	Average P/E, price-to-book, and three-year sales growth compared to S&P 500 Index®
Value	Below average P/E, price-to-book, and three-year sales growth compared to S&P 500 Index®

Source Lipper Inc.

Table 2

Variable List

The following table describes the variables required for this research. The variable and source of the information is listed below.

VARIABLE	IDENTIFIER	SOURCE
Panel A Variables of Interest		
Board excess return (Obj)	BEXRET	Calculated - Lipper Fund Analyzer*
Board excess return (Maj Obj)	BMEXRET	Calculated - Lipper Fund Analyzer
Stand Board excess return (Obj)	BSEXRET	Calculated - Lipper Fund Analyzer
Stand Board excess return (Maj Obj)	BMSEXRET	Calculated - Lipper Fund Analyzer
Board configuration	BCV	Dummy – Fund SAIs
All directors own	BALLOWN	Dummy – Fund SAIs
At least one director owns in top range	BONETOP	Dummy – Fund SAIs
All Directors own & At least one director owns in top range	BOWNTOP	Dummy – Fund SAIs
All directors own in top range	BALLTOP	Dummy – Fund SAIs
Panel B Control Variables		
Board Composition Controls		
Number of directors	NODIRS	Fund SAIs
Percent independent directors	BIND	Calculated – Fund SAIs
Board Portfolio Controls		
Number of funds	BFDS	Fund SAIs
Board Focus – By objective	BFOC	Calculated – Fund SAIs
Board Area – Equity vs Debt	BAREA	Calculated – Fund SAIs
Fund-Derived Board-Level Controls		
Board TNA ($Mil) *Ln*	BTNA *Ln*	Calculated - Lipper Fund Analyzer
Board's use of Loads	BLDRATE	Calculated - Lipper Fund Analyzer
Board's use of 12b-1 *Ln*	B12b1 *Ln*	Calculated - Lipper Fund Analyzer
Board's use of Multiple Share Classes	BMSC	Dummy - Lipper Fund Analyzer
Board turnover	BTURN	Calculated - Lipper Fund Analyzer
Board Win - % of funds w/+ BXR	BWIN	Calculated - Lipper Fund Analyzer
Board expenses (Obj)	BEXEXP	Calculated - Lipper Fund Analyzer
Board expenses (Maj Obj)	BMEXEXP	Calculated - Lipper Fund Analyzer

* Lipper Fund Analyzer– A Lipper product providing individual fund data such as returns and expense ratios. Special thanks to Heritage Asset Management for their generous use of the Lipper Fund Analyzer.

** SAIs – Statements of Additional Information – Part B of a mutual fund's prospectus. Required annually to be filed with SEC and available to investors.

Table 3

Summary Statistics - Sponsors and Boards

This table provides summary statistics for the 23 sponsors and 56 individual boards in the sample. Panel A provides statistics on sponsors for the full sample as well by those utilizing a Single Board Configuration (SBC) and those using a Multiple Board Configuration (MBC). Panel B describes the 56 boards in the sample.

Panel A - Sponsor Summary

Variable		Mean	Std Dev	Min	Max
Number of Sponsor Funds	SPFDS	64.4	46.5	11	229
Size of Sponsor Assets ($Bil)	SPTNA	141.5	177.2	0.7	739.5
Sponsor Focus	SPFOC	0.18	0.11	0.06	0.44
Number of Boards	NOBRDS	2.43	3.16	1	13
n = 23					
Single Board Sponsors					
Number of Sponsor Funds	SPFDS	59.6	55.3	11	229
Size of Sponsor Assets ($Bil)	SPTNA	149.3	213.2	0.7	739.5
Sponsor Focus	SPFOC	0.23	0.11	0.11	0.44
Number of Boards	NOBRDS	1	0	1	1
n = 15					
Multiple Board Sponsors					
Number of Sponsor Funds	SPFDS	73.5	23.6	29	103
Size of Sponsor Assets ($Bil)	SPTNA	126.9	86.2	67.4	329.6
Sponsor Focus	SPFOC	0.09	0.03	0.06	0.14
Number of Boards	NOBRDS	5.1	4.3	2	13
n = 8					

Panel B - Board Summary

Variable		Mean	Std Dev	Min	Max
Excess Return	BEXRET	0.26	4.00	-13.58	8.95
Excess Return	BSEXRET	0.03	0.56	-1.32	1.22
Excess Return	BMEXRET	1.35	7.44	-10.94	31.48
Excess Return	BMSEXRET	0.07	0.64	-0.94	2.23
Board Size	NODIRS	9.5	2.7	3	16
Board Independence	BIND	0.74	0.09	0.57	0.90
Number of Funds	BFDS	26.5	36.7	1	229
Board Focus	BFOC	0.47	0.34	0.11	1
Percent Equity	BAREA	0.63	0.34	0	1
Board TNA ($Bil)	BTNA	58.1	122.2	0.004	739.5
Board Load Rate	BLDRATE	0.83	0.30	0	1
Board Turnover	BTURN	38.8	32.2	0	133.3
Board 12b1	B12B1	111.1	193.8	0	985.7
Percent Winning Funds	BWIN	0.49	0.29	0	1
Excess Expense	BEXEXP	0.06	0.19	-0.46	0.64
Excess Expense	BMEXEXP	0.10	0.24	-0.45	0.74
n = 56					

Table 4

Difference-in-Means Tests

This table depicts the mean and standard deviation for each board-level variable for Single Board Configuration (SBC) and Multiple Board Configuration (MBC) sponsors. Differences-in-means, SBC mean – MBC mean, and p values are reported following each variable.

	SBC Boards n=15		MBC Boards n=41			
Variable	Mean	Std Dev	Mean	Std Dev	Diff	P Value
Board Excess Returns (BXRs)						
Excess Return (BEXRET)	-1.81	3.81	1.02	3.83	-2.83	0.021
Excess Return (BSEXRET)	-0.30	0.52	0.15	0.53	-0.45	0.008
Excess Return (BMEXRET)	-1.00	6.85	2.21	7.53	-3.20	0.143
Excess Return (BMSEXRET)	-0.14	0.51	0.15	0.66	-0.29	0.094
Board Composition Controls						
Board Size (NODIRS)	10.1	3.2	9.3	2.5	0.8	0.395
Board Independence (BIND)	0.77	0.08	0.73	0.09	0.04	0.114
Board Portfolio Controls						
No of Funds (BFDS)	59.6	55.3	14.3	15.0	45.3	0.007
Board Focus (BFOC)	0.23	0.11	0.55	0.35	-0.32	0.000
Board Equity (BAREA)	0.63	0.19	0.63	0.39	0.01	0.924
Board-Level Fund-Derived Controls						
Board TNA ($Bil) (BTNA)	149.3	213.2	24.8	19.6	124.5	0.040
Board Load Rate (BLDRATE)	0.74	0.34	0.85	0.28	-0.11	0.261
Board Turnover (BTURN)	49.8	28.2	34.9	33.0	14.9	0.105
Board 12b1 ($Bil) (B12B1)	0.246	0.326	0.061	0.071	0.184	0.046
Per. Winning Funds (BWIN)	0.32	0.16	0.55	0.30	-0.23	0.001
Excess Expense (BEXEXP)	0.05	0.20	0.06	0.19	-0.01	0.809
Excess Expense (BMEXEXP)	0.08	0.24	0.10	0.24	-0.01	0.853

Table 5

Fund-Level Optimization Matrix

This optimization matrix characterizes individual funds in terms of a fund's excess returns (XR) and excess expenses (XP). Panel A shows results when excess values are computed using individual fund objectives. Panel B uses the broader major objective category.

Panel A - Objective Based Excess Returns and Expenses

	All Funds n=3519		SBC Funds n=2122		MBC Funds n=1307	
	XP (-)	XP (+)	XP (-)	XP (+)	XP (-)	XP (+)
XR (+)	500 14%	843 24%	298 14%	422 20%	202 14%	421 30%
XR (-)	381 11%	1795 51%	267 13%	1135 53%	114 8%	660 47%

Panel B - Major Objective Based Excess Returns and Expenses

XR (+)	423 12%	1035 29%	269 13%	564 27%	154 11%	471 34%
XR (-)	287 8%	1774 50%	183 9%	1106 52%	104 7%	668 48%

Table 6

Board-Level Optimization Matrix

This optimization matrix characterizes individual boards in terms of a board's excess return (BXR) and excess expense (BXP). Panel A shows results when excess values are computed using individual fund objectives to form excess measures. Panel B uses excess measures based on the broader major objective category. Panels C and D show the results when the excess returns are standardized by the standard deviation of the category returns as described in Chapter 3.

Panel A - Objective Based Excess Returns & Expenses

	All Board n=56			SBC Boards n=15			MBC Boards n=41	
	BXP			BXP			BXP	
	(-)	(+)		(-)	(+)		(-)	(+)
(+)	17 30%	17 30%	(+)	2 13%	3 20%	(+)	15 37%	14 34%
BXR			BXR			BXR		
(-)	5 9%	17 30%	(-)	2 13%	8 53%	(-)	3 7%	9 22%

Panel B - Major Objective Based Excess Returns & Expenses

(+)	15 27%	15 27%	(+)	2 13%	3 20%	(+)	13 32%	12 29%
BXR			BXR			BXR		
(-)	5 9%	21 37%	(-)	3 20%	7 47%	(-)	2 5%	14 34%

Panel C – Standardized Objective Based Excess Returns

(+)	15 27%	16 29%	(+)	2 13%	1 7%	(+)	13 32%	15 37%
BXR			BXR			BXR		
(-)	7 12%	18 32%	(-)	2 13%	10 67%	(-)	5 12%	8 20%

Panel D – Standardized Major Objective Based Excess Returns

(+)	14 25%	14 25%	(+)	2 13%	2 13%	(+)	12 29%	12 29%
BXR			BXR			BXR		
(-)	6 11%	22 39%	(-)	3 20%	8 53%	(-)	3 7%	14 34%

Table 7

Probit Analysis for Board-Level Optimization Matrix

Optimal Board = F(BCV; CONTROL)

An optimal board is one that has a positive excess return (BSEXRET) and negative excess expenses (BEXEXP). BCV is the board configuration variable and CONTROL represents the series of control variables defined in Chapter 3 and shown in Table 2. (z-statistics are reported in parentheses).

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
BCV		0.681		1.350**		1.535**		1.240**		2.932**
		(1.45)		(2.10)		(2.38)		(2.42)		(2.21)
NODIRS	0.067	0.081			0.034	0.052			0.144	0.162
	(1.05)	(1.18)			(0.51)	(0.66)			(1.16)	(1.30)
BIND	-1.423	-0.679			-0.005	1.058			3.456	6.203*
	(-0.65)	(-0.31)			(-0.00)	(0.40)			(1.01)	(1.84)
BFDS			0.015**	0.027**	0.015**	0.029**			0.006	0.030
			(2.39)	(2.15)	(2.21)	(2.09)			(0.86)	(1.53)
BFOC			2.573***	2.546***	2.546***	2.605***			3.115***	3.753***
			(3.72)	(3.17)	(3.53)	(3.08)			(3.12)	(2.94)
BAREA			-0.403	-0.289	-0.453	-0.451			-0.724	-0.840
			(-0.62)	(-0.47)	(-0.73)	(-0.76)			(-0.94)	(-1.01)
LnBTNA							-0.054	-0.138	0.132	-0.116
							(-0.31)	(-0.63)	(0.53)	(-0.40)
BLDRATE							0.115	-0.162	-1.233	-1.768
							(0.11)	(-0.11)	(-0.97)	(-1.19)
LnB12B1							0.136	0.301	0.075	0.371
							(0.84)	(1.31)	(0.30)	(1.15)
BMSC							-1.197*	-2.049**	-1.071	-2.752*
							(-1.84)	(-2.54)	(-1.40)	(-1.86)
BTURN							-0.017**	-0.017**	-0.017	-0.019
							(-2.44)	(-2.21)	(-1.51)	(-1.53)
Pseudo R2	0.02	0.05	0.21	0.26	0.22	0.26	0.09	0.15	0.33	0.41
n	56	56	56	56	56	56	55	55	55	55

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 8

Configuration OLS Regression Results

BXR = F(BCV; CONTROL)

BXR is a board's excess return (BSEXRET). BCV is the board configuration variable and CONTROL represents the series of control variables defined in Chapter 3 and shown in Table 2. (t-statistics are reported in parentheses).

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
BCV		0.469***		0.406*	0.704*		0.415*		0.721*	0.786**
		(2.82)		(1.94)	(1.73)		(1.88)		(1.74)	(2.65)
NODIRS	0.010	0.018				0.008	0.012	0.001	0.005	0.004
	(0.42)	(0.71)				(0.32)	(0.43)	(0.04)	(0.19)	(0.13)
BIND	-0.367	0.107				-0.113	0.099	0.205	-0.004	-0.102
	(-0.54)	(0.18)				(-0.15)	(0.14)	(0.29)	(-0.01)	(-0.15)
BFDS			-0.001	0.001	0.003**	-0.001	0.001	0.002	0.003**	0.003
			(-0.51)	(0.63)	(2.13)	(-0.55)	(0.57)	(0.85)	(2.08)	(1.28)
BFOC			0.448*	0.315	1.399	0.432*	0.307	1.439	1.461	-0.083
			(1.79)	(1.34)	(0.48)	(1.70)	(1.27)	(0.49)	(0.49)	(-0.30)
BAREA			0.045	0.122	-0.592	0.047	0.103	-1.339	-0.597	0.164
			(0.27)	(0.82)	(-0.61)	(0.25)	(0.58)	(-1.19)	(-0.56)	(0.90)
BCV*BFDS					-0.015**			-0.011*	-0.015**	-0.014*
					(-2.21)			(-1.81)	(-2.23)	(-2.16)
BCV*BFOC					-1.495			-1.397	-1.558	
					(-0.51)			(-0.48)	(-0.51)	
BCV*BAREA					0.765			1.524	0.763	
					(0.77)			(1.39)	(0.73)	
R2	0.01	0.14	0.10	0.17	0.23	0.10	0.17	0.21	0.23	0.22
n	56	56	56	56	56	56	56	56	56	56

Continued – Next Page

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 8

Configuration OLS Regression Results (Continued)

BXR = F(BCV; CONTROL)

	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
BCV		0.616***		0.223**		0.564***	0.194
		(3.73)		(2.13)		(3.31)	(1.59)
NODIRS					-0.006	-0.007	0.016
					(-0.19)	(-0.21)	(0.66)
BIND					-0.298	-0.012	0.165
					(-0.30)	(-0.01)	(0.29)
BFDS					-0.003	-0.001	-0.002
					(-1.15)	(-0.27)	(-1.28)
BFOC					0.327	0.079	-0.319
					(0.78)	(0.18)	(-1.27)
BAREA					-0.012	0.029	0.173
					(-0.03)	(0.07)	(0.74)
LnBTNA	-0.053	-0.027	-0.010	-0.004	-0.008	-0.018	0.003
	(-0.50)	(-0.29)	(-0.23)	(-0.08)	(-0.05)	(-0.13)	(0.05)
BEXEXP	-0.886**	-0.832**	0.066	0.017	-0.472	-0.738*	-0.056
	(-2.40)	(-2.31)	(0.22)	(0.06)	(-1.10)	(-1.73)	(-0.18)
BLOADRATE	0.362	0.512	0.145	0.215	0.244	0.476	0.331
	(0.83)	(1.22)	(0.71)	(1.11)	(0.48)	(1.01)	(1.30)
LnB12B1	0.066	0.083	0.038	0.047	0.078	0.085	0.029
	(0.89)	(1.42)	(1.17)	(1.59)	(0.82)	(1.03)	(0.58)
BMSC	-0.287	-0.614*	-0.358	-0.471**	-0.401	-0.605	-0.542**
	(-0.84)	(-1.73)	(-1.53)	(-2.01)	(-0.94)	(-1.45)	(-2.14)
BTURN	-0.001	-0.000	-0.002	-0.001	-0.001	-0.001	-0.003
	(-0.47)	(-0.13)	(-1.22)	(-0.95)	(-0.33)	(-0.17)	(-1.28)
BWIN			1.627***	1.509***			1.577***
			(8.98)	(8.27)			(8.15)
R2	0.11	0.29	0.72	0.74	0.18	0.29	0.77
n	55	55	55	55	55	55	55

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 9

Configuration OLS Regression Results w/Independence Proxies

BXR = F(BCV; CONTROL)

BXR is a board's excess return (BSEXRET). BCV is the board configuration variable and CONTROL represents the series of control variables defined in Chapter 3 and shown in Table 2. LnFUNDRAT, NOBRDS and BLEV are independence proxies as defined in Chapter 4. (t-statistics are reported in parentheses).

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
BCV	0.564***		0.238		0.321		0.179
	(3.31)		(0.99)		(1.56)		(0.41)
LnFUNDRAT		-0.332***	-0.259				
		(-2.89)	(-1.66)				
NOBRDS				0.073***	0.051*		
				(2.89)	(1.69)		
BLEV						-0.759***	-0.563
						(-3.25)	(-0.97)
CONTROLS							
Board Composition	Included	Included	Included	Included	Included	Included	Included
Board Portfolio	Included	Included	Included	Included	Included	Included	Included
Board-Level Fund-Derived	Included	Included	Included	Included	Included	Included	Included
R2	0.29	0.34	0.35	0.31	0.34	0.31	0.31
n	55	55	55	55	55	55	55

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 10

Summary Statistics
Ownership Data

This table describes the ownership levels of the directors for the 47 mutual fund boards where complete ownership data is available. Column A reports the full sample while Columns B and C describe those boards within sponsors using a Single Board Configuration (SBC) and a Multiple Board Configuration (MBC) respectively.

		(A) All Boards		(B) SBC Boards		(C) MBC Boards	
All Ind directors have a stake	yes	41	87.2%	10	90.9%	31	86.1%
	no	6	12.8%	1	9.1%	5	13.9%
BALLOWN		47		11		36	
At least one Ind. director owns>$100K	yes	47	100.0%	11	100.0%	36	100.0%
	no	0		0		0	
BONETOP		47		11		36	
All Ind. directors have stake + at least one owns >$100K	yes	41	87.2%	10	90.9%	31	86.1%
	no	6	12.8%	1	9.1%	5	13.9%
BALLTOP		47		11		36	
All Ind. directors own >$100K	yes	23	48.9%	5	45.5%	18	50.0%
	no	24	51.1%	6	54.5%	18	50.0%
BALLTOP		47		11		36	

Table 11

Ownership OLS Regression Results

BXR = F(OWN; BCV; CONTROL)

BXR is a board's excess return (BSEXRET). OWN is BALLTOP, a binary variable representing the case where all independent directors on the board have more than $100,000 invested in their funds. BCV is the board configuration variable and CONTROL represents the series of control variables defined in Chapter 3 and shown in Table 2. (t-statistics are reported in parentheses).

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
BALLTOP	-0.060	0.023	-0.068	-0.103	-0.058	-0.045	-0.038	-0.051	-0.043	-0.021
	(-0.31)	(0.12)	(-0.38)	(-0.60)	(-0.33)	(-0.20)	(-0.18)	(-0.23)	(-0.19)	(-0.10)
BCV		0.490***		0.462***	0.262		0.482***		0.374	0.798***
		(3.48)		(3.14)	(0.77)		(3.45)		(0.89)	(4.00)
NODIRS	0.016	0.038				0.018	0.028	0.008	0.012	0.021
	(0.55)	(1.37)				(0.50)	(0.87)	(0.25)	(0.35)	(0.69)
BIND	-0.824	-0.101				-0.419	-0.054	-0.228	-0.301	-0.313
	(-1.17)	(-0.15)				(-0.48)	(-0.07)	(-0.27)	(-0.36)	(-0.39)
BFDS			-0.000	0.003*	0.002	-0.001	0.002	0.001	0.001	0.003**
			(-0.12)	(1.91)	(1.25)	(-0.28)	(1.39)	(0.45)	(1.16)	(2.23)
BFOC			0.488**	0.379	-2.275	0.426*	0.329	-2.555	-2.219	-0.028
			(2.08)	(1.64)	(-1.27)	(1.74)	(1.33)	(-1.18)	(-1.00)	(-0.10)
BAREA			-0.070	-0.006	0.253	-0.032	-0.010	0.118	0.392	0.082
			(-0.36)	(-0.03)	(0.36)	(-0.14)	(-0.04)	(0.12)	(0.48)	(0.36)
BCV*BFDS					-0.010			-0.008	-0.010	-0.012
					(-1.21)			(-1.22)	(-1.29)	(-1.67)
BCV*BFOC					2.334			2.632	2.229	
					(1.29)			(1.24)	(0.99)	
BCV*BAREA					-0.165			-0.005	-0.285	
					(-0.23)			(-0.00)	(-0.36)	
R2	0.03	0.16	0.10	0.18	0.24	0.10	0.20	0.24	0.25	0.24
n	47	47	47	47	47	47	47	47	47	47

Continued – Next Page

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 11

Ownership OLS Regression Results (Continued)

BXR = F(OWN; BCV; CONTROL)

	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
BALLTOP	-0.043	0.025	-0.042	-0.009	0.030	0.007	0.078
	(-0.27)	(0.16)	(-0.49)	(-0.11)	(0.12)	(0.03)	(0.70)
BCV		0.610***		0.294**		0.609***	0.237*
		(2.84)		(2.41)		(3.40)	(1.80)
NODIRS					0.017	0.004	0.037
					(0.30)	(0.07)	(1.07)
BIND					0.015	-0.141	0.148
					(0.01)	(-0.13)	(0.24)
BFDS					-0.002	0.001	-0.002
					(-0.67)	(0.28)	(-1.10)
BFOC					0.446	0.375	-0.143
					(0.98)	(0.85)	(-0.52)
BAREA					-0.150	-0.198	0.079
					(-0.38)	(-0.52)	(0.33)
LnBTNA	0.091	0.050	0.067*	0.048	0.119	0.050	0.065
	(0.78)	(0.52)	(1.84)	(1.38)	(0.82)	(0.41)	(1.26)
BEXEXP	-0.917**	-0.790*	-0.014	-0.007	-0.374	-0.524	0.114
	(-2.12)	(-1.96)	(-0.04)	(-0.02)	(-0.65)	(-1.02)	(0.28)
BLDRATE	0.591	0.397	0.192	0.122	0.259	0.151	0.108
	(1.59)	(0.97)	(1.09)	(0.66)	(0.47)	(0.30)	(0.37)
LnB12B1	-0.075	0.024	-0.030	0.015	-0.042	0.041	-0.002
	(-0.99)	(0.31)	(-1.37)	(0.46)	(-0.38)	(0.40)	(-0.04)
BMSC	0.288	-0.093	0.043	-0.126	0.164	-0.051	-0.198
	(1.16)	(-0.37)	(0.32)	(-0.87)	(0.46)	(-0.17)	(-1.08)
BTURN	0.001	0.001	-0.000	-0.000	0.000	0.002	-0.001
	(0.36)	(0.54)	(-0.26)	(-0.10)	(0.07)	(0.56)	(-0.62)
BWIN			1.490***	1.400***			1.463***
			(8.02)	(7.81)			(7.30)
R2	0.15	0.28	0.74	0.77	0.20	0.30	0.79
n	46	46	46	46	46	46	46

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 12

Probit Analysis for Board-Level Ownership

BALLTOP = F(BCV; CONTROL)

BALLTOP is a binary variable representing the case where all independent directors on the board have more than $100,000 invested in their funds. BCV is the board configuration variable and CONTROL represents the series of control variables defined in Chapter 3 and shown in Table 2. (z-statistics are reported in parentheses).

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
BCV		-0.638		0.611		0.092		0.105		0.160
		(-1.20)		(0.97)		(0.15)		(0.23)		(0.25)
NODIRS	-0.239***	-0.265***			-0.334***	-0.333***			-0.337***	-0.335***
	(-2.74)	(-3.12)			(-3.12)	(-3.15)			(-3.11)	(-3.13)
BIND	-5.537**	-6.513**			-6.291**	-6.209**			-6.392**	-6.252**
	(-2.28)	(-2.42)			(-2.39)	(-2.36)			(-2.45)	(-2.39)
BFDS			0.013	0.018	0.020**	0.021**			0.020**	0.022**
			(1.42)	(1.40)	(2.40)	(2.12)			(2.39)	(2.08)
BFOC			1.542**	1.464*	1.446*	1.441*			1.590*	1.592*
			(2.15)	(1.90)	(1.79)	(1.78)			(1.80)	(1.78)
BAREA			-1.250**	-1.126**	-0.072	-0.063			-0.098	-0.086
			(-2.16)	(-1.98)	(-0.11)	(-0.10)			(-0.15)	(-0.13)
BWIN							0.089	0.041	-0.330	-0.359
							(0.14)	(0.06)	(-0.45)	(-0.48)
Pseudo R2	0.24	0.27	0.10	0.11	0.35	0.36	0.00	0.00	0.36	0.36
n	47	47	47	47	47	47	47	47	47	47

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 13

Treatment Effects Model For Board-Level Ownership

BXR = F(OWN;, BCV; CONTROL)
OWN = F(CONTROL)

BXR is a board's excess return (BSEXRET). OWN is BALLTOP, a binary variable representing the case where all independent directors on the board have more than $100,000 invested in their funds. BCV is the board configuration variable and CONTROL represents the series of control variables defined in Chapter 3 and shown in Table 2. (t-statistics are reported in parentheses).

	TWO-STAGE			MAXIMUM LIKELIHOOD		
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
BSEXRET						
BCV	0.518**	0.233*	0.284*	0.517***	0.238***	0.302**
	(2.37)	(1.89)	(1.85)	(3.55)	(2.71)	(2.32)
BFDS	0.001	0.002	0.002	0.001	0.002*	0.002**
	(0.49)	(1.25)	(1.37)	(0.69)	(1.81)	(2.15)
BCV*BFDS			-0.002			-0.002
			(-0.57)			(-0.60)
BWIN		1.461***	1.435***		1.517***	1.494***
		(10.68)	(10.03)		(6.41)	(5.70)
BALLTOP	-0.095	-0.221*	-0.216*	-0.089	-0.274	-0.277
	(-0.42)	(-1.69)	(-1.66)	(-0.52)	(-1.21)	(-1.14)
NODIRS	-0.334***	-0.334***	-0.334***	-0.335***	-0.344***	-0.335***
	(-3.04)	(-3.04)	(-3.04)	(-3.15)	(-3.29)	(-3.03)
BIND	-6.291**	-6.291**	-6.291**	-6.277**	-5.517*	-5.319*
	(-2.00)	(-2.00)	(-2.00)	(-2.38)	(-1.82)	(-1.66)
BFDS	0.020**	0.020**	0.020**	0.020**	0.024**	0.024**
	(2.07)	(2.07)	(2.07)	(2.34)	(2.39)	(2.45)
BFOC	1.446	1.446	1.446	1.414	1.820**	1.921**
	(1.46)	(1.46)	(1.46)	(1.60)	(2.25)	(2.37)
BAREA	-0.072	-0.072	-0.072	-0.071	-0.195	-0.224
	(-0.08)	(-0.08)	(-0.08)	(-0.11)	(-0.32)	(-0.38)
IMR	0.025	0.136	0.132			
	(0.15)	(1.46)	(1.42)			
Prob>Chi2	0.02	0.00	0.00	0.00	0.00	0.00
n	47	47	47	47	47	47

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 14

Summary Statistics - Sponsors and Boards
(Ex Money Market Funds)

This table provides summary statistics for the 23 sponsors and 56 individual boards in the sample. Panel A provides statistics on sponsors for the full sample as well by those utilizing a Single Board Configuration (SBC) and those using a Multiple Board Configuration (MBC). Panel B describes the 56 boards in the sample.

Panel A - Sponsor Summary

Variable		Mean	Std Dev	Min	Max
No of Sponsor Funds	SPFDS	54.9	38.4	10	192
Size of Sponsor Assets ($Bil)	SPTNA	108.2	142.6	0.687	540.9
Sponsor Focus	SPFOC	0.21	0.11	0.06	0.44
No of Boards	NOBRDS	2.43	3.16	1	13
n = 23					
Single Board Sponsors					
No of Sponsor Funds	SPFDS	50	44.8	10	192
Size of Sponsor Assets ($Bil)	SPTNA	107.3	166.5	0.687	540.9
Sponsor Focus	SPFOC	0.26	0.10	0.12	0.44
No of Boards	NOBRDS	1	0	1	1
n = 15					
Multiple Board Sponsors					
No of Sponsor Funds	SPFDS	64	22.0	26	94
Size of Sponsor Assets ($Bil)	SPTNA	109.9	92.1	31.2	321.7
Sponsor Focus	SPFOC	0.11	0.03	0.06	0.16
No of Boards	NOBRDS	5.1	4.3	2	13
n = 8					

Panel B - Board Summary

Variable		Mean	Std Dev	Min	Max
Excess Return	BEXRET	0.17	4.14	-13.58	8.95
Excess Return	BSEXRET	0.04	0.57	-1.32	1.22
Excess Return	BMEXRET	1.20	7.64	-11.73	31.48
Excess Return	BMSEXRET	0.08	0.63	-0.94	2.23
Board Size	NODIRS	9.5	2.7	3	16
Board Independence	BIND	0.74	0.09	0.57	1
No of Funds	BFDS	22.5	30.4	1	192
Board Focus	BFOC	0.50	0.32	0.12	1
Percent Equity	BAREA	0.67	0.33	0	1
Board TNA ($Bil)	BTNA	44.4	93.7	0.004	540.2
Board Load Rate	BLDRATE	0.84	0.31	0	1
Board Turnover	BTURN	44.2	31.9	0	133.3
Board 12b1 ($Bil)	B12B1	0.099	0.176	0	0.936
Percent Winning Funds	BWIN	0.49	0.29	0	1
Excess Expense	BEXEXP	0.08	0.22	-0.52	0.64
Excess Expense	BMEXEXP	0.11	0.27	-0.52	0.74
n = 56					

Table 15

Difference-in-Means Tests
(Ex Money Market Funds)

This table depicts the mean and standard deviation for each board-level variable for Single Board Configuration (SBC) and Multiple Board Configuration (MBC) sponsors. Differences-in-means, SBC mean-MBC mean, and p values are reported following each variable.

	SBC Boards n=15		MBC Boards n=41			
Variable	Mean	Std Dev	Mean	Std Dev	Diff	P Value
Board Excess Returns (BXRs)						
Excess Return (BEXRET)	-1.94	4.09	0.94	3.93	-2.88	0.027
Excess Return (BSEXRET)	-0.31	0.54	0.16	0.53	-0.48	0.007
Excess Return (BMEXRET)	-1.35	7.34	2.13	7.62	-3.48	0.132
Excess Return (BMSEXRET)	-0.19	0.54	0.18	0.64	-0.37	0.040
Board Composition Controls						
Board Size (NODIRS)	10.1	3.2	9.3	2.5	0.8	0.395
Board Independence (BIND)	0.77	0.08	0.73	0.09	0.04	0.115
Board Portfolio Controls						
No of Funds (BFDS)	50.0	44.8	12.5	13.5	37.5	0.006
Board Focus (BFOC)	0.26	0.10	0.58	0.33	-0.32	0.000
Board Equity (BAREA)	0.70	0.16	0.66	0.38	0.04	0.574
Board-Level Fund-Derived Controls						
Board TNA ($Bil) (BTNA)	107.3	166.5	21.4	18.4	85.9	0.066
Board Load Rate (BLDRATE)	0.74	0.35	0.88	0.28	-0.14	0.199
Board Turnover (BTURN)	60.93	22.92	38.11	32.86	22.81	0.006
Board 12b1 ($Bil) (B12B1)	0.213	0.300	0.057	0.068	0.156	0.065
Per. Winning Funds (BWIN)	0.32	0.16	0.56	0.30	-0.24	0.000
Excess Expense (BEXEXP)	0.07	0.25	0.08	0.21	-0.00	0.972
Excess Expense (BMEXEXP)	0.13	0.30	0.10	0.26	0.03	0.764

Table 16

Fund-Level Configuration OLS Regression Results

XR = F(BCV; CONTROL)

XR is a fund's standardized excess return. BCV is the board configuration variable and CONTROL represents the series of control variables defined in Chapter 3 and shown in Table 2. (t-statistics are reported in parentheses).

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
BCV		0.262***		0.405***		0.361***		0.490***	
		(3.98)		(5.50)		(4.79)		(5.85)	
NODIRS	-0.021*	0.005			-0.053***	-0.034**			
	(-1.71)	(0.38)			(-3.77)	(-2.40)			
BIND	0.294	0.240			0.371	0.141			
	(0.90)	(0.74)			(0.96)	(0.37)			
BFDS			0.003***	0.004***	0.004***	0.004***			
			(5.13)	(6.93)	(5.99)	(7.10)			
BFOC			1.304***	0.882***	1.299***	0.908***			
			(5.20)	(3.41)	(5.01)	(3.39)			
BAREA			-0.034	0.096	-0.043	0.094			
			(-0.23)	(0.68)	(-0.26)	(0.57)			
LnTNA							0.017*	0.015	0.008
							(1.70)	(1.51)	(0.84)
LnBTNA							0.003	0.109***	-0.015
							(0.12)	(3.67)	(-0.78)
EXEXP							-0.415***	-0.382***	-0.329***
							(-5.99)	(-5.61)	(-4.86)
FLOAD							0.026	0.108**	0.111**
							(0.49)	(2.06)	(2.28)
DISTFEE							-0.076	-0.147**	-0.125**
							(-1.25)	(-2.47)	(-2.14)
BSEXRET									0.860***
									(11.03)
R2	0.00	0.01	0.03	0.06	0.04	0.06	0.07	0.10	0.15
n	3515	3515	3515	3515	3515	3515	3269	3269	3269

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* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 16

Fund-Level Configuration OLS Regression Results (Continued)

XR = F(BCV; CONTROL)

	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)	(xviii)
BCV	0.153*		0.102		0.465***			0.177**	0.130
	(1.81)		(1.19)		(5.48)			(2.08)	(1.56)
NODIRS				-0.021	0.002	-0.011	0.019	-0.003	0.023
				(-1.42)	(0.14)	(-0.76)	(1.38)	(-0.21)	(1.61)
BIND				0.271	-0.028	-0.055	0.066	-0.131	-0.003
				(0.66)	(-0.07)	(-0.14)	(0.17)	(-0.34)	(-0.01)
BFDS				0.002**	0.002**	0.000	-0.001	0.000	-0.001
				(2.13)	(2.01)	(0.32)	(-0.82)	(0.49)	(-0.64)
BFOC				1.464***	1.183***	0.297	0.263	0.324	0.270
				(5.35)	(4.42)	(1.09)	(0.95)	(1.17)	(1.00)
BAREA				0.061	0.059	0.173	-0.028	0.192	0.004
				(-0.33)	(0.34)	(1.03)	(-0.16)	(1.15)	(0.02)
LnTNA	0.008	0.006	0.006	0.009	0.009	0.006	0.005	0.006	0.005
	(0.85)	(0.65)	(0.66)	(0.89)	(0.97)	(0.66)	(0.52)	(0.72)	(0.57)
LnBTNA	0.020	0.002	0.025	0.041	0.113**	0.003	0.027	0.035	0.048
	(0.72)	(0.13)	(0.90)	(1.05)	(2.55)	(0.09)	(0.78)	(0.87)	(1.24)
EXEXP	-0.327***	-0.281***	-0.281***	-0.398***	0.380***	-0.335***	-0.280***	-0.336***	-0.283***
	(4.85)	(-4.27)	(-4.28)	(-5.67)	(-5.51)	(-4.86)	(-4.12)	(-4.90)	(-4.19)
FLOAD	0.130***	0.153***	0.164***	0.039	0.101*	0.123**	0.135***	0.137***	0.145***
	(2.62)	(3.08)	(3.27)	(0.72)	(1.91)	(2.44)	(2.66)	(2.71)	(2.87)
DISTFEE	-0.144**	-0.183***	-0.193***	-0.061	-0.125**	-0.116*	-0.199***	-0.134**	-0.207***
	(-2.45)	(3.21)	(-3.36)	(-0.98)	(-2.04)	(-1.91)	(-3.22)	(-2.20)	(-3.44)
BSEXRET	0.786***					0.804***		0.712***	
	(9.52)					(8.68)		(7.35)	
BWIN		2.213***	2.099***				2.205***		2.047***
		(13.47)	(12.03)				(11.52)		(10.71)
R2	0.16	0.18	0.18	0.10	0.12	0.16	0.18	0.16	0.18
n	3269	3269	3269	3269	3269	3269	3269	3269	3269

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 17

One Class Fund-Level Configuration OLS Results

XR = F(BCV; CONTROL)

XR is a fund's standardized excess return. BCV is the board configuration variable and CONTROL represents the series of control variables defined in Chapter 3 and shown in Table 2. (t-statistics are reported in parentheses).

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
BCV		0.069		0.294		0.375		0.245	
		(0.32)		(1.24)		(1.56)		(1.10)	
NODIRS	0.002	0.005			-0.041	-0.051			
	(0.08)	(0.17)			(-0.99)	(-1.15)			
BIND	0.134	0.347			-0.349	0.575			
	(0.11)	(0.25)			(-0.25)	(0.42)			
BFDS			0.001	0.001	0.002*	0.003**			
			(1.27)	(1.60)	(1.85)	(2.03)			
BFOC			0.034	-0.485	-0.125	-0.456			
			(0.05)	(-0.61)	(-0.19)	(-0.64)			
BAREA			0.277	0.513	0.308	0.400			
			(0.59)	(1.18)	(0.66)	(0.93)			
LnTNA							-0.004	-0.000	-0.003
							(-0.19)	(-0.02)	(-0.16)
LnBTNA							0.049	0.085	0.015
							(1.46)	(1.47)	(0.75)
EXEXP							-0.683**	-0.729**	-0.530*
							(-2.17)	(-2.19)	(-1.87)
FLOAD							0.050	0.103	0.148
							(0.47)	(1.22)	(1.60)
DISTFEE							-0.595*	-0.595	-0.707**
							(-1.70)	(-1.57)	(-2.56)
BSEXRET									0.736***
									(7.11)
R2	0.00	0.00	0.01	0.02	0.02	0.03	0.09	0.10	0.16
n	590	590	590	590	590	590	547	547	547

Continued – Next Page

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 17

One Class Fund-Level Configuration OLS Results (Continued)

XR = F(BCV; CONTROL)

	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)	(xviii)
BCV	0.021		0.012		0.277			-0.009	-0.010
	(0.18)		(0.07)		(1.40)			(-0.06)	(-0.53)
NODIRS				-0.027	-0.032	-0.023	-0.007	-0.023	-0.005
				(-0.71)	(-0.84)	(-1.01)	(-0.28)	(-0.97)	(-0.18)
BIND				-0.860	-0.182	-0.453	-0.884	-0.473	-1.129
				(-0.68)	(-0.15)	(-0.82)	(-1.40)	(-0.70)	(-1.60)
BFDS				0.001	0.002	0.000	0.000	0.000	-0.000
				(0.69)	(0.95)	(0.36)	(0.11)	(0.29)	(-0.08)
BFOC				0.124	-0.154	-0.311	-0.055	-0.303	0.036
				(0.21)	(-0.27)	(-0.57)	(-0.12)	(-0.54)	(0.07)
BAREA				0.176	0.261	0.215	0.312	0.213	0.288
				(0.43)	(0.68)	(0.81)	(1.25)	(0.80)	(1.14)
LnTNA	-0.003	-0.002	-0.002	-0.003	0.001	-0.004	0.000	-0.004	-0.001
	(-0.15)	(-0.12)	(-0.12)	(-0.14)	(0.05)	(-0.21)	(0.00)	(-0.22)	(-0.07)
LnBTNA	0.019	0.021	0.023	0.030	0.028	0.012	0.028	0.012	0.028
	(0.67)	(0.70)	(0.48)	(0.30)	(0.26)	(0.24)	(0.35)	(0.24)	(0.38)
EXEXP	-0.536*	-0.428	-0.431	-0.701**	-0.717**	-0.533*	-0.444	-0.532*	-0.425
	(-1.78)	(-1.57)	(-1.42)	(-2.07)	(2.10)	(-1.77)	(-1.51)	(-1.73)	(-1.37)
FLOAD	0.152	0.155*	0.157*	0.008	0.063	0.126	0.134	0.125	0.120
	(1.67)	(1.71)	(1.78)	(0.07)	(0.68)	(1.37)	(1.58)	(1.33)	(1.35)
DISTFEE	-0.706**	-0.637**	-0.637**	-0.530	-0.559	-0.685**	-0.603*	-0.684**	-0.596*
	(-2.54)	(-2.11)	(-2.10)	(-1.44)	(-1.48)	(-2.22)	(-1.83)	(-2.23)	(-1.84)
BSEXRET	0.730***					0.726***		0.729***	
	(6.07)					(6.80)		(6.23)	
BWIN		1.779***	1.769***				1.752***		1.838***
		(5.31)	(4.28)				(5.88)		(4.96)
R2	0.16	0.15	0.15	0.10	0.11	0.16	0.16	0.16	0.16
n	547	547	547	547	547	547	547	547	547

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 18

Fund-Level Ownership OLS Regression Results

XR = F(OWN; BCV; CONTROL)

XR is a fund's standardized excess return. OWN is BALLTOP, a binary variable representing the case where all independent directors on the board have more than $100,000 invested in their funds. BCV is the board configuration variable and CONTROL represents the series of control variables defined in Chapter 3 and shown in Table 2. (t-statistics are reported in parentheses).

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
BALLTOP	0.406**	0.408**	0.332	0.302	0.268	0.236	0.278	0.162	0.1970
	(2.36)	(2.14)	(1.61)	(1.40)	(1.12)	(1.03)	(1.56)	(0.89)	(1.69)
BCV		0.008		0.179		0.183		0.389	
		(0.03)		(0.59)		(0.56)		(1.69)	
NODIRS	0.013	0.014			-0.017	-0.022			
	(0.43)	(0.34)			(-0.31)	(-0.39)			
BIND	-0.330	-0.304			-0.634	-0.098			
	(-0.25)	(-0.20)			(-0.44)	(-0.06)			
BFDS			0.001	0.001	0.001	0.002			
			(0.56)	(0.70)	(0.61)	(0.79)			
BFOC			0.016	-0.261	-0.276	-0.336			
			(0.02)	(-0.34)	(-0.36)	(-0.43)			
BAREA			0.032	0.185	0.206	0.234			
			(0.07)	(0.44)	(0.45)	(0.53)			
LnTNA							0.009	0.011	0.014
							(0.34)	(0.45)	(0.74)
LnBTNA							0.026	0.114*	-0.012
							(0.73)	(1.72)	(-0.47)
EXEXP							-0.537	-0.620	-0.430
							(-1.67)	(-1.70)	(-1.51)
FLOAD							0.047	0.086	0.117
							(0.49)	(0.95)	(1.24)
DISTFEE							-1.004**	-1.027**	-0.895**
							(-2.55)	(-2.47)	(-2.65)
BSEXRET									0.762***
									(5.55)
R2	0.03	0.03	0.03	0.04	0.04	0.04	0.14	0.15	0.19
n	519	519	519	519	519	519	491	491	491

Continued – Next Page

* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Table 18

Fund-Level Ownership OLS Regression Results (Continued)

XR = F(OWN; BCV; CONTROL)

	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)	(xviii)
BALLTOP	0.191	0.197**	0.174	0.248	0.178	0.098	0.107	0.110	0.124
	(1.40)	(2.08)	(1.56)	(1.38)	(0.94)	(0.63)	(0.93)	(0.66)	(0.94)
BCV	0.028		0.098		0.287			-0.065	-0.089
	(0.15)		(0.57)		(1.00)			(-0.30)	(-0.43)
NODIRS				0.028	0.025	-0.041	0.008	-0.042	0.008
				(0.58)	(0.54)	(-0.97)	(0.27)	(-0.98)	(0.29)
BIND				-1.766*	-1.019	-0.364	-1.351*	-0.493	-1.569**
				(-1.75)	(-0.82)	(-0.46)	(-2.36)	(-0.61)	(-2.23)
BFDS				-0.002	-0.001	0.001	-0.001	0.001	-0.001
				(-0.83)	(-0.52)	(0.69)	(-0.45)	(0.67)	(-0.55)
BFOC				-0.025	-0.036	-0.502	-0.100	-0.513	-0.099
				(-0.04)	(-0.06)	(-0.91)	(-0.20)	(-0.91)	(-0.19)
BAREA				0.119	0.153	0.256	0.325	0.253	0.321
				(0.31)	(0.43)	(1.03)	(1.45)	(1.01)	(1.45)
LnTNA	0.014	0.014	0.014	0.016	0.016	0.016	0.020	0.016	0.020
	(0.74)	(0.75)	(0.77)	(0.67)	(0.72)	(0.78)	(0.99)	(0.77)	(0.98)
LnBTNA	-0.005	-0.003	0.021	0.112	0.136	-0.064	0.042	-0.075	0.033
	(-0.10)	(-0.10)	(0.42)	(1.34)	(1.58)	(-0.81)	(0.61)	(-0.80)	(0.46)
EXEXP	-0.438	-0.298	-0.331	-0.577	-0.610	-0.484	-0.346	-0.474	-0.329
	(-1.39)	(-1.19)	(-1.12)	(-1.58)	(-1.58)	(-1.47)	(-1.19)	(-1.39)	(-1.07)
FLOAD	0.119	0.141	0.146	0.046	0.070	0.147	0.145	0.145	0.141
	(1.22)	(1.68)	(1.67)	(0.48)	(0.80)	(1.61)	(1.68)	(1.53)	(1.59)
DISTFEE	-0.899**	-0.953**	-0.962**	-1.065**	-1.060**	-0.847*	-0.963**	-0.842*	-0.961**
	(-2.57)	(-2.74)	(-2.67)	(-2.41)	(-2.35)	(-1.98)	(-2.38)	(-1.95)	(-2.39)
BSEXRET	0.748***					0.794***		0.816***	
	(3.96)					(4.07)		(3.45)	
BWIN		1.833***	1.742***				1.808***		1.868***
		(5.71)	(4.99)				(6.00)		(5.53)
R2	0.19	0.20	0.20	0.15	0.16	0.20	0.21	0.20	0.21
n	491	491	491	491	491	491	491	491	491

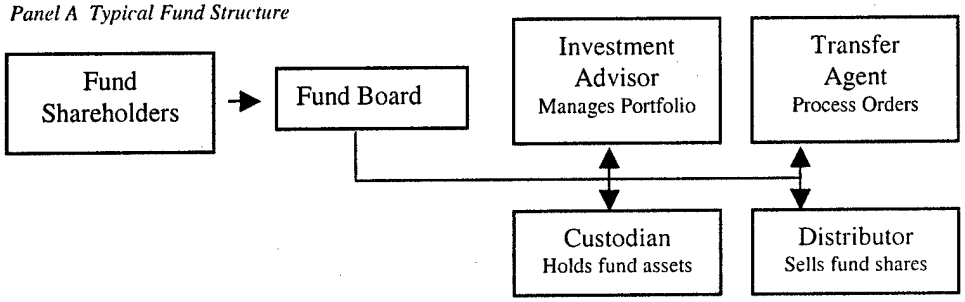
* and ** and *** indicate significance at the ten, five, and one percent levels, respectively.

Figure 1

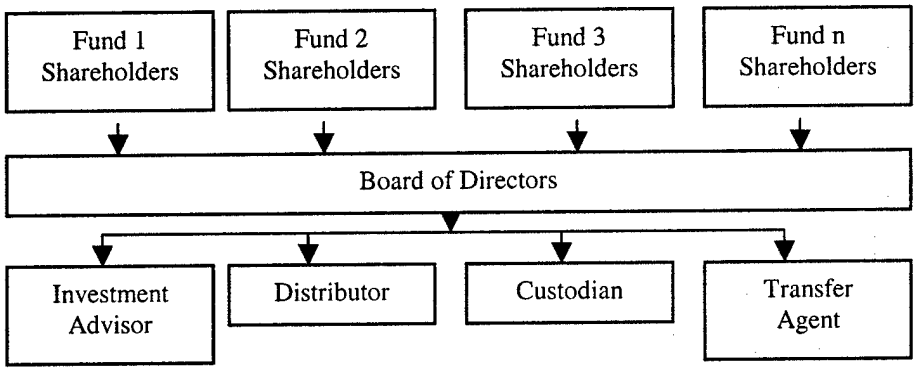
MUTUAL FUND STRUCTURE & BOARD CONFIGUATIONS

Panel A outlines the basic structure common to mutual funds. Boards hire separate entities to handle the investment advisory, distribution, custodial, and transfer agent functions. Most often these are all subsidiary organizations of the sponsor organization. Panels B and C depict the single and multiple board configurations respectively. In Panel B, a single board oversees all funds within the complex or family. In Panel C, multiple boards provide governance over differing number of funds within the family.

Panel A Typical Fund Structure



Panel B Single Board Configuration



Panel C Multiple Board Configuration

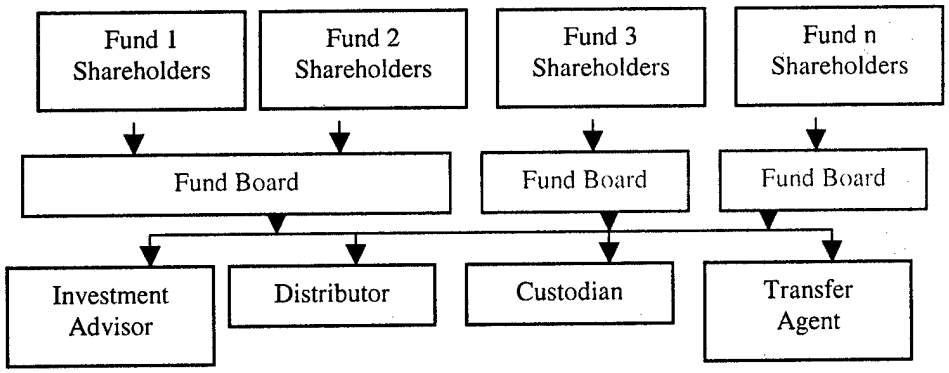


Figure 2

Optimization Matrix

This optimization matrix characterizes individual funds and boards in terms of a fund's excess returns (XR) and excess expenses (XP) or a board's excess returns (BXR) and excess expenses (BXP). Excess return and expense measures are as defined in Chapter 3.

Excess Returns (XR/BXR)		Excess Expenses (XP/BXP) (-)	Excess Expenses (XP/BXP) (+)
	(+)	Optimal	
	(-)		Sub-Optimal

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Appendices

Appendix A: Fund Sponsor Information

End of Year 2000 Top 25*

No.	Family/Sponsor	Share
1	Fidelity	11.8%
2	Vanguard	8.1%
3	American Funds	5.2%
4	Putnam	3.8%
5	MSDW VanKampen	3.3%
6	Janus Berger	3.0%
7	INVESCO AIM	3.0%
8	Merrill Lynch	2.7%
9	Franklin Templeton	2.5%
10	Salomon Citi Smith Barney	2.4%
11	TIAA-CREF	2.4%
12	Federated Kaufman	2.3%
13	Schwab US Trust	2.0%
14	Dreyfus	1.9%
15	Oppenheimer Mass Mutual DLB	1.8%
16	MFS	1.7%
17	American Express IDS	1.6%
18	Zurich Scudder Kemper	1.6%
19	Bank of America Marsico	1.6%
20	T Rowe Price	1.6%
21	Alliance Capital Bernstein	1.6%
22	American Century	1.4%
23	Prudential	1.4%
24	Chase JP Morgan	1.3%
25	SEI Investments	1.2%
	Top 25	71.2%

* From Pozen (2002)

Fund Complexes in Research Sample

Sponsor	No Funds	Size ($Mil)**	No Boards
Fidelity	229	$739,491	1
Vanguard	91	$549,513	1
American Funds	29	$329,620	11
Putnam	68	$182,680	1
Franklin Templeton	103	$156,536	13
Federated	114	$153,544	1
Nations	63	$139,950	1
Janus	35	$130,938	1
AIM	61	$130,341	1
Oppenheimer	58	$107,741	3
T Rowe Price	83	$100,861	3
Zurich Scudder	92	$90,508	2
MFS	89	$82,936	3
American Century	62	$79,478	2
American Express	47	$78,945	1
Prudential	72	$67,391	4
VanKampen	49	$45,679	1
SEI Investments	48	$42,463	1
INVESCO	34	$27,730	1
MassMutual	19	$8,382	1
Berger	13	$5,818	1
TIAA-CREF	11	$3,304	1
DLB	12	$687	1
** End of Year 2001	1482	$3,254,535	56

Appendix B: Board Information

Each board within a SBC sponsor takes the name of the sponsor while each board of a MBC sponsor adds a numeric identifier.

Board	No Funds	Size ($Mil)	Obs*	Board	No Funds	Size ($Mil)	Obs
fidelity	229	$739,491	424	mfs1	37	$26,382	114
vanguard	91	$549,513	119	amercent2	36	$23,251	54
putnam	68	$182,680	268	trowe1	29	$21,979	31
federated	114	$153,544	235	ft13	6	$20,666	24
nations	63	$139,950	281	pru3	17	$20,144	69
janus	35	$130,938	41	ft14	8	$20,056	19
aim	61	$130,341	167	amerfunds6	2	$18,840	4
amex	47	$78,945	171	opp2	10	$18,740	37
trowe3	40	$66,957	48	ft8	3	$17,616	11
opp1	20	$60,934	57	amerfunds4	2	$16,728	4
amerfunds10	2	$56,861	4	amerfunds8	2	$16,473	4
amercent1	26	$56,226	58	ft6	10	$13,136	16
mfs3	41	$55,382	113	trowe2	14	$11,925	16
amerfunds2	1	$55,216	2	pru2	19	$8,999	62
amerfunds7	1	$48,778	2	massmut	19	$8,382	72
zurich1	48	$47,497	98	berger	13	$5,818	17
vankamp	49	$45,679	143	ft5	8	$4,678	17
zurich2	44	$43,011	126	tiaacref	11	$3,304	11
sei	48	$42,463	78	pru1	21	$2,888	48
ft3	7	$39,362	25	ft2	1	$2,601	4
pru4	15	$35,360	35	ft41	5	$2,468	12
ft7	48	$34,989	116	mfs2	11	$1,172	15
amerfunds1	12	$30,988	22	ft11	2	$692	4
amerfunds3	2	$29,203	4	dlb	12	$687	12
amerfunds9	2	$28,336	4	amerfunds11	2	$276	4
opp3	28	$28,067	96	ft10	2	$239	6
amerfunds5	1	$27,921	2	ft12	1	$29	2
invesco	34	$27,730	83	ft9	2	$4	8
					1,482	$3,254,535	3,519

* Observations differ from number of funds due to use of multiple class shares.

Appendix C: Correlation Matrix

The following table presents the pairwise correlation coefficients between the variables. Significance level is reported below each coefficient.

	BCV	BALLTOP	BSEXRET	NODIRS	BIND	BFDS	BFOC	BAREA
BCV								
BALLTOP	0.0951							
	0.4855							
BSEXRET	0.3615	0.0252						
	0.0062	0.8538						
NODIRS	-0.1310	-0.2836	0.0434					
	0.3359	0.0342	0.7509					
BIND	-0.2097	-0.3449	-0.0518	0.1146				
	0.1208	0.0092	0.7045	0.4005				
BFDS	-0.5500	0.1587	-0.2063	0.1402	0.0927			
	0.0000	0.2427	0.1272	0.3026	0.4967			
BFOC	0.4309	0.0944	0.3114	0.0406	-0.1548	-0.5231		
	0.0009	0.4889	0.0195	0.7666	0.2548	0.0000		
BAREA	-0.0096	-0.1764	0.1219	0.1332	0.2792	-0.1358	0.3174	
	0.9442	0.1934	0.3709	0.3279	0.0372	0.3184	0.0171	
LBTNA	-0.3107	-0.0557	-0.0134	0.1697	0.1124	0.5379	-0.4673	0.1334
	0.0198	0.6837	0.9222	0.2112	0.4094	0.0000	0.0003	0.3271
BEXEXP	0.0343	-0.1518	-0.1781	-0.1306	0.2742	0.0779	-0.3322	-0.0751
	0.8016	0.2642	0.1892	0.3375	0.0409	0.5684	0.0124	0.5823
BLDRATE	0.1686	-0.1502	0.1335	0.1378	0.0665	-0.1772	0.3069	0.0497
	0.2140	0.2692	0.3266	0.3113	0.6265	0.1914	0.0214	0.7159
LB12B1	-0.2579	-0.1630	0.0635	0.4607	0.3882	0.3599	-0.3071	0.1355
	0.0573	0.2345	0.6452	0.0004	0.0034	0.0070	0.0226	0.3241
MSC	0.3292	-0.0741	0.0145	0.1675	0.0356	-0.2399	0.1412	-0.0856
	0.0132	0.5873	0.9154	0.2174	0.7944	0.075	0.2991	0.5305
BTURN	-0.2070	-0.3593	-0.0952	-0.0219	0.3161	0.1248	-0.1859	0.5423
	0.1257	0.0065	0.4852	0.8725	0.0176	0.3594	0.1701	0.0000
BWIN	0.3595	0.0470	0.8291	-0.0036	-0.102	-0.2147	0.3981	0.0823
	0.0065	0.7308	0.0000	0.9792	0.4545	0.1121	0.0024	0.5464

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Appendix C: Correlation Matrix (Continued)

The following table presents the pairwise correlation coefficients between the variables. Significance level is reported below each coefficient.

	LBTNA	BEXEXP	BLDRATE	LB12B1	MSC	BTURN	BWIN
LBTNA							
BEXEXP	0.0200						
	0.8838						
BLDRATE	-0.1855	0.3866					
	0.1710	0.0033					
LB12B1	0.7505	0.2407	0.2902				
	0.0000	0.0766	0.0316				
MSC	-0.0435	0.3121	0.6772	0.3172			
	0.7505	0.0192	0.0000	0.0183			
BTURN	0.2168	0.2993	0.0462	0.1993	-0.0957		
	0.1086	0.0251	0.7352	0.1446	0.4829		
BWIN	-0.1012	-0.2346	0.1444	-0.0217	0.1091	-0.0659	
	0.4581	0.0818	0.2883	0.8750	0.4237	0.6293	

About the Author

Steven P. Fraser received a Bachelor of Science degree from the United States Air Force Academy in 1990 and a Masters degree in Business Administration from the University of Pittsburgh in 1991. Following seven years of service as an acquisition program manager, he returned to the Academy in 1998 as an instructor in the Department of Management. In 2000, he entered the doctoral program at the University of South Florida. Mr. Fraser presented research at the Financial Management Association's 2002 Annual Meeting, and received the 2002 Certified Financial Planner™ (CFP®) Board Article Award – Academic Journal Category, for "Strategic asset allocation for individual investors: The impact of the present value of social security benefits", coauthored with William W. Jennings and David R. King.