

**Does Skin in the Game Matter?
Director Incentives and Governance
in the Mutual Fund Industry***

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This draft: September 2005

* We thank Bruno Biais, Francesca Cornelli, Bernard Dumas, Alexei Goriaev, Martin Gruber, Jerome Hass, Roger Ibbotson, Steven Kaplan, Owen Lamont, Urs Peyer, Martin Shubik, Matthew Spiegel, Heather Tookes, and seminar participants at the Yale School of Management and the 2005 meeting of the European Finance Association for helpful comments and discussions.

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Abstract

We use a unique database on the ownership stakes and compensation of equity mutual fund directors to analyze whether the directors' incentive structure is related to fund performance. We find that governance plays an economically substantial and statistically significant role. The ownership stakes of both independent and non-independent directors matter for fund performance. Further, the various governance variables interact: funds with high director ownership outperform those with low director ownership only when director compensation is low, and ownership by independent directors only matters when non-independent director ownership is high. We find that funds with high director ownership are better able to continue to perform well than funds with low director ownership. Our results cannot be explained by the previously documented relation between fund governance and mutual fund fees. We also provide evidence that the relation between fund performance and director ownership is not due to directors ex-ante picking the best performing funds.

1. Introduction

While conflicts of interest in mutual funds between managers, fund sponsors and shareholders have recently attracted much popular, academic, political and even legal attention, relatively little is known about the importance of director incentives in mutual funds, or the extent to which effective corporate governance is related to mutual fund performance.

Most studies of corporate governance have focused on industrial corporations, and the evidence thus far has been mixed. For example, Weisbach (1988), Byrd and Hickman (1992), Cotter, Shivdasani and Zenner (1997), and Brickley, Coles and Terry (1994) find evidence that more independent boards of directors make decisions that maximize shareholder value, but Baysinger and Butler (1985), Hermalin and Weisbach (1991), and Klein (1998) find no evidence of a relation between board composition and firm performance. In the context of investment companies, Tufano and Sevick (1997) find that the fees charged by open-end funds are lower when the funds' boards have characteristics that are consistent with effective governance, and Del Guercio, Dann and Partch (2003) find that board structures conducive to effective board independence are associated with lower expense ratios and value-enhancing restructurings, but their results on the relation between governance and discounts from net asset value are mixed.

In this paper, we ask whether effective governance is associated with superior mutual fund performance, and what governance structures are more likely to be effective. To answer these questions, we assemble a unique database on the fund holdings and cash compensation of the members of the largest equity mutual fund boards of directors, and investigate whether mutual fund performance is related to the ownership stakes and compensation of the directors overseeing those same funds. Specifically, for all the funds in the largest equity mutual fund families, we collect information on the ownership stakes of all independent and non-independent directors, as well as on the compensation of the non-independent directors. Our main finding is that effective governance matters a great deal for fund performance. Specifically, funds in which directors have low ownership stakes, or "skin in the game", significantly underperform.

Disclosure by mutual fund directors of ownership stakes in the funds they oversee is a relatively new requirement under a final rule passed by the SEC in January 2001 to help "a mutual fund shareholder to evaluate whether the independent directors can, in fact, act as an independent, vigorous, and effective force in overseeing fund operations" (SEC, 2001). To the best of our knowledge the link between the performance of mutual funds and their director's stakes has not been previously investigated in the academic literature.¹ The issue has received some attention

¹ Upon completion of this paper, we became aware of independent work by Meschke (2004) and Chen, Goldstein and Jiang (2005), who also study the governance of mutual funds. Although neither paper focuses directly on the relation between performance and ownership, they both consider this relation. Using different data, ownership definitions and methodology, they find less evidence that director ownership is related to fund performance. However, among other

among industry professionals, however, but in the absence of any evidence, disagreement prevails: while some funds require their directors to own shares, others do not. For example, Franklin fund directors are required to invest one third of their pay into Franklin funds to align their interests with those of the shareholders, but an Enterprise spokesperson has been quoted as saying that “the company does not believe directors’ ownership has any bearing on their ability to serve in the best interests of the fund’s shareholders” (Tergesen, 2004).

We make several contributions with this paper. Our first contribution is to the literature on equity mutual funds: we identify a previously overlooked, yet economically intuitive, important determinant of mutual fund performance, namely director ownership and its relation to director compensation.

Our second contribution is to the corporate governance literature. This paper is the first to relate director ownership to performance in the context of mutual funds. While others have done this for industrial corporations, see, e.g., Morck, Shleifer and Vishny (1998), McConnell and Servaes (1990), and Hermalin and Weisbach (1991), the issues in the mutual fund context are quite different.² This paper is also the first to directly relate governance and fund performance, as the previous literature focuses almost exclusively on fees. We build on the work of Tufano and Sevick (1997) and Del Guercio, Dann and Partch (2003) by not only introducing a new board characteristic, namely fund director ownership, but also by relating ownership to performance directly. An interesting by-product of our approach is that it enables us to quantify the extent to which the relation between governance and performance is due to the relation between governance and fees.

Our third contribution is to the individual investor. Following the recent mutual fund scandals, and given the current debate on soft commissions, individual investors may wish to know whether a fund is likely to put its shareholders first. Our results suggest that investors should pay close attention to the incentive structure of their funds’ boards of directors, and to the information disclosed in a seemingly little known document, the “Statement of Additional Information,” which has a wealth of information on directors, including compensation and ownership stakes.

Our fourth contribution is to the current policy debate. Here interpretation is treacherous because our results only imply association, not necessarily causation. Still, our results clearly indicate that the disclosure requirements brought about by the 2001 SEC rules were warranted. The latest wave of SEC rules requires even greater transparency, as well as boards chaired by independent

things, neither paper forms governance-sorted portfolios of funds as we do. Instead, these papers look at individual fund performance, which greatly increases the estimation risk in short time series.

² For example, there is evidence in this literature of a non-monotonic relation between manager and director ownership and Tobin’s Q, with Q increasing at low levels of ownership and then decreasing. This is not unexpected in the context of an industrial corporation, where high management ownership insulates management from board discipline and the threat of takeovers (Demsetz, 1983). It is not clear to what extent this applies in the mutual fund context.

directors, and a proportion of at least 75% of independent directors on mutual fund boards. Our findings suggest fund ownership as a mechanism to ensure that directors' interests are aligned with those of the shareholders. Contrary to recent moves to expel non-independent directors from the boardroom, we find our strongest results for the ownership stakes of non-independent directors. It is exactly for those funds in which the dependent directors' incentives are aligned with those of the shareholders, that we find the strongest fund performance. Further, the percentage of independent directors on the board has no effect on performance.

Our main findings are easily summarized. First, we find that directors' ownership stakes as of December 31st, 2001, in the funds overseen by them are indeed related to the funds' performance from January 2002 to June 2004. Funds with low director ownership perform poorly. This relation between directors' ownership and fund performance has sizeable statistical significance and is economically large. This is true of both ownership at the fund family level, and at the individual fund level. We find that a portfolio that buys funds in mutual fund families in which ownership by independent directors is high and sells funds in families in which ownership is low, generates average annual abnormal returns of 2.30%. Similarly, a portfolio that buys funds with high ownership by non-independent directors and sells funds with low ownership generates average annual abnormal returns of 2.11%, and a portfolio that that buys funds with high ownership by independent directors and sells funds with low ownership generates somewhat smaller abnormal returns, at 1.42% per annum. Thus the relation between director ownership and fund performance holds for both independent and non-independent directors, and for both ownership in the mutual fund family and ownership in the individual fund, but for independent directors ownership in the fund family impacts performance more than ownership in the individual fund.

Second, we investigate how the various governance measures interact. We first interact independent director compensation and ownership. Here, we find that the long/short portfolio discussed above generates large and statistically significant abnormal returns (2.25% per year for individual fund level ownership and 3.18% per year for fund family level ownership) only when the independent directors' compensation is low, consistent with the popular idea that highly compensated board members who have little ownership may also have fewer incentives to serve as effective monitors. We also interact ownership by independent and non-independent directors. We find that ownership by non-independent directors only matters when independent directors have high ownership too, and similarly, that independent director ownership only matters significantly when non-independent director ownership is high as well. Finally, when we interact individual fund and fund family level ownership by independent directors, we find that while both matter, the effect we identify in this paper is more a family effect than an individual fund effect.

Third, we investigate the extent to which our results are driven by fees. We find that while fees are indeed higher in low director-ownership funds, and while this does explain part of our results, it in fact explains a surprisingly small fraction of the results, which suggests that the role of mutual fund boards of directors extends well beyond fee negotiations.

There are several possible interpretations of our finding that there is a relation between mutual fund performance and director ownership. One such interpretation involves directors' private information: it might be the case that directors rely on their intimate knowledge of the funds they oversee to ex-ante pick the best performing ones, and avoid those most likely to perform poorly. Two important empirical findings contradict this hypothesis. First, the ownership effect we identify is stronger at the fund family level than at the individual fund level. Second, we show that past performance does not matter in determining director ownership, therefore directors are not picking funds that performed well in the past and avoiding those that performed poorly. Another explanation of our findings may be that we are simply picking up the previously documented relation between governance structure and mutual fund fees. We find, however, that fees can only explain a small fraction of our results. Another possibility is that directors serve as better monitors when their ownership stakes are high, either because of a causal link between ownership and effort, or because boards are endogenously determined, e.g., better directors signal their quality by investing in the funds they oversee, and better funds do the same by requiring that directors do so. Lacking a directly observable proxy for director quality, it is difficult to test this hypothesis directly. Therefore we cannot rule out the possibility that director ownership is in fact correlated with some other fund characteristic that we do not observe and that drives our results.

The rest of this paper is organized as follows. Section 2 discusses the legal roles of mutual fund boards of directors. Section 3 describes mutual fund boards along several dimensions, including director compensation and ownership. Section 4 reports our results on the relation between governance and mutual fund performance. Section 5 investigates the role of fees and considers several extensions and robustness checks. Section 6 concludes.

2. The Many Roles of Independent Mutual Fund Directors

In this section, we discuss the organization of the mutual fund industry and the role of directors in alleviating several potential conflicts of interest.

2.1. Structure of the Mutual Fund Industry

Mandated by the Investment Company Act of 1940, the organizational structure of the mutual fund industry is unlike that of any other sector of the economy. Mutual fund management companies run a variety of individual mutual funds. Mutual funds are investment companies that

are owned by their customers, i.e., the investors. As owners, fund shareholders have voting rights and a separate, legally empowered board of directors that represents their interests. Management companies (also referred to as fund sponsors, or advisory firms) are separate corporate entities. Management companies start up mutual funds: initially they own all the fund shares and select the directors that serve on the initial board. Thereafter, the primary responsibility of mutual fund boards is to contract for fund management services: mutual funds have no employees and all management activities are outsourced.

The 1940 Act gives boards of directors, and particularly independent directors, explicit responsibilities with regard to the approval of investment advisory contracts and the selection of independent public auditors. Moreover, over the years, the SEC has significantly expanded the responsibilities of independent directors to oversee many other transactions involving potential conflicts of interest between the fund's shareholders and the investment advisor (Phillips, 2003). For this reason, the independent members of boards of directors in investment companies also have substantial indirect roles that extend well beyond fee negotiation and may well be economically important. We discuss the directors' roles next, explaining why it is inaccurate to simply view mutual fund directors as fee negotiators.

2.2. Conflicts of Interest and the Role of Directors under the 1940 Act

Since January 2001, mutual fund boards must be composed of a majority of independent directors, new independent directors must be selected by the other independent directors, and any legal counsel to the independent directors must also be independent. The legal responsibilities of investment company boards of directors are: (1) to select the advisory firm and approve contracts with it (this includes the approval of fees paid to the advisor), (2) to police conflicts of interest between the advisor and the fund shareholders, and (3) to monitor compliance with federal securities law.

The role of mutual fund directors in negotiating fees with the sponsor is the subject of much prior research, see, e.g., Tufano and Sevick (1997). Here we simply emphasize that it is not a director's responsibility to shop for the lowest fees, but merely to ensure that the fees are 'reasonable', given management performance and fund growth. Legally, the 1940 Act does not place a higher burden upon directors. Economically, it seems difficult to imagine that investors would purchase shares in funds believing that the current fees are too high but relying on the independent directors to reduce those fees in the future.

The other, more indirect, roles merit some comment. Independent directors have a fiduciary responsibility to monitor the advisor and to police potential conflicts of interest. Specifically, they approve procedures under which a fund may merge with an affiliated fund, purchase securities

from an affiliate, use fund assets to finance distribution, contract with affiliates of the investment advisor, or participate with affiliates in combined letters of credit and other similar transactions. In all cases, the board must determine that the terms of the transactions are fair, reasonable, and in the best interests of the fund and its shareholders.

In addition to their role in policing conflicts of interest, mutual fund boards of directors must oversee and monitor compliance with federal securities laws. These compliance responsibilities include the pricing of fund shares and approving personal securities trading policies for personnel employed by the mutual fund. Those are clearly matters of paramount importance, especially in light of the recent fund trading scandals, and the allegations made by the SEC that some fund managers themselves had participated in the improper trading.³ Zitzewitz (2003) finds that agency problems may be the root cause of the alleged fund trading activities. Khorana, Tufano and Wedge (2005) show that independent boards tolerate poor performance less before they initiate a merger. Several recent papers also point out that differences might arise between the interests of the shareholders of a fund, and those of the fund family. For example, Gaspar, Massa and Matos (2004) show that mutual fund families use trades across member funds to strategically transfer performance across the funds (see also Guedj and Papastaikoudi, 2004). Regulations dealing with these matters require that boards of directors implement detailed policies that protect the fund's shareholders.

Another example of a conflict of interest in the mutual fund industry is the use of soft dollars and soft commissions. Several mutual fund boards have reduced or eliminated the use of soft dollars, and the Investment Company Institute is urging the SEC to issue rules that would clarify the conditions under which the use of brokerage commissions for research products and services is permissible. One of the Investment Company Institute proposals is that fund boards adopt explicit policies and procedures in this regard.

2.3. Advisory Contract Termination as a Measure of Board Effectiveness

There are several reasons why the infrequency with which investment advisory contracts are terminated is not a reflection of inaction on the part of mutual fund boards of directors.

First, it is not a director's responsibility to select the investment manager: investors choose funds with qualified managers and suitable shareholder services. They select funds to obtain the skills of the fund's manager, not the fund's directors, as evidenced by the fact that mutual funds typically feature the fund's manager prominently in their marketing materials but do not make the

³ For example, the SEC has alleged that some portfolio managers had market timed their own funds, and that a fund manager had allowed a hedge fund he had invested in to trade improperly in the fund he managed. In other instances, fund management companies and fund managers were on opposing sides, see Mahoney (2004).

identity of the directors known except in required public filings. Nevertheless, independent directors have the important role of ensuring that the expectations of the shareholders are satisfied in the long run, well after the purchase decision has been made. Directors resolve the problem that arises from the separation of ownership and control by providing continuing oversight over the fund manager on behalf of the shareholders who do not have the economic incentives or the expertise to do this themselves. However, the directors are not entrusted with the responsibility of selecting a new advisor unless the situation is distressed.

Second, while directors have important oversight responsibilities, termination of the advisory contract should be viewed as a measure of last resort. By law, if the advisor's performance is unsatisfactory, directors must act, but this does not necessarily imply that they should fire the advisor. Therefore the infrequency with which boards have sought to terminate advisory contracts is not a measure of their effectiveness. As the SEC recently pointed out (Roye, 2003),

“The infrequency with which fund directors have rejected investment advisory contracts does not necessarily indicate that ... independent directors have not been forceful enough in representing shareholder interests. Fund directors can and frequently do employ means other than contract termination to effect changes in the best interests of funds. ... [They] may reasonably conclude that it would be in the best interests of the fund and its shareholders to require the investment advisor to take appropriate steps to improve its performance, such as by hiring a new portfolio manager for the fund, ... increase the advisor's investment research capability, insist on retention of a sub-advisor, merge or liquidate the fund, close a fund to new investors, or adjust the fee structure, such as including a performance fee component to the advisory fee, without seeking to terminate the investment advisory contract.”

It is therefore only after efforts to obtain improvements within the existing management organization have failed that directors are justified in selecting a new investment advisor.

Third, terminations of advisory contracts are disruptive and often involve lengthy and costly litigation. The SEC recognizes the disruptive impact of director-initiated changes of investment advisor, pointing out that such a step involves “the possibility of disrupting the fund's operations, the prospect of a bitter and expensive proxy contest and the risk and uncertainty of replacing an entire fund management organization with a new and untested one” (SEC, 1966)⁴.

In sum, independent directors have the important responsibility to monitor conflicts of interest and to ensure that transactions with affiliates are in the best interest of the fund and its shareholders. These responsibilities extend beyond fee negotiations and cannot be dismissed simply because investment advisors are fired infrequently. These conflict and compliance

⁴ Further, in two recent instances in which the directors sought to remove the investment advisor, after substantial redemptions, the remaining shareholders rejected the recommendations of the directors and voted to stay with the original advisor. See Carter (2001), Sturms (1999) and Wyatt (1998) for further discussion of recent proxy battles, shareholder-initiated proxy fights, and shareholder lawsuits against boards of directors.

oversight responsibilities of independent directors occupy a major part of their role under the 1940 Act and provide significant protection for shareholders. Nevertheless, there has been virtually no research on the economic role of mutual fund boards beyond their impact on fees. One of the goals of this paper is to attempt to fill this gap in the literature.

3. Fund Boards and Director Ownership

This section discusses our data and describes mutual fund board composition, director holdings and compensation.

3.1. Data Collection

Our sources of mutual fund data are (1) the Center for Research in Security Prices (CRSP) Mutual Fund database and (2) the SEC Edgar database. The CRSP database contains monthly data on net returns and net asset values, and annual data on expense ratios, total load fees, turnover and proportion of assets allocated to stocks for virtually all mutual funds since January 1, 1962. This database is essentially free of survivorship bias, see, e.g., Elton, Gruber and Blake (2001) and Evans (2004). The SEC Edgar database contains electronic versions of all the forms that mutual funds are required, by law, to file with the SEC. We purchased access to a large data vendor's depository of SEC filings for the period 1996-2004.

We use the SEC Edgar database to create a new database of mutual fund director holdings in the funds they oversee. Starting January 31, 2002, mutual funds are required to disclose in a Statement of Additional Information (SAI) detailed information about each member of their board of directors, including the following:

- the name, address and age of the director,
- the term of office and the length of time served,
- whether or not the director is independent,
- the number of portfolios in the fund complex overseen by the director,
- the dollar range of equity securities in the fund (beneficially) owned by the director,
- the aggregate dollar range of equity securities in all registered investment companies overseen by the director in the family of investment companies,
- the total dollar amount of cash compensation received by each independent director for the fund complex.⁵

⁵ Some directors are compensated in shares in lieu of cash and the data do not distinguish between directors who voluntarily acquire ownership shares and those who are required to own shares per family policy.

This information must be disclosed in any SAI filed by the fund; it is available to the public through the SEC but it is typically not furnished by the funds to their shareholders except upon their explicit request.

The SEC provides strict formatting standards that mutual funds must abide by in the above described disclosure obligations. Unfortunately, the vast majority of mutual funds do not follow these formatting standards and consequently there is no formatting consistency across mutual funds. This means that the SEC forms that contain SAIs cannot be parsed electronically. We therefore collect the relevant information by hand.

First, because of the labor intensity of hand-collecting this data, we limit ourselves to the actively managed equity funds that belong to the top 25 equity mutual fund families as of January 1996. While a similar analysis could be performed on bond funds, this paper follows the standard in the literature in narrowing its focus to equity funds. Specifically, we collect basic information on all the funds that are in the CRSP database as of January 1996. We then eliminate all the funds that do not have a strategic insight fund objective code (self-declared investment objective) of ‘aggressive growth’, ‘growth’, ‘growth and income’ or ‘balanced’ or that are less than 50% invested in stocks. We then rank management companies by their total net asset values in those funds, and keep only those funds that belong to the 25 largest equity mutual fund families. To prevent double counting of fund returns, we follow the standard practice of calculating a value-weighted average of returns for funds with multiple share classes, see, e.g., Wermers (2000). Second, we match those funds from the CRSP database with the SEC data. Because the two databases use different fund numbering systems, this requires matching fund names from CRSP with the ‘central index key’ (CIK) that the SEC Edgar database uses to identify funds. Third, for every CIK that corresponds to a fund identified in the second step, we search the SEC Edgar database for all SAIs filed in 2002, the first year that funds were required to disclose fund ownership stakes by directors. Some funds that existed in 1996 do not survive until 2002 and are thus not included in our analysis. Fourth, we manually collect from the matched SAIs the information about the members of the boards of directors that we use in our analysis, including compensation data and directors’ ownership of fund shares data. In the end, we are left with 134 funds for which we have complete director data. While this is arguably a small sample, the next section shows that on the major dimensions of board composition our sample looks very much like the larger sample of mutual fund boards from 1992 that Tufano and Sevick (1997) analyze, which indicates that our sample seems generally representative of the boards of directors of the larger US mutual funds.

Our choice of a January 1996 start date deserves some comment, given that we only observe director ownership as of December 2001. This is motivated by the fact that one of the issues that we investigate later in the paper is whether or not ownership is related to prior performance. This

is an important question, as it helps us to better understand the link between ownership and performance, and in interpreting our results as not being driven by directors ex-ante picking what they expect to be the best performing funds. Still, there are two potential issues regarding the start date that need to be addressed. First, we select the largest funds; these are likely to have performed well, and if performance is persistent, our sample will have funds that perform better than the funds not included. This problem would actually be more serious if we had used December 2001 data for fund selection. Second, there is the issue of survivorship bias. Again, this is only relevant if the funds that survived over the 1996 - 2002 period outperform over the 2002 - 2004 period. However, even if these two issues bias the estimated level of outperformance of all funds, what matters for our analysis is the cross-sectional variation in the performance of the funds in our sample. So, even if we overstate the performance of all the funds in our sample, we can still analyze the cross-sectional variation with respect to director ownership and compensation.

3.2. Director Holdings and Compensation

Table 1 contains the basic descriptive statistics of the variables of interest: board composition, director holdings and compensation. Panel A shows that the average board in our sample has 9.47 members, only 1.94 of whom are not independent. We confirm the finding in Tufano and Sevick (1997) that there is substantial variation in these basic board characteristics across funds, with boards ranging from 3 to 25 members and non-independents ranging from 0 to 6. Non-independent members of the board account for about 20% of the total on average in our sample, and the percentage of independents always exceeds 50%. Thus, while we use a different sample than Tufano and Sevick (1997), board size and composition in our sample is very much in line with theirs. The main difference is that the average proportion of independent board members is 71% in their (1992) sample, which reflects the move toward greater independence of mutual fund boards of directors in recent years.

Funds are not required to disclose the exact dollar amount of director holdings, but only a range: either no investment, or an investment of \$1 to \$10,000, \$10,001 to \$50,000, \$50,001 to \$100,000 or more than \$100,000. We convert these ranges into dollar amounts by assuming that the lowest possible dollar amount is always invested, e.g., we record an investment in the range of \$10,001 to \$50,000 as an investment of \$10,001.⁶ Therefore these numbers are clearly very conservative estimates of the ownership stakes. Panel B contains basic information on director compensation and director holdings in both individual fund shares and aggregate fund family shares.

⁶ We have experimented with other approaches as well, e.g., working with the ranges directly and with range dummies. None of this affects the main results in this paper.

In the average mutual fund, independent directors hold an average of \$8,058 in each fund overseen, for a total of \$67,170 invested in all the funds overseen by the directors in the family of mutual funds. For the average non-independent director, these amounts are even larger: \$23,027 and \$88,075 respectively. Importantly, there is substantial variation in some, but not all, of these amounts across funds. Specifically, both the average independent director fund family holdings and the average non-independent director individual fund holdings vary significantly, ranging from \$0 to over \$100,000, while the cross sectional variation in average fund family holdings by non-independent directors is much less pronounced.

Mutual funds do not generally disclose the compensation of non-independent directors, so we only have data on independent director compensation. Panel B shows that in 2001 the average fund paid directors an average \$137,517 in aggregate cash compensation from all the funds overseen in the mutual fund family. Again, there is substantial variation in average compensation across funds, with average compensation ranging from just \$7,195 to over \$350,000. Note that mutual funds actually disclose two compensation figures: compensation per individual fund and compensation per fund family. We follow Tufano and Sevick (1997) in focusing our attention on the latter. To put the above amounts in perspective, a recent survey has shown that average corporate board director compensation among Forbes 500 companies was \$140,350 in 2003.⁷ Thus total compensation at the mutual fund family level is comparable to that received by corporate board directors for sitting on a single board, which suggests that the mutual fund family is indeed the appropriate unit on which we should focus.

Panel C shows that a very substantial number of mutual fund directors do not invest at all in the funds they oversee: in the average individual mutual fund, 68.36% of independent directors and 59.04% of non-independent directors have no shares. In the average fund family, we find that the percentages of independent and non-independent directors without any shares in any funds in the family are 20.76% and 6.28% respectively. There is a great deal of variation across funds in the proportion of directors with zero holdings; this is true for both independent and non-independent directors. There is also variation across fund families in the proportion of independent directors holding nothing, but the variation in the proportion of non-independents holding nothing is much smaller.

In addition to what is described in panel C, it is worth pointing out that in 31.82% (35.53%) of the individual funds in our sample no independent (non-independent) director holds anything, and that in 10.61% (17.11%) of the funds all independent (non-independent) directors have at least a dollar invested. At the fund family level, in 3.82% (0%) of fund families all independent (non-

⁷ This figure is for the 469 Fortune 500 companies that filed their 2003 proxies by May 28, 2004. See the consultancy Towers Perrin's August 2004 newsletter *Executive Compensation Resources*.

independent) directors hold nothing, and in 48.85% (88.31%) all independent (non-independent) directors have at least a dollar invested.

4. Board Characteristics and Fund Performance

In this section, we analyze the returns of various portfolios created by sorting funds according to various board characteristics. Director ownership is measured as of December 31st, 2001. Performance is measured using monthly mutual fund returns from January 2002 to June 2004, for a total of 36 months.

4.1. Initial Analysis

We categorize funds in our sample according to four variables: (1) average fund family ownership by independent directors, (2) average individual fund ownership by independent directors, (3) average individual fund ownership by non-independent directors, and (4) average dollar compensation of the (independent) directors. Table 1 reports some summary statistics on these four variables, and on an additional variable, namely the average family ownership of the non-independent directors. As was pointed out earlier, there is almost no variation across funds in this additional variable, as most non-independent directors have family ownership in the highest range, so we do not consider this variable further.

For each variable, we sort funds into four groups based on the quartiles of the variable (see Table 1). Thus funds in which the average family level investment by independent directors is greater than \$95,000 are classified as funds with high independent family ownership, and funds in which the average family level investment by independent directors is less than \$38,334 are considered funds with low independent family ownership. Funds with independent family ownership between \$38,334 and \$72,857 and those with independent family ownership between \$72,858 and \$95,000 are the other two categories. Similarly, we also divide funds into four quartiles based on the other three variables.

We thus construct four separate sets of four NAV-weighted portfolios (one set per governance variable) and four long/short portfolios that buy funds with high values of the particular governance variable (the fourth quartile) and sell funds with low values of that governance variable (the first quartile). To ensure that our results are not driven by differences in risk or ‘style’ we calculate abnormal returns using a four factor model that includes the three Fama-French (1993) factors and a momentum factor, as in Carhart (1997) and Jegadeesh and Titman (1993). The estimated abnormal return is the constant α in the regression

$$R_t = \alpha + \beta_1 \cdot MKT_t + \beta_2 \cdot SMB_t + \beta_3 \cdot HML_t + \beta_4 \cdot UMD_t + \varepsilon_t,$$

where R_t is the excess return over the risk free rate to a portfolio in month t , and MKT_t , SMB_t , HML_t and UMD_t are, respectively, the excess return on the market portfolio and the return on three long/short portfolios that capture size, book-to-market, and momentum effects.

Table 2 contains our results on the relation between mutual fund performance and the four board characteristics. In addition, it also considers the proportion of independent directors on the board. Panel A considers the performance of portfolios formed on the basis of average ownership in fund family shares by independent directors. We find that, over the period January 2002 to June 2004, a portfolio that buys into funds with high independent family ownership and sells funds with low independent family ownership earns annual abnormal returns (alphas) of 2.30% with a t-statistic of 2.88. This abnormal return is very significant, both economically and statistically. To put this number in perspective, recall that the average mutual fund underperforms the market by 1% per year (Wermers, 2000). Thus fund ownership by directors emerges as a major driver of mutual fund performance.

Panels B and C consider the performance of portfolios formed on the basis of average ownership in individual fund shares by non-independent directors (panel B) and independent directors (panel C). A portfolio that buys funds with high non-independent fund ownership and sells funds with low non-independent fund ownership earns annual abnormal returns of 2.11% with a t-statistic of 2.44, again economically large and statistically significant. A portfolio that buys funds with high independent fund ownership and sells funds with low independent fund ownership earns annual abnormal returns of 1.42% with a t-statistic of 2.27.

In sum, for independent directors we find evidence for both an individual fund effect and a fund family effect, though the latter is larger economically and more significant statistically. Thus, for independent directors, the ownership effect identified in this paper is more a family effect than an individual fund effect.⁸ For non-independent directors, we identify a very significant individual-fund ownership effect. This is an important finding in light of the significant emphasis that regulators as well as previous researchers have placed on the role of independent directors. This finding makes good economic sense, since non-independent directors are, by the very nature of their legal classification, much more involved in the life of the fund. Our results point to an important role for non-independent directors, as long as the incentives are in place to make their interests aligned with those of the shareholders of the funds they oversee.

We note that, since it is not possible to literally short funds, the long/short strategies should not be viewed as trading strategies, but merely as a convenient way to calculate differences in performance. Further, as can be readily seen in table 2, we do not find any evidence of a

⁸ Similarly, Tufano and Sevick (1997) found that board structure is better able to explain differences in fees between fund families than to explain differences among various funds with a family.

monotonic relation between ownership and performance. Our results are driven by the poor performance of the funds in the lowest ownership category: funds with low director ownership earn robustly large and statistically significant negative alphas, regardless of the specific measure of director ownership.

Turning now to the role of director compensation, panel D shows that compensation, in and of itself, does not do much. For comparison, Tufano and Sevick (1997) find some evidence that funds whose directors are paid more tend to exhibit higher fees, and Del Guercio, Dann and Partch (2003) find that closed-end funds with relatively low expense ratios also have lower director compensation, though they too find no statistically significant relation between director compensation and premia over, or discounts from, NAV, a natural measure of performance for closed-end funds. In section 4.2 we show that compensation does in fact matter for mutual fund performance, but only when it is interacted with ownership.

Finally, given the recent SEC rule requiring that 75% of board members be independent and the debate that this has sparked in the industry, it may be of interest to examine whether sorting funds according to the proportion of independent directors produces a spread. Panel E clearly shows that there is little evidence that the proportion of independent directors matters for risk-adjusted performance: the alpha of the long/short portfolio is only 85 basis points, with a t-statistic of 0.63.

To alleviate concerns about the robustness of our results, in unreported work we repeat the analysis above using different breakpoints, different numbers of portfolios, and different ways of computing the average ownership measures (using range dummies). Our results survive this battery of robustness checks. We also repeat the analysis using equally weighted portfolios as opposed to NAV weighted portfolios and again the results are very similar, except for independent director fund ownership, which becomes insignificant, consistent with our earlier observation that for independent directors, ownership at the family level matters more than ownership at the individual fund level, an issue we return to shortly.

4.2 Interacting the governance variables

In this section, we consider how the various governance variables interact in their relation to mutual fund performance.

4.2.1 Ownership and compensation

Within the mutual fund industry, some have argued that mutual fund boards of directors fail to adequately fulfill the monitoring and advisory roles assigned to them under the 1940 Act. This critique seems based upon the belief that mutual fund directors, even legally independent ones,

may have interests that are more aligned with those of the mutual fund sponsor than those of the shareholders. Effectively, according to this argument, mutual fund boards have become captured by their funds' sponsors: in practice and as pointed out earlier, mutual fund directors serve on the boards of many funds within a fund family and often receive significant compensation for their services; therefore they may wish to develop a reputation for not rocking the boat and thus take actions aimed at protecting their compensation for sitting on the board, as opposed to maximizing the fund's returns to its shareholders.⁹

According to this argument one might expect independent directors' interests to be better aligned with those of the shareholders of the funds they oversee when their compensation for sitting on a board is smaller relative to the performance of their assets invested in the fund. We test this hypothesis by sorting funds on both independent director ownership stakes and director compensation. We consider separately both ownership stakes in the fund family and ownership stakes in the individual fund. To ensure that we have a reasonable number of funds in each portfolio, we form $2 \times 4 = 8$ different portfolios, sorting funds into two groups based on independent director compensation, and into four groups based on independent director ownership stakes (all our double sorts are independent sorts).

Table 3 reports the average returns, the abnormal returns (alphas) and their t-statistics for the eight portfolios as well as two long/short portfolios that buy funds with high fund/family independent director ownership and sell funds with low fund/family independent director ownership. Panel A has the results for portfolios of funds sorted on individual fund ownership, and panel B has the results for portfolios formed on fund family ownership. Looking first at the results for fund family ownership, we find that a portfolio that buys funds with high director ownership and sells funds with low director ownership earns very impressive abnormal returns of 3.18% per year (t-statistic of 2.64), but only when director compensation is low. Clearly the performance differential attributable to ownership and compensation is economically large and statistically significant. Therefore we find strong evidence that corporate governance in mutual funds is associated with performance, and that the funds that perform well are precisely the funds whose independent directors' interests are expected to be most aligned with those of the shareholders. At the same time this finding provides evidence for the economically intuitive idea that independent directors' interests are best aligned with those of shareholders when the directors have larger total ownership stakes and lower total dollar compensation.

The results at the individual fund level (panel A) are similar. A portfolio that buys funds with high director ownership and sells funds with low director ownership earns abnormal returns of 2.25% per year (t-statistic of 2.20), but only when director compensation is low.

⁹ While fund sponsors have no direct legal means of removing independent directors, as Tufano and Sevick (1997) point out, they may pressure them into resigning or not seeking reelection. See Carter (2001) for a specific example.

4.2.2. Dependent versus independent directors

Both the academic and the practitioner literatures on corporate governance in mutual funds as well as the 1940 Act itself emphasize the role and importance of independent directors. This is because it is generally believed that independent directors are more likely to act in the interests of shareholders, since non-independent directors, by definition, tend to have business or economic ties to the investment advisor, the broker, or another firm that provides services to the fund. In fact, the SEC has recently approved a rule that requires all mutual fund boards to appoint an independent chairman and to fill at least 75% of the board seats with independent directors.

In this section, we study how the ownership stakes of independent and non-independent directors interact. To this end, we again sort funds into $2 \times 4 = 8$ different portfolios. Our analysis proceeds in two steps: in the first step, we sort funds first into two groups based on the ownership stakes of non-independent directors, and then into four groups based on the stakes of the independent directors. In the second step we do the reverse, sorting funds first into two groups based on the ownership stakes of independent directors, and then into four groups based on the stakes of the non-independent directors (again, these double sorts are independent sorts).

Table 4 reports the results: average returns, alphas and t-statistics for both sets of 8 portfolios as well as the long/short portfolios that buy funds with high ownership stakes by one group and sell funds with low ownership stakes by the same group. Panel A considers the importance of independent directors' fund ownership stakes, conditional on the ownership stakes of the non-independent directors, and panel B considers the importance of non-independent director fund ownership conditional on independent director fund ownership. We find clear evidence that both the ownership stakes of the non-independent directors and those of the independent directors matter and strongly interact: the fund ownership stakes of the two groups are complements rather than substitutes. Specifically, a portfolio that buys funds with high ownership stakes by non-independent directors and sells funds with low ownership stakes by non-independent directors earns an economically large and statistically significant average abnormal return of 4.12% per year (t-statistic of 2.67) only when ownership by independent directors is high. Conversely, a portfolio that buys funds with high ownership stakes by independent directors and sells funds with low ownership stakes by independent directors earns statistically significant average abnormal returns only when the non-independent directors have high ownership stakes (but notice that the average abnormal returns are actually economically large in either case at 2.70% and 2.82% respectively, though there is no statistical significance in the former case).

Thus non-independent director ownership only matters when independent directors have high ownership as well, and independent director ownership only matters statistically for funds whose

non-independent directors also have high ownership. It therefore appears that independent and non-independent directors have complementary skills, and that both can contribute to mutual fund performance if the appropriate incentives are in place.

4.2.3. Fund versus family ownership stakes

The previous sections identify a strong relation between governance variables and mutual fund performance, and specifically show that ownership by directors matters. For independent directors, we found that while both individual fund and fund family ownership matter, the effect seems to be more a family effect than an individual fund effect. In this section we pursue this issue further and ask how these variables interact.

In the spirit of our earlier analysis, we proceed in two parts. In the first part, we sort funds first into two groups based on the level of ownership by directors in the family, and then into four groups based on the individual fund level stakes. In the second part we do the reverse, sorting funds first into two groups based on the individual fund level stakes, and then into four groups based on the fund family level stakes. Both cases consider the independent directors only, as there is little variation in the family level ownership of the non-independent directors.

Table 5 reports the results for both sets of eight portfolios as well as the long/short portfolios that buy funds with high ownership stakes and sell funds with low ownership stakes. Panel A has the results for the first part, and panel B for the second. Our findings support the fact that while both fund and family ownership stakes matter, family ownership seems to matter more. Two observations support this claim. First, controlling for family level ownership, individual fund level ownership matters little: neither long/short portfolio in panel A earns statistically significant (or particularly large) abnormal returns. Second, controlling for the individual fund level investment, ownership in the family does matter: both long/short portfolios in panel B earn large average abnormal returns (3.04% and 1.99%, respectively conditioning on low and high independent director fund ownership, and with respective t-statistics of 2.03 and 1.77). The finding that there seems to be more of a family effect is consistent with the fact that it is common for board members to discuss several funds overseen by them at a single meeting of the board of directors. Note however that the second-part results are more difficult to interpret, as having a large investment in a fund within a family necessarily and mechanically implies that the family-level investment is large as well.

5. Interpretation and discussion

5.1. Board characteristics, shareholder fees, and fund performance

An important finding in the mutual fund literature is that shareholder fees are a major determinant of mutual fund performance. Among others, Blake, Elton and Gruber (1993), Carhart (1997), Elton, Gruber, Das and Hlavka (1993), Jensen (1968), and Malkiel (1995) document this empirical regularity over various time periods, types of funds and methods of accounting for risk and style. The result that emerges from this literature is that a 1% increase in annual expense ratios typically lowers performance by 0.8% to 2.2% per annum. Wermers (2000) finds that the stocks held by mutual funds outperform a broad market index by 1.3% per year even though, on a net return basis, funds underperform by 1% annually. He decomposes the 2.3% difference, and finds that 0.7% is due to the underperformance of non-stock holdings, while the remaining 1.6% is split evenly between expenses and trading costs. The evidence thus suggests that fund shareholders are well served when directors negotiate lower fees.

Our findings so far support the claim that effective governance is related to mutual fund performance. In this section we ask to what extent this effect is driven by fees. This is an important question, because one of our objectives in this paper is to better understand the economic role of mutual fund boards of directors. Previous research in this area has focused almost exclusively on the cross-sectional relation of board characteristics and shareholder fees. This is perhaps not surprising, given the literature on the relation between performance and fees, and the fact that boards of directors do play the important role of negotiating the terms of the advisory contract. However, as we have argued earlier in the paper, there is reason to believe that directors do more. Specifically directors have the important monitoring role of resolving a wide array of conflicts of interests between the advisory firm and the fund's shareholders. In this section, we attempt to quantify the role of effective governance beyond its relation to shareholder fees.

Our analysis proceeds in two parts. In the first part, we examine the relation between fund fee levels and our governance variables, after controlling for fund specific factors and fund board characteristics known to affect fees. In the second part we then investigate to what extent the relation between director ownership and fund performance is driven by fees.

5.1.1. Expense ratio regressions

Following Tufano and Sevick (1997) and Del Guercio, Dann and Partch (2003), we test whether effective governance is associated with lower expense ratios. We begin by replicating their result that expense ratios are negatively related to assets under management, positively related to board

size¹⁰, negatively related to the proportion of independent members on the board of directors and positively related to directors' compensation. Column 1 in table 6 contains the evidence. We also find some evidence that even after controlling for assets under management, the number of funds in the family matters, as does the average turnover. The negative coefficients on fund assets, family assets and number of funds in the family point to economies of scale in the mutual fund industry, and it appears that at least part of these savings are passed on to investors in the form of lower fees. The positive relation between fees and turnover is consistent with that identified by Wermers (2000). Overall the evidence in table 6 is entirely consistent with the results of Tufano and Sevick (1997) and Del Guercio, Dann and Partch (2003) that effective governance is associated with lower shareholder fees.

We then add the measures of director ownership stake as explanatory variables, adding first non-independent director ownership alone, then both independent and non-independent director ownership. Several important results emerge from this analysis. First, non-independent director ownership is highly significant, both economically and statistically. Adding log non-independent director fund ownership increases the R^2 from 34.7% to 56.3%. Economically, a one-standard deviation increase in the log of non-independent director fund ownership (equal to 5.4), is associated with a decrease in the expense ratio of 9.8 basis points, or about 8.4% of the average expense ratio of 116 basis points. Second, once the ownership stakes of the non-independent directors are included in the regression as an explanatory variable, the proportion of independent directors on the board flips sign and loses statistical significance. Third, in fact, controlling for non-independent director ownership, none of the other governance variables except board size remain significant or even have the expected sign.

5.1.2. Before-fee portfolio performance

To assess the importance of our governance variables beyond their relation to fees, we again form portfolios by sorting funds on the governance variables. This is reminiscent of our analysis in table 2, but the difference is that we now consider gross, i.e., before-fee, returns, whereas in the previous sections we were looking at returns net of fees. This is a simple approach that has the advantage that any performance differential identified in gross returns cannot, by definition, be due to the association between our governance variables and shareholder fees. To calculate the returns before expenses, we first estimate abnormal returns exactly as we do in the previous sections, using the Fama-French (1993) three-factor model augmented by a momentum factor (Carhart, 1997). Second, we calculate a monthly expense ratio by using the annual expense ratio reported by CRSP for that year and dividing it by 12.¹¹ Third, for each fund we add the monthly

¹⁰ This result is also consistent with Yermack's (1996) finding that small boards are more effective than large ones in large U.S. industrial corporations.

¹¹ We continue to follow the standard practice of calculating a value-weighted average of returns for funds with multiple share classes as in, e.g., Wermers (2000). Fees are thus added back to each share class.

expense ratio back into each monthly abnormal return and we compute mean returns, mean abnormal returns (alphas) and t-statistics. The standard deviations of alphas necessarily remain the same, as the expense ratios are not estimated.

Our results are reported in table 7. Panel A considers the before-fee performance of portfolios of funds sorted on the basis of average ownership in fund family shares by independent directors. Panels B and C report results on the before-fee performance of portfolios of funds sorted on average individual fund ownership by non-independent directors and independent directors, respectively. The average annual expense ratio for each portfolio is also reported.

Two important results emerge from this analysis. First, looking at the average expense ratios, we find that funds whose directors have large ownership stakes indeed have lower expense ratios than funds whose directors have little ownership, consistent with the results of the fee regressions.

Second, we find that the long/short portfolios that buy funds in which directors have high ownership and sell funds in which they have little ownership generate economically large and statistically significant average abnormal *before-fee returns*. For example, a long/short portfolio constructed by sorting funds by the average fund family level investments of independent directors produces average before-fee abnormal returns of 1.82% per year, with a t-statistic of 2.28. Based on net returns, the same portfolio generates average abnormal returns of 2.30% per year with a t-statistic of 2.88 (see table 2). Therefore, of the 230 basis point spread, only about 48 basis points, or 21% of the spread, can be attributed to fees. For ownership at the individual fund level, the part of the spread that can be attributed to fees is even smaller. Thus fees account for part of the performance of the director ownership based long/short portfolios, but they clearly do not explain the spread exhaustively, and in fact only explain a surprisingly small portion of it. These results are consistent with the view that directors have roles that extend beyond negotiating advisory fees with the fund sponsor.

5.2. Explaining director ownership and compensation

In order to facilitate the interpretation of the role of governance structure, this section explores the relation between director ownership and compensation as of year-end 2001 and the characteristics of the mutual fund over the preceding five-year period (1997 – 2001). In particular, the above documented relation between director ownership and mutual fund performance could potentially be driven by mutual fund directors' fund picking skills: directors might be relying on their inside knowledge of the funds they oversee to ex-ante pick the best-performing ones or to avoid the worst performers. Consistent with this view and if there is any persistence in mutual fund performance, one might expect directors to pick funds that have done well in the past, and to avoid funds that have performed poorly.

We first test this hypothesis by relating director ownership and compensation to past performance. Specifically, we run OLS regressions of (logs of) our governance variables as of December 31st, 2001 on the annualized abnormal return of the fund in the five years 1997 - 2001. Panel A in table 8 reports the results of these regressions for our three ownership measures (independent director individual fund ownership, non-independent director individual fund ownership, and independent director fund family ownership), as well as for director compensation. The R^2 's in these regressions are very low, between 0.1% for director compensation and 3% for non-independent director fund ownership, and none of the coefficients on past abnormal performance are statistically significant or economically large. Thus it appears that directors are not choosing funds that have performed well in the past, or avoiding funds that have performed poorly.

In panel B of table 8 we analyze the extent to which director ownership and compensation can be explained by other fund characteristics. We consider the size of the fund, proxied by the fund net asset value as of December 31, 2001, and the size of the fund sponsor, proxied by the combined net asset value of all the funds in the family, as well as the number of funds in the family. Further, we also consider the average annual turnover, the average annual expense ratio, the fund's past abnormal return and return volatility, all computed over the 1997 - 2001 period.

Several interesting results emerge. First, these fund characteristics jointly explain a significant portion of the variation in ownership across funds: the R^2 's in the ownership regressions are close to 25%. Second, and perhaps not surprisingly, fund size is an important determinant of fund ownership: the individual fund-level ownership of both independent and non-independent directors is significantly related to the individual fund size but not to the family size. Third, turnover does not appear to matter. Fourth, funds with higher expense ratios have a lower level of dependent director fund-level ownership, which we found to be the governance variable most strongly and robustly related to fund performance. However, the previous section showed that differences in fees can explain only a small fraction of performance differences related to governance. Further, there is no significant relation between expense ratios and independent director fund or family-level ownership. Fifth, turning to the results on director compensation, we find that 36% of the variation in compensation can be explained by the fund characteristics. Three variables stand out: the family's aggregate net asset value and the number of funds in the family, and the expense ratio. Thus, larger funds and those with larger investor fees compensate their independent directors more. Sixth, returning to the question of whether or not funds that did well (or poorly) in the past have higher (or lower) ownership now, we again find no evidence

consistent with that when all these other variables are added. The coefficient on past performance is insignificant.¹²

Given the interesting findings of interactions between the governance variables, in panel C of table 8 we include the other governance variables as additional regressors, as well as board size and the percentage of independent directors. We find that the fund-level ownership of independent and non-independent directors are related, which increases the respective R^2 's by about an additional 15 percentage points. Interestingly, the level of compensation does not seem to directly affect fund-level ownership of either independent or non-independent directors. At the same time, independent-director compensation is economically and statistically significantly higher in funds with higher ownership by non-independent directors.

5.3. Robustness: Two-step methodology

In this section, we investigate whether our results on the relation between governance and fund performance as reported in tables 2 to 5 are robust to the use of a different experimental design. Specifically, we regress individual fund abnormal returns on board characteristics, accounting for the estimation risk of the alphas. Our approach is similar to that of Cremers and Nair (2004) and proceeds in two steps. In the first step, we estimate fund alphas by running time series regressions of after-fee fund returns on the three Fama-French factors and a momentum factor. In the second step, we regress these fund-specific alphas on various board characteristics and compute t-statistics that incorporate the first step estimation risk of the alphas. Specifically, we assume heteroskedastic errors with the residual variance of each fund-specific alpha proportional to its own variance in the first step. In other words, the procedure weighs more heavily in the second step those fund alphas that were more precisely estimated in the first step. We use standard OLS coefficient estimates because a full WLS estimation (incorporating correlations across fund returns) is not feasible here, since we have more funds than months.

Table 9 contains the results of these two-step regressions of alphas on fund characteristics. Panel A reports univariate regressions in the spirit of the single sorts in table 2, and panel B reports regressions involving interaction terms, which could be compared to the double sorts in tables 3, 4, and 5. It should be emphasized that this is a rather stringent robustness check, as fund-specific alphas are estimated with a significant amount of idiosyncratic noise. Nevertheless we are able to detect significant relations between these alphas and the governance variables, while taking estimation risk into account by weighting the alphas by their appropriate significance.

¹² These results are robust to using raw rather than abnormal mutual fund performance, and to using raw or idiosyncratic fund volatility.

Overall, we find that the results of the two-step alpha regression methodology are generally consistent with those of the single and double sorts. In the univariate regressions of panel A, independent-director family ownership stakes and non-independent director fund ownership stakes are both significantly associated with higher fund-specific alphas, with t-statistics of 3.44 and 3.12 respectively. Higher fund alphas are also positively related to independent-director ownership in individual fund shares, but the coefficient is small and not significantly different from zero. This is consistent with our earlier finding that for independent directors, the relation between ownership and performance is more a fund family effect than an individual fund effect. Director compensation appears to be positively related to fund alphas.

The interaction regressions in panel B are generally also consistent with the double-sorted portfolios, with a few exceptions. The first two specifications (labeled 3A and 3B) suggest that individual fund ownership by independent directors does not matter, regardless of the level of director compensation, and that fund family ownership by independent directors matters, but also regardless of the level of director compensation. The other four interaction regressions are consistent with our earlier results: (1) independent director fund ownership matters only when non-independent director fund ownership is high, (2) non-independent director fund ownership matters only when independent director fund ownership is high, (3) controlling for their level of ownership in the fund family, independent director's fund ownership is not significantly related to higher fund alphas, and (4) controlling for their level of ownership in the individual fund, independent director's ownership in the fund family is significantly associated with larger fund-specific abnormal returns.

5.4. Director ownership and performance persistence

A rather extensively researched question is the extent to which mutual funds have persistent returns. Several papers find strong evidence that there is performance persistence, e.g., Lehman and Modest (1987), Hendricks, Patell and Zeckhauser (1993), and Wermers (1997).¹³ Here we analyze mutual fund performance persistence from a different perspective than the existing literature: we investigate whether there is a link between performance persistence and director ownership. Following the two-step methodology outlined above, we first run a regression of alphas estimated over the January 2002 to June 2004 period on prior alphas that we estimate over the period January 1997 to December 2001. Column 1 in table 10 contains the results. It appears that there is performance persistence in our sample: the coefficient on past alpha equals 0.21 and is highly significant, with a t-statistic of 3.33, and the R^2 of the regression is 10.5%. We then interact past alpha and director ownership, by adding as an explanatory variable the fund's past

¹³ Brown and Goetzmann (1995) emphasize that the predictability in mutual fund returns is difficult to detect, and Carhart (1997), Daniel et al. (1997), Pastor and Stambaugh (2002) and Wermers (2000) argue that most of it is due to factors other than managerial skill.

alpha multiplied by an indicator variable equal to one for above-median ownership, and zero otherwise. Column 2 in table 10 has the results of the interaction involving independent director fund-level ownership, column 3 the results of the interaction involving non-independent director fund-level ownership, and column 4 the results of the interaction involving independent director family-level ownership. The interaction coefficients are positive for all three measures of ownership, indicating that funds whose directors have larger ownership stakes tend to exhibit stronger performance persistence. While the interaction coefficient is not statistically significant in the case of independent director fund-level ownership, it is statistically significant for the other measures of ownership, and economically large: there is about twice as much persistence when non-independent director ownership is above its median and when independent director family ownership is above its median.

6. Conclusion

The much publicized recent allegations of mutual fund trading improprieties have brought mutual fund governance practices into the spotlight. While the specific details of the allegations vary, the basic issue invariably involves some conflict of interest between a fund management firm and a fund's shareholders. For example, allowing some large investors to engage in market timing activities may increase a fund's assets under management (and thus the advisory firm's fee income) but only at the expense of other fund investors. The SEC has proposed several new rules designed to improve the governance of mutual funds, including a requirement that all mutual fund boards appoint an independent chairperson and fill at least 75% of the board seats with independent directors. There is significant disagreement in the mutual fund industry, and even within the SEC itself, about the potential costs and benefits of the new governance rules. The mutual fund industry's Investment Company Institute has proposed its own set of best practices and several industry leaders have voiced strong opposition and proposed alternative strategies to improve mutual fund governance. Fidelity Asset Management went so far as to commission a study, the Bobroff and Mack (2004) Report, that found no evidence that funds chaired by a non-independent director perform worse or charge higher fees than those chaired by an independent director. In the words of Fidelity Chairman Edward Johnson, "a government mandate to have an independent fund chairman would be like requiring a ship to have two captains. He said he would rather have one, and *if he owned the ship, so much the better*" (Damato and Burns, 2004).¹⁴ For all this disagreement, there is a consensus that conflicts of interest exist and that mutual fund governance practices are important and need to be improved.

In this paper, we use a unique database on the ownership stakes of directors in the funds they oversee to analyze whether effective mutual fund governance is related to fund performance. We find that the directors' ownership stakes are related to fund performance. Importantly, this is true

¹⁴ Emphasis added.

not only for independent directors, but appears even stronger for non-independent directors. The relation between director ownership and fund performance has sizeable statistical significance and is economically important. Further, we investigate how the various governance measures interact in their relation to fund performance. We first interact independent director compensation and independent director ownership and find that a long/short portfolio that buys funds with high ownership and sells funds with low ownership generates large and statistically significant abnormal returns only when compensation is low. We also interact ownership by independent and non-independent directors and find that the ownership stakes of these two groups serve as complements rather than substitutes. Finally, when we interact individual fund and fund family ownership by independent directors, we find that while both matter, the effect we identify in this paper is more a family effect than an individual fund effect. Overall, our results suggest that investors are indeed better off if the captains own the ship.

One possible interpretation of this relation between mutual fund performance and director ownership involves directors' private information: directors could rely on their intimate knowledge of the funds they oversee to ex-ante pick the best performing ones and avoid those most likely to perform poorly. However, our empirical findings contradict this hypothesis, as the ownership effect we identify is stronger at the fund family level than at the individual fund level, and past performance does not matter in determining director ownership. Therefore, we find no evidence that directors are investing in those funds that performed well in the past and avoiding those that performed poorly. Another explanation, the previously documented relation between governance structure and mutual fund fees, is partly validated, but it is clearly not the whole story, as fees can only explain a small fraction of our results. A further possibility is that directors serve as better monitors when their ownership stakes are high, either because of a causal link between ownership and effort, or because boards are endogeneously determined, e.g., better directors signal their quality by investing in the funds they oversee, and better funds do the same by requiring that directors do so. Lacking a directly observable proxy for director quality, it is difficult to directly test this hypothesis. Therefore, we cannot rule out the possibility that director ownership is in fact correlated with some other fund characteristic that we do not observe.

Finally, regardless of the interpretation, our results suggest that investors might be well served to take director ownership and compensation into account when making investment decisions. To that end, and also to simplify future research in this area, the addition of this information to mutual fund prospectuses (using some standard format and preferably with more detail than broad ranges of ownership and compensation) appears very useful, and is thus highly recommended.

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Table 1
Mutual fund board characteristics

The tables below report data at the individual fund level for the 25 largest equity mutual fund sponsors as of December 2001. Panel A reports the distribution of board size and the number and percentage of non-independent directors. Panel B reports the distribution of director ownership stakes and total compensation. Since funds do not report exact dollar ownership, but rather ranges (\$0, \$1 to \$10,000, \$10,001 to \$50,000, \$50,001 to \$100,000 or more than \$100,000), we convert these ranges into dollar amounts by assuming that the lowest possible dollar amount is always invested. For each fund in the sample, we then compute the average amount invested by the fund's directors. Panel B describes the distribution of those average across funds. Panel C reports fund level descriptive statistics on the percentage of directors with zero ownership in the funds they oversee.

Panel A: Size of Boards and Percentage of Independents

	Number of:		Non-Independent Percentage
	Board Members	Non-Independents	
Mean	9.47	1.94	19.96
Std. Dev	3.62	1.21	11.05
Minimum	3	0	0
Quartile 1	7	1	14.29
Median	9	2	22.22
Quartile 3	12	3	25
Maximum	25	6	42.86

Panel B: Director Holdings and Compensation

	Independent Director Holdings in:		Non-Independent Director Holdings in:		Director Compensation
	Individual Fund	Fund Family	Individual Fund	Fund Family	
Mean	8,058	67,170	23,027	88,075	137,517
Std. Dev	12,711	30,767	30,478	22,656	77,424
Minimum	0	0	0	1	7,195
Quartile 1	0	38,334	0	75,001	75,968
Median	1,112	72,858	3,334	100,001	121,895
Quartile 3	14,000	95,001	50,001	100,001	197,805
Maximum	62,001	100,001	100,001	100,001	351,937

Table 1, continued

Panel C: Directors with Zero Holdings

	Per Individual Fund: Percent of Directors Holding Nothing		Per Fund Family: Percent of Directors Holding Nothing	
	Independent	Non-Independent	Independent	Non-Independent
Mean	68.36	59.04	20.76	6.28
Std. Dev	32.93	36.51	27.29	17.53
Minimum	0	0	0	0
Quartile 1	50	33.33	0	0
Median	78.57	50	10	0
Quartile 3	100	100	33.33	0
Maximum	100	100	100	66.67

Table 2
Portfolios formed on governance variables: One-way sorts

Annualized mean return (in %), abnormal return (in %) and its t-statistic for portfolios formed on four measures of director incentives (panels A through D), and the proportion of independent directors on the board (panel E). For each governance variable, we sort funds into portfolios based on the quartiles of the variable and report the performance of the four portfolios and a long/short portfolio. The indices (1), (2), (3), and (4) refer to the sorted portfolios, with higher values of the indices designating portfolios of funds with higher values of the indicated governance variable, e.g., ‘(1)’ designates the portfolio of funds in the first quartile of the variable (with low values of the variable). The long/short portfolio is long ‘(4)’ and short ‘(1)’.

Panel A: Portfolios formed on the basis of average ownership in fund family shares by independent directors

	Mean Return	Alpha	t-stat
(1)	0.35	-2.54	-2.95
(2)	1.63	-1.21	-1.50
(3)	0.17	-2.07	-2.22
(4)	1.76	-0.24	-0.47
Lg/Short	1.41	2.30	2.88

Panel B: Portfolios formed on the basis of average ownership in individual fund shares by non-independent directors

	Mean Return	Alpha	t-stat
(1)	0.21	-2.48	-2.63
(2)	3.38	0.23	0.14
(3)	3.09	0.24	0.20
(4)	1.11	-0.37	-0.51
Lg/Short	0.90	2.11	2.44

Panel C: Portfolios formed on the basis of average ownership in individual fund shares by independent directors

	Mean Return	Alpha	t-stat
(1)	0.14	-2.01	-3.01
(2)	0.61	-1.17	-1.31
(3)	2.91	-0.21	-0.19
(4)	1.32	-0.60	-1.17
Lg/Short	1.18	1.42	2.27

Panel D: Portfolios formed on the basis of average compensation of independent directors

	Mean Return	Alpha	t-stat
(1)	0.91	-1.32	-1.45
(2)	1.00	-1.03	-2.54
(3)	2.27	-0.69	-0.97
(4)	1.36	-0.05	-0.06
Lg/Short	0.45	1.27	1.21

Panel E: Portfolios formed on the basis of proportion of independent directors on the board

	Mean Return	Alpha	t-stat
(1)	0.97	-1.01	-2.35
(2)	0.33	-2.13	-2.90
(3)	1.46	-0.36	-0.57
(4)	3.20	-0.16	-0.11
Lg/Short	2.24	0.85	0.63

Table 3
Portfolios formed on compensation and ownership:
Two-way sorts

This table analyses how the ownership stakes of independent directors interact with their compensation. We sort funds into $2 \times 4 = 8$ different portfolios. In panel A, we sort funds first into two groups based on non-independent director compensation, and then into four groups based on their ownership in individual fund shares. In panel B, we sort funds into two groups based on non-independent director compensation, and then into four groups based on their ownership in fund family shares. These double sorts are independent sorts. For each double sort we report the annualized return (in %), abnormal return (in %) and its t-statistic for the 8 portfolios as well as two long/short portfolios. The indices (1), (2), (3), (4), and (1), (2) refer to the sorted portfolios, with higher values of the indices designating portfolios of funds with higher values of the indicated governance variable. The long/short portfolios are denoted '(4) - (1)'.

Panel A: Performance of portfolios formed on compensation and average ownership in individual fund shares by independent directors

		Ownership in individual fund shares				
	Compensation	(1)	(2)	(3)	(4)	(4) – (1)
Mean	(1)	-0.34	-0.50	3.51	2.26	2.61
Return	(2)	1.14	0.99	2.32	0.64	-0.50
Alpha	(1)	-2.31	-2.51	-0.54	-0.06	2.25
	(2)	-1.40	-0.66	-0.04	-0.98	0.42
t-stat	(1)	-2.65	-2.28	-0.31	-0.13	2.20
	(2)	-2.01	-0.63	-0.06	-1.20	0.45

Panel B: Performance of portfolios formed on compensation and average ownership in fund family shares by independent directors

		Ownership in fund family shares				
	Compensation	(1)	(2)	(3)	(4)	(4) – (1)
Mean	(1)	0.35	1.15	0.06	2.78	2.43
Return	(2)	0.17	2.76	0.20	1.12	0.95
Alpha	(1)	-2.78	-1.79	-4.32	0.40	3.18
	(2)	-1.60	0.17	-1.71	-0.64	0.95
t-stat	(1)	-2.65	-1.89	-2.40	0.58	2.64
	(2)	-2.66	0.15	-1.87	-0.92	1.31

Table 4
Portfolios formed on independent and non-independent ownership:
Two-way sorts

This table analyses how the ownership stakes of independent and non-independent directors interact. We sort funds into $2 \times 4 = 8$ different portfolios. In panel A, we sort funds first into two groups based on the ownership stakes of non-independent directors, and then into four groups based on the stakes of the independent directors. In panel B we do the reverse, sorting funds first into two groups based on the ownership stakes of independent directors, and then into four groups based on the stakes of the non-independent directors. These double sorts are independent sorts. For each double sort we report the annualized return (in %), abnormal return (in %) and its t-statistic for the 8 portfolios as well as two long/short portfolios. The indices (1), (2), (3), (4), and (1), (2) refer to the sorted portfolios, with higher values of the indices designating portfolios of funds with higher values of the indicated governance variable. The long/short portfolios are denoted '(4) - (1)'.

Panel A: Performance of portfolios formed on average ownership in individual fund shares by non-independent directors (two groups) then independent directors (four groups)

		Ownership by independent directors				
	Non-indep.	(1)	(2)	(3)	(4)	(4) - (1)
Mean	(1)	-2.16	0.40	5.25	1.53	3.69
Return	(2)	0.57	1.27	2.17	1.63	1.06
Alpha	(1)	-4.94	-1.27	1.35	-2.24	2.70
	(2)	-2.96	-0.57	-0.01	-0.15	2.82
t-stat	(1)	-3.22	-1.43	0.46	-1.66	1.41
	(2)	-2.23	-0.35	-0.01	-0.20	2.10

Panel B: Performance of portfolios formed on average ownership in individual fund shares by independent directors (two groups) then non-independent directors (four groups)

		Ownership by non-independent directors				
	Independents	(1)	(2)	(3)	(4)	(4) - (1)
Mean	(1)	0.40	-1.27	1.49	0.49	0.09
Return	(2)	-0.28	5.16	3.44	1.15	1.43
Alpha	(1)	-1.58	-2.95	-1.09	-1.60	-0.02
	(2)	-4.40	1.44	0.52	-0.29	4.12
t-stat	(1)	-1.64	-3.04	-0.53	-1.35	-0.02
	(2)	-2.64	0.67	0.45	-0.37	2.67

Table 5
Portfolios formed on fund and family ownership:
Two-way sorts

This table analyses how fund and family ownership by independent directors interact. We sort funds into $2 \times 4 = 8$ different portfolios. In panel A, we sort funds first into two groups based on the ownership stakes of independent directors in fund family shares, and then into four groups based their ownership in individual fund shares. In panel B, we sort funds into two groups based on the ownership stakes of independent directors in individual fund shares, and then into four groups based their ownership in fund family shares. These double sorts are independent sorts. For each double sort we report the annualized return (in %), abnormal return (in %) and its t-statistic for the 8 portfolios as well as two long/short portfolios. The indices (1), (2), (3), (4), and (1), (2) refer to the sorted portfolios, with higher values of the indices designating portfolios of funds with higher values of the indicated governance variable. The long/short portfolios are denoted '(4) - (1)'.

Panel A: Performance of portfolios formed on average ownership in fund family shares by independent directors (two groups) then ownership in individual fund shares (four groups)

		Individual fund ownership				
	Fund family	(1)	(2)	(3)	(4)	(4) – (1)
Mean	(1)	-0.49	-0.48	2.54	0.68	1.17
Return	(2)	0.69	0.96	3.04	1.37	0.68
Alpha	(1)	-2.54	-2.35	-1.42	-1.51	1.03
	(2)	-1.56	-0.74	0.39	-0.53	1.03
t-stat	(1)	-2.20	-2.03	-1.38	-1.78	1.06
	(2)	-2.70	-0.73	0.31	-1.01	1.48

Panel B: Performance of portfolios formed on average ownership in individual fund shares by independent directors (two groups) then ownership in fund family shares (four groups)

		Fund family ownership				
	Individual fund	(1)	(2)	(3)	(4)	(4) – (1)
Mean	(1)	-0.64	-0.14	-0.60	2.23	2.87
Return	(2)	2.01	1.82	1.56	1.72	-0.28
Alpha	(1)	-2.72	-1.53	-2.48	0.32	3.04
	(2)	-2.28	-1.18	-1.34	-0.29	1.99
t-stat	(1)	-2.57	-2.48	-2.59	0.30	2.03
	(2)	-2.27	-1.35	-0.82	-0.55	1.77

Table 6
Expense ratio regressions

Analysis of expense ratios charged by the top 25 equity mutual fund sponsors as a function of fund and sponsor characteristics, as well as the incentive structure of the board of directors. The table reports results of OLS regressions. The dependent variable is the expense ratio, measured as the average annual expense ratio of a fund over the period January 2002 to June 2004. Sponsor- and fund- assets under management are both taken as of December 2001. Board size, proportion of independent directors, director ownership and compensation, and the number of funds in the fund family are as of December 2001. The average turnover is computed over the 5-year period 1997 – 2001.

Independent Variables	(1)	(2)	(3)
Intercept	1.70 (2.84)	2.67 (7.06)	3.12 (4.32)
Log of individual fund assets	-0.02 (-0.83)	0.04 (2.00)	0.04 (1.74)
Log of fund family assets	-0.16 (-3.96)	-0.24 (-5.11)	-0.24 (-4.67)
Number of funds in family	-0.02 (-1.79)	0.00 (0.24)	0.01 (0.63)
Average turnover	0.11 (1.91)	0.13 (1.96)	0.15 (2.36)
Board size	0.03 (2.59)	0.05 (3.60)	0.05 (3.86)
Proportion of independent directors	-0.34 (-1.63)	0.27 (0.41)	0.73 (0.99)
Log of independent director compensation	0.09 (1.56)		-0.09 (-1.06)
Log of non-independent director fund ownership		-0.02 (-2.6)	-0.02 (-3.23)
Log of independent director fund ownership			0.01 (1.97)
Log of independent director family ownership			0.03 (0.85)
R^2	0.347	0.563	0.596

Table 7
Board characteristics and before-fee returns

Annualized mean before-fee return (in %), abnormal before-fee return (in %) and its t-statistic for portfolios formed on three measures of director ownership (panels A through C). For each ownership measure, we sort funds into portfolios based on the quartiles of the measure and report the performance of the four portfolios and a long/short portfolio. The indices (1), (2), (3), and (4) refer to the sorted portfolios, with higher values of the indices designating portfolios of funds with higher director ownership, e.g., ‘(1)’ designates the portfolio of funds in the first quartile of ownership (with low ownership). The long/short portfolio is long ‘(4)’ and short ‘(1)’.

Panel A: Portfolios formed on the basis of average ownership in fund family shares by independent directors

	Returns Before Fees			Fees
	Mean Return	Alpha	t-stat	
(1)	1.50	-1.40	-1.62	1.14
(2)	2.80	-0.04	-0.05	1.18
(3)	1.42	-0.81	-0.87	1.23
(4)	2.43	0.42	0.85	0.69
Long/Short	0.93	1.82	2.28	-0.45

Panel B: Portfolios formed on the basis of average ownership in individual fund shares by non-independent directors

	Returns Before Fees			Fees
	Mean Return	Alpha	t-stat	
(1)	1.42	-1.27	-1.35	1.22
(2)	4.17	1.02	0.62	0.78
(3)	3.89	1.04	0.90	0.80
(4)	1.93	0.45	0.63	0.85
Long/Short	0.52	1.73	2.00	-0.37

Panel C: Portfolios formed on the basis of average ownership in individual fund shares by independent directors

	Returns Before Fees			Fees
	Mean Return	Alpha	t-stat	
(1)	1.00	-1.15	-1.72	0.86
(2)	1.63	-0.15	-0.17	1.03
(3)	3.83	0.70	0.62	0.93
(4)	2.05	0.13	0.26	0.76
Long/Short	1.05	1.29	2.06	-0.10

Table 8
Explaining the Governance Variables

OLS regressions of log governance variables as of December 31, 2001 on fund characteristics. Panel A reports the results of regressions of the three ownership measures and director compensation on the annualized abnormal return of the fund in the five years 1997 - 2001. Panel B includes other fund characteristics: log of fund assets, log of family assets, the number of funds in the family (as of December 31, 2001), and average annual turnover, average annual expense ratio, past abnormal return and volatility (all computed over 1997-2001). Panel C includes the other governance variables as additional regressors, as well as board size and the percentage of independent directors.

Panel A: Governance variables and past performance

Independent Variables	Log Independent director fund ownership	Log Non-independent director fund ownership	Log Independent director family ownership	Log Compensation
Intercept	4.55 (8.48)	3.96 (3.77)	10.61 (37.06)	11.60 (131.52)
Past abnormal return	0.07 (0.81)	0.27 (1.46)	-0.04 (-0.86)	-0.00 (-0.26)
R^2	0.005	0.030	0.006	0.001

Panel B: Governance variables and fund characteristics

Independent Variables	Log Independent director fund ownership	Log Non-independent director fund ownership	Log Independent director family ownership	Log Compensation
Intercept	-3.62 (-1.05)	5.46 (0.80)	3.84 (1.99)	8.23 (15.76)
Log of fund assets	1.26 (4.84)	0.83 (2.16)	0.16 (1.11)	0.04 (0.93)
Log of family assets	-0.14 (-0.33)	-0.30 (-0.32)	0.69 (2.89)	0.24 (3.65)
Number of funds in family	-0.09 (-0.95)	0.05 (0.19)	-0.07 (-1.20)	0.04 (2.79)
Turnover	-0.30 (-0.40)	-0.63 (-0.57)	-0.44 (-1.08)	-0.08 (-0.69)
Expense ratio	0.22 (0.22)	-4.44 (-2.34)	0.87 (1.50)	0.43 (2.72)
Past abnormal return	-0.06 (-0.74)	0.07 (0.38)	-0.12 (-2.50)	-0.02 (-1.26)

Past return volatility	3.53 (2.22)	2.82 (1.16)	-1.43 (-1.61)	0.01 (0.04)
R^2	0.242	0.237	0.180	0.360

Panel C: Relation among governance variables

Independent Variables	Log Independent director fund ownership	Log Non-independent director fund ownership	Log Independent director family ownership	Log Compensation
Intercept	-1.58 (-0.15)	8.31 (0.71)	-7.03 (-1.50)	7.51 (9.75)
Independent director fund ownership		0.36 (2.82)	0.09 (1.63)	-0.01 (-0.49)
Non-indep. director fund ownership	0.28 (2.82)		0.69 (2.89)	-0.01 (-0.87)
Independent director family ownership	0.42 (1.63)	0.40 (1.35)		0.12 (4.61)
Compensation	-0.52 (-0.49)	-1.03 (-0.86)	1.95 (4.61)	
Board size	-0.14 (-0.70)	0.32 (1.40)	0.11 (1.15)	0.03 (1.18)
Percent. Independent	-26.49 (-2.76)	22.60 (2.03)	6.12 (1.33)	-2.31 (-2.06)
Log of fund assets	0.28 (0.85)	0.60 (1.66)	0.13 (0.90)	0.00 (0.11)
Log of family assets	1.33 (1.37)	-0.85 (-0.77)	-0.99 (-2.29)	0.40 (3.93)
Number of funds in family	-0.41 (-1.83)	0.21 (0.83)	0.13 (1.24)	-0.07 (-2.88)
Turnover	-0.34 (-0.37)	-0.41 (-0.40)	0.71 (1.72)	-0.12 (-1.14)
Expense ratio	1.86 (1.09)	-5.47 (-2.97)	0.18 (0.23)	-0.11 (-0.57)
Past abnormal return	0.21 (1.42)	0.04 (0.24)	-0.14 (-2.10)	0.02 (0.95)
Past return volatility	1.65 (0.80)	3.50 (1.51)	-1.74 (-1.88)	0.18 (0.74)
R^2	0.393	0.384	0.464	0.699

Table 9
Two-Step Alpha Regressions

Results of regressions of fund-specific abnormal returns on board characteristics that take into account the estimation risk of the alphas. We first estimate fund-specific alphas by running time series regressions of fund returns on the three Fama-French factors and a momentum factor. We then regress these fund-specific alphas on various board characteristics and compute t-statistics that incorporate the first step estimation risk of the alphas. We assume heteroskedastic errors with the residual variance of each fund-specific alpha proportional to its own variance. The procedure weighs more heavily those fund alphas that were more precisely estimated. We use standard OLS coefficient estimates because a full WLS estimation is not feasible here (since we have more funds than months). Panel A provides the results of univariate regressions, and panel B the results of interaction regressions. The robust standard errors are in parentheses.

Panel A: Univariate regressions

Independent Variables	2A	2B	2C	2D
Intercept	-1.59 (-4.45)	-1.04 (-4.78)	-0.65 (-1.84)	
Independent director family ownership	0.43 (3.44)			
Non-independent director fund ownership		0.39 (3.12)		
Independent director fund ownership			0.05 (0.42)	
Compensation				0.36 (2.21)
R^2	0.029	0.035	0.001	0.020

Table 9, continued

Panel B: Interaction terms

Independent Variables	3A	3B	4A	4B	5A	5B
Intercept	-0.67 (-1.74)	-1.46 (-3.94)	-0.53 (-1.44)	-1.02 (-4.68)	-0.54 (-1.52)	-1.59 (-4.16)
(Indep. fund ownership) × (low compensation)	-0.05 (-0.41)					
(Indep. fund ownership) × (high compensation)	0.17 (0.95)					
(Indep. family ownership) × (low compensation)		0.29 (2.22)				
(Indep. family ownership) × (high compensation)		0.44 (2.75)				
(Indep. fund ownership) × (low non-ind. fund ownership)			-0.14 (-1.06)			
(Indep. fund ownership) × (high non-ind. fund ownership)			0.26 (1.72)			
(Non-ind. fund ownership) × (low indep. fund ownership)				0.22 (1.27)		
(Non-ind. fund ownership) × (high indep. fund. ownership)				0.49 (3.24)		
(Indep. fund ownership) × (low indep. family ownership)					-0.17 (-0.96)	
(Indep. fund ownership) × (high indep. family ownership)					0.15 (1.30)	
(Indep. fund ownership) × (low indep family ownership)						0.43 (2.19)
(Indep. fund ownership) × (high indep family ownership)						0.43 (3.43)
R^2	0.010	0.033	0.031	0.042	0.020	0.029

Table 10
Director Ownership and Performance Persistence

Results of regressions of January 2002 to June 2004 fund-specific abnormal returns on past (January 1997 to December 2001) fund-specific abnormal returns interacted with December 2001 director ownership. To take into account the estimation risk of the alphas, we first estimate fund-specific alphas by running time series regressions of fund returns on the three Fama-French factors and a momentum factor. We then regress these fund-specific alphas on past alphas interacted with director ownership and compute t-statistics that incorporate the first step estimation risk of the alphas. We assume heteroskedastic errors with the residual variance of each fund-specific alpha proportional to its own variance. The procedure weighs more heavily those fund alphas that were more precisely estimated. We use standard OLS coefficient estimates. Robust standard errors are in parentheses.

Independent Variables	(1)	(2)	(3)	(4)
Intercept	-1.32 (-4.19)	-1.33 (-4.27)	-1.43 (-4.42)	-1.32 (-4.24)
Prior alpha	0.21 (3.33)	0.17 (2.53)	0.18 (2.65)	0.15 (2.23)
Prior alpha if independent director fund ownership is above median, 0 otherwise		0.08 (1.44)		
Prior alpha if non-independent director fund ownership is above median, 0 otherwise			0.17 (2.52)	
Prior alpha if independent director family ownership is above median, 0 otherwise				0.12 (2.14)
R^2	0.105	0.112	0.126	0.120