

# Organizational Form, Board Structure, and Fund Manager Turnover \*

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## Abstract

We examine the relation between organizational structure, board composition, and managerial turnover in a large sample of actively managed equity mutual funds. Consistent with the hypothesis that agency conflicts are more acute in mutual funds managed by public investment companies, we find that fund performance following replacement decisions increases more in private than public sponsor funds and that ownership structure plays a pivotal role in the fund manager turnover decision. Specifically, we find a positive relation between public ownership and the likelihood of manager replacement; public sponsors are more likely to terminate managers of underperforming funds as their private counterparts. Interacting organizational type with fund returns, we also find that public sponsors are also more sensitive to prior fund performance. Additional testing suggests a higher likelihood of fund manager replacement when mutual fund boards are large and more independent. Overall, our results indicate that organizational form and board structure matter in the labor market for mutual funds.

*Keywords:* Mutual funds; board structure; organizational structure; managerial turnover

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## 1. Introduction

Organizational form, or the concentration of ownership and how that ownership can be transferred, is a long running topic of interest among financial researchers (see e.g., Berle and Means, 1932). From a corporate governance perspective, the primary interest is whether the effectiveness of internal and external control mechanisms varies across organizational structures.<sup>1</sup> Despite this interest, our understanding of control differentials among firms that are publicly held and those that are privately owned remains limited, primarily because market-based performance metrics are generally not available for privately held firms. Mutual fund manager replacements provide a rare opportunity to test the impact of organizational form on internal control mechanisms because all investment companies, whether publicly held or privately owned, are required to provide market and operational performance data on the funds they sponsor. Mutual funds also have the added benefit of lower endogeneity concerns since sponsor organizational type is determined before funds are created and managers are appointed. Further, because sponsors and boards typically oversee multiple funds it is unlikely that an individual fund's performance impacts sponsor ownership or mutual fund board structures.

In this paper, we examine how organizational structure influences decisions to reward and punish managers using a sample of actively managed equity mutual funds. In doing so, we attempt to answer the following three questions: (i) Does organizational structure matter in the labor market for mutual fund managers?, if so, (ii) How does organizational structure impact the relationship between fund performance and managerial turnover?, and (iii) Are boards, through their monitoring of operational policies, related to the turnover decision? Overall, our results suggest that fund performance following replacement decisions increases more in private than public sponsor funds and that ownership structure plays a pivotal role in the fund manager turnover decision. Specifically, we document a higher likelihood of fund manager replacement when sponsor firms are publicly held. Interacting organizational type with fund returns, we also find that public sponsors are also more sensitive to prior fund performance. When examining mutual fund board structure, we find that managers of funds with large

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<sup>1</sup> In this paper, the terms organizational form and organizational structure refer to public vs private ownership of the fund sponsors and not the mutual funds. Similarly, the terms public funds and private funds refer to the ownership type of the fund sponsor.

boards are more likely to be replaced. We also report a positive relation between the number of funds boards oversee and fund manager replacement. Similarly, our results suggest that there is a positive and significant impact of increasing board independence, the number of outside directorships, and director compensation on replacement likelihoods.

The ownership structure of publicly held sponsors tends to be more atomistic and therefore suffers more from the effects of agency costs than does the ownership of privately held ones. The characteristics of diffused equity ownership, such as mandatory disclosure requirements and financial analyst coverage, lead publicly traded firms to focus excessively on short-term performance (Porter, 1992; Froot, Perold, and Stein, 1992). In addition, heavy scrutiny from investors may prevent future investment and growth by influencing management decision making (Rappaport, 1990). Managers of publicly held firms are also more likely to focus on short horizon projects because their compensations and positions are tied to their immediate performance (Bushee, 2001; Shleifer and Vishney, 1989). Alternatively, the operating strategies of private sponsor funds may be more complex than public ones and incorporate concerns about firm and founder reputation in addition to shorter term measures of performance (see e.g., Anderson, Mansi, and Reeb, 2003). Consistent with this rationale, Adams, Mansi, and Nishikawa (2009) note that organizational structure plays an important role in operating decisions in the mutual fund industry. Furthermore, Ferris and Yan (2009) report that private fund sponsors charge lower fees and are less likely to be involved in fund scandals that harm sponsors' reputations. Overall, the literature suggests that privately held firms have different incentive structures than publicly owned firms and therefore should differ in their treatment of internal control mechanisms.

Sirri and Tufano (1998) report a positive relation between prior period fund performance and subsequent cash inflows. Because fund sponsor revenues are a function of fund size and fees, public and private sponsors alike have incentives to monitor fund manager performance. Khorana (1996) shows that prior poor performance is associated with increased probability of fund manager turnover, suggesting sponsors react to protect shareholder wealth and to maximize sponsor revenues. The greater agency issues associated with publicly traded sponsor firms provide incentives for sponsor managers to be more aggressive in maximizing current period cash flows in order to signal their managerial value to sponsor shareholders. Because of the differing incentive structures of private and public sponsors, we hypothesize that private

sponsors evaluate fund managers more subjectively and not exclusively on shorter term measures of performance. Consistent with our rationale, we find a significant and economically important link between mutual fund management turnover and organizational form. Specifically, we report an inverse relation between private ownership and the likelihood of manager replacement.

We also examine the role of mutual fund boards of directors in the labor market for mutual fund managers. While the decision to hire, fire, and reward fund managers is made by sponsors, boards of mutual funds may influence the process since inadequate monitoring and evaluation of fund performance can permit an inferior fund manager to erode shareholder wealth.<sup>2</sup> On the firm level, Weisbach (1998) posits that as boards become increasingly independent of managers, their monitoring effectiveness increases thereby decreasing managerial opportunism and enhancing overall firm performance. Yermack (1996) argues that smaller boards are less myopic than larger boards and as a result are better monitors.<sup>3</sup> In contrast to corporations, mutual fund boards often monitor several funds within the fund complex overseen by a particular fund sponsor. Fich and Shivdasani (2006) argue that busy boards are less effective than non-busy boards, suggesting larger boards might be more effective monitors when overseeing several funds. Since directors are compensated for each individual fund, aggregate compensation can be significant for directors in large fund complexes. Khorana, Tufano, and Wedge (2007) point out that the theoretical relation between director compensation and performance is not clear. Highly paid directors may be reluctant to challenge management for fear of losing their positions. Alternatively, if there is a competitive market for superior monitors then high levels of compensation may reflect superior monitoring ability. Similarly, the number of outside directorships held by board members may be related to the quality of monitoring. Ferris, Jagannathan, and Pritchard (2003) argue that increased outside directorships are associated with superior monitoring. Therefore, we examine the relation between organizational structure and management turnover taking into consideration internal governance mechanisms such as board structure and individual director attributes.

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<sup>2</sup> Mutual fund boards negotiate with investment management companies to provide needed services on an annual basis. Although rare, boards can punish sponsors by not renewing the management contract. For a detailed discussion see Khorana, Tufano Wedge (2007).

<sup>3</sup> Alternatively, Anderson, Mansi, and Reeb (2004) find that larger board are associated with a lower cost of debt financing, evidence that monitoring matters more to debt holders than equity holders.

Using a sample of 3,223 funds from 102 large investment management companies covering the period from 1999 through 2007, we find that the probability of fund manager replacement increases about 14 percent when sponsor firms are publicly held. These results are robust to several specifications of performance, clientele, and managerial effects. We also interact sponsor ownership type and prior fund performance and find that public sponsors are more sensitive to fund performance than their private counterparts. Further testing indicates that fund performance following fund manager replacements increases more in privately sponsored funds, suggesting that private sponsors are better able to differentiate between fund manager luck and ability.

We also examine the relation between board structure and fund manager turnover likelihood. Using hand collected board of director's data consisting of 20,733 fund-year observations, we document a significant and positive association between board independence and replacement likelihood.<sup>4</sup> Similar to Ding and Wermers (2006), we find that managers of funds with large boards are more likely to be replaced. In contrast to Fich and Shivdasani (2006), we find that boards that oversee a large number of funds or have directors with more outside directorship appointments, are associated with a higher likelihood of fund manager replacements. We also consider individual director attributes and find higher levels of director compensation are associated with increased likelihood of fund manager replacement. Overall, the results suggest that internal governance mechanisms are necessary vehicles for a well functioning mutual fund labor market.

Our research contributes to the literature in three important ways. First, to the best of our knowledge this is the first empirical evidence that provides a link between organizational form and managerial turnover. This separation of organizational form is necessary and relevant because of the sheer size of the private market and the differing agency costs. The extant managerial turnover literature is almost exclusively limited to replacements that occur in public firms, and yet private firms control considerable resources in most economies. Second, understanding the relation between organizational form and managerial turnover in the mutual fund industry is important because lower level managerial performance (e.g., fund managers) critically relates to the profitability of both mutual funds and the companies that sponsor them.

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<sup>4</sup> In terms of economics significance, a one standard deviation increase in board independence results in an estimated 7% increase in the likelihood of fund manager replacement.

If organizational structure influences how fund sponsors react to fund manager under or over performance then organizational structure is an important consideration for shareholders of actively managed funds. Third, our study is the first that adequately links internal governance mechanisms such as board characteristics and compensation with managerial separation.

The remainder of the paper is organized into four sections. Section 2 discusses the data generation process as it related to firm organization and manager replacement. Section 2 also presents the descriptive statistics and the performance measures used. Section 3, provides the multivariate results of the study while section 4 concludes.

## **2. Data and Variables Measures**

### **2.1 Sample**

We utilize two primary databases in our analysis: the Center of Research in Security Prices (CRSP) Survivor Free Mutual Fund database and the Morningstar database. Both databases contain monthly class level returns and yearly information including total net assets, 12b-1 fees, expense ratios, age, purchase constraints such as institutional share classes, and historical returns. We rank the investment management companies listed in CRSP Mutual Fund database from largest to smallest in 2002 according to the size of fund assets under management and select the 55 largest fund families. In order to avoid a large firm bias we also obtain data for 47 small and midsize investment companies as in Adams, Mansi, Nishikawa (2009) mutual fund family. The resulting database contains 102 investment management companies and represents over 80% of all mutual fund investments in 2002, the midyear of our sample. We determine whether the investment companies are publicly or privately held using the CRSP stock database to identify publically traded sponsors. We also refer to Dun and Bradstreet's Million Dollar Directory and Hoover's Online to determine whether an investment company is a subsidiary of a publically traded firm. For funds not listed in the aforementioned databases, we visit their website to determine ownership status, or in the case of subsidiaries their parent's ownership status. For each fund we also gather sponsor level information including the number of funds overseen and the total net assets under management.

The Morningstar and CRSP databases list information on a per share class basis. Since the majority of mutual funds have multiple share classes that differ primarily in expenses, loads,

and clientele, we combine the different classes into a single fund. Specifically, we compute fund level data for a given fund using the summation of the weighted class level data items, with the weight being the total net assets of each share class divided by total assets for the entire fund. We also eliminate exchange traded funds where the relation between fund and manager performance is not clear.

## 2.2 Measuring Fund Manager Turnover

We identify fund manager turnover by noting those instances in the Morningstar Principia database where the current fund manager was not the fund manager of record in the preceding year. For completeness, we also verify fund manager replacement using the CRSP mutual fund database.<sup>5</sup> It is common practice in the mutual fund industry to employ multiple fund managers for either an individual fund or a group of funds (for example, in 2002 approximately 57% of all funds were team managed). Therefore, we include a dummy variable that takes on a value of one when funds are team managed. We identify fund manager replacement in team managed funds based on the start date of the longest tenured manager.

Manager replacement occurs for a variety of reasons including voluntary resignations, forced removals, retirements, promotions within the fund family, and reassignments to other positions within the family. As a result, fund manager replacements can be associated with under, over, or average performance (e.g., Khorana, 1996). Because fund sponsors do not identify publicly the nature of the replacement, we follow Khorana (2001) and categorize fund manager replacements as forced when any of the performance measures used is negative. In other words, our analysis using this proxy will not estimate the likelihood of forced turnovers per se, but rather the likelihood of turnover in underperforming funds. We also utilize a calendar year matched control sample of funds that did not experience fund manager replacement in the preceding three years.

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<sup>5</sup> We compare the data gathered from the CRSP Mutual Fund database with the Morningstar Principia mutual fund database and find 2,977 discrepancies (14% of overall sample). Our analysis of these discrepancies indicates that most errors are due to differences in the fiscal and calendar year ends of funds. We address this issue by repeating our tests for each database separately and by eliminating any discrepancies. Our results are robust to each treatment. We report Morningstar results since Morningstar data is more commonly used by investors and the financial media and more consistent than CRSP (see e.g., Massa, Reuter, Zitzewitz 2009).

### 2.3 Measuring Performance Variables

Sirri and Tufano (1998) report a positive relation between performance and cash flows into mutual funds. Since fund sponsors are compensated with fees based on portfolio size, they have powerful incentives to monitor manager performance. When considering whether to replace a manager Morck, Shliefer, and Vishny (1989) argue that firms compare their manager's performance against the performance of other firms within the same industry. Similarly, Parrino (1997) documents an increased likelihood of manager replacement when reliable benchmarks are available. We follow Khorana (1996) and employ four benchmarks to measure fund performance. First, we compute each fund's objective adjusted return using the difference between the mean annual expense adjusted return of each fund's investment objective grouping and the corresponding return of each fund. That is,

$$OAR_{i,t} = R_{i,t} - R_{o,t} \quad (1)$$

where  $OAR_{i,t}$  is the investment objective adjusted return of fund  $i$  in year  $t$ ,  $R_{i,t}$  is the return of fund  $i$  in year  $t$ , and  $R_{o,t}$  is the return of an equally weighted index of funds with the same investment objective  $o$ , in year  $t$ . Second, since the objective adjusted return does not account for risk, we compute each fund's objective based alpha using an equally weighted index of funds with the same investment objective. The objective based alpha,  $\alpha_i$ , for each fund is computed using monthly data over 2 and 3 year intervals. That is,

$$(R_{i,m} - R_{f,m}) = \alpha_i + \beta_1(R_{o,m} - R_{f,m}) + e_{i,m} \quad (2)$$

where  $R_{i,m}$  is the return of fund  $i$  in month  $m$ ,  $R_f$  is the 30-day T-bill return,  $R_{o,m}$  is the return of an equally weighted index of funds with the same investment objective  $o$ , in month  $m$ . While the appropriate performance benchmark for each fund should be based on similar funds (e.g., those with the same investment objective) it is possible that fund sponsors and investors consider broader performance measures. Therefore, in a third specification, we compute Jensen's alpha using the S&P 500 as the benchmark index. Finally, for completeness we compute each fund's Fama-French three factor alpha. The latter alpha measures are computed similarly to the investment objective alpha. The specifications for the latter two models are



$$(R_{i,t} - R_{f,t}) = \alpha_i + \beta_1(R_{index,t} - R_{f,t}) + e_{i,t} \quad (3)$$

$$(R_{i,t} - R_{f,t}) = \alpha_i + \beta_1(R_{index,t} - R_{f,t}) + \beta_2(SMB_t) + \beta_3(HML_t) + e_{i,t} \quad (4)$$

where  $R_{index}$  is the return on the S&P 500 index,  $R_f$  is the 30-day T-bill return,  $SMB_t$  (small minus big) is size factor that captures the stock return performance of small firms relative to large firms, and  $HML_t$  (high minus low) is the relative return of value and growth stocks. The latter two alpha measures are computed similarly to the investment objective alpha (e.g. over 2 and 3 year periods using monthly data).

## 2.4 Measuring Board Structure Variables

For our board structure variables, we collect calendar year end data from the statement of additional information (SAI) that is included in each fund's prospectus (Form 485). For each of the collected trustee level data items, we compute board level values by computing the average of each trustee level variable. We compile data on board size, or the number of trustees serving on each fund's board, and manually search each Form 485 to ascertain whether the board has a chairperson who is an independent director (Independent Chair).<sup>6</sup> The sample generation process results in three board structure variables (board size, percentage outsider, and independent chairperson dummy) and four trustee attribute measures (number of funds overseen, trustee compensation, trustee fund family share ownership, and outside director appointments) for each fund.

We determine director independence in accordance with SEC (2004) regulations. Under these regulations, independence indicates that an outsider is not an employee, not an employee family member, not an employee or a 5% shareholder of a registered broker-dealer, and is not affiliated with any recent legal counsel to the fund. The SAI also lists each trustee's employment history for the preceding five years. From the employment history, we count the number of outside directorships excluding appointments to not-for-profit organizations and board appointments associated with a trustee's primary employer. We also record from each Form 485 the number of funds each director oversees within the fund family. Starting in 2002, each Form

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<sup>6</sup> We redo the analysis using board size as the number of independent directors and find similar results.

485 lists the dollar value, in specific ranges, of all funds owned by each trustee in the fund family. Further, we obtain the overall compensation received for all funds overseen within the same fund family for both independent and non-employee inside directors. The sponsor compensates employees who serve on the mutual fund board. The definitions for the variables used in the analysis are provided in Table 1.

**[Insert Table 1 about here]**

## **2.5 Descriptive Statistics**

Table 2 provides descriptive statistics for the sample at the fund family level. Panel A reports the distribution of investment management companies' assets segmented by ownership form. Included are the mean, median, and standard deviation for total net assets under management, market share, growth rate, and number of funds. The results provide a mixed view of the variables due to the skewness of the variables. On average, private investment companies have about 84% larger asset base than public firms (\$55 billion vs \$30 billion) and similar percentage market share (1.47% vs 0.80%). However, the reverse is true for median values, which have total net assets and market share that are larger for public than private sponsors (\$15 billion vs \$8 billion and 0.39% vs 0.21%). However, the mean and median two year growth rates in total net assets under management are greater for private sponsors. Public sponsors appear to provide their clients more investment options, offering about 50% more funds on average than private sponsors (38 vs 26 funds), and the difference is even more noticeable when medians are compared (33 vs 12 funds).

**[Insert Panels A of Table 2 about here]**

Panel B presents the distribution of public and private investment management companies by deciles for the sample. Overall, for the years 1999 through 2007, public investment companies represent 63.7% of the sample while private investment companies account for 36.3%. Public sponsor funds are found in greater proportion than their overall representation in most of the larger deciles (5, 6, 7, 8 and 9), while private sponsor funds are found in greater

proportions in the smaller deciles (1, 2, 3, and 4). Panel B also presents the top and bottom five percent size groupings. The data indicates that publicly owned status is less prevalent with the very smallest and largest sponsors, while the opposite occurring for the private funds. Overall, the descriptive statistics presented suggest that public and private investment management companies differ in terms of characteristics such as size, market share, and fund offerings.

**[Insert Panels B of Table 2 about here]**

Next, we investigate public and private investment companies at the fund objective level. Panel A of Table 3 lists the mean, median, and standard deviations of relevant fund measures and ownership status for the overall sample. Private funds represent the largest asset bases in the dataset with a median value of about 40% more than public sponsor funds. On average, expense ratios, front load fees, and 12B-1 fees are slightly higher for public sponsor funds. Managers appear to turnover securities slightly more in private funds. In terms of performance, private funds had higher objective adjusted returns, objective alphas, Jensen's alphas, and Fama-French three factor alphas than public sponsored funds. Manager tenure is similar in private and public sponsored funds.<sup>7</sup>

In terms of board characteristics, the data indicate that boards of public sponsor mutual funds are similar to private sponsor fund boards. The boards in public sponsored funds are slightly smaller and have a similar proportion of independent directors. In addition, private and public boards have a similar incidence of independents chairs (40% vs 34%). The differences in public and private boards are more pronounced at the individual director level. Directors of public mutual fund boards have fewer outside directorships (i.e., serve on fewer boards of publically traded firms) and have less ownership in the sponsor's funds than private fund directors. The greatest difference in public and private boards is that private fund directors have unexplained compensation levels that are much lower than public funds.

**[Insert Panel A of Table 3 about here]**

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<sup>7</sup> Although not reported, manager tenure in the control sample of funds not experiencing turnover varies only slightly across organization type, suggesting policies such as mandatory periodic fund manager rotations are similar for public and private sponsors.

Panel B examines the incidence and frequency of fund manager replacement for the data used in the analysis for public, private, and all mutual funds. Fund manager replacement occurs in 2,538 (71%) public funds and 1,038 (29%) private funds during the sample period from 1999 through 2007. They appear to be evenly distributed across both public and private samples, with most of the replacements occurring in the years 2003, 2005 and 2006. Panel C provides data on replacements by fund objective. Public replacements have slight variations across each investment objective category, with the percentage of replacements in each category about the same as the representation of each category in the overall sample. Private replacements, however, occur less often in the growth and income category and more often in sector funds when compared to each category's representation in the overall sample. Overall, the descriptive statistics presented in Table 3 suggest that fund level characteristics vary across fund family ownership structure and investment objective.

**[Insert Panels B and C of Table 3 about here]**

### **3. Empirical Results**

#### **3.1 Logistic Analysis of Fund Manager Replacement**

We provide multivariate logistic analysis to examine the relation between investment company ownership, board structure, and fund manager replacement while controlling for investment company, investment objective, and fund performance factors. To test the hypothesis that sponsor level ownership structure is related to the incidence of fund manager changes, we apply the following logit model<sup>8</sup>

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<sup>8</sup> We compute fund clustered standard errors as in Petersen (2009). However, clustered standards errors may be problematic when the number of observations within clusters is small (Donald and Lang, 2007). Therefore, we repeat the analysis using robust standard errors and find similar results.

$$E(\text{ManagerChange}_{i,t}) = \left( \begin{array}{l} 1 + \exp(-\beta_0 - \beta_1(\text{PublicOwnership}_{i,t})) \\ -\beta_{2-9}(\text{BoardStructure}_{i,t}) - \beta_{10}(\text{FundsPerformance}_{i,t}) \\ -\beta_{11-13}(\text{FundManager}_{i,t}) - \beta_{14-15}(\text{Clientele}_{i,t}) \\ -\beta_{16}(\text{LnFundTNA}_{i,t}) - \beta_{17}(\text{LnSponsorTNA}_{i,t}) \\ -\beta_{18-38}(\text{InvestmentObjective}_{i,t}) - \beta_{39-46}(\text{Year}_t) \end{array} \right)^{-1} \quad (3)$$

where  $\text{ManagerChange}_{i,t}$  is dummy variable that takes on a value of one if fund  $i$  experiences managerial turnover in year  $t$ , and zero otherwise.  $\text{PublicOwnership}_{i,t}$  is a dummy variable that takes on a value of one if the investment firm is publicly held and zero otherwise.  $\text{BoardStructure}$  is comprised of Board Size, or the natural logarithm of the total number of directors, Independent Directors, or the proportion of outside or independent directors to total directors, Independent Chair, which represent each board's independent chair status, Funds Supervised, or the logarithm of the average number of funds supervised by each director, and Other Directorships, or the number of outside directorships at privately and publicly held corporations. We exclude outside directorships at not for profit organizations such as hospitals, charities, and universities and directorships associated with a trustee's primary employment. We also include director ownership of mutual funds within the fund family (Family Ownership), and excessive director compensation (Unexplained Director Compensation).<sup>9</sup>

$\text{FundsPerformance}_{i,t}$  is comprised of one of four annualized performance measures computed over the 24 months prior to the observation year. These include objective adjusted return (Objective Adjusted Return<sub>t-2,t-1</sub>), investment objective alpha (Objective Alpha<sub>t-2,t-1</sub>), Jensen's alpha (Jensen's Alpha<sub>t-2,t-1</sub>), or Fama-French three Factor alpha (FF 3-factor Alpha<sub>t-2,t-1</sub>).<sup>10</sup> The ownership and board results in all regressions are robust to each fund performance measure as well as the performance measures computed over the prior 36 months. For brevity, we primarily report the objective adjusted return results.  $\text{FundManager}$  consists of three fund manager characteristics: asset turnover over the preceding year (Asset Turnover<sub>t-1</sub>), current or in the case of managerial turnover, the outgoing fund manager's tenure in years (Manager

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<sup>9</sup> Specifically, we employ Tufano and Sevick's (1997) measure of relative director compensation (equation 2, page 338) scaled per \$100,000. This measure is the residual obtained from the following specification:

$$\text{Director Comp}_i = \beta_0 + \beta_1 (\text{No. of funds overseen by a director}_i) + \beta_2 (\text{TNA}_i \text{ of funds overseen by a director}_i) + \epsilon_i$$

Tenure), and a dummy variable for team managed funds (Team Managed).<sup>11</sup> *Clientele* is comprised of two measures: fund's expense ratio in the prior year ( $Expense\ Ratio_{t-1}$ ) and proportion of shares held by institutions ( $Institutional\ Holding_{t-1}$ ).<sup>12</sup> All models include index fund dummies as well as investment objective ( $Investment\ Objective_{i,t}$ ) and year ( $Year_t$ ) fixed effects.

Table 4 provides logit regression results for five specifications. Our primary variables of interest are the investment management company ownership type (Public), and the board structure measures. A positive value on ownership type indicates lower probability of turnover with private ownership and higher probability of turnover with public ownership. All models include the fund manager and clientele variables listed above. Model 1 considers public ownership status.<sup>13</sup> Model 2 focuses on each fund's primary board level variables. Model 3 includes the board measures utilized in Model 2 and also incorporates average number of sponsor funds supervised by each director, average number of outside directorships held by each board member, mutual fund family ownership, and unexplained director compensation. Model 4 reports the estimated coefficients for the sponsor ownership structure and primary board characteristics. Model 5 combines models 1 and 3 in one single specification. We control for fund TNA and family TNA in all models.

**[Insert Table 4 about here]**

The results indicate that public investment management company ownership is associated with higher probability of turnover, results that are statistically significant at 1% level. Model 1 reports that prior performance, measured using investment objective adjusted return ( $Objective\ Adjusted\ Return_{t-2,t-1}$ ), is negatively and significantly related to fund manager replacement. This result supports Khorana (1996) who finds fund managers are more likely to be replaced when performance is poor. However, unlike Khorana (1996) Table 4 reports that portfolio changes ( $Asset\ Turnover_{t-1}$ ) are negatively and significantly related to the likelihood of subsequent

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<sup>11</sup> In unreported regressions we also include fund return volatility and find similar results.

<sup>12</sup> We also consider fund front end sales charge and 12B-1 marketing fees ( $12B-1\ Fee_{t-1}$ ) and find similar results.

<sup>13</sup> We also include in each regression model performance measures computed over the 24 months prior to the turnover month ( $t-25,t-1$ ) and over the 2 years preceding the turnover calendar year end ( $t-1,t$ ) as well as the 24 months period beginning the year prior to the turnover ( $t-2,t-1$ ). Our findings are robust to each performance measurement period. Since many of our variables are only available on a calendar year end basis, we report the results for the prior calendar year end performance measures.

period replacement, suggesting that managers with more active trading strategies are less likely to be replaced since they have better private information and/or greater stock picking and market timing abilities (Ding and Wermers, 2005). The manager tenure estimated coefficient is positive and significant. While it may seem counter-intuitive that longer tenured managers are more likely to be replaced, it is a common industry practice to evaluate newly appointed managers over multi-year periods so that fund manager replacements are less likely in the very early years of their appointments. Model 1 also reports that the coefficient for one clientele effect (expense ratio) is positive and significant (at the one percent level). This finding is consistent with investors of higher cost funds demanding superior performance. However, the estimated coefficient on the other clientele effect (institutional ownership) is insignificant.

Model 2 examines the impact of board size and independence on the likelihood of fund manager replacement. The estimated coefficient for board size is positive and significant (at the one percent level). This result suggests that large boards in mutual funds are better able to monitor fund managers. This finding is consistent with the notion that large boards are effective and easier for managers to control (Anderson, Mansi, and Reeb, 2004). Our finding of a positive relation between board size and manager turnover, however, is in contrast to the evidence from CEO turnovers at public corporations (Yermack, 1996; Faleye, 2008). Note that unlike corporate boards, mutual fund boards typically oversee several funds within the fund family so it is difficult for the manager of any single fund to effectively control large boards. In addition, with more directors available to oversee multiple funds, mutual fund boards may be able to avoid the director busyness problems that arise from excessive director workloads. In unreported regressions, we test this hypothesis by interacting board size with the average number of funds overseen by the board and find that fund manager replacement is more likely when large boards oversee larger numbers of funds and less likely when large boards oversee fewer funds. Model 2 also reports that the estimated coefficients on the proportion of independent directors and independent board leadership are positive and significant, consistent with the hypothesis that monitoring effectiveness improves as boards become more independent.<sup>14</sup>

For robustness, we also control for individual director attributes in Model 3. The sign, size, and significance levels of the primary board structure variables are similar to those reported in

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<sup>14</sup> We find similar results when employing a dummy variable for boards comprised entirely of independent directors as an alternative board independence measure.

Model 2. The coefficient on the number of funds supervised by directors (a proxy for director busyness) is positive and significantly related to manager replacement (p-value of 0.02). We also find that the number of outside directorship appointments (Other Directorships) and excess director compensation (Unexplained Director Compensation) is positively and significantly related to the likelihood of fund manager replacement. The latter two results are consistent with the idea that higher quality directors, i.e. those who are in demand at other organizations and those who are more highly paid, are better monitors.

Models 4 and 5 add the public ownership dummy variable to Models 2 and 3, respectively. The most important result of Models 4 and 5 is that the size, sign, and significance of the public estimated coefficients are robust to the inclusion of board structure variables. Likewise, the significance levels of the board structure variables are robust to sponsor ownership type (although the significance of the board size and independent chair estimated coefficients drop to the 10% levels). Consistent with prior results, Models 4 and 5 also report that prior fund performance is inversely and significantly related to fund manager replacement decisions. Overall, the results of Table 4 show an increased likelihood of fund managers being replaced when the shares of the sponsor are publically traded. These results provide compelling evidence that sponsor level and board attributes play important roles in governance in general, and fund manager replacement in particular.

### **3.2 Turnover Sensitivity to Performance**

Although the results in Table 4 provide strong evidence that sponsor ownership type and board structure are significantly related to the likelihood of fund manager turnover, they do not tell us how these internal governance mechanisms impact the nature of the turnover event (e.g., forced vs. voluntary turnover decisions). Research has found that prior performance is an important determinant of whether a manager is voluntarily replaced or forcibly removed (see e.g., Weisbach 1988; Bonnier and Bruner 1989; Furtado and Rozeff, 1987). If agency issues associated with dispersed ownership causes public sponsors to evaluate manager ability and performance quicker than private sponsors, then public sponsors should be more likely to fire underperforming managers. To test this hypothesis, we interact prior performance with the primary ownership and board structure measures and repeat the logit analysis of Table 4.



**[Insert Table 5 about here]**

Model 1 of Table 5 interacts prior fund performance (Objective Adjusted Return<sub>t-2,t-1</sub>) and public ownership status. Models 2 through 4 repeat the interaction analysis using board size, the proportion of independent directors, and the independent board chairperson dummy, respectively. The sign and significance of the public sponsor dummy variable and the board related measures are consistent with the results presented in Table 4 and support our hypothesis that public companies are more likely to fire or promote fund managers. The negative and significant coefficient estimates on the interaction between public sponsor ownership type and each fund's objective adjusted return (Model 1) suggest that public sponsors are more sensitive to poor prior performance in the fund manager replacement decision. Likewise, the negative and significant coefficient on the interaction between independent director representation and prior performance (Model 3) indicates that fund manager replacement in poorly performing funds is more likely when boards are more independent. This finding is similar to Khorana, Tufano, and Wedge (2007) who find independent boards to be less tolerant of poor performance. Furthermore, this finding indicates that while sponsors have the ultimate responsibility to monitor and terminate underperforming fund managers, mutual funds board still play an important role in the manager replacement process.

Although not reported, we also segment the sample by sponsor ownership type to examine the role of boards in the turnover decisions in public and private sponsored funds. Similar to Adams, Mansi, and Nishikawa (2009) we find that board monitoring matters more in public sponsored funds. Specifically, the board size and independence variables that are significant in Tables 4 and 5 are only significant for public sponsored funds. The results presented in Tables 4 and 5 indicate that the estimated coefficients for sponsor ownership structure as well as board and fund manager characteristics are similar for overall and performance related turnovers. These findings suggest that the manager evaluation and replacement processes are different in public and private companies. Public companies appear to be more aggressive in evaluating fund managers and more sensitive to performance.

### **3.3 Post Turnover Performance**

In this section we examine the consequences of fund manager replacement decisions. If public sponsors are more sensitive to performance than their private counterparts and replace underperforming manager more frequently, then underperforming managers have less opportunity to erode fund value. Alternatively, if private sponsors are better able to evaluate fund manager ability (by waiting to see whether recent performance is due to luck or ability) then the expected ability of the new manager should exceed the ability of the previous manager by a greater margin than in public sponsor replacements. Both hypotheses predict relatively small performance improvements in public sponsored funds following forced turnover events. Similarly, we expect board structure mechanisms that are more sensitive to fund performance to be associated with smaller post turnover performance gains.

Table 6 reports ordinary least squares estimated coefficients for changes in our primary performance measure, each fund's objective adjusted return. We deduct the value computed for the two years prior to the replacement calendar year end from the value computed over the two years after the replacement (e.g.,  $t+1,t+2$  vs.  $t-2,t-1$ ).<sup>15</sup> To control for the nature of the turnover event, each model includes a forced turnover dummy variable that takes on a value of one if there is a turnover event and the objective adjusted return (computed over  $t-2$  and  $t-1$ ) is negative.<sup>16</sup> In addition, we include a term to capture the interaction between the forced dummy and the internal governance measures. Each model also includes the expense ratio, portfolio turnover, a team managed dummy, institutional ownership as well as the natural logarithms of fund and family total net assets. Finally, each model includes index fund, year, and investment objective dummies.<sup>17</sup>

**[Insert Table 6 about here]**

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<sup>15</sup> We lose 56 funds in the post two year period. We account for the potential survivorship bias by noting that the mean public fund replacement year return is about 9% lower than the mean private fund replacement year return (approximately -2% and +7% for public and private funds, respectively) and that most of the missing observations (about 81%) are for public funds. Since the poor performance and higher incidence of missing public funds biases our private ownership results downward, we also perform multiple imputations to estimate the missing values and find similar results. Further, we employ logit analysis with the dependent indicator variable takes on a value of 1 if the change in performance is positive and zero if the change in performance is negative or the fund does not survive. The results from the logit analysis concur with the OLS results that turnover is more likely to result in positive changes in performance for private firms.

<sup>16</sup> For ease of exposition we use the term forced to designate turnover events at underperforming funds and acknowledge that some replacements at poorly performing fund may be voluntary.

Model 1 of Table 6 focuses on forced turnover decisions and sponsor ownership status. Model 1 reports that underperforming funds that experience fund manager turnover (forced) are associated with an approximate 15% performance improvement, results that are significant at the one percent level. This finding is similar to evidence from Khorana (2001) on mutual fund manager replacements and Denis and Denis (1995) for CEO replacements. However, the forced and public sponsor interaction term is negative (about 4 basis points) and statistically significant (at the one percent level). This finding is consistent with our hypothesis that the fund manager replacement process and its consequences, are different in private and public firms. Interestingly, independent chairs are associated with a modest, although significant, decrease in fund performance. Model 2 focuses on board size and replacements and reports a positive (and statistically significant) relation between changes in fund performance and the board size/forced turnover interaction term. This finding suggests that not only is turnover more likely at funds with large boards, post turnover performance is also better. Model 3 reports the proportion of independent directors/forced turnover interaction term is negative (about 10 basis points) and significant (t-stat of 2.57). Model 4 reports similar results for independent chairs. The lower post replacement performance for more independent boards in Models 3 and 4 are consistent with independent boards being less tolerant of poor performance and more likely to petition sponsors to replace managers in order to prevent erosion of shareholder wealth.

#### **4. Conclusion**

This paper examines the relation between ownership structure and the probability of manager replacement in the mutual fund industry. The turnover literature is almost exclusively limited to replacements that occur in public firms primarily because market-based performance metrics are usually not available for privately held firms. This is a shortcoming given the importance of private organizations in most economies. There are also reasons why we expect control differentials between organizational structures to exist. The ownership structure of publicly held sponsors tends to be more atomistic with managers having different performance goals than privately held ones (i.e., higher agency costs). This suggests that the incentive structures of privately held and publicly owned firms differ and therefore the two may diverge in their treatment of internal control mechanisms.

Using a large sample of actively managed equity mutual funds, we find a positive relation between public ownership and the likelihood of manager replacement. When interacting organizational type and fund performance, we find that public firms are more sensitive to performance in deciding whether to replace fund managers than their public counterparts. However, performance improvements following forced manager replacement are greater in private funds, suggesting by evaluating managers over longer periods private sponsors are better able to discern between manager luck and ability. Alternatively, public sponsors react more quickly to prevent underperforming managers from destroying shareholder wealth.

While we acknowledge that fund sponsors, who contract with mutual fund boards to manage the funds on a day to day basis, have the responsibility to terminate underperforming managers, it is unlikely that mutual fund boards do not play a role. We find that managers of funds with large boards are more likely to be replaced. We also document a relation between board independence and fund manager turnover. Perhaps counter-intuitively, we report a positive relation between our proxy for director busyness, the average number of funds overseen by a board, and fund manager replacement. Further testing reveals that the relation between board busyness and fund manager turnover holds when board size is large; evidence that large boards serve to reduce excessive director workloads. Boards whose directors have more outside directorships and those with higher paid directors are associated with increased replacement likelihood. In additional testing, we analyze board sensitivity to fund performance and find that boards with more outside directors are less tolerant of poor performance. Overall, the results indicate that organizational form and board structure matter in the labor market for mutual funds.

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**Table 1**  
**Variable definitions and primary source\***

Variable	Data Source	Explanation
<i>Performance and Risk</i>		
Objective Adjusted Return	Morningstar/CRSP	Difference between an index fund's return and it's benchmark index (%)
Objective Alpha	Morningstar/CRSP	Alpha computed from an equally weighted index of each investment objective (%)
Jensen's Alpha	Morningstar/CRSP	Computed using 2 years of monthly returns, 1 month Treasury bills, and monthly S&P 500 returns (%)
Growth Rate	Morningstar/CRSP	The two year investment objective adjusted growth rate of total net assets.
Volatility	Morningstar/CRSP	The standard deviation of monthly fund returns computed over two years.
<i>Fund &amp; Family Characteristics</i>		
TNA	Morningstar/CRSP	Log of total net assets of fund or family.
Expense Ratio	Morningstar/CRSP	Percentage of fund assets used to pay for operating expenses, including 12b-1 fees, management and administrative fees, and other asset-based costs incurred except for sales charges.
Front Load	Morningstar/CRSP	Sales charge at initial fund purchase, not included in expense ratio (%)
12B-1 Fees	Morningstar/CRSP	Promotional and advertising expense charge, included in expense ratio (%)
Institutional Holding	Morningstar/CRSP	Percentage of institutional class holdings in fund
Asset Turnover	Morningstar/CRSP	Trading activity/change in portfolio holdings computed as the lesser of sales or purchases divided by average monthly total net assets (%)
<i>Governance Characteristics</i>		
Board Size	Form 485	Log of number of directors on fund board
Manager Tenure	Form 485	The length of time, in years, the fund manager has directed the fund
Independent Directors	Form 485	Proportion of directors who are classified as outsiders (independent)
Other Directorships	Form 485	Average number of outside directorships held by directors
Funds per Director	Form 485	Proportion of average number of funds overseen by each board to board size
Family Ownership	Form 485	Proportion of directors who have ownership in funds in family
Director Compensation	Form 485	Average yearly compensation (\$) a director receives from all funds supervised

Note: For fund with multiple share classes we compute the weighted average value (using TNA of each class), where the reported fund TNA is the sum of the TNA from all classes. All Morningstar data are cross- checked or recomputed with the CRSP Mutual Fund database.

**Table 2**  
**Descriptive Statistics (Family Level Data)**

*Panel A: Distribution of public and private investment management companies' assets and related measures*

Variables	Public Ownership			Private Ownership		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
Total Net Assets	30,201.1	14,865.1	38,899.0	55,447.5	7,864.1	152,395.2
Market Share (%)	0.80	0.39	1.03	1.47	0.21	4.05
Growth Rate (%)	23.15	11.43	69.51	33.74	15.78	74.51
Number of Funds	38.18	33.00	26.90	25.97	12.00	32.86
Observations	65	65	65	37	37	37

*Note:* Panel A provides data on the nature of public and private ownership of investment management companies during a nine year period beginning in 1999. The data set is comprised of 102 large investment management companies as of 2002 and represents 953 firm-year observations. Total net assets are the year-end sum of investor funds in all objective categories. Market share is the percentage of the U.S. mutual fund market held by each investment management company. Growth rate is the two year growth rate in total net assets in percentage terms and the number of funds is the total number of mutual funds sponsored by the investment management companies.

*Panel B: Distribution of public investment management companies by deciles*

Size Deciles	Public (%)	Private (%)
Overall Sample	63.7	36.3
Smallest 1	33.0	67.0
2	58.9	41.1
3	60.4	39.6
4	58.5	41.5
5	64.9	35.1
6	72.7	27.3
7	68.1	31.9
8	76.0	24.0
9	82.1	17.9
Largest 10	53.3	46.7
Bottom 5%	34.0	66.0
Top 5%	27.9	72.1

*Note:* Panel B lists the percentage of public investment management companies overall and in each size decile. Data is presented for all years, 1999-2007. Panel B also lists the percentage of public investment management companies in the top and bottom 5% size groupings.



**Table 3**  
**Descriptive statistics (Fund Level Data)**

*Panel A: Public vs private ownership*

	<u>Public Ownership</u>			<u>Private Ownership</u>		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
<i>Fund Characteristics</i>						
Manager Tenure	5.27	4.60	3.57	5.47	4.50	4.00
TNA	1,058.46	302.90	3,174.20	2,501.95	420.55	7,806.44
Asset Turnover	92.144	57.000	120.871	133.97	63.000	327.265
Expense Ratio	1.152	1.076	0.494	1.054	0.955	0.538
Front Load	1.763	1.420	1.743	1.404	0.072	1.768
12B-1 Fees	0.280	0.250	0.267	0.186	0.036	0.241
Growth Rate (%)	68.355	0.991	1,701.68	77.763	9.132	888.12
<i>Performance Characteristics</i>						
Objective Adjusted Return	0.311	-0.159	13.680	1.141	0.368	17.117
Objective Alpha	-0.004	-0.003	0.441	0.031	0.020	0.533
Jensen's Alpha	0.076	0.062	0.598	0.101	0.064	0.677
Three Factor Alpha	-0.019	-0.011	0.566	-0.002	-0.001	0.631
<i>Board Characteristics</i>						
Board Size	8.81	8.00	2.68	9.12	9.00	2.51
Proportion of Independent Directors	0.79	0.80	0.12	0.78	0.78	0.10
Independent Chair	0.34	0.00	0.48	.40	0.00	0.49
Number of Funds Supervised	70.80	67.13	44.50	91.55	43.90	101.12
Outside Directorships	0.87	0.80	0.57	1.09	1	0.77
Family Ownership	0.70	0.75	0.27	0.71	0.82	0.32
Unexplained Director Compensation	10,743	2,107	65,792	-20,253	-30,369	61,182
Observation	14,485	14,485	14,485	6,288	6,288	6,288

*Note:* Panel A reports descriptive statistics for the overall fund manager replacement and control sample that contains 20,773 mutual funds observations from 1999 through 2007. Mean, median, standard deviation, and number of observations is provided for each variable and each investment category. All variables are gathered or computed at the end of each year from 1998 through 2007.

Panel B: Incidence of fund manager turnover by sponsor ownership type

<u>Manager Turnovers</u>	Public		Private		All	
	<u>Obs.</u>	<u>(%)</u>	<u>Obs.</u>	<u>(%)</u>	<u>Obs.</u>	<u>(%)</u>
1999	220	8.67	102	9.83	433	9.00
2000	255	10.05	118	11.37	458	10.43
2001	193	7.60	65	6.26	413	7.21
2002	258	10.17	114	10.98	592	10.40
2003	422	16.63	112	10.79	780	14.93
2004	258	10.17	88	8.48	545	9.68
2005	375	14.78	142	13.68	822	14.46
2006	337	13.28	196	18.88	810	14.90
2007	220	8.67	101	9.73	564	8.98
Total	2,538	100.00	1,038	100.00	3,576	100.00

Note: Panel B reports the percentage of funds experiencing fund manager replacement by year for each ownership type.

Panel C: Fund manager replacements by objective

Objective Title	ICDI Code	Public Sample (%)	Private Sample (%)	Public Replacements (%)	Private Replacements (%)
	(1)	(2)	(3)	(4)	(5)
Aggressive Growth	AG	9.38	12.67	10.62	11.92
Balanced	BL	4.26	3.86	4.54	4.33
Global Bond	GB	2.65	2.07	2.76	1.73
Global Equity	GE	2.67	2.31	2.53	3.17
Government Money Market	MG	0.10	0.14	0.08	0.38
Government Security	GS	3.53	4.55	3.91	4.23
Income	IN	1.36	1.66	1.66	1.54
International Equity	IE	8.46	10.00	9.51	8.17
Ginnie Mae Fund	GM	1.88	1.08	1.89	0.77
Growth and Income	GI	8.41	10.76	9.32	7.88
High Quality Bond	BQ	7.86	7.22	7.38	5.96
High Yield Money Market	MY	0.93	0.49	0.87	0.48
High Quality Municipal	MQ	5.92	4.14	5.25	4.42
High Yield Bond	BY	2.68	2.86	2.88	2.31
Long Term Growth	LG	14.30	13.48	13.23	13.94
Precious Metals	PM	0.28	0.81	0.36	0.48
Sector Fund	SF	4.60	8.12	4.82	11.83
Special/Unclassified	SP	0.05	0.00	0.04	0.00
Single State Municipal	MS	15.94	9.22	13.46	11.25
Tax Free Money Market	MF	0.09	0.36	0.28	1.35
Taxable Money Market	MT	0.10	0.17	0.16	0.19
Total Return	TR	3.82	3.58	3.47	3.27
Utility Funds	UT	0.73	0.46	0.99	0.38
Observations		14,485	6,288	2,538	1,038
(%)		100	100	100	100

Note: This panel reports the percentage of funds experiencing fund manager replacement by investment objective category for each ownership type. Column 1 provides the investment object codes. Columns 2 and 3 represent the percentage of observations in the public and private samples, respectively. Columns 4 and 5 represent the percentage of fund manager replacements in public and private samples, respectively.

**Table 4**  
**Fund Sponsor Ownership, Mutual Fund Boards, and Fund Manager Replacement**

	Dependent Variable = Manager Turnover				
	Public Ownership	Board Structure	Internal Governance	Board and Public	All Variables
	(1)	(2)	(3)	(4)	(5)
Public Ownership	0.118 <sup>a</sup> (0.01)			0.134 <sup>a</sup> (0.00)	0.141 <sup>b</sup> (0.02)
Board Size		0.289 <sup>a</sup> (0.00)	0.178 <sup>b</sup> (0.05)	0.295 <sup>a</sup> (0.00)	0.168 <sup>c</sup> (0.06)
Independent Directors		0.654 <sup>a</sup> (0.00)	1.014 <sup>a</sup> (0.00)	0.631 <sup>a</sup> (0.00)	1.024 <sup>a</sup> (0.00)
Independent Chair Dummy		0.183 <sup>a</sup> (0.00)	0.106 <sup>b</sup> (0.05)	0.190 <sup>a</sup> (0.00)	0.101 <sup>c</sup> (0.06)
Number of Funds Supervised			0.001 <sup>b</sup> (0.02)		0.002 <sup>b</sup> (0.00)
Other Directorships			0.135 <sup>a</sup> (0.00)		0.141 <sup>a</sup> (0.00)
Family Ownership			-0.001 (0.99)		0.001 (0.99)
Unexplained Director Comp.			0.134 <sup>a</sup> (0.00)		0.098 <sup>b</sup> (0.03)
Objective Adjusted Return <sub>t-2,t-1</sub>	-0.008 <sup>a</sup> (0.00)	-0.298 <sup>a</sup> (0.00)	-0.319 <sup>a</sup> (0.00)	-0.295 <sup>a</sup> (0.00)	-0.317 <sup>a</sup> (0.00)
Expense Ratio <sub>t-1</sub>	0.145 <sup>a</sup> (0.01)	0.090 <sup>c</sup> (0.08)	0.073 (0.24)	0.063 (0.24)	0.061 (0.33)
Asset Turnover <sub>t-1</sub>	-0.025 <sup>b</sup> (0.01)	-0.033 <sup>b</sup> (0.02)	-0.026 <sup>b</sup> (0.01)	-0.029 <sup>b</sup> (0.00)	-0.023 <sup>b</sup> (0.03)
Manager Tenure	0.071 <sup>a</sup> (0.00)	0.081 <sup>a</sup> (0.00)	0.081 <sup>a</sup> (0.00)	0.082 <sup>a</sup> (0.00)	0.083 <sup>a</sup> (0.00)
Team Managed	-0.009 (0.82)	-0.028 (0.50)	0.052 (0.29)	-0.030 (0.73)	0.062 (0.21)
Institutional Ownership	-0.060 (0.35)	-0.093 (0.15)	0.145 <sup>c</sup> (0.05)	0.109 <sup>c</sup> (0.09)	-0.166 (-0.29)
Fund TNA	-0.058 <sup>a</sup> (0.00)	-0.059 <sup>a</sup> (0.00)	-0.054 <sup>a</sup> (0.00)	-0.059 <sup>a</sup> (0.00)	-0.053 <sup>a</sup> (0.00)
Family TNA	0.083 <sup>a</sup> (0.00)	0.037 <sup>b</sup> (0.03)	-0.041 (0.10)	0.0 42 <sup>b</sup> (0.01)	-0.039 (0.12)
Pseudo-R <sup>2</sup>	7.26	7.91	4.28	7.96	4.33
Model p-value	0.00	0.00	0.00	0.00	0.00
Observations	20,773	20,773	13,843	20,773	13,843

*Note:* This table presents Logit regressions modeling impact of investment management company ownership type on the likelihood of fund manager replacement while controlling for board, clientele and manager specific factors, fund size, and management company size. The data covers the period from 1999 through 2007 for 3,274 funds. Independent variables are: a dummy variable that take a value of 1 if the investment management company is publicly held (Public), using objective adjusted return, the difference between the fund return and the return of an equally weighted index of funds with the same investment objective, for 2 years prior to the replacement (Objective Adjusted Return), average expense ratio in the preceding year (Expense Ratio), approximate percentage of fund holdings that changed over the preceding year (Asset Turnover), fund manager tenure (Manager Tenure), presence of multiple fund managers (Team Managed), institutional ownership, fund total net assets (Fund TNA), and investment company total net assets (Family TNA). All models include year and investment objective fixed effects and are lagged one period. P-values derived from fund-level clustered robust standard errors are in parentheses.

**Table 5**  
**Fund sponsor ownership, boards of directors, and performance sensitivity**

	Dependent Variable = Manager Turnover			
	Public Ownership	Board Size	Independent Directors	Independent Chair
	(1)	(2)	(3)	(4)
Public Ownership	0.130 <sup>a</sup> (0.00)	0.129 <sup>a</sup> (0.00)	0.130 <sup>a</sup> (0.01)	0.130 <sup>a</sup> (0.01)
Board Size	0.300 <sup>a</sup> (0.00)	0.298 <sup>a</sup> (0.00)	0.296 <sup>a</sup> (0.00)	0.295 <sup>a</sup> (0.00)
Independent Directors	0.577 <sup>a</sup> (0.00)	0.570 <sup>a</sup> (0.00)	0.546 <sup>b</sup> (0.01)	0.573 <sup>a</sup> (0.00)
Independent Chair Dummy	0.186 <sup>a</sup> (0.00)	0.187 <sup>a</sup> (0.00)	0.186 <sup>a</sup> (0.00)	0.186 <sup>a</sup> (0.00)
Objective Adjusted Return <sub>t-2,t-1</sub>	-0.004 (0.13)	-0.009 (0.37)	0.030 <sup>a</sup> (0.01)	-0.010 <sup>a</sup> (0.00)
Expense Ratio <sub>t-1</sub>	0.084 <sup>b</sup> (0.01)	0.028 (0.13)	0.084 (0.12)	0.082 (0.13)
Asset Turnover <sub>t-1</sub>	-0.021 <sup>b</sup> (0.03)	-0.023 <sup>b</sup> (0.02)	-0.023 <sup>b</sup> (0.02)	-0.023 <sup>b</sup> (0.02)
Manager Tenure	0.079 <sup>a</sup> (0.00)	0.079 <sup>a</sup> (0.00)	0.078 <sup>a</sup> (0.00)	0.079 <sup>a</sup> (0.00)
Team Managed	-0.016 (0.70)	-0.015 (0.72)	-0.013 (0.76)	-0.016 (0.70)
Institutional Ownership	-0.095 (0.14)	-0.096 (0.14)	-0.094 (0.14)	-0.095 (0.14)
Fund TNA	-0.063 <sup>a</sup> (0.00)	-0.062 <sup>a</sup> (0.00)	-0.063 <sup>a</sup> (0.00)	-0.062 <sup>a</sup> (0.00)
Family TNA	0.043 <sup>a</sup> (0.00)	0.045 <sup>a</sup> (0.01)	0.046 <sup>a</sup> (0.01)	0.046 <sup>a</sup> (0.01)
Public* Obj. Adj. Return <sub>t-2,t-1</sub>	-0.008 <sup>b</sup> (0.01)			
Board Size* Obj. Adj. Return <sub>t-2,t-1</sub>		0.001 (0.95)		
Indep Dir* Obj. Adj. Return <sub>t-2,t-1</sub>			-0.048 <sup>a</sup> (0.00)	
Indep Chair* Obj. Adj. Return <sub>t-2,t-1</sub>				0.005 (0.14)
Pseudo-R <sup>2</sup>	7.61	7.57	7.63	7.58
Model p-value	0.00	0.00	0.00	0.00
Observations	20,773	20,773	20,773	20,733

*Note:* This table presents Logit regressions modeling impact of investment management company ownership type on the likelihood of fund manager replacement while controlling for board, clientele and manager specific factors, fund size, and management company size. The data covers the period from 1999 through 2007 for 3,274 funds. Independent variables are: a dummy variable that take a value of 1 if the investment management company is privately held (Private), performance using alpha computed using 2 years of monthly fund returns, one month Treasury bills, and monthly S&P 500 index returns for 2 years prior to the replacement (Jensen's Alpha), average expense ratio in the preceding year (Expense Ratio), approximate percentage of fund holdings that changed over the preceding year (Asset Turnover), fund manager tenure (Manager Tenure), presence of multiple fund managers (Team Managed), institutional ownership, fund total net assets (Fund TNA), and investment company total net assets (Family TNA). All models include year and investment objective fixed effects and are lagged one period. P-values derived from fund-level clustered robust standard errors are in parentheses.

**Table 6**  
**Performance Changes Following Replacements**

	Public Ownership	Board Size	Independent Directors	Independent Chair
	(2)	(3)	(4)	(5)
Forced	14.604 <sup>a</sup> (13.32)	4.387 (1.33)	19.647 <sup>a</sup> (5.99)	12.373 <sup>a</sup> (18.13)
Public Ownership	-0.106 (-0.23)	-0.394 (-0.91)	-0.380 (-0.88)	-0.391 (-0.90)
Board Size	0.288 (0.41)	0.019 (0.03)	0.269 (0.39)	0.258 (0.37)
Independent Directors	-2.083 (-1.25)	-2.155 (-1.29)	-1.537 (-0.89)	-2.156 (-1.29)
Independent Chair Dummy	-1.365 <sup>a</sup> (-2.99)	-1.346 <sup>a</sup> (-2.95)	-1.318 <sup>a</sup> (-2.88)	-1.167 <sup>b</sup> (-2.41)
Expense Ratio <sub>t</sub>	-0.226 (-0.41)	-0.203 (-0.36)	-0.221 (-0.40)	-0.208 (-0.37)
Asset Turnover <sub>t</sub>	-0.093 (-0.70)	-0.103 (-0.77)	-0.100 (-0.75)	-0.097 (-0.73)
Team Managed	-0.051 (-0.13)	-0.080 (-0.20)	-0.077 (-0.19)	-0.086 (-0.21)
Institutional Ownership	0.436 (0.76)	0.429 (0.75)	0.405 (0.71)	0.433 (0.76)
Fund TNA	-2.192 <sup>a</sup> (-12.47)	-2.200 <sup>a</sup> (12.49)	-2.198 <sup>a</sup> (-12.48)	-2.200 <sup>a</sup> (-12.49)
Family TNA	1.069 <sup>a</sup> (6.08)	1.074 <sup>a</sup> (6.10)	1.069 <sup>a</sup> (6.07)	1.078 <sup>a</sup> (6.12)
Public* Forced	-4.047 <sup>a</sup> (-3.36)			
Board Size* Forced		3.335 <sup>b</sup> (2.17)		
Independent Directors* Forced			-10.159 <sup>a</sup> (-2.57)	
Independent Chair* Forced				-2.105 <sup>b</sup> (-2.23)
Adjusted R <sup>2</sup>	4.62	4.64	4.59	4.61
Model p-value	0.00	0.00	0.00	0.00
Observations	17,424	17,424	17,424	17,424

*Note:* This table presents OLS regressions of two year changes in mutual fund performance on investment management company ownership type. Models 1 through 4 classify replacements as forced if the Objective Adjusted Return<sub>t-2,t-1</sub> is negative. The data covers the period from 1999 to 2007 for 3,274 funds. The dependent variables are the difference in the Objective Adjusted Return<sub>t-2,t-1</sub> in the two year period following manager replacement and the prior two year period. Control variables include: nature of the turnover event (forced vs. voluntary), average expense ratio in the replacement year (Expense Ratio<sub>t</sub>), fund total net assets (Fund TNA), and investment company total net assets (Family TNA). All models include year and investment objective fixed effects. Fund-level clustered robust t-statistics are in parentheses.