Mutual Fund Performance and Governance Structure: The Role of Portfolio Managers and Boards of Directors

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Abstract

This paper conducts a comprehensive analysis of the relation between the performance and governance structure of open-end, domestic-equity mutual funds during the 1985 to 2002 period. Specifically, we analyze the role of fund managers in generating portfolio performance, as well as the role of fund boards, both in the ongoing performance of the fund, and in replacing underperforming managers. We find evidence that experienced large-fund managers and managers with better track-records outperform their size, book-to-market, and momentum benchmarks, which indicates that managers play an important role in generating portfolio performance. However, we find that experienced managers of smaller funds underperform their benchmarks, indicating the presence of managerial entrenchment in the mutual fund industry. When we examine the role of boards, we find that higher numbers of outside directors are associated both with better future fund performance and with a higher likelihood of replacing underperforming managers, which indicates that outside board members play an important role in gathering information about the skills of fund managers that is not captured by information contained in mutual fund flows. Overall, our findings add new insights to the ongoing debate on fund governance.

I. Introduction

A good deal of attention is focused on professionals who manage money, in the form of television interviews, best-selling books, and frequent articles in the popular press. The media often focuses on the investment results of a few "star" mutual fund managers, such as Bill Miller of the Legg-Mason Value Trust Fund or Scott Schoelzel of the Janus 20 Fund. In addition, the recent appointment of Harry Lange as the portfolio manager for the Fidelity Magellan Fund, one of the world's largest actively managed mutual funds, has generated a good deal of media attention (see, for example, Lauricella and Hechinger (2005)). The implication of the media spotlight on some managers with long records of outperformance is that managers matter in generating portfolio performance—for example, that experienced managers, or managers with a good track record, outperform other managers in addition to passively managed funds.

Further attention has focused on the structure of fund boards of directors, in light of the recent mutual fund market-timing and late-trading scandals. Yet, little academic research has been conducted on the relation between the governance structure of a fund and its portfolio performance. On the contrary, the large number of papers that have analyzed mutual fund performance have largely ignored the role of the manager and the board.¹ In general, these papers indicate that mutual fund performance is, at best, about zero after fees and trading costs. However, these papers do not address whether subgroups of funds with better governance structures may outperform their benchmarks. If managers play an important role in generating fund performance, then the quality of governance of a fund may be important to that fund's performance through negotiating low fees, monitoring manager behavior, or influencing the advisor to remove underperforming managers.

¹ Examples of past papers that examine mutual fund performance without considering the governance structure of funds include Malkiel (1995), Carhart (1997), Grinblatt and Titman (1989, 1993), and Wermers (2000).

There are many reasons why we might believe that portfolio managers are key in generating performance for a fund.² For instance, some of the most highly compensated professionals in the financial services industry are managers of active portfolios; many mutual fund managers earn in excess of \$5 million per year. If this level of compensation is not based purely on entrenchment of managers, then past studies of performance have omitted an important explanatory variable in studying the cross-section of mutual fund returns.

This paper analyzes the relation between the governance structure and portfolio performance of U.S. open-end, domestic-equity mutual funds. Specifically, we analyze whether manager characteristics, such as experience and performance track record, predict future fund performance. In addition, we look at whether the structure of the fund board of directors impacts performance, both in the ongoing operations of the fund and in their role in replacing underperforming managers.

Some past evidence supports our analysis of managers, and our choice of manager characteristics in this study. Specifically, Chevalier and Ellison (1999a), using a sample of mutual funds over a short time period, are the first to analyze the impact of manager characteristics on fund performance. And, some papers, including Gruber (1996) and Carhart (1997) find evidence (although weak) of persistence in fund performance. Finally, Baks (2001) examines fund manager changes over the 1992 to 1999 period, and finds some evidence supportive of a role of managers in generating fund performance.

Our contribution, in this paper, is to follow the manager over her entire career in order to build more precise measures of manager characteristics at each point in time. We examine the

² The alternative view is that the fund advisory company generates performance for its various funds through efforts in gathering and processing information by its pools of buy-side analysts or purchased research. If so, then the fund manager is much less important in generating performance. For example, the Janus family, in recent years, has advertised itself as having an approach that digs deeper into the business plans of firms in which it invests.

stockholdings of each manager, over her entire career, to build these measures. Further, we study the characteristics of mutual fund boards jointly with the characteristics of managers to determine the influence of different board structures on manager performance.

Specifically, we assemble a manager database that covers the 1985 to 2002 period for all U.S. open-end, domestic-equity mutual funds. This database, which is the longest time-series of manager data assembled to date, includes the starting and ending dates of the manager's tenure with each fund she managed over her career. We merge this manager database with a mutual fund stockholdings dataset, allowing us to build several new characteristics of managers at each point in time, such as the stockpicking track record of the manager over her entire career (i.e., over all funds managed). We further augment this manager/fund database with a dataset that contains comprehensive information on the board of directors for each fund during three years, 1995, 1999, and 2002. This dataset includes the name and affiliation of each fund director, which allows us to build characteristics that describe the independence of the board.

Our results provide several new insights into the role of governance in the performance of mutual funds. First, we document that fund managers have a strong influence in generating portfolio performance. For instance, we find that higher managerial experience positively predicts future stockholdings-level performance of larger mutual funds. Further, we find that fund manager track-record persists, when measured as the average track-record of all funds within the same advisory company.

While large-fund managers are important in generating superior performance, which indicates effective governance of these funds, we also find evidence that many poorly performing managers are entrenched. Specifically, more experienced managers of smaller funds underperform

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their benchmarks, indicating that they have become entrenched by an ineffective governance system.

Motivated by this finding of partially effective governance, we set out to find the determinants of effectively governed funds. We examine characteristics of our mutual fund board dataset—the number and proportion of independent directors—and their influence on fund performance and manager replacement. Our results indicate that board independence is important in fund governance. Specifically, a higher number of outside directors is associated both with better ongoing performance and a higher probability of replacing an underperforming portfolio manager. We also find a strong role for investor outflows, in that funds with outflows are more likely to replace underperforming managers, regardless of the board structure. However, the board is also important, regardless of the reaction of flows to underperformance—thus, investor flows do not fully discipline underperforming managers (consistent with the convex flow-performance relation documented by Sirri and Tufano (1998)).

We find only weak evidence of a limitation in the influence of increasing numbers of outside directors on manager replacement—in some of our results, an increase in the proportion of outside directors beyond a threshold level decreases the probability of manager replacement.³ However, for most of our tests, more outside directors increases performance and manager replacements without limitation. Therefore, we may infer that the value of the additional information gathered by an additional outside director exceeds her costs, at least for the range of board sizes that we observe in our sample. This result provides an interesting empirical outcome for the Harris and Raviv (2005) theory of board structure. Overall, our results show evidence of

³ Interestingly, the SEC has recently proposed that all mutual funds install a board having at least 75 percent outside directors, as well as an outside chairman.

managerial entrenchment in the mutual fund industry, and a strong role for outside directors in improving fund performance and minimizing manager entrenchment.

The remainder of this paper is organized in four sections. The construction of our database and our measures of manager characteristics and fund performance are discussed in Section II. Section III presents empirical findings on mutual fund managers. Section IV discusses the role of mutual fund board of directors in fund governance and fund performance. We conclude the paper in Section V, and provide the detailed method used in constructing the mutual fund manager and board of directors database in the Appendix.

II. Data and Methodology

A. Mutual Fund and Mutual Fund Manager Data

Our mutual fund characteristics data are extracted from an updated version of the merged Thomson/CDA-CRSP mutual fund database (henceforth, CDA-CRSP) of Wermers (2000). For each open-end, U.S. domestic-equity fund that exists anytime between January 1975 and December 1999, CDA-CRSP contains data on various fund statistics, such as the monthly net return, total net assets, annual expense ratio, and annual turnover ratio, as well as containing the quarterly stock holdings of each fund. We extend data for funds existing at the end of 1999 to include data through the end of 2002. See Wermers (2000) for more information on the construction and limitations of an earlier version of this database.

In addition, we construct a proprietary mutual fund manager database over the period 1985 to 2002 from several electronic and printed sources, including Morningstar, Thomson/Wiesenberger, CRSP, various mutual fund publications, and fund prospectuses filed with the SEC. The detailed method used in constructing the fund manager database is reported in Appendix A. The information contained in the manager database includes manager name, fund name, manager start and end dates at the fund, and (for a subset of fund managers) some biographical information such as gender, birth date, birth city, marital status, education background (degrees and schools from where degrees are received), CFA designation and date, and previous employers and positions held.

Although we make every attempt to create a complete dataset, our sources do not allow every manager to be documented. The reasons for this are, first, fund manager information is not required to be disclosed prior to 1988, and, second, (even after 1988) funds that are team-managed are not required to fully disclose names of each team member to shareholders or the SEC.⁴ Nevertheless, we believe our manager database represents the most complete information on U.S. open-end, domestic-equity mutual fund managers compiled to date.^{5,6} For this paper, a long timeseries is crucial, as we track each fund manager over her career, and measure manager attributes at various points during this career.

For mutual funds that are team-managed, we identify the manager having the longest tenure with that fund. This manager is deemed the "lead manager," and we measure only the characteristics of this lead manager for our empirical tests—our assumption is that the longesttenure manager likely has the highest level of control of a fund. For example, we measure the lead manager's career experience for tests of the relation between performance and manager experience—if, however, non-lead managers play a significant part of the decision-making process

⁴ Recently, the SEC has stipulated that mutual funds must disclose information about each manager in a team (up to at least four of the members) in the fund prospectus.

⁵ The earliest manager in our database is Paul Cabot of the *State Street Investment Trust* with a start date of July 29, 1924 and end date of January 1, 1962. Chevalier and Ellison (1997, 1999) provide some of the first studies of fund managers, using a more limited set of manager data obtained from Morningstar that covers managers existing between 1992 and 1995. Baks (2001) uses manager data from CRSP, which contains several errors and omissions, and only covers fund managers starting in 1992.

⁶ Also, our manager database does not suffer from survivor-bias, as we consult original publications in order to backfill information on managers of non-surviving funds.

of a mutual fund, then our tests will lack power in detecting such relations. However, for the majority of our funds, there is only one fund manager at each point in time, making this a minor issue.

We merge CDA-CRSP with this new manager database over the the 1985 to 2002 period. Counts of lead managers over the entire time period, as well as counts at the end of 1985, 1991, 1997, and 2002 are presented in Table I. There are a total of 2,689 CDA-CRSP funds and 3,136 lead managers in our matched manager/fund databases. Growth funds account for the majority of the fund universe, and about 80% of the fund managers have experience in managing at least one growth fund (funds with an investment objective of aggressive-growth or growth) during 1985-2002. Not surprisingly, the number of funds and fund managers grows rapidly with the expansion of the fund industry during our sample period. The average number of funds leadmanaged by a manager increases slightly from 1.2 at the end of 1985 to 1.4 at the end of 2002.

To check the completeness of our matched manager/fund database, we further examine CDA-CRSP funds that fail to be matched with any fund manager, and report statistics on these funds in panels C and D of Table I. Overall, we are able to identify the lead manager during at least one point in time during 1985 to 2002 for more than 98 percent of funds in CDA-CRSP. In addition, about 95 percent of all fund-months during 1985 to 2002 contain information about the lead manager.

A close look at the number of missing managers at four different points in time reveals more detailed information. Fifteen percent of the funds that exist at the end of 1985 have missing manager data, but this fraction declines steadily over the first five years of our sample period, then stabilizes at about 4% during later years.⁷ In Panel D, a further comparison is provided between

⁷ The predominant reason for missing manager information in the late 1990s is that some funds report "team management" without any further details, as mentioned previously.

funds with complete manager data and funds that have missing manager data. This panel presents data on the total net assets under management and the net return between funds having manager data and funds with missing manager data at the end of 1985, 1991, 1997, and 2002. Although funds with missing managers are, on average smaller, these differences do not seem to be especially significant. Also, there is no significant difference in net returns between funds with manager data, and those without manager data. We conclude that funds with missing managers, which are a very small proportion of our fund dataset, do not appear to have characteristics that are substantially different from the entire domestic-equity universe in CDA-CRSP.

B. Measures of Mutual Fund Manager Characteristics

Since the lead fund manager is the unit of analysis for our study, we construct measures that serve as proxies for lead manager talent and, perhaps, for lead manager entrenchment. The first characteristic is manager experience, which is defined as the length of time since the lead fund manager first managed any mutual fund. The career experience of lead fund manager i at the end of month t is computed as

$$EXP_{i,t} = t - t_{0,i} , \qquad (1)$$

where $t_{0,i}$ is the month when lead fund manager *i* first becomes a fund manager of any domesticequity mutual fund.

The second characteristic is the past performance record of the lead manager. To construct a proxy for past success, we compute the time-series average (monthly) performance of the fund manager, as defined by the characteristic selectivity (*CS*) measure of Daniel, Grinblatt, Titman, and Wermers (DGTW; 1997), where mutual fund holdings are benchmarked with characteristic-

matched portfolios of stocks. Specifically, the characteristic selectivity track record (CST) for manager *i* at month *t* is calculated as

$$CST_{i,t} = \frac{1}{EXP_{i,t}} \sum_{\tau=t_{0,i}+1}^{t} \sum_{j=1}^{J_{\tau-1}} w_{j,\tau-1} \left(R_{j,\tau} - R_{\tau}^{b_{j,\tau}} \right)$$
(2)

where $w_{j,\tau-1}$ is the portfolio weight of stock *j* held by manager *i* at the end of the month t-1; $R_{j,\tau}$ is the month τ return on stock *j*; $R_{\tau}^{b_{j,\tau}}$ is the month τ return on stock *j*'s characteristicmatched portfolio (matched, at the previous June 30th, on market capitalization, the ratio of bookequity to market-equity, and prior one-year return); and $J_{\tau,t}$ indicates the number of stocks held by the fund at the end of month τ -1. An advantage of the *CS* measure is that it uses portfolio holdings information, which (as shown by DGTW) provides a more precise measurement of performance relative to regression-based methods. Also, in calculating the *CS* measure, we only require a fund to have at least one quarter's stockholdings, which reduces survival bias in evaluating fund performance. Most importantly, evaluating the performance at the level of stockholdings allows us to examine manager talents before trading costs and other fund fees and costs, which are almost always outside the control of the portfolio manager.

C. Summary Statistics for Mutual Fund Managers

Panel A of Table II provides average manager characteristics across all mutual funds existing during different subperiods of our sample. Specifically, the average career experience (in years) and track-record (in percent per year), both measured at the end of each year, of the lead fund manager (defined to be the manager with the longest tenure at a given fund at that time) is computed across three-year intervals. The results show that the level of career experience is fairly consistent throughout our sample period—about 7-8 years in duration. Also, consistent with the findings of Wermers (2000), the mean manager track record (*CST*) is slightly positive, averaging about less than one percent per year. In unreported tests, we also find that fund managers in the latter part of our sample tend to be more aggressive, as reflected in the standard deviation of returns relative to the S&P 500 index and their career-average turnover levels during the latter subperiods of our sample, relative to earlier years. However, it is not clear whether this increased risk-taking and trading activity is related to greater manager skills, lower trading costs, or whether fund managers merely engage in these costly activities in order to appear to have talents (see, for example, Brown, Harlow, and Starks (1996)).

Panel A also indicates the replacement rate of fund managers during each subperiod. During the average year, 14-18 percent of managers are replaced. While this indicates that funds may effectively eliminate underperforming managers, many of these managers may leave due to retirement or to manage private money (such as hedge fund portfolios). We will explore the role of manager replacement in improving fund performance in a later section of this paper.

We also explore the correlation of our two manager characteristics with fund size. If the fund industry is characterized as having effective governance, then we would expect that more experienced managers would have better average skills than newer managers (since poor-skills managers are eventually fired), and that they manage larger funds (due to the higher difficulty as well as higher fees associated with running large funds). In addition, managers with better past stockpicking success would manage larger funds.

In panel B, we rank all U.S. open-end, domestic-equity mutual funds existing at the end of each year on the number of months of career experience (attained by managing any domestic-

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equity fund, as defined by Equation (1)) of the lead manager, then (conditionally) on the career track-record (career average characteristic selectivity measure, *CST*, as defined by Equation (2)) of the lead manager (as of that date). We then compute, for each fractile portfolio, the average fund size at the same date, and present the time-series average size measures in the panel for each fractile.

The results show evidence consistent with effective governance in the mutual fund industry in that fund size differs substantially among the experience and track-record ranked fractiles. Note that the most experienced managers, and managers with the best track-records, manage much larger funds than other managers. For example, the quintile of most-experienced managers run, on average, funds that are more than three times the size of the funds managed by the leastexperienced quintile (\$753 million vs. \$220 million). Even more dramatic differences are present between high and low track-record managers. Again, this indicates that governance is effective, in that well-performing managers are promoted to larger funds (and that experienced managers, in general, run larger funds, indicating that they have skills).⁸ Importantly, the panel also indicates that we should control for the size of funds when measuring the relation of manager characteristics with manager talents, as funds have substantial diseconomies-of-scale (as shown by Chen, Hong, Huang, and Kubik (2004)). For example, an experienced manager with skills will find it much more difficult to generate the same level of performance as an inexperienced manager, as the experienced manager will generally be managing a much larger fund.

⁸ It may also be true that managers with better records run larger funds, simply due their success in growing the fund. However, this may also be consistent with effective governance, in that they are not replaced at some point by an entrenched manager with poor skills.

III. Results

A. Manager Characteristics and Fund Performance

If lead portfolio managers are key in producing fund performance, then we would expect to find persistent stockpicking skills among the managers. However, if governance of mutual funds is not perfectly effective, then we would expect to find that some managers with high levels of experience are entrenched, and do not exhibit persistent skills. While several prior studies have attempted to find persistence in manager skills, almost none have examined the role of experience.⁹

For example, suppose that manager entrenchment is widespread in the open-end fund industry, such that managers with poor current skills (whether or not they performed well in the past) are retained. In this setting, managers with good current skills are more likely to leave the industry (for higher compensation) than managers with poor current skills. Therefore, we would expect that experience provides a useful additional signal—managers with good track records and little experience should exhibit outperformance. On the other hand, suppose that governance is effective, so that managers are fired when they exhibit poor skills. Here, we might expect that bad managers leave the industry (by termination) more frequently than talented ones, so that managers with good track records and high experience would exhibit outperformance. In either case, experience provides a useful signal, in addition to career track record, for locating skilled managers.¹⁰

⁹ See, for example, Gruber (1996) and Carhart (1997). It is important to note, however, that Chevalier and Ellison (1999b) study the impact of experience on managerial risk-taking behavior, approaching the issue from the perspective of career concerns of fund managers. They find that young managers take less risk and are more likely to herd in picking stocks.

¹⁰It is also possible that a manager gains skills in picking stocks as her career progresses, from perhaps several sources. For example, it may take some time for the manager to assemble and train her stock analysts, or to learn how to best use the analysts already in place at a fund complex. Also, over time, managers may develop relationships with corporate managers that provide them with privileged information on the prospects of firms. This

Since Panel B of Table II indicates that levels of experience and track-record are highly correlated with fund size, we implement tests that attempt to control for differences in size. As mentioned earlier, this control is important, as prior research by Chen, Huang, Hong, and Kubik (2004) shows evidence of significant diseconomies-of-scale in mutual fund management.

Specifically, Panel A of Table III focuses on the largest quintile of mutual funds, where mutual fund size (TNA, in \$millions) is measured at the beginning of each calendar quarter. After segregating these largest funds, we implement a double-sort on experience and track-record to provide evidence on the interaction of these two variables, in terms of their impact on performance at the stockholdings level (i.e., before expenses and trading costs). In particular, all top size-quintile U.S. open-end, domestic-equity mutual funds existing at the beginning of each calendar quarter are first sorted on the number of months of career experience (attained by managing any domestic-equity fund, as defined by Equation (1)) of the lead manager, then (conditionally) on the career track record (career average characteristic selectivity measure, CST, as defined by Equation (2)) of that lead manager (as of that date). We then compute the stockholdings-level performance (CS measure) for each fractile during the following 12 months, equal-weighted across all funds in a given fractile. During this test year, we rebalance portfolios each month, and include each fund that exists for the full month (whether or not it survives beyond that month) to minimize survival bias. The time-series average performance (across all event quarters) is presented in the panel.

For example, the panel shows that the most experienced managers among these large funds (see "Top 20%") have 24 years of experience, while the least experienced (the Bottom 20% fractile) have only three years. Further, managers with the most experience and best track-records have a

issue was a factor in the implementation of Regulation FD by the SEC, which occurred during the last part of the period covered by this study.

prior career performance that averages 6.27 percent per year above their size, book-to-market, and momentum benchmarks. This top-experience, top track-record fractile exhibits a following-year performance level of 1.66 percent. By contrast, while managers with the lowest levels of experience and track-record have a prior career performance that averages -2.05 percent per year, and a following-year performance of 0.37 percent.

In general, as shown by the "Top 20% - Bottom 20%" row and column, experience and career track-record are positively correlated with following-year performance, although the statistical power of this simple sorting test is somewhat weak. For example, across all track-record fractiles, the most experienced managers ("Top 20%") outperform the least experienced ("Bottom 20%") by 0.99 percent per year. And, across all experience fractiles, the highest track-record managers outperform the lowest track-record managers by 0.83 percent per year.

Further analysis of the panel indicates that an interaction effect appears to be present. Specifically, experience predicts future performance more keenly when coupled with a good track-record. For instance, the most experienced managers of large funds outperform the least experienced by 1.22 percent per year in the top 20% track-record fractile, while they underperform by 0.96 percent in the bottom 20% track-record fractile. Similar results can be found for the impact of track-record—good past performance predicts future performance more keenly when coupled with high experience levels. These results indicate that, perhaps, governance is effective in the open-end mutual fund industry, in that managers with current skills are retained, while managers with poor skills are replaced—indicating that experience is a useful signal in addition to track-record.

It is noteworthy that we find some indication of ineffective governance as well. For instance, highly experienced managers with a poor track-record *underperform* their less-experienced

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counterparts, producing an average CS measure of -0.59 percent during the test year. This finding, while statistically weak, indicates that some degree of ineffective governance may be present, where low-skill managers are entrenched.

In panels B and C, we repeat the tests of panel A, across funds in the smaller size quintiles. Specifically, we repeat the double-sort tests of panel A for each fund size quintile, two through five. Panel B shows the results for quintiles two through four (averaged across these three quintiles for brevity), while panel C shows results for quintile five (the smallest funds).

Panel B shows results across the second through fourth TNA quintiles of funds (equally weighted across all such funds). Here, experience and track-record play a less reliable role in identifying skilled managers. Further, Panel C shows that, among the smallest quintile of funds, experience and track-record appear to be negatively correlated with future performance. For instance, high experience managers underperform their low experience counterparts by 1.16 percent during the following year.

To summarize, our findings of this section reveal evidence of effective governance structures among large open-end funds, in that experienced managers exhibit better skills than their less-seasoned counterparts. However, we also find evidence of manager entrenchment, in that some experienced managers—especially those in smaller funds—exhibit poor stockpicking skills.

B. Multivariate Regression Tests

The simple portfolio sorting tests of the prior section produce rather weak power in detecting performance differences, which might be due to other cross-sectional differences in characteristics of funds managed by individuals with differing levels of experience or past success. Therefore, we now explore these issues in a multivariate setting that includes several other control

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variables to shed further light on whether governance is effective in the open-end mutual fund industry. To be specific, we wish to control for other fund- and advisor-level characteristics that may be correlated with fund performance to conduct a more precise test of whether manager characteristics matter.

We choose several fund- and advisor-level variables as controls in our multivariate regression tests. Our results of Tables II and III motivate us to include (log) fund size (*TNA*, in \$millions) as well as variables that interact lead-manager experience and career track-record with fund size (*EXPER* * Log(TNA) and *CST* * Log(TNA), respectively). In addition, we include the prior-year expense ratio of the fund (*EXPENSES*)—in theory, expenses might positively predict stockholdings-level performance, if fees are higher for higher-ability funds or fund families.

While these and some other fund-level variables have been shown to be correlated with performance by past studies (see, for example, Grinblatt and Titman (1994)), almost no research has been conducted to determine the role of fund advisory companies in generating performance. An exception is Nanda, Wang, and Zheng (2004), who show that high variation in fund strategies within a fund family reduces average fund performance within that family. However, no studies have analyzed the role of manager characteristics within a fund family, or the role of the scale of fund family operations. Accordingly, we also include, as control variables, average manager experience and stock-picking record across all funds in the same complex (having the same advisor) as a particular fund (*EXPER_ADVISOR* and *CST_ADVISOR*, respectively), as well as (log) advisory company size, which is measured as the aggregate TNA (in \$millions) of all funds under management by the same advisory company as a particular fund (*Lag(TNA_ADVISOR*)), and total number of funds managed by the advisor (*NUMFUNDS_ADVISOR*). Finally, variables that interact the number of funds (in the same complex) with experience and track-record are included

(*EXPER * NUMFUNDS_ADVISOR* and *CST * NUMFUNDS_ADVISOR*, respectively), which is motivated by Gaspar, Matos, and Massa (2005), who show that larger fund families may transfer performance between funds. These variables would capture a manager who built a track-record by receiving performance from other funds, or a more-seasoned manager who pressures other same-complex managers to transfer performance.

Our cross-sectional Fama-MacBeth (1973) tests proceed as follows. For each year, starting in 1986 and ending in 2002, we run a cross-sectional regression of fund CS measure, averaged across all four quarters of that year, on our manager-, fund-, and advisor-level control variables, all measured at the beginning of the year. We then average the coefficient estimates over all years, and report this average.

The resulting regressions shown in Table IV provide several new insights. While regression 1 indicates that fund size and expenses negatively predict performance, and that managers do not matter, regressions 2 and 3 show that manager track-record predicts performance when variables are included that interact manager characteristics with fund size (as indicated by our analysis of Section III.A.). However, regression 4 adds advisor-level performance and experience, and shows that only manager experience (and not track-record) remains significant in explaining future performance. In fact, experience negatively predicts performance, unless interacted with TNA. For instance, the model predicts that, for a same-size fund, a manager with 10 years of experience will underperform a new manager by 90 basis points during the following year. However, between two managers with 10 years experience, the one managing a fund that is 10 times the size of the other will outperform by 0.46 percent (0.02 x 10 x log(10)) during the following year. Thus, experienced managers who are promoted to larger funds outperform their peers, while those not promoted underperform. It is interesting that this finding indicates both effective governance (in

promotions) and ineffective governance (in retaining, although not promoting, low-talent managers). Large funds are often flagship funds for their fund families, as well as being a major source of fees for the fund advisory company. Thus, underperforming managers may well be tolerated for a shorter duration among large funds. In addition, the very existence of a seasoned manager in a large fund indicates that the market has deemed this manager as being skilled, in that inflows have helped to grow the fund beyond its investment-based returns.

Note that manager track-record does not explain performance, while advisor-average trackrecord does. This finding indicates externalities among same-complex funds—perhaps due to sharing of private information on stock valuations (directly between managers or indirectly through pools of in-house analysts), or through transferring performance from outperforming funds to underperforming funds within the same complex. The positive influence of the number of funds in the complex reinforces this positive externality among same-complex funds. Finally, fund size (as expected) shows a strong, negative influence on performance, while fund expenses show a similar negative influence. While it is puzzling that pre-expense performance is negatively related to expenses, it might be that high expenses are associated with poor governance, or manager entrenchment. Thus, expenses may be serving as a proxy for the quality of governance.

In unreported tests, we run the above regressions separately for growth-oriented funds and income-oriented funds. We find that the above results hold only for growth-oriented funds. We do not find any significant role of manager characteristics in income fund returns. This finding is consistent with past studies (e.g., Chen, Jegadeesh, and Wermers (2000)), who find little evidence of performance among income funds.

To summarize, this section has shown that managerial skills, at the fund advisor level, strongly persist, controlling for other fund- and advisor-level characteristics. However, we have also

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shown that individual manager experience can either be a positive or negative influence on performance, indicating that fund governance is only partially effective, and that some level of managerial entrenchment exists. However, it is not clear who provides such governance in the open-end fund industry. Do investors provide discipline through the threat of heavy outflows? Do fund directors assist by providing oversight? Do independent directors provide even better discipline? In the next section, we explore these issues by addressing the impact of fund flows and fund boards on fund performance. A major part of this analysis lies in determining whether boards with different characteristics have varying levels of effectiveness in governance, which should result in better portfolio performance.

IV. Mutual Fund Boards and Fund Performance

Mutual fund governance has long been a topic of discussion among fund investors, regulators, the asset-management industry, and academics. Recently, the fund market-timing and late-trading scandals have increased the focus on the effectiveness of fund governance. At issue is whether certain mutual fund boards of directors are more capable in providing the discipline to protect shareholders from market timers and late traders. In our context, we wish to examine the effectiveness of different board structures in disciplining underperforming managers, and, therefore, in improving ongoing fund performance. As such, we focus on the broad impact of boards on overall performance, and not on the impact on fraudulent fund activities (which, in most cases, have a very small effect on overall fund performance).

Our empirical analysis is motivated by Harris and Raviv (HR; 2005), who model the optimal choice of board structure by shareholders in a general corporate setting; some of the implications of their model are directly applicable to our specialized mutual fund setting.

Specifically, HR predict the influence of increasing numbers of outside directors in a setting where outsider-controlled boards are mandated, as in the mutual fund industry where funds are currently required to have a simple majority of outsiders on the board. In such a setting, outsiders already control the board, which allows them to control all important decisions made by the board, thus mitigating the agency problems associated with insiders serving on the board (assuming that agency problems do not exist for outside directors as well, that is, that their interests are perfectly aligned with shareholders through, perhaps, being paid a share of profits).

Further, when outside directors must expend effort to gather information about the firm, the HR model predicts that there will be offsetting effects when the number of outsiders is increased above a simple majority. On one hand, more outsiders allow more independent gathering of information about the firm's operations, collectively allowing the outsiders to make more informed decisions about firm operations. In a mutual fund setting, outside directors gather information about the performance of the fund as well as the manager's strategy and investment decisions, which allows them to make inferences regarding the likelihood that the manager is talented and will produce good future performance. On the other hand, more outsiders increases the free-riding problem—since each outsider only benefits by a fraction of her efforts in collecting information, each tends to underinvest in costly effort due to the positive externality created by it.

In our setting, the HR model predicts that there is an optimal level of outside directors for a mutual fund company, and this optimum exceeds a simple majority as long as each outside director infers that her share of the expected benefit of her effort exceeds the cost. We next address whether this empirical prediction seems to be supported in our fund sample.¹¹

¹¹ Little research has been conducted on the influence of fund boards. A notable exception is Tufano and Sevick (1996), who find that smaller boards and a higher fraction of independent directors are associated with lower fees, indicating that smaller boards with higher independence are more effective in dealing with agency conflicts.

We address these empirical implications by first examining the impact of board structure on the ongoing fund performance. Then, we examine manager replacement decisions for a mutual fund, and their correlation with board structure to determine whether this is an important mechanism through which outside directors influence the ongoing fund performance.

A. Board Data and Board Characteristics

We obtained fund board data for funds during fiscal year 2002 from Lipper, and for fiscal years 1995 and 1999 from the SEC Edgar site. The Lipper data has total director expense and the number of board meetings data, but lacks data on the affiliation of the board chairperson. The SEC data (collected to date) lacks board expense and meeting frequency. These data are further described in Appendix B.

The board characteristics we study are board size and independence. We use the total number of directors and the proportion of outside directors as proxies for the influence of outside board members.¹²

Table V shows summary statistics for our three-year sample of board characteristics. Panels A, B, and C provide mean and median counts of the total number of directors on a board (*NUMDIR*), number of independent directors (*NUMINDEP*), and number of inside directors (*NUMINSIDE*) for 1995, 1999, and 2002, respectively, as well as the percentage of independent directors (*PCTINDEP*) and the percentage of boards with an insider director serving as the board chairperson (*INSIDERCHAIR*).

¹² Non-interested directors are those who are unaffiliated with the mutual fund management company, defined as not having a direct business relationship. We use the terms "non-interested directors," "outside directors," and "independent directors" interchangeably. Likewise, we use "interested directors" and "inside directors" interchangeably.

The median fund that did not replace its manager during 1995 has seven directors, with five being independent—or, about 71 percent independent directors. About 58 percent of funds have an insider serving as chairperson. These statistics remain fairly stable over the three years, although there is a tendency toward larger boards (a median of eight directors) and more independent boards (75 percent independent) by the year 2002.

It is noteworthy that funds replacing managers have (median) one or two more independent directors than non-replacement funds, which results in a higher proportion of independent directors. Prima facie, this indicates that higher numbers of independent directors exert more discipline in firing underperforming managers; however, several other interpretations are also possible, such as higher levels of skilled managers leaving the industry among larger funds (which generally have larger boards). In 2002, replacement boards tend to have higher average expenses (*DIREXPENSE*) and more meetings (*NUMMEET*), but the differences do not seem important.

Panel D shows cross-sectional correlations between board characteristics, where the three years are pooled to form the cross-section. It is noteworthy that a very high correlation exists between the number of independent directors and the total number of directors, indicating that funds wish to maintain a minimum number of insiders on the board. Thus, the total number of directors can serve as a proxy for the number of independent directors in our tests to follow. Most other variables, while showing significant correlations, have enough independent variation to allow for fairly sharp multivariate tests.

Finally, panels E and F show how boards have changed from 1995 to 1999, and from 1999 to 2002, respectively. As indicated by the summary measures of panels A through C, boards have moved toward becoming larger and more independent, especially since 1999.

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B. Board Characteristics and Fund Performance

We first wish to test whether certain board structures are associated with better governance, and, thus, higher levels of performance for their funds. Our tests focus on performance at the stockpicking level, therefore, we do not consider the impact of board structure on fee-setting or fraudulent activities, which might show up at the net return level. In focusing on performance before costs, we directly measure the influence of boards on the performance of the fund manager, since trade costs and the setting of fees is likely to be outside the influence of the portfolio manager.

It is important to note that the board does not directly provide incentives to the fund manager, in the form of designing compensation contracts or though employment termination. However, the board indirectly influences the choice of manager as well as his incentives to perform by its role in selecting the fund advisor and (jointly) in negotiating fees with the advisor.

To test the empirical predictions of the Harris and Raviv (2005) model described previously, we capture the structure of the board through a couple of simple variables: the total number of directors (*NUMDIR*) and the proportion of independent directors (*PCTINDEP*). In addition, we include a dummy slope ($D_{75\%}$) that equals max(0, PCTINDEP-75%) to capture whether there is a limit to the effectiveness of independent directors.

We implement a cross-sectional regression of stockpicking performance (CS measure), pooled across the three years of our director data (1995, 1999, and 2002), on these board characteristics as well as several control variables. Note that we exclude manager-level variables in these regressions, since they may serve as proxies for effective governance, which we wish to capture with our board-level characteristics. For instance, if governance is effective among most funds, then we would expect manager experience to have a positive influence on stockpicking

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performance (which we find in a previous section for large funds). Such outperformance may be associated with funds having, for instance, more independent boards, which is what we wish to capture in this section.

The regressions results, as shown in Table VI, support that larger boards (which are comprised of larger numbers of outside directors) are related to significantly higher fund performance when we include dummy variables to capture differences in performance across the years (regressions 3 and 4). Although the point estimates results indicate that higher board independence is also a positive influence, these coefficients are not significant. However, while board independence is not an important influence for ongoing fund performance, it may be more important at certain crucial times, such as when a manager should be replaced. In such a case, a test of the effect of percent outsiders on overall performance may lack power. Therefore, we directly explore the influence of board structure on manager replacement in the next section.

C. Board Characteristics and Manager Replacement

C.1. Hypotheses, Research Design, and Descriptive Statistics

We identify all funds in the CDA-CRSP mutual fund database that experience manager replacements during 1995, 1999, or 2002.¹³ First, we provide a comparison of the performance of funds that replace managers with other funds—this is shown in Table VII. In this table, we rank funds, at the end of each year, by their prior 36-month average CS performance measure. Quintile portfolios are formed, and we examine the following three-year performance and manager replacement frequency of each quintile. The table presents fractile statistics, averaged over all event-years.

¹³ In this section, we define manager replacement as when the whole management team is replaced by a new team.

Note that (panel A) bottom performing funds replace managers much more frequently than top performers (16.55 vs. 12.15 percent per year), indicating that managers more frequently leave because they are terminated. However, well-performing manager departures are far from rare. A comparison of panels B and C is also interesting—it shows some evidence of persistence in performance of "Top 20%" managers who do not leave (panel C), but no persistence in performance for funds that replace such top past-performers (panel B). Further, the third, fourth, and bottom quintiles indicate some improvement in performance when managers are replaced, relative to the no-replacement sample.

C.2. Logit Regressions of Occurrence of Manager Replacement

Our final cross-sectional tests look for variables that predict manager replacement, noting that a manager replacement event (as seen in the last section) is an imperfect proxy for an effective governance action. Although we cannot perfectly see the reason for a manager replacement (i.e., termination or leaving for higher compensation), we are motivated to examine manager replacements because of the possibility that the structure of boards may matter more when a decision about manager replacement must be made.

Table VIII presents results for several cross-sectional logit regressions, pooled across 1995, 1999, and 2002, of the probability of manager replacement on several fund-, advisor-, and board-level variables. In each regression, the dependent variable equals one for funds that replace managers during a given year (1995, 1999, or 2002), and zero otherwise. As in the regressions of Table VI, board-level variables include board size (*NUMDIR*), independence (*PCTINDEP*), and a dummy slope that equals max(0, PCTINDEP-75%)—shown as *PCTINDEP* * $D_{PCTINDEP>=75\%}$, where $D_{PCTINDEP>=75\%}$ is a dummy variable equal to one only if *PCTINDEP* is greater than or equal to 75%.

Other regressors include the number of funds managed by the same advisor

(NUMFUNDS_COMPLEX), fund size (log(TNA)), expenses, and a dummy variable equal to one only if investor flows during the prior year are negative ($D_{OUIFLOW}$). This outflow dummy captures the disciplining force of investor flows.

Regressions 1 and 2 present results across all manager replacements during the three years, while regressions 3 and 4 assign a dependent variable equal to one only if a manager with a negative three-year lagged CS measure is replaced. This modification is performed to attempt to focus on managers who are most likely replaced because of their poor skills. Further, regressions 5 and 6 assign a value of one if, in addition, the manager has an experience level of more than 10 years or less than five years, respectively—to focus on managers who are more (or less) likely to be entrenched, perhaps making them harder to fire for underperformance.

Consistent with the results of Table VI, larger boards—which means more independent directors—are consistently associated with a higher probability of manager replacement. However, the results of Table VIII also show a role for (proportionately) higher board independence—a fund having a board with 70% independent directors, all else equal, is about 31 percent more likely to replace an underperforming manager than a fund with 60% independent directors, according to regression 4. While regressions 1 and 2 indicate that there are limits to the benefits of board independence—a proportion of independent directors higher than 75% leads to lower fund performance—these results disappear when we focus on underperforming manager replacements (regressions 3 and 4). For these underperforming funds, it appears that the number of independent directors, proxied by the total number of directors, is the most important predictor of replacement, and that there is no particular role for the proportion of independent directors. Note, also, that investor flows are a strong influence on underperforming manager replacements.

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Interestingly, the replacement of more-experienced underperforming managers (regression 5) depends on numbers of independent directors, but not proportions. However, note the stronger disciplinary force of investor outflows in regression 5, compared with other specifications. Regression 6 indicates that flows are not effective in disciplining underperforming low-experience managers, perhaps because investors see the strong influence of board independence (as seen by the large coefficient on *PCTINDEP*), or because they give a newer manager the benefit of the doubt when confronted by a three-year underperformance record.

Finally, higher fund expenses and more funds within a complex are associated with a greater likelihood of replacing an underperforming manager. Presumably, a board demands higher levels of performance when fees and other expenses are higher. And, perhaps the negative externalities of a poorly performing fund on other same-complex funds provides incentive for the advisory company to quickly replace underperforming managers.

To summarize the results of this section, we find that higher numbers of outside directors, but not necessarily higher proportions, are associated with more frequent replacement of underperforming managers. Since the proportion of outside directors has no (or a weak) relation with manager replacement, we may infer that the additional information gathered by an additional outside director exceeds her costs, at least for the range of board sizes that we observe in our sample. This result provides an interesting empirical outcome for the Harris and Raviv (2005) theory model of board structure.

V. Conclusion

In this paper, we have presented evidence on the role of mutual fund managers in generating portfolio performance, as well as the role of directors in the ongoing performance of funds and in the replacement of underperforming managers. Our study is timely, in that it has implications for the newly proposed SEC regulation on fund director independence and the newly adopted SEC regulation on fund manager disclosure.

We find that experience and (advisor-level) stockpicking track-record of a fund manager are correlated with following-year performance, however, this relation indicates some evidence of manager entrenchment. That is, experience negatively predicts following-year portfolio performance, unless the highly experienced manager runs a large mutual fund. Finally, we find that larger boards (which are comprised of larger numbers of independent directors) are associated with better performance as well as with a higher likelihood of underperforming manager replacement.

Our study, while providing new insight on the relation between fund governance and performance, also opens new avenues for research that examine the labor market for fund managers as well as the dynamic aspects of fund boards over time. We leave these important issues for future research.

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Appendix A: Construction of Mutual Fund Manager Database

In constructing our database of managers, we focus on U.S. equity funds, that is, funds having a self-declared investment objective of Aggressive Growth (AG), Growth (G), Growth and Income (GI), or Income (I) at the beginning of a given calendar quarter. The fund manager data is assembled from electronic databases, mutual fund industry publications, as well as mutual fund SEC filings. The electronic databases we use include a survivor-bias free manager database that was obtained from Morningstar in August 2004, the monthly Morningstar Principia Pro CDs (1995-2002), the annual Morningstar OnDisc CDs (1992-1994), the CRSP Survivor-Bias Free Mutual Fund Data Base covering fund characteristics through 2003Q1, a database of fund managers that was purchased from Thomson/Wiesenberger in 1999. The Morningstar manager database and CDs constitute the main sources of our manager data, as CRSP only lists managers beginning in 1992 and Weisenberger only lists fund manager information for funds existing in 1999, although, for these surviving funds, the succession of managers is listed as far back as the early 1970s.¹ The Morningstar electronic sources contain manager information for funds that exist after around 1992.² Because of the resulting missing manager data from pre-1992, we augment the merged dataset with manager information obtained from a few other printed sources. These sources include Investment Dealers' Digest's Mutual Fund Directory (1987-1991), the Handbook for No-Load Fund Investors (1984-1991), the Morningstar Mutual Fund Sourcebooks (1984-1991), the Morningstar Mutual Fund Values (1986-1989), and Standard & Poor's/Lipper Mutual Fund Profiles (1987-1991). For some funds, we request to the SEC for their fund prospectus filings in

¹ Spot checks among the three sources indicate that Morningstar is fairly more accurate and complete in reporting manager information (name, start date) than the other two sources. Also, Morningstar mains a managerial characteristics database starting from the early 1990s, which include fund manager bio, education, CFA designation, etc.

² Morningstar backfills manager information for most of the funds existing after 1992 back to at least the mid-1980s, though.

late 1980s. Although we attempted to obtain manager data starting in 1975 (since we have fund holdings data starting at this date), none of the printed sources had reliable and complete information before roughly 1986.³

We combine the fund manager data from these sources based on manager's name and the name of the managed fund to ensure that we create a manager database that is as complete as possible.⁴ Specifically, for each fund manager, we collect her name, the names of funds managed by her during her career, the start and end dates for that manager at each fund over her career, and other manager characteristics, including CFA designation, universities attended, prior analyst experience, and other items such as marital status and personal interests. The fund manager data are then matched with the CDA-CRSP database of portfolio holdings, net returns, and fund characteristics. In conducting our study, we focus our attention on the lead manager of each mutual fund, assuming that this manager has the greatest decision-making power for that fund. As a proxy to identify the lead manager, we choose the manager with the longest tenure at a given fund (if team managed) to decide on which manager is the lead manager.⁵

³ One reason for this is that mutual funds have been required to report the portfolio manager information in fund prospectus starting from around 1987, according to the Investment Company Institute, the trade association of the mutual fund industry in Washington, DC.

⁴ We note that in some (rare) cases, there are inconsistencies in manager's first name due to nick name (e.g. Robert vs. Bob) and name suffix (none vs. Jr.) in the three fund manager data sources. In these cases, we use other information, such as historical name of the manager, fund name, dates of start and end, to ensure the accuracy of matching.

⁵ If there is tie in the start date, we use the career experience as the tie-breaker, that is, we pick as the lead manager the manager who becomes a fund manager (of any fund) at the earliest date.

Appendix B: Mutual Fund Board of Directors Data

Mutual funds are required to report the board of directors information in the statement of additional information (SAI) contained in fund prospectus filed in Form 485APOS or 485BPOS at least once a year.⁶ The detailed board of directors information is usually contained in the section of "Management of the Trust" or "Directors and Officers," which includes director name, address, age (or date of birth), position in the board, whether interested or non-interested director as defined in the Investment Act of 1940, principal occupations in the past five years, committee membership, cash compensations, ownership in the fund and fund complex, etc.

Mutual funds usually make filings with the SEC under a filer name different than the fund name. Moreover, a mutual fund filer may contain multiple funds in its filings.⁷ In collecting the board of directors information, we first find the filing entity name for each fund in CDA-CRSP by searching the SEC/EDGAR filing archive database at http://www.sec.gov/edgar.⁸ After obtaining the fund entity name for each fund, we then download their Form 485 filings for 1995 and 1999 from the SEC/EDGAR site.⁹ Finally, for each downloaded Form 485 filing, we manually collect the directors information and generate the board of directors characteristics for each fund based on the collected directors information.

⁶ Although funds may disclose the board of directors information in other filings (e.g. N-30D), Form 485 is the most reliable source for board information and contains the most comprehensive information about directors.

⁷ For example, both Fidelity Capital Appreciation Fund and Fidelity Value Fund are filed under the name of Fidelity Capital Trust with Central Index Key (CIK) of 275309.

⁸ After 1994, mutual funds are required to make filings on SEC/EDGAR electronically.

⁹ A fund may file Form 485 more than once in a year, in which case, we use the latest filing as the Form 485 filing for that year.

Table I Summary Statistics for Mutual Fund and Mutual Fund Manager Database

This table presents summary statistics of mutual funds and lead managers in the merged mutual fund and fund manager databases from 1985 through 2002 (inclusive). The mutual fund data are drawn from the merged Thomson/CDA-CRSP mutual fund database (CDA-CRSP). The CDA-CRSP mutual fund database includes all actively managed diversified domestic equity funds (holdings, net returns, and fund characteristics) from 1974 through 2002. Panel A reports the number of mutual funds at the end of 1985, 1991, 1997, and 2002, as well as during the whole sample period, 1985-2002. Reported are statistics for the whole fund universe, as well as for the subgroups of aggressive growth (AG), growth (G), and growth and income or income funds (these two similar groups are pooled together; GI & I). Panel B presents counts of lead managers and the average number of funds managed by a lead manager at the end of 1985, 1991, 1997, and 2002 as well as during 1985 through 2002. The lead manager of a team management is defined as the manager who starts to manage the fund earliest. A lead manager is included in a subgroup of an investment objective (e.g. AG) for one point in time (e.g. the end of 2002) if she is the lead manager of at least one fund with that objective at that time. Some managers may lead-manage several funds with different investment objectives at one time. Panel C reports the number of funds missing managers. For instance, the 1985 column in Panel C reports the funds that exist at the end of 1985, but do not have managers matched in 1985. The percent of funds missing managers is calculated as the number of funds missing managers divided by the number of funds existing at that time expressed in percentage. Panel D provides a comparison of median total net assets (TNA) and mean excess returns between the funds with manager data and funds with missing manager data. To test the difference in characteristics of funds reporting manager information and funds missing manager information, a Wilcoxon two-sample signed rank test is done for TNA (median) and a t-test is done for net returns (mean). ***, **, and * indicate significance at the levels of 1%, 5%, and 10%, respectively.

Panel A: Counts of Mutual Funds										
	1985	1991	1997	2002	1985-2002					
All Funds	324	648	1594	1698	2689					
AG	70	169	178	276	533					
G	165	345	1129	1137	2084					
GI & I	89	134	287	285	561					

Panel B:	Panel B: Counts of Mutual Fund Managers										
	1985			1991		1997		2002			
	Avg. No. of Avg. N		Avg. No. of	o. of Avg. No. of			Avg. No. of				
	Funds Lead- Funds Lead-		Funds Lead-			Funds Lead-					
	Ν	Managed	Ν	Managed	Ν	Managed	Ν	Managed			
All											
Funds	239	1.2	499	1.3	1133	1.3	1079	1.4			
AG	55	1.3	143	1.4	158	1.8	224	1.8			
G	132	1.2	288	1.4	860	1.4	797	1.5			
GI & I	72	1.2	120	1.4	248	1.5	224	1.7			

Panel C: Counts of Mutual Funds Missing Managers										
		1985		1991		1997		2002		
	Ν	Percent	Ν	Percent	Ν	Percent	Ν	Percent		
All	49	15.1%	21	3.2%	80	5.0%	164	9.7%		
AG	10	14.3%	3	1.8%	5	2.8%	23	8.3%		
G	25	15.2%	15	4.4%	62	5.5%	114	10.0%		
GI & I	14	15.7%	3	2.2%	13	4.5%	27	9.5%		

Panel D: Comparison of Mutual Funds Reporting Managers and Mutual Funds Missing Managers										
	1985		199	1991		1997		2002		
	Median		Median	Mean	Median		Median			
	TNA	Mean	TNA	Return	TNA	Mean	TNA	Mean Return		
	(\$Million)	Return (%)	(\$Million)	$(^{0}/_{0})$	((\$Million)	Return (%)	(\$Million)	(%)		
All Funds	111	27.2%	93	36.4%	147	22.6%	144	-21.6%		
Funds Reporting										
Managers	104	27.4%	93	36.3%	154	22.7%	158	-21.3%		
Funds Missing										
Managers	117	26.2%	130	39.0%	61***	21.6%	65***	-24.6%***		

Table II Summary Statistics for Mutual Fund Manager Characteristics

This table presents summary statistics for mutual fund lead-manager characteristics. Panel A presents manager characteristics, averaged over three-year periods, where characteristics are measured at the end of each year. These characteristics include career experience and career track record (measured as the career-average CS performance). In addition, the average yearly proportion of funds experiencing a lead-manager replacement event is presented. This proportion is computed as the number of new lead managers, as a percentage of all managers at the end of each year. Panel B presents the average fund size (total net assets) managed by lead-managers with varying levels of experience and career track-record. All managers are double-sorted at the end of each year, first on career experience, and then (conditionally) on career track-record. Time-series average statistics are presented in the panel.

Panel A. Manager	Characteristics		
			Proportion of Funds
			Experiencing Lead
	Career	Career CS	Manager
	Experience	Track Record	Replacement
	(Years)	(% per year)	(%/year)
1985-1987	7.1	1.26	14.7
1988-1990	7.3	0.68	14.6
1991-1993	6.8	0.34	13.9
1994-1996	6.5	0.27	15.4
1997-1999	7.0	0.04	17.2
2000-2002	8.2	2.01	17.8

Talki D. Total	INCI ASSCIS-LI	uai-weighteu i o		ΙΙΝΛ, ΦΙΨΙ					
					Care	er Track	Record (%/	year)	
		Avg. Career Track Record (%/Year)	7.41	2.40	0.65	-0.98	-5.52		
	Avg. Career								Top 20%-
	Experience		Тор	2^{nd}	3rd	4th	Bottom	All	Bottom
	(Years)		20%	20%	20%	20%	20%	Managers	20%
	20	Top 20%	1,361	1,915	1,293	716	313	753	1,048
	10	2nd 20%	1,411	807	591	620	221	995	1,190
	6	3rd 20%	656	587	620	401	258	786	398
Career	4	4th 20%	324	487	483	319	222	486	102
Experience	2	Bottom 20%	268	235	332	335	161	220	107
		All Managers	1,306	731	518	353	242	1,064	
		Тор 20%-							
		Bottom 20%	1,094	1,679	962	381	152	533	_

Panel B. Total Net Assets—Equal-Weighted Portfolios (TNA; \$Millio
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Table III Following-Year Performance (CS Measure) for Funds Sorted by TNA, Manager Experience, and Career Stockpicking Track-Record

At the beginning of each quarter between 1985 and 2002, we first sort all funds into quintiles by total net assets under management (TNA). Then for each TNA-quintile of funds, we sort funds by the lead manager's career experience (the months of career experience, with any fund, of the manager starting at a given fund at the earliest date). Thus, we get 25 TNA/experience double-sorted fund portfolios. To be included in the analysis, each lead manager is required to have at least one-year career experience as a mutual fund manager. Finally, we rank all funds, within each of the 25 fractiles, on the level of career stockpicking talent, as measured by the career average characteristic selectivity (CST) track record of the lead fund manager, as of the beginning of that quarter. Panel A presents the equal-weighted following-year performance (CS measure) of all funds within the largest TNA fractile, while Panels B and C present results for the 2nd through 4th (equal-weighted across all funds falling within the 2nd through 4th TNA quintiles) and the smallest quintile of funds , respectively. For each cell, the the time-series average over all event quarters from April 1, 1985 through October 1, 2002 is presented. In forming all portfolios in this table, we limit our analysis to funds having a self-declared investment objective of "Aggressive Growth," "Growth," "Growth and Income," or "Income" at the beginning of the test year. Significance levels are noted, based on a Wilcoxon nonparametric signed-rank test: *significant at the 10% level; **significant at the 5% level.

Panel A. CS	Panel A. CS Measure (in %/year)									
fo	r Largest TN	A Quintile	Career Track Record							
		Avg. Career								
		Track Record								
		(%/Year)	6.27	2.79	1.24	0.06	-2.05			
	Avg.								Тор	
	Career								20%-	
	Experience		Тор	2nd	3rd	4th	Bottom	All	Bottom	
	(Years)		20%	20%	20%	20%	20%	Funds	20%	
	24	Top 20%	1.66	1.83	1.68	1.07	-0.59	1.06	2.25	
	13	2nd 20%	0.50	2.45	1.10	-0.08	-0.57	0.22	1.08	
	9	3rd 20%	0.48	1.20	0.37	0.70	0.03	0.36	0.45	
Career	6	4th 20%	-0.23	1.02	1.26	0.55	-0.50	0.54	0.28	
Experience	3	Bottom 20%	0.44	-0.35	-0.67	-0.10	0.37	0.07	0.07	
		All Funds	0.63	0.76	0.68	0.26	-0.20	0.45	0.83	
		Тор 20%-								
	_	Bottom 20%	1.22	2.17**	2.35	1.17	-0.96	0.99	-	

Panel B. CS	Measure (in %) 2 nd -4 th TNA Q	/year) Quintiles			Career Ti	ack Reco	rd (%/Year)	
		Avg. Career Track Record (%/Year)	7.48	2.47	0.58	-1.15	-5.39		
	Avg. Career Experience (Years)		Top 20%	2nd 20%	3rd 20%	4th 20%	Bottom 20%	All Funds	Top 20%- Bottom 20%
	18	Top 20%	1.33	-0.16	0.07	-0.90	-0.71	0.47	2.04
	9	2nd 20%	0.64	-0.18	0.74	0.43	0.19	0.04	0.45
C	6	3rd 20%	0.77	-0.24	0.15	0.06	0.12	0.41	0.66
Career	4	4th 20%	0.41	1.40	0.51	0.02	-0.37	0.09	0.77
(Years)	2	Bottom 20%	-0.40	0.15	0.04	1.25	0.07	-0.12	-0.48
(reals)		All Funds	-0.03	0.38	0.16	0.40	0.00	0.18	-0.03
		Top 20%- Bottom 20%	1.73	-0.30	0.03	-2.15	-0.79	0.60	

Panel C. CS	Measure (in %	/year)								
for	Smallest TNA	Quintile	Career Track Record							
		Avg. Career								
		Track Record								
		(%/Year)	7.74	2.10	-0.13	-2.33	-8.86			
	Avg. Career								Тор 20%-	
	Experience		Тор	2nd	3rd	4th	Bottom	All	Bottom	
	(Years)		20%	20%	20%	20%	20%	Funds	20%	
	19	Top 20%	-0.13	-0.32	1.08	1.75	0.49	-0.31	-0.62	
	9	2nd 20%	-2.18	0.44	-0.84	-0.67	0.55	-0.19	-2.73	
	5	3rd 20%	0.81	0.48	1.00	0.76	-0.54	1.14	1.35	
Career	3	4th 20%	0.32	1.51	-0.46	0.51	-0.06	0.79	0.38	
Experience	2	Bottom 20%	-0.18	0.00	-0.77	0.63	-2.53	0.84	2.35	
		All Funds	0.04	0.70	-0.11	0.62	1.03	0.44	-0.99	
		Тор 20%-								
		Bottom 20%	0.05	-0.32	1.85	1.12	3.03	-1.16		

Table IV Fama-MacBeth Regressions of Fund Performance (CS Measure) on Manager-, Fund-, and Advisor-Level Characteristics

This table reports time-series average regression coefficients from cross-sectional regressions of annual fund CS measure (in %/year) on year-beginning manager-, fund-, and advisor-level characteristics. A regression is computed each year, starting in 1986 and ending in 2002. Manager characteristics include lead-manager (the manager at that fund with the most career experience) career experience (EXPER) and lead-manager career CS track record (CST). Fund-level characteristics include year-beginning log total net assets under management (log(TNA), TNA in \$millions) and expense ratio (EXPENSES) during the prior year. Advisor-level characteristics include average (across all funds having the same advisor at the beginning of the given year) manager experience (EXPER_ADVISOR), lead-manager career track-record (CST_ADVISOR); as well as log cumulative assets across all funds with that advisor (log(TNA_ADVISOR)) and the total number of funds having the same advisor (NUMFUNDS_ADVISOR) as a given fund. Also reported are the time-series average sample size (Avg. N) and time-series average adjusted R² of the cross-sectional regressions. To be included in the regressions, managers are required to have at least one year of career experience. ***, **, and * indicate significance at the levels of 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)
Constant	2.64***	3.14***	3.01***	3.04**
EXPER (Years)	0.02	-0.05	-0.04	-0.09*
CST (%/Year)	0.06	0.15*	0.17*	0.10
EXPER x Log(TNA)		0.01**	0.01**	0.02**
CST x Log(TNA)		-0.02	-0.02	-0.02
EXPER_ADVISOR (Years)				0.06*
CST_ADVISOR (%/Year)				0.08*
EXPER x NUMFUNDS_ADVISOR			0.001	
CST x NUMFUNDS_ ADVISOR			0.001	
Log(TNA)	-0.32**	-0.40***	-0.38**	-0.42***
Log(TNA_ADVISOR)	0.001	-0.02	-0.04	-0.03
EXPENSES (%/Year)	-0.67**	-0.61*	-0.61*	-0.64*
NUMFUNDS_ ADVISOR	0.03**	0.03**	0.05**	0.03**
Avg. N (# Funds Per Year)	761	761	761	761
Avg. Adj. R ²	0.04	0.05	0.06	0.05

Table V Characteristics of Mutual Fund Boards

This table reports the characteristics of mutual fund boards of directors during fiscal years 1995, 1999, and 2002. We define "manager replacement" as occurring when the entire management team is replaced by a new management team. Board characteristics include the total number of directors (NUMDIR), number of non-interested directors (NUMINDEP), number of interested directors (NUMINSIDE), percentage of non-interested directors (PCTINDEP), insider serves as board chairperson (INSIDERCHAIR), yearly director expenses as a percentage of average total net assets (DIREXPENSE), and number of board meetings (NUMMEET). Panels A, B, and C show board characteristics of funds experiencing a lead-manager replacement event during 1995, 1999, or 2002, respectively (t-test and Wilcoxon nonparametric tests are shown for the hypothesis that the board characteristics, averaged across 1995, 1999, and 2002. Panels E and F show the frequency of board changes from 1995 to 1999, and from 1999 to 2002, respectively, as well as the cross-sectional correlations of board characteristics between the pairs of years.

Panel A: 1995 Board	Panel A: 1995 Board Characteristics										
	Mana	igement	No Mar	nagement							
	Turnover		Turi	nover	<i>p</i> -Value for Difference						
	(N	Æ97)	(N=1,088)								
				·		Wilcoxon					
					<i>t</i> -Stat	(two-sided)					
	Mean	Median	Mean	Median	(pooled)						
NUMDIR	8.5	8	7.5	7	0.00	0.00					
NUMINDEP	6.3	6	5.3	5	<.0001	<.0001					
NUMINSIDE	2.2	2	2.1	2	0.38	0.37					
PCTINDEP	73%	75%	71%	71%	0.04	0.04					
INSIDERCHAIR	58%	_	58%	1	1.00	1.00					

Panel B: 1999 Board Characteristics									
	Management		No Ma	nagement					
	Turnover		Tu	rnover	<i>p</i> -Value fo	<i>p</i> -Value for Difference			
	(N	=129)	(N=	=1,619)					
						Wilcoxon			
					<i>t</i> -Stat	(two-sided)			
	Mean	Median	Mean	Median	(pooled)				
NUMDIR	7.7	8	7.3	7	0.15	0.23			
NUMINDEP	5.9	6	5.3	5	0.00	0.04			
NUMINSIDE	1.8	2	2.0	2	0.02	<.0001			
PCTINDEP	77%	77%	72%	75%	<.0001	0.05			
INSIDERCHAIR	41%		50%	1	0.05	<.0001			

Panel C: 2002 Board Characteristics									
	Management			No Ma	nagement				
	Turr	Turnover		urnove	r (N=1561)	<i>p</i> -Value f	<i>p</i> -Value for Difference		
	(N=	:152)							
							Wilcoxon		
						<i>t</i> -Stat	(two-sided)		
	Mean	Median		Mean	Median	(pooled)			
NUMDIR	9.9	10		8.1	8	<.0001	<.0001		
NUMINDEP	7.6	8		6.2	6	<.0001	<.0001		
NUMINSIDE	2.3	2		1.9	2	<.0001	0.0002		
PCTINDEP	77%	73%		76%	75%	0.47	0.46		
DIREXPENSE	0.061%	0.003%	().016%	0.005%	0.01	<.0001		
NUMMEET	6.7	4		5.2	4	<.0001	<.0001		

Panel D: Pearson Correlations of Board Characteristics Variables (Averaged Across Years 1995, 1999, and 2002)										
	NUMDIR	NUMINDEP	NUMINSIDE	PCTINDEP	DIREXPENSE	NUMMEET				
NUMDIR	1.00									
NUMINDEP	0.93	1.00								
NUMINSIDE	0.60	0.32	1.00							
PCTINDEP	0.09	0.40	-0.68	1.00						
INSIDERCHAIR	0.13	0.04	0.23	-0.18						
DIREXPENSE	-0.06	-0.07	-0.02	-0.05	1.00					
NUMMEET	0.44	0.35	0.42	-0.09	-0.03	1.00				

Panel E: Change in Board Composition from 1995 to 1999									
N=923	Unchanged	%	Increase	%	Decrease	%	Correlation		
NUMDIR	305	33.1	327	35.5	289	31.4	0.70		
NUMINDEP	346	37.6	330	35.8	245	26.6	0.64		
NUMINSIDE	424	46.0	222	24.1	275	29.9	0.48		
PCTINDEP	205	22.3	418	45.4	298	32.4	0.37		

Panel F: Change in Board Composition from 1999 to 2002								
N=1230	Unchanged	%	Increase	%	Decrease	%	Correlation	
NUMDIR	327	26.6	536	43.6	367	29.8	0.64	
NUMINDEP	389	31.6	588	47.8	253	20.6	0.61	
NUMINSIDE	514	41.8	283	23.0	433	35.2	0.53	
PCTINDEP	239	19.4	660	53.7	331	26.9	0.49	

Table VI Fama-MacBeth Regressions of Fund Performance (CS Measure) on Fund-, Advisor-, and Board-Level Characteristics

This table reports regression coefficients from a pooled, cross-sectional regression of following-year fund CS measure (in percent) on fund-, advisor-, and board-level characteristics during 1995, 1999, and 2002. Fund characteristics include log total net assets under management (log(TNA); where TNA is measured in \$millions) at the end of 1995, 1999, or 2002, and expense ratio (EXPENSES, in percent per year) during those years, respectively. Advisor-level characteristics include the number of funds in the same complex (NUMFUNDS_COMPLEX), while board characteristics include the total number of directors (NUMDIR), the percentage of non-interested directors (PCTINDEP), and a dummy variable equal to one if PCTINDEP>75% (D_{75%}), all at the end of those years. Year dummies are also used in some regressions (D_{YEAR=1995} and D_{YEAR=1999}). Also reported are the number of funds (N) and adjusted R². ***, **, and * indicate significance at the levels of 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)
Constant	7.80***	8.01***	-2.50	-1.75
NUMDIR	-0.05	-0.03	0.13*	0.15*
PCTINDEP	-4.50	-5.13	3.34	2.55
PCTINDEP *D75%	1.31	1.36	-0.15	-0.06
Log(TNA)	-0.06	-0.04	-0.21*	-0.27**
EXPENSES (%/Year)	-1.56**	-1.54**	-1.36*	-1.35*
NUMFUNDS_COMPLEX		-0.01		0.001
D _{YEAR=1995}			2.38***	2.25***
D _{YEAR=1999}			10.55***	10.76***
N (# of Fund-Years)	3,780	3,527	3,780	3,527
Adj. R-squared	0.01	0.01	0.13	0.13

Table VIIThe Impact of Lead Manager Replacement

This table shows the frequency of lead manager replacement, as well as the performance of funds ranked on their three-year prior performance records, computed as the average monthly CS measure. Funds are ranked at the beginning of each year based on this three-year record, from January 1, 1986 to January 1, 2002. Presented in Panel A of this table, for each past-performance fractile, are the yearly average: number of managers, equal-weighted TNA, three-year past performance (the ranking variable), following three-year performance, and percentage of funds that experience a lead-manager replacement event. Panel B presents statistics for funds that experience a lead-manager change (during a given event-year), and panel C presents statistics for funds not experiencing a lead-manager change. ***, **, and * indicate significance at the levels of 1%, 5%, and 10%, respectively.

					Bottom		Top 20% - Bottom
Average 3-Year Monthly CS Performance Measure	Top 20%	2nd 20%	3rd 20%	4th 20%	20%	All	20%
Panel A. All Funds							
Ν	130	130	130	130	129	649	_
TNA (\$ Mil)	891	1123	979	752	346	816	545***
Average Prior 3-Year Monthly CS Measure (%/month)	0.65	0.21	0.05	-0.11	-0.50	0.06	_
Average Following 3-Year Monthly CS Measure (%/month)	0.12	0.05	0.06	0.05	0.03	0.06	0.08
% of Funds Changing Lead Managers	12.15	11.80	13.08	17.16	16.55	14.15	-4.40***
Panel B. Funds Replacing Manager							
Ν	18	17	19	23	24	95	_
TNA (\$ Mil)	891	1220	712	620	286	712	606***
Average Prior 3-Year Monthly CS Measure (%/month)	0.74	0.21	0.04	-0.11	-0.54	0.03	_
Average Following 3-Year Monthly CS Measure (%/month)	0.01	0.07	0.12	0.07	0.04	0.06	-0.03
Panel C. Funds Not Replacing Manager							
Ν	104	101	101	97	98	501	_
TNA (\$ Mil)	874	1115	1034	780	364	839	509***
Average Prior 3-Year Monthly CS Measure (%/month)	0.64	0.21	0.05	-0.11	-0.49	0.07	_
Average Following 3-Year Monthly CS Measure (%/month)	0.12	0.05	0.05	0.05	0.03	0.06	0.09

Table VIII Logit Regression of Manager Replacement on Mutual Fund Board Characteristics

Pooled, cross-sectional logit regressions of the occurrence of manager replacement on the fund-, advisor-, and board-level characteristics of mutual funds are shown for the years 1995, 1999, and 2002. The dependent variable equals one if the lead manager is replaced, and zero otherwise. In regressions 3 and 4, the dependent variable equals one if the lead manager is replaced and the prior three-year CS measure is negative (indicating the manager was replaced for underperformance). Independent variables include the total number of directors on the board during the year (NUMDIR), the percentage of non-interested directors on the board (PCTINDEP), as well as its interaction with a dummy variable that equals one if the percentage of non-interested directors is greater than or equal to 75 percent, and zero otherwise ($D_{PCTINDEP>=75\%}$). In addition, three fund characteristics are included: a dummy variable equal to one if the fund experiences cash outflows from investors during the prior year ($D_{OUTFLOW}$), log total net assets under management at the beginning of the year (log(TNA), TNA in \$millions), and the expense ratio (EXPENSES) in percent per year. Finally, the number of funds in the same fund complex (NUMFUNDS_COMPLEX) is included, as well as (for some regressions) year dummies ($D_{YEAR=1995}$ and $D_{YEAR=1999}$).

	(1)	(2)	$\begin{pmatrix} 3 \\ 2 \\ 3 \end{pmatrix}$	(4) (D : 2) V (C < 0)	(5) (Prior 3-year CS<0 and Manager	(6) (Prior 3-year CS<0 and Manager
	(1)	(2)	(Prior 3-Year CS<0)	(Prior 5-Year CS<0)	Experience>10 years)	Experience<5 years)
Constant	-5.90***	-6.13***	-5.33***	-6.26***	-4.77**	-7.62***
NUMDIR	0.10***	0.10***	0.10***	0.08***	0.15*	0.12***
PCTINDEP	3.64***	3.88***	2.25	3.09***	-2.14	5.60**
PCTINDEP x D _{PCTINDEP>=75%}	-0.70**	-0.74***	0.00	-0.16	0.89	-0.35
D _{OUTFLOW}	0.54***	0.55***	0.40*	0.39*	0.96*	0.24
Log(TNA)	-0.05	-0.05	-0.01	0.01	0.02	-0.07
EXPENSES (%/Year)	8.09**	8.52**	12.03***	13.03***	21.82	14.15
NUMFUNDS_COMPLEX	0.01***	0.01***	0.01***	0.02***	0.01	0.01*
D _{YEAR=1995}		0.29**		0.84***	1.94***	0.73*
D _{YEAR=1999}		-0.01		0.17	0.85	0.01
N (# of Fund-Years)	2,892	2,892	1,176	1,176	333	513
MacFadden R-squared	0.05	0.06	0.06	0.07	0.10	0.09
# of Manager Replacements	260	260	125	125	23	57
% Manager Replacements	8.99	8.99	10.63	10.63	6.91	11.11