

Team Management and Mutual Funds*

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Team Management and Mutual Funds

Abstract

In recent years, team management has become increasingly popular in the mutual fund industry. In this paper, we analyze team management along three broad dimensions. First, we examine potential determinants explaining a fund's management structure. Second, we analyze potential effects of fund management structure on managerial behavior. Third, we address the consequences of team management on fund performance, performance persistence, and fund inflows. Findings show that the management choice is a strategic decision, made usually uniformly for all funds at the fund family level. In particular the extent and complexity of the tasks fund managers face determine management structure, with more teams in segments that require expertise in different fields. Regarding the effects of team management, we find that the management behavior of teams and individual managers differ systematically. Funds managed by teams exhibit significantly lower (unsystematic) risk than single manager funds and adjust their risk to a lesser extent as response to prior performance. In their investment style teams are less extreme and more consistent over time. Looking at fund performance, we find some, albeit only weak, evidence that team management has a negative impact on fund performance. However, team-managed funds are more persistent in their performance over time. Fund investors seem to care about fund management structure. Our findings show that team-managed funds experience significantly higher inflows.

I Introduction

Conventional wisdom holds that two heads are better than one. But is this also true when it comes to managing a mutual fund? Recent developments in the mutual fund industry suggest so. Over the past several years, many mutual fund companies have converted their funds previously run by a single manager to team status. The percentage of US equity funds managed by teams multiplied between 1994 and 2003 from 5 % to about 46 %.

Despite the growing importance of team management in the mutual fund industry, barely any empirical research has been conducted on this issue. This paper fills this gap. We address three broad research questions: 1. What are the determinants explaining the use of teams vs. single managers for the management of mutual funds? 2. How does the managerial behavior of teams and single-managers differ in terms of risk taking and investment style? 3. What are the consequences of team management on fund performance, performance persistence, and fund inflows?

Answers to these questions have significant implications: When choosing among competing funds, fund investors should consider fund management structure if it has an effect on managerial behavior and fund performance. For investment companies, potential answers may be vitally important for how to organize and manage their funds. Furthermore, this issue is also of broader academic interest. Despite the fact that many economic, political as well as legal decisions are made by teams, much of economic theory has to date focused primarily on the behavior of individuals. The mutual fund industry is ideally suited to analyze the decisions of teams as compared to individuals as it constitutes a real-world setting, where the behavior and decision outcomes of managers can easily be observed and directly compared.

There are two main reasons why fund management structure might matter: Firstly, several recent studies have stressed the important role of portfolio managers in generating fund performance (e.g., Chevallier/Ellison, 1999b, Ding/Wermers, 2005). They find that manager characteristics, in particular their educational background and experience, have a significant influence on fund performance. However, if managers play an important role for fund performance, then it should also matter whether a single manager or a team of several managers decide about fund investments. Secondly, several (mainly psychological) experiments have shown that decisions made by individuals differ from decisions made by teams in various dimensions, in particular in terms of their riskiness, extremity, and quality (e.g. Adams/Ferreira, 2003, Cooper/Kagel, 2004). Thus, we would not necessarily expect team decisions to be the simple sum of individuals' decisions.

For our empirical examinations, we use US open-end mutual fund data from the years 1994 to 2003, covering the years of the rapidly increasing popularity of team-managed funds. Our study delivers a broad array of new results on the determinants and consequences of fund management structure, as well as on the managerial behavior of teams versus single managers.

Findings on the determinants of fund management structure indicate that the fund management choice is a strategic decision, usually made uniformly for all funds by the top management of the fund family. We show, that families following a team management approach (i) offer a higher number of funds, (ii) run larger funds and (iii) run more funds in segments that require expertise in different fields, e.g. in the balanced funds or global funds segment. Thereby, our results yield support to the view that teams are primarily employed for more extensive and complex tasks.

Regarding their management behavior, our results show that the decisions made by individuals and teams differ systematically. Management teams take on less overall fund risk as compared to single managers. This difference is mainly driven by a lower level of unsystematic risk. Looking at changes in risk taking as response to prior performance, we find that teams alter their risk to a lesser extent than individual managers. With respect to their style characteristics team-managed funds show a less extreme investment style than single managed funds, i.e. they deviate less from segment specific style benchmarks. In addition, team-managed funds are more consistent in their investment style over time. Overall, our findings support the idea that team decision-making represents a form of averaging among individual positions and ensures a higher continuity in management.

Analysing the consequences of fund management structure on performance, we find some, albeit only weak, evidence that team management has a negative impact on fund performance. Fund management teams can either not realize potential benefits of having more than one manager running the fund, or these benefits are overcompensated by additional costs and team specific inefficiencies. Though differences in performance are generally small, team-managed funds exhibit a significantly higher persistence in their performance. This indicates that a higher continuity in management of team- as compared to single-managed funds eventually leads also to higher continuity in fund performance. Finally, fund investors seem to care about fund management structure. Analysing fund inflows we find that investors strongly prefer team-managed funds. This is a possible explanation for the increasing popularity of the team management approach in the mutual fund industry in recent years.

By providing a comprehensive view on team management and its potential effects in the context of the real-world setting offered by the mutual fund industry, our study contributes to the mutual fund literature as well as the general literature on group decision-making. While the literature has theorized that teams in money management can be motivated by risk-sharing considerations (Barry/Starks, 1984) and might offer benefits from specialization of team members and diversification among managers (e.g. Williams, 1980, Sharpe, 1981), there is barely any empirical evidence on the potential effects of team management. The only notable exceptions are two papers on the performance of team-managed funds that deliver contradicting results. While Chen/Hong/Huang/Kubik (2004) find that teams underperform single-managed funds, Prather/Middleton (2002) find no significant difference in performance. Our paper is the first to address the determinants of team management in the fund industry as well as the risk taking, investment style, performance persistence and inflows of team- versus single-managed funds.

The paper proceeds as follows. Section II explores some of the implications for fund management that arise from the economic and psychological literature. We describe our data in Section III. Section IV presents empirical results on the determinants of fund management choice. In Section V, we examine differences in the behavior between management teams and single managers, while the consequences of fund management structure on fund performance, performance persistence and fund flows are analysed in Section VI. Section VII concludes.

II The Management Structure of Mutual Funds and its Potential Effects

In this section we analyze potential implications for fund management that arise from the economic and psychological literature. In particular, we focus on two aspects that have been studied in literature: first, the (managerial) behavior of teams versus individuals, and, second, the performance of teams versus individuals.

Comparing teams and individuals with respect to the riskiness and extremity of their *behavior*, findings in literature are differing. There is some evidence that team decisions entail a diversification-of-opinion effect and tend to be less extreme than individual ones (e.g. Adams/Ferreira, 2003). As discussed by Moscovici/Zavalloni (1969), a natural hypothesis is that final group decisions represent a compromise, an averaging among individual positions. In order to reach a consensus, group members have to balance their individual opinions. Consequently, one would expect decisions of teams to be less extreme and less volatile over time than decisions of single managers (e.g. Sah/Stiglitz 1986, 1991). In the fund management con-

text, this should be reflected in less volatile fund returns of team-managed funds and less extreme, more consistent investment styles of management teams.

However, there are also theories predicting an increase of the extremeness and riskiness of group decisions. Some psychological experiments provide evidence for a group-polarization effect which refers to the tendency that group member's individual judgements become more extreme after group discussion (e.g. Myers/Lamm 1976). One potential reason for this effect is that team members become comfortable with more extreme positions when they realize that the other team members also generally support this position. Furthermore, some psychological studies document a risky-shift phenomenon which indicates that groups tend to make riskier choices than the average group member (e.g. Kogan/Wallach, 1965, Kahneman/Tversky, 1979). A potential explanation lies in the process of team deliberation which might create an illusion of control and leads to a higher confidence, or even overconfidence, of team members. Persuasive arguments favouring the dominant position might convince doubtful members and help to reach a consensus around the riskier choice. These two phenomena can attenuate or even reverse a moderating affect of teams described above and lead to a more extreme investment style and higher risk of funds managed by more than one manager.

Regarding the *performance* of teams versus individuals, the literature also provides differing evidence. Several studies find that teams act more rational and perform better (e.g. Bone/Hey/Suckling, 1999, Blinder/Morgan, 2000, Rockenbach/Mataushek, 2001, Cooper/Kagel, 2004). Management literature suggests that team decisions may benefit from two sources. Firstly, team members can correct each others errors in the process of team deliberation (e.g. Shaw, 1932, Sharpe, 1981). Given the bounded rationality of individuals, this is particularly important under conditions of high uncertainty and complexity, which regularly characterise investment decisions of mutual funds. Secondly, teams may profit from a broader resource of knowledge and capabilities, particularly when specialists with complementary skills are integrated in teams (Pelled/Eisenhardt/Xin, 1999). Consistent with these ideas, we would expect team-managed funds to make better and more rational decisions than individually managed funds. As a result, team-managed funds should deliver a better performance.

However, additional costs associated with group decision-making (e.g. coordination and communication costs) may reduce potential benefits. Furthermore, experimental studies have documented inefficiencies and biases that are specific to group decision-making. For example, some studies find that team members become less motivated and reduce effort as compared to situations where they work individually (e.g. Williams/Nida/Baca/Latané, 1987, Weldon/Gargano, 1988). Hölmstrom (1982) argues that this is due to moral hazard in teams.

Moreover, groupthink may lead highly cohesive teams to strive for unanimity, even at the expense of decision quality (Janis 1982). Mutual fund management teams may also be subject to these phenomena. In addition, management teams may be used by fund companies as “training grounds” for inexperienced managers, as adversaries of the team management approach argue (e.g. Pizzani, 2004). As a result of these effects, potential benefits of team decision-making can be reduced or even overcompensated.

Ultimately, whether investment decisions taken by management teams are less or more extreme and risky, better or worse than individual decisions are open empirical questions that we address in the following.

III Data

Our primary data source is the CRSP Survivor Bias Free Mutual Fund Database.¹ This database covers U.S. open-end mutual funds and provides information about fund returns, fund management structures, total net assets, investment objectives, and other fund characteristics. We focus on actively managed equity funds which invest more than 50 % of their assets in stocks, excluding bond, money market and index funds. We use the ICDI objective codes, identified by Standard & Poors’s Fund Services to define the market segments in which funds operate. This leaves us with 10 different segments.

We aggregate multiple classes of the same fund to avoid multiple counting. Although multiple share classes are listed as separate funds in CRSP, they are backed by the same portfolio of assets and have the same portfolio manager(s). Following the approach in Daniel/Grinblatt/Titman/Wermers (1997), we identify classes by matching fund names and characteristics, such as fund management structure, turnover, and fund holdings in asset classes.

To examine the consequences of specific management structures, it is crucial to clearly classify a fund’s management structure. CRSP reports management structures in several ways. First, for funds managed by an individual, the manager is reported by name. We classify these as “single manager” funds (SM). Second, if CRSP reports “team” or “management team”, we label these funds team-managed (T). A third category lists the names of two or more managers or reports a manager name and “et al.” or “and team”. As it is not quite clear, how this

¹ Source: CRSPSM, Center for Research in Security Prices. Graduate School of Business, The University of Chicago. Used with permission. All rights reserved. For a more detailed description of the CRSP database, see Carhart (1997) and Elton/Gruber/Blake (2001).

classification differs from the team-managed and single manager funds, respectively, we exclude these funds from the final sample. A fourth category reports the name of a management company. These funds are also excluded from the sample since the precise management structure remains unclear.

Our final sample spans the period from January 1994 to December 2003 and includes 14,848 yearly observations on US equity funds. It covers the years of the rapid growth of team-managed funds, as it can be seen from Figure 1. This figure plots the percentage of team and single manager funds in our sample between 1994 and 2003.

– Insert FIGURE 1 about here –

In 1994, team-managed funds represent only about 5 % of the total number of equity funds. In the following years, this percentage grows rapidly, reaching about 46 % in 2003. When looking at assets under management of single and team-managed funds during the same period, we find a similar development. Assets held by team-managed funds increase from 7 % in 1994 to about 50 % of total assets held by single and team-managed equity funds in 2003.

Summary statistics of our final sample are given in Table 1.

– Insert TABLE 1 about here –

The second column shows the characteristics of all funds. On average, sample funds are 9.7 years old and manage over 840 million USD. The mean turnover rate is slightly above 1.14 and the average fee burden is 1.4 % p.a.² To better understand the characteristics of single and team-managed funds, we report summary statistics of the two sub-samples in columns 3 and 4. The respective differences are reported in column 5. Team-managed funds are significantly younger (8.9 versus 10 years), have higher TNAs (997 versus 791 million USD), a higher turnover ratio (146 % versus 102 %), and lower fees (1.29 % versus 1.44 % p.a.) as compared to single-managed funds.

² Following Sirri/Tufano (1998), we calculate total fees as the sum of a fund's expense ratio and 1/7 of its total loads.

Looking at the distribution of team- and single managed funds across sections we see considerable cross-sectional variation, as shown in Figure 2.

– Insert FIGURE 2 about here –

This figure plots the share of team- and single-managed funds in each of the ten market segments for the year 2003. The balanced funds sector has the highest percentage of team-managed funds (61% in 2003), followed by the global equity funds and international equity funds segments (about 50 %). The share of team-managed funds is lowest for sector funds and in the utility funds segment (33 % and 39 %, respectively).

The comparison between the two sub-samples provides preliminary evidence that team and single manager funds differ significantly with respect to their characteristics and are unequally spread across market segments. We will examine the management choice decision more formally in the next section.

IV Determinants of Funds Management Structure

1 Analysis on the Individual Fund Level

In this section we explore possible determinants of a fund's management structure. We hypothesize that funds are managed by a team rather than a single manager if, first, their tasks are more extensive and complex, and, second, their families in general promote the team approach. To investigate the potential effects of these two aspects on fund management we relate the probability of a fund being team-managed, $Prob(\text{Team Management})$, to fund specific variables that characterize a fund's task and the management policy of its family. We estimate the following logit model:

$$Prob(\text{Team Management})_{i,t} = F\left(\beta_1(\text{Size})_{i,t-1} + \sum_k \beta_k(\text{Segment})_{i,t} + \beta_2(\text{Family Policy})_{i,t-1} + \beta_3(\text{Age})_{i,t-1} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t}\right). \quad (1)$$

Here, i is the index for an individual fund. $Size$ proxies for the extent of a fund's tasks and is computed as the logarithm of assets under management of fund i . To capture the complexity of a fund's task, we add a set of dummy variables, $Segment$. These variables adjust for the fact that managing a fund in certain market segments is more complex in the sense that exper-

tise in different fields is required. The dummy variables take on the value one, if a fund belongs to the respective segment, and zero otherwise.³ As proxy for the general management policy of a fund's family we use the *Family Policy* variable. It is defined as the percentage of team-managed funds in the respective family and thereby reflects the dominant management strategy of a fund's family. While calculating this measure, we exclude the specific fund under consideration.

Finally, to control for a fund's lifecycle and year-specific effects, we include *Age*, calculated as the logarithm of fund age in years and a set of dummy variables, $D(y)$, that take on the value one if an observation is from year y , and zero otherwise.

In order to measure the economic significance of our results, we follow Khorana/Servaes (1999) and calculate the percentage changes in the probability of having a fund being team-managed when a variable is increased by one standard deviation, for all other variables set equal to their means.⁴ For dummy variables, we compute the percentage change when the variable is increased from zero to one.

– Insert TABLE 2 about here –

In the second and third column of Table 2, we present the results of the logit regression. We find that the probability of having a fund being team-managed is higher for funds with higher total net assets. One standard deviation increase in size increases the likelihood of having team management by 31 %. This supports the view that teams are particularly employed for more extensive tasks.

Looking at the estimates for the influence of the fund segments, results show that in particular balanced funds, and, to a lesser extent, global equity and international funds are associated with significantly higher odds of being team-managed (+ 102 %, 81 %, and 60 % increase in probability, respectively), while the probability of team management is significantly lower for sector funds (-33 %). These results confirm the idea, that teams are mainly employed for more

³ We leave out one dummy for one of the segments, as otherwise our explanatory variables would be linearly related. We exclude the dummy for the growth and income segment, as this is a well diversified standard-segment. Results are not qualitatively affected by the particular segment chosen.

⁴ The percentage change measures the *relative* change of the probability of a fund being team-managed. Assuming, e.g., an average probability of team management of 25%, an increase (decrease) in the probability of 10 % means that the probability of team management is increased (decreased) to 27.5 % (22.5%).

complex tasks that require specialised know-how in different areas, as the potential benefits from specialization of team members are larger in these cases (e.g. Sharpe, 1981).

However, the highest impact on the management structure choice for individual funds emanates from the general management policy of the family. The family policy exhibits a positive and statistically as well as economically highly significant influence on the probability for being a team-managed fund. A one standard deviation increase in the percentage of team-managed funds in the respective family increases the likelihood of team management by about 231 %. This suggests that the choice of a fund's management structure is a strategic decision, made relatively uniformly at the fund family level.

Figure 3 supports this reasoning. It plots the distribution of mutual fund families in our sample according to the percentage of team-managed funds within a family. 60 % of all fund families have more than 90 % of their funds being managed by a single manager, while about 18 % of fund families have more than 90 % of their funds managed by a team. Only 22 % of all families have a significant amount of *both* management structures. The strategic choice of the management structure at the family level will be examined in more detail in the following section.

– Insert FIGURE 3 about here –

Finally, our results also indicate that younger funds are more likely to be managed by teams. A possible reason for the age effect might be that team management became very popular in the late nineties, during the rapid growth of the mutual fund industry. Management companies were possibly reluctant to change the management structure of their well established funds, but employed teams for running new funds. In consequence, team-managed funds are, on average, younger than single manager funds. An alternative explanation for this result is that setting up and managing a new fund represents a more complex task than running a well established fund and might require additional capacity.

2 Analysis on the Fund Family Level

We now turn to an examination of the factors that determine a family's management-strategy. Based on our findings on the individual fund level, we hypothesize that, first, families that have a large proportion of funds with extensive and complex tasks predominantly employ

teams for fund management. Second, we expect that larger families are more likely to follow a team approach, as these families can more efficiently use teams in varying compositions for the management of their funds.

To test these hypotheses, we estimate the following logit regression:

$$\begin{aligned}
 Prob(\textit{Team Family})_{j,t} = F & \left(\beta_1 (\textit{Average Fund Size})_{j,t-1} + \sum_k \beta_k (\textit{Fam Segment})_{j,t} \right. \\
 & + \beta_2 (\textit{Number of Funds})_{j,t-1} + \beta_3 (\textit{Family Age})_{j,t-1} \\
 & \left. + \beta_4 (\textit{Average Fund Age})_{j,t-1} + \sum_y \alpha_y \cdot D(y)_{j,t} + \varepsilon_{j,t} \right). \tag{2}
 \end{aligned}$$

Here, j is the index for an individual family. *Team family* is an indicator variable that equals one if more than 50 % of funds in a family are managed by a team, and 0 if more than 50 % are managed individually.⁵

As a proxy for the extent of tasks of a family's fund-portfolio we use *Average Fund Size* which is calculated as the logarithm of the average total net assets (TNA) of a family's funds. The *Fam Segment* variables proxy for the complexity of tasks and are defined as the percentage of the family's funds operating in the respective market segment k . As proxy for the size of the family we include *Number of Funds* which is calculated as the logarithm of the total number of funds in the family.

To control for a family's lifecycle and the age of a family's fund-portfolio, we also include *Family Age* and *Average Fund Age*. The former is computed as the logarithm of the age of the family, while *Average Fund Age* denotes the logarithm of the average age of all funds in the family. Year-specific effects are captured by a set of yearly dummy-variables, $D(y)$.

– Insert TABLE 3 about here –

Results are presented in Table 3. We find that the probability of being a team dominated family is higher for families with higher average fund size. A one standard deviation increase in the average fund size increases the likelihood of having a team dominated family by about 49 %. This is consistent with our findings on the individual fund level. Results also indicate that families with a relatively higher percentage of balanced funds and a relatively lower percentage of sector funds tend to have a higher probability of being team families. A one percent in-

⁵ Results are stable with respect to other specifications used (e.g., 70 %).

crease in the percentage of balanced funds (sector funds) increases (decreases) the probability by about 44 % (14%). These results are also in line with our earlier findings that the likelihood of being team-managed is significantly higher (lower) for balanced (sector) funds.

Furthermore, the number of funds in the family has a significantly positive influence on the probability of team management. A one standard deviation increase in the number of member funds increases the likelihood of having a team dominated family by about 23 %. This supports our hypothesis that a family needs a certain number of funds in order to be able to efficiently use teams of specialists in varying compositions for the management of different funds.

Regarding the control variables, we find no significant influence of the average fund age on the probability of being a team family, while the coefficient on the family age is significantly negative. An one standard deviation increase in family age decreases the likelihood of having a team dominated family by about 46 %. This indicates that in particular younger families follow the team approach.

Overall, our results provide evidence that task characteristics as well as the general management policy of the family affect the management choice at the individual fund level. The former is important on its own, but also through its influence on the general management policy of the family. This holds because the management decision is usually made uniformly for all funds by the top management of the fund family. Families following a team management approach are usually larger in terms of number of funds and manage on average larger funds that do business in segments where expertise in different areas is required, e.g. in the balanced funds segment. These results support the view that teams are primarily employed for more extensive and complex tasks.

V Management Behavior: Teams versus Single Managers

In this section we examine potential differences in the management behavior of teams and single managers. The management structure may influence, in particular, the risk taking as well as the investment style of mutual funds. Each of these issues will be discussed in turn. We will first examine the average risk taking behavior of single managers and management teams as well as their change in risk taking as response to prior performance (Section V.1). Then we will take a closer look at the investment styles and explore the average styles of the

two groups, the extremity of their styles, as well as their style consistency over time (Section V.2).

1 Risk Taking

1.1 Average Fund Risk

If team members have divergent opinions on which stocks to invest in, the final portfolio on which they agree might reflect a diversification-of-opinion effect. Following this argument, we expect the returns of team-managed funds to be less risky than those of single-managed funds. A competing hypothesis based on the psychology literature is that groups experience a risky shift (see Section II), which leads management teams to behave, on average, more risky than individual managers.

To explore the impact of a fund's management structure on its risk taking, we relate a fund's total risk to its management structure and other potentially relevant fund characteristics, such as fund age, size, and turnover:

$$Fund Risk_{i,t} = \beta_1 (Team Dummy)_{i,t} + \beta_2 (Age)_{i,t-1} + \beta_3 (Size)_{i,t-1} + \beta_4 (Turnover)_{i,t-1} + \sum_k \beta_k (Segment)_{i,t} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t}. \quad (3)$$

Here, $Fund Risk_{i,t}$ reflects the overall fund risk measured by the standard deviation of fund i 's return in year t . *Team Dummy* indicates a fund's management structure and equals one if the fund is team-managed, and zero otherwise.⁶ *Age* and *Size* are computed as the logarithm of fund age and total net assets (TNA), respectively, *Turnover* is given by a fund's turnover ratio.⁷ We include a set of segment and yearly dummy variables, *Segment* and $D(y)$, to capture segment- and year-specific effects. Column 2 of Table 4 summarizes the findings.

– Insert TABLE 4 about here –

The results provide evidence that management teams take less risk than single managers. The coefficient on the team dummy is negative and significant at the 1% level. The estimate of 0.0019 implies that the risk, measured by the standard deviation of fund returns, is about 0.2 percentage points per month lower for team-managed funds than for single-managed funds.

⁶ We drop observations from years in which the management structure changes. As robustness check, we rerun our regressions including these observations. If the management structure changes in year t , we ascribe the fund's risk to the new management from year $t+1$ on. Results are qualitatively similar.

⁷ We lag these explanatory variables by one year to mitigate potential endogeneity problems.

This translates into 0.7 percentage points less risk per year of teams as compared to single managers.

Following the diversification-of-opinion argument, the lower risk of team-managed funds documented above should be driven by the pooling of different active bets on specific stocks within teams. This implies that the reduction in total risk is due to a reduction in unsystematic rather than systematic risk. To test this hypothesis, we re-estimate regression (3) by using a fund's unsystematic and systematic risk, respectively, as dependent variables:

$$\begin{aligned} \text{Unsystematic Risk}_{i,t} = & \beta_1 (\text{Team Dummy})_{i,t} + \beta_2 (\text{Age})_{i,t-1} + \beta_3 (\text{Size})_{i,t-1} + \beta_4 (\text{Turnover})_{i,t-1} \\ & + \sum_k \beta_k (\text{Segment})_{i,t} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t}. \end{aligned} \quad (4)$$

$$\begin{aligned} \text{Systematic Risk}_{i,t} = & \beta_1 (\text{Team Dummy})_{i,t} + \beta_2 (\text{Age})_{i,t-1} + \beta_3 (\text{Size})_{i,t-1} + \beta_4 (\text{Turnover})_{i,t-1} \\ & + \sum_k \beta_k (\text{Segment})_{i,t} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (5)$$

We follow Chevalier and Ellison (1999b) and measure *Systematic Risk* by fund i 's beta in year t , $\beta_{i,M,t}$, from a market model. *Unsystematic Risk* is measured by the standard deviation of fund i 's residual fund return. We calculate these measures by regressing fund i 's excess return on the market excess return for each year in our sample:

$$R_{i,m,t} - R_{f,m,t} = a_{i,t} + \beta_{i,M,t} (R_{M,m,t} - R_{f,m,t}) + e_{i,m,t} \quad (6)$$

$R_{i,m,t}$ denotes the return of fund i in month m of year t . $R_{i,m,t} - R_{f,m,t}$ denotes the excess return of the market portfolio over the risk-free rate. The other explanatory variables in equation (4) and (5) are defined as in the previous regression.

The results on the unsystematic and systematic risk components are presented in the third and fourth column of Table 4, respectively. Our results on the unsystematic risk component indicate that manager teams take significantly lower unsystematic risks (0.25 percentage points per month or about 0.87 percentage points per year). However, we find no evidence that the team management approach affects a fund's systematic risk. This supports the hypothesis of a diversification-of-opinion effect in group decision-making. Our findings provide no evidence for a risky shift in the portfolio decisions of team-managed funds.

1.2 Changing Risk

In this section, we examine how team-managed funds adapt their risk as compared to single-managed funds during the year dependent on their performance in the first part of the year.

The idea, that fund managers align their risk in a tournament-like fashion as response to their midyear rank was first proposed in Brown/Harlow/Starks (1996). They argue that fund managers adjust the risk of their portfolio in the course of the year in order to increase their chance of beating their competitors.

Many team members are part of different management teams. This regularly leads to situations, where they compete against other funds of which they are also part of the management team, i.e. they compete against themselves.⁸ As a result, risk-adjusting incentives due to their competitive position should be less pronounced for teams than for single managers.

To estimate potential differences in the risk-adjustment strategies of teams and single fund managers we apply a modified version of the model in Kempf/Ruenzi (2005):

$$\begin{aligned} \text{Change in Risk}_{i,t} = & \beta_1 (\text{Perf Rank})_{i,t}^{(1)} + \beta_2 (\text{Team Dummy})_{i,t} \cdot (\text{Perf Rank})_{i,t}^{(1)} \\ & + \beta_3 (\text{Risk})_{i,t}^{(1)} + \beta_4 (\text{Change in Segment Risk})_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (7)$$

The dependent variable, *Change in Risk*_{*i,t*}, denotes the change in risk between the first and the second part of the year. It is defined as the difference between fund *i*'s annualized return standard deviations in the first and the second period of year *t*. *Perf Rank*_{*i,t*}⁽¹⁾ denotes the rank of fund *i* in its segment after the first part of year *t* based on its return in this period. In our regressions, we chose six months as the first part of the year.⁹

To examine differences in the behavior between team and single-managed funds, we interact the influence of *Perf Rank*_{*i,t*}⁽¹⁾ with a team-dummy. If teams really adjust their risk less than single-managed funds, we expect β_2 to have the opposite sign of β_1 . As control variable we add the fund's risk in the first part of the year, *Risk*_{*i,t*}⁽¹⁾, to allow for mean reversion in risk (see Daniel/Wermers, 2000). We also include the change in segment risk, *Change in Segment Risk*_{*i,t*}, as additional explanatory variable to capture variations in the overall risk in the respective segment. This variable is calculated as the difference between the median standard deviations of returns in fund *i*'s segment in the first and the second part of the year. Results are presented in Table 5.

– Insert TABLE 5 about here –

⁸ Some managers of single-managed funds also manage more than one fund. However, they generally manage a smaller number of additional funds (if any) as compared to the number of additional funds an individual team member usually manages.

⁹ Results remain stable if we choose seven or five months as the first part of the year.

The positive influence of $Perf Rank_{i,t}^{(1)}$ indicates that winners increase risk more than losers do. This behavior confirms the theoretical predictions in Taylor (2003) and Makarov (2005) and the empirical results of Busse (2001) and Kempf/Ruenzi (2005). However, the risk-changing of team-managed funds is less pronounced than that of single-managed funds.¹⁰ This supports the idea that risk-adjusting incentives are weaker for teams as they compete (partly) against themselves.

In sum, the results on the effect of fund management structure on fund risk taking in this section indicate that teams take on less (unsystematic) risk than single managers and change their risk to a lesser extent as response to their prior performance.

2 Investment Style

2.1 Average Investment Style

We start our analysis of the investment styles of team- versus single-managed funds by comparing the average styles followed by the two groups. We apply a return-based classification approach and measure a fund's style based on the sensitivities of its return to the four Carhart (1997) factors. For each fund, we construct the yearly factor weightings by estimating the following regression:

$$R_{i,m,t} - R_{f,m,t} = a_{i,t} + \beta_{i,M,t} (R_{M,m,t} - R_{f,m,t}) + \beta_{i,S,t} SMB_{m,t} + \beta_{i,H,t} HML_{m,t} + \beta_{i,MO,t} MOM_{m,t} + \varepsilon_{i,m,t} \quad (8)$$

where the dependent variable is the monthly return on fund i in month m , $R_{i,m,t}$, less the risk free rate, $R_{f,m,t}$. The independent variables are the returns on the four factor portfolios: $R_{M,m,t} - R_{f,m,t}$ is the excess return of the market portfolio over the risk-free rate. SMB is the return difference between small and large capitalization stocks. HML is the return difference between high and low book-to-market stocks, and MOM is the return difference between stocks with high and low past returns.¹¹

In order to look at the average investment styles of team- versus single-managed funds, we regress the yearly factor weightings, $Factor Weighting_{i,t}^f$, on the SMB, HML, and MOM port-

¹⁰ Similar findings are reported in Qiu (2003).

¹¹ The market, the size, and the value portfolio were taken from Kenneth French's Web site: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html, while the momentum factor was kindly provided by Mark Carhart.

folios ($\beta_{i,S,t}$, $\beta_{i,H,t}$, and $\beta_{i,MO,t}$) on a fund's management structure and other potentially relevant fund characteristics:

$$\begin{aligned} \text{FactorWeighting}_{i,t}^f = & \beta_1 (\text{Team Dummy})_{i,t} + \beta_2 (\text{Age})_{i,t-1} + \beta_3 (\text{Size})_{i,t-1} + \beta_4 (\text{Turnover})_{i,t-1} \\ & + \sum_k \beta_k (\text{Segment})_{i,t} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (9)$$

where f denotes the index for the f th factor portfolio, i.e. $f = S, H$ and MO , respectively. The independent variables, *Team Dummy*, *Age*, *Size*, and *Turnover* are defined as in the previous sections. Table 6 shows the results.

– Insert TABLE 6 about here –

The coefficient for the influence of the team dummy on the factor weighting is not statistically significant, for none of the three factors.¹² This indicates, that management teams and single managers follow, *on average*, similar styles. In the following we will explore whether they differ with respect to the *extremity* of their styles.

2.2 Extremity

Though fund managers pursue a wide variety of investment strategies and adopt different criteria for stock selection, most mutual funds seem to adopt investment styles that cluster around broad market indices (Chan/Chen/Lakonishok, 2002). We now examine whether differences in the decision-making process of teams and individuals induce management teams to make less extreme decisions than individuals. While some team members might prefer extreme style bets, the averaging effect of team decision-making should lead to more moderate styles of teams as compared to individual manager styles.

In order to measure a fund's style extremity, we construct a new extremity measure, *EM*, based on the return-based approach to style classification described in the previous section. We define style extremity in the sense of having taken a large bet on the direction of the size, value, or momentum factor, i.e. having unconventional high or low weightings on the SMB, HML, and MOM portfolio.

¹² When using the weighting on the first factor of the Carhart model, the market portfolio, as dependent variable in regression (9), we get findings similar to those presented in section V.1.1 for the beta of the one index model (regression equation (5)). The coefficient for the influence of the team dummy is, as well, not statistically significant.

We compute this measure as follows. First, we determine average weightings on the size, value and momentum factor as style benchmarks, $Style\ Benchmark_f$, for each market segment.¹³ For each fund in each year we calculate the absolute differences between its factor weightings and the corresponding style benchmarks. In order to make these differences homogeneous, we rescale them by the mean difference of the corresponding market segment in the respective year. Finally, we average the normalized absolute values of the three factor differences on the fund level to get a measure for the extremity of each individual fund:

$$EM_i = \frac{1}{3} \sum_f |(Factor\ Weighting_f)_i - (Style\ Benchmark_f)_k|^{resc}. \quad (10)$$

In this equation, i is the index for the individual fund, k denotes the corresponding market segment and f represents the f th factor. $resc$ indicates that the differences are rescaled as to make them homogeneous in terms of their level and range of variation. A higher value of the extremity measure, EM , for a fund corresponds to more extreme factor weightings, i.e. to a more extreme style of this fund as compared to a (hypothetical) average fund in the respective segment. A typical fund with average extremity has, by construction, an extremity measure of 1.

– Insert TABLE 7 about here –

Column 2 of Table 7 presents the results on the average style extremity of team- and single-managed funds. We find the extremity measure of team-managed funds to be lower than that of single manager funds (1.0238 versus 0.9108). The difference is significant at the 1% level. This indicates that team-managed funds deviate less from the style benchmark of the corresponding segment as compared to single manager funds. Our results hold not only for the aggregate level of factor deviations, but also for all of the three factors individually. Columns 3 to 5 show the average deviation of single- and team-managed fund weightings from the corresponding style benchmarks for each of the three factors separately. We find that management teams deviate significantly less from benchmark styles as compared to single managers in all of the three style dimensions. In this sense, management teams exhibit a less extreme investment style and show a higher tendency to herd as compared to single managers.¹⁴

¹³ Alternatively, we use the median of the four factor loadings in the respective market segment as style benchmark. Results are not affected by this.

¹⁴ When computing the extremity in terms of the first of the four Carhart factors, the market factor, results are similar, i.e. teams are less extreme also in the sense of having less unconventional positions in the market. Thereby, they are also less extreme in terms of the *BetaDeviation* measure of Chevalier/Ellison

These findings again support the idea that group decision-making represents a form of averaging among individual positions. Group phenomena like the group-polarization effect (see Section II), that may increase decision extremity either do not occur in the context of mutual fund management, or are too weak to reverse the moderating effect.

2.3 Style Consistency

Differences in the decision-making process of management teams and individual managers might also be reflected in the consistency of their investment decisions over time. From the investor's point of view, a drift in a fund's style can produce unwanted and unexpected style bets for individual portfolios.

Given our previous results, we expect teams to change their styles more gradually over time as compared to single managers because changes in the opinions of managers that might lead to style drift should be smoothed by the averaging effect of team decision-making. In addition, manager changes should have less disruptive effects for team than for single manager styles. While teams will tend to hold on to their strategy even if individual members change, a new fund manager of an individually managed fund most likely adopts her own investment strategy which might differ considerably from the previous fund style (see, e.g., Jin/Scherbina, 2005). For all of these reasons we expect styles of team-managed funds to be more consistent over time than styles of single-managed funds.

To compare the style consistency of single- and team-managed funds, we construct a new quantitative style drift measure that captures a fund's style variability through time, based on its weightings on the SMB, HML, and MOM portfolios.¹⁵ It is defined as the average standard deviation, $STDev$, of a fund's three *factor weightings* over time:

$$SDM_i^{abs} = \frac{1}{3} \sum_f STDev^{resc} (Factor\ Weighting_f)_i. \quad (11)$$

(1999a), which is calculated similarly, as the absolute value of the difference between a fund's beta and the average beta in the fund's market segment. As robustness check, we also use a multivariate regression technique and regress the extremity measure on fund management structure and other potentially relevant fund characteristics, such as fund size, age, and turnover. Results (not reported) indicate that team management has a significantly negative influence on a fund's style extremity, supporting the univariate findings documented in this section.

¹⁵ Commonly used measures for style consistency are a fund's tracking error or the R^2 (e.g. Brown/Harlow, 2004). The former can be estimated as the volatility of the difference between fund returns and those to a corresponding benchmark. The latter, R^2 , captures the portion of a fund's variability that is explained by the variance of benchmark portfolios. When benchmarks are adequately specified, these variables can indicate a fund's active risk. However, they do not necessarily capture a fund's style variability through time. A low R^2 as well as a high tracking error can result either from a constant investment strategy with a high level of unsystematic risk or from changing style bets.

In this equation, i is the index for the individual fund and f represents the f th factor. *resc* indicates that the standard deviations are rescaled as to make them homogeneous across factors and market segments.¹⁶ A higher value of the style drift measure, SDM^{abs} , corresponds to a higher standard deviation of their factor weightings, and thus to a more volatile, i.e. less consistent style of this fund over time. It is defined not in relation to a typical fund in the respective market segment, but in absolute terms (as indicated by *abs*).

Alternatively, we also employ a modified version of this measure, SDM^{rel} , which captures a fund's style variation corrected for the movements of a typical fund with average style characteristics, *Style Benchmark*, in the respective market segment k . It is calculated as the average standard deviation, *STDev*, of the deviations of a fund's three factor weightings from style benchmarks:¹⁷

$$SDM_i^{rel} = \frac{1}{3} \sum_f STDev^{resc} \left(\left(Factor\ Weighting_f \right)_i - \left(Style\ Benchmark_f \right)_k \right). \quad (12)$$

A higher value of this style drift measure indicates a less consistent fund style, in the sense that it fluctuates more in relation to the style movements of a (hypothetical) fund with average style characteristics in the same segment. As for the extremity measure, a typical fund with average style drift has, by construction, a (relative and absolute) drift measure of 1. Results of a comparison of our style drift measures between single- and team-managed funds are presented in Table 8.

– Insert TABLE 8 about here –

Columns 2 and 6 of Table 8 show the average style drift measures (absolute and relative) for single- and team-managed funds. The results are similar for the two measures. SDM^{abs} and SDM^{rel} are significantly lower for team-managed funds than for single manager funds (0.81 versus 1.053 and 0.796 versus 1.049). This indicates that management teams, more than sin-

¹⁶ To calculate this measure, we proceed in three steps, similar to the computation of our extremity measure in the previous section. For each fund, we first compute the standard deviations of a fund's yearly factor weightings over time. We exclude funds that have less than 4 years of data. Next, we rescale the results by the average standard deviation of the respective factor in the respective market segment. In the last step, the rescaled standard deviations of the individual factors are averaged on the fund level to get a measure for the overall consistency of a fund's style.

¹⁷ As SDM^{abs} , this measure is calculated in three steps. However, in the first step we compute the standard deviations of the *difference* between the individual fund factor weightings and the corresponding style benchmarks (defined as in the previous section). Accordingly, we rescale the results by the average standard deviation of this difference in the next step.

gle managers, hold on to their style decisions in absolute terms as well as in relation to the style movements of a typical fund with average style characteristics in the respective segment. When looking at the average fluctuations of weightings for each of the three factors separately, we observe that management teams are significantly more consistent in their style in all of the three style dimensions, both in absolute terms as well as relative to the movements of a corresponding style benchmark. As can be seen from columns 3 to 5 and 7 to 9, team-managed fund weightings on the SMB, HML, and MOM portfolios as well as their deviations from style benchmarks fluctuate, on average, less than those of single-managed funds.¹⁸

In sum, we find that teams follow less extreme styles than individual fund managers and that their investment style is more consistent over time. Thus, our results on the managerial behavior of teams with respect to risk taking as well as investment style yield support for the diversification-of-opinion hypothesis. We do not find any evidence in favour of the group-polarization theory or the risky-shift hypothesis that predict that teams make more extreme and risky decisions than single managers.

VI Consequences of Fund Management Structure

The former section provides evidence that management teams and single managers differ with respect to their risk-taking as well as their investment style. In the following we will analyse further consequences on fund performance (Section VI.1), performance persistence (Section VI.2) and fund-inflows (Section VI.3). Potential differences between the two management forms are relevant from the investor's point of view as well as from the fund management companies point of view: the first are interested in (persistently) good performance while the latter try to maximize assets under management and consequently fee income.

1 Fund Performance

Based on theory, we have no ex-ante expectation on whether team- or single-managed funds should perform better (see Section II). There is also only very little empirical evidence on the performance of team- vs. single-managed funds in the literature. Golec (1996) and Prather/Middleton (2002) find no difference, while Chen/Hong/Huang/Kubik (2004) report that funds run by teams significantly underperform single-managed funds. As findings in the

¹⁸ As for findings on style extremity, we check the robustness our results using multivariate regression analysis. Results (not reported) support our univariate findings.

literature are equivocal, we re-address this issue by comparing the performance of single- and team-managed funds using a broader sample than previous studies.¹⁹

1.1 Portfolio Evidence

We first examine whether the performance of portfolios of funds with different management structures differs. We use the Carhart (1997) four-factor model as described in Section V.2.1 to measure fund performance. The a_i in equation (8) measures the abnormal return corrected for systematic fund risk and style.²⁰

At the end of each year, we sort all funds according to their management structure into a single-managed fund portfolio (SM) and a team-managed fund portfolio (T). For each portfolio we compute the equally weighted average four-factor alpha. To examine potential differences between the management approaches, we also analyse a portfolio that is constructed by subtracting single-managed fund portfolio returns from team-managed fund portfolio returns (T – SM).

We look at the abnormal returns before and after subtracting expenses. Examining the returns before expenses enables us to better assess the investment ability of fund management, since there might be systematic differences in expenses between single and team-managed funds. However, for mutual fund investors the returns after expenses are most important. Table 9 summarizes the results of the portfolio analysis.

– Insert TABLE 9 about here –

The second column in Table 9 presents the abnormal returns before expenses. Both fund portfolios in our sample generate negative abnormal gross-returns. When comparing the portfolio of team-managed funds to the single manager fund portfolio, we find that the performance of the team portfolio shows a slightly worse performance (-0.127 versus -0.067 percentage points per month). However, this difference of 0.06 percentage points is not statistically sig-

¹⁹ Prather/Middleton examine a small sample of 147 single and 15 team managed equity funds, while Chen/Hong/Huang/Kubik (2004) limit their analysis to well-diversified equity funds like Growth & Income or Long-Term Growth. This might influence the results, as teams are particularly prominent in segments excluded from their examination (see Figure 2).

²⁰ As robustness check, we also use two alternative measures of performance for our analysis: First, the Fama-French (1993) three factor model and, second, a multi-index model including an international index (as our final sample also contains international and global funds) and a Government Bond index (Elton/Gruber/Blake, 1999). Results (not reported) are qualitatively similar to those presented in tables.

nificant (p-value of 0.15) and becomes even smaller on an after expense basis (0.05 percentage points, p-value of 0.23). Overall, these findings suggest that the team- and single-manager portfolios do not differ systematically in their performance.

1.2 Multivariate Regression Evidence

In the following we extend our analysis using a multivariate regression framework. This approach differs from the portfolio approach used above in two main respects. First, it examines the management-performance relation on a more disaggregate level, looking at individual funds rather than fund portfolios. Second, it enables us to control for fund characteristics with respect to which team- and single-managed funds differ and that are possibly related to fund performance. For example, we observe that team-managed funds are, on average, younger and larger than single manager funds. Assuming that management structure and fund age and size have reverse and compensating effects, we possibly do not find performance differences in management portfolios, only because management structure is correlated with age and size.

To analyse the influence of the management-structure on fund performance, we estimate the following regression:

$$Perf_{i,t} = \beta_1(Team\ Dummy)_{i,t} + \beta_2(Perf)_{i,t-1} + \beta_3(Age)_{i,t-1} + \beta_4(Size)_{i,t-1} + \beta_5(Turnover)_{i,t-1} + \beta_6(Expenses)_{i,t-1} + \sum_k \beta_k(Segment)_{i,t} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t} \quad (13)$$

Performance ($Perf_{i,t}$) is measured by a fund's four factor alpha in year t .²¹ *Team Dummy* reflects the management structure and equals one if the fund is managed by a team, and zero otherwise. *Expenses* denotes a fund's expense ratio, *Age*, *Size* and *Turnover* are defined as in the previous sections. To control for segment- and year-specific effects, (13) also includes segment and time dummies.²² Results are presented in Table 10.

– Insert TABLE 10 about here –

Looking at the second column of Table 10, we find a negative relation between team management and fund performance. Team-managed funds underperform single manager funds by about 0.056 percentage points per month. The coefficient on the team dummy is significant at

²¹ We use the four factor alpha after expenses. The variable *Expenses* captures the influence of fund expenses on fund abnormal return.

²² As in the logit regression, we leave out the segment dummy for the growth and income segment in order to prevent multicollinearity. Results are not qualitatively affected by this choice.

the 5 % level (p-value of 0.013). These results suggest that fund management teams are moderately less efficient than single managers. They can either not realize potential benefits of having more than one manager running the fund, or these benefits are overcompensated by additional costs and team specific biases.

When looking at the risk taking behavior of team- and single-managed funds in Section V.1.1, we find that teams take significantly lower levels of unsystematic risk. To take into account these differences in unsystematic risk, we rerun our regression using an extended version of the appraisal ratio of Treynor/Black (1973) as an alternative performance measure. It is calculated by dividing the four factor alpha from (8) by the standard deviation of the residuals from the four factor regression. As team-managed funds take on less unsystematic risk, we would expect that the negative relation between team management and fund performance becomes, at least, less pronounced.

The regression results using the appraisal ratio are presented in the third column of Table 10. Consistent with our earlier findings, we observe a negative relation between team management and fund performance. However, the underperformance of team-managed funds now is only significant at the 10 % level. These results suggest that the better performance of single-managed funds is (at least partly) driven by the higher amount of unsystematic risk of these funds. Thus, our results provide weak support for the findings of Chen/Hong/Huang/Kubik (2004), who find that teams significantly underperform single-managed funds.

2 Performance Persistence

Differences in the consistency of investment styles through time, as documented in Section V 2.3, might also translate into differences in the performance persistence of single- and team-managed funds. Assuming a positive relation between style consistency and performance persistence, as documented by Brown/Harlow (2004), we expect team-managed funds to show more persistent performance than single-managed funds.

To investigate potential differences in performance persistence, we examine the returns to team and single manager portfolios of funds sorted by past performance. Specifically, we proceed as follows: We first sort all mutual funds according to their management structure into single-managed and team-managed fund portfolios at the end of each year. Second, we rank the funds within the two portfolios based on the 12-month objective adjusted return.²³ Funds

²³ Objective adjusted returns are fund returns in excess of the returns of the average fund in the respective market segment.

with the highest (lowest) objective adjusted return go into portfolio 1 (10). After one year, portfolios are rebalanced. This is repeated throughout the sample until we eventually get a time series of monthly returns on these portfolios.

– Insert TABLE 11 about here –

For team- and single-managed funds, fund portfolios sorted on objected adjusted past returns demonstrate a nearly monotonically decreasing excess return, as shown in the second column of Table 11. The average monthly spread between high and low rank portfolios is approximately 0.67 % for single-managed funds (Panel A) and 0.95 % for team-managed funds (Panel B).

As these return differences might be due to differences in the risk level of the decile portfolios, we also use the Carhart (1997) four factor model to control for risk and style. Results are presented in columns 3 to 7. We observe that for single-managed funds, most of the spread in excess return can be explained by the four factor model (58 basis-points of the 67 basis-point spread).²⁴ The remaining spread of 9 basis-points in monthly risk-adjusted returns is not statistically significant (p-value of 0.76). Thus, there is no evidence of performance persistence. Findings for the team portfolio look somewhat different. Corrected for risk, team-managed funds still exhibit a 63 basis-point spread in monthly returns, which is statistically significant (p-value of 0.07). Only about 1/3 of the 95 basis-point spread in monthly excess returns can be explained by the four factor model. Thus, contrary to the results on single-managed funds, the performance of team-managed funds persists on a risk-adjusted basis.

In order to directly compare the persistence of team- and single-managed funds, we calculate the difference in spreads between team and single manager portfolios. Findings presented in Panel C of Table 11 indicate that team-managed funds are significantly more persistent in their performance as compared to single-managed funds. Their spread in monthly risk-adjusted returns is, on average, 54 basis points higher than that of the single manager portfolio. This confirms the idea that teams ensure a higher continuity in management which leads not only to a more consistent style, but, eventually, also to higher persistence of fund performance.

²⁴ In line with the findings of Carhart (1997), the momentum factor accounts for most of the explanation (about 54 basis-points).

3. Fund Inflows

While fund investors mainly care about performance, fund management companies are ultimately interested in net-inflows of new money, as they earn their fee income on their assets under management. Therefore, we examine which consequences team management has in terms of inflows of new money. Although differences in overall performance seem to be small, investors might still prefer a particular management approach. For example, investors might value the less extreme style followed by teams or prefer funds that deliver a more persistent performance. This should lead to higher inflows into team-managed funds.

To examine the influence of the management structure on fund inflows, we estimate the following model:

$$\begin{aligned}
 Fund\ Flow_{i,t} = & \beta_1 (Team\ Dummy)_{i,t-1} + \beta_2 (Fund\ Flow)_{i,t-1} + \beta_3 (Perf\ Rank)_{i,t-1} \\
 & + \beta_4 (Perf\ Rank)_{i,t-1}^2 + \beta_5 (Risk)_{i,t-1} + \beta_6 (Age)_{i,t-1} + \beta_7 (Size)_{i,t-1} \\
 & + \beta_8 (Turnover)_{i,t-1} + \beta_9 (Fees)_{i,t-1} + \beta_{10} (Segment\ Flow)_{i,t-1} \\
 & + \beta_{11} (Family\ Size)_{i,t-1} + \beta_{12} (Family\ Age)_{i,t-1} + \beta_{13} (Family\ Flow)_{i,t-1} \\
 & + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t}
 \end{aligned} \tag{14}$$

The dependent variable are the net-inflows into fund i in year t , $Fund\ Flow_{i,t}$. As no data on net-flows are available in our database, we follow Sirri/Tufano (1998) and construct a synthetic measure of net inflows by subtracting the rate of return of the fund (i.e. the fund's internal growth rate) from the total growth of its assets under management.²⁵ This measure captures the growth of a fund which is due to the net-inflow of new money.

To capture the influence of the management structure on a fund's net inflows, we use a team dummy, $Team\ Dummy$, as explanatory variable. Besides, we control for the influence of several other variables that are used in the literature: $Fund\ Flow_{i,t-1}$ is the external growth rate of the fund in the previous year. Sirri/Tufano (1998) have shown, that investors react asymmetrically to past performance. To capture this non-linearity of the performance-flow relationship, we follow Barber/Odean/Zheng (2004) and use the lagged return-rank of a fund in its segment, $Rank_{i,t-1}$, and the square of the past performance rank as additional explanatory variables.²⁶ We also control for the influence of fund risk, $Risk$, the fund's age in years, Age , its

²⁵ Thereby, we implicitly assume that all new money flows into the fund at the end of the year. Results do not hinge on this assumption; they are very similar if we assume that new money flows into the fund at the beginning or in the middle of the year. Furthermore, the use of the synthetic flow measure does not systematically influence the results of performance-flow studies (Ber/Ruenzi, 2005).

²⁶ We also use the piecewise-linear regression approach suggested in Sirri/Tufano (1998) to capture the convexity of the performance-flow relationship. Results are very similar.

assets under management, *Size*, its turnover rate, *Turnover*, its fees, *Fees*,²⁷ the external growth of the segment the fund belongs to (net of the fund's external growth rate), *Segment Flow*, the size of the family a fund belongs to, *Family Size*, the age of the fund's family, *Family Age*, and the external growth rate of the fund's family (net of the fund's external growth rate), *Family Flow*. Estimation results are presented in Table 12.

– Insert TABLE 12 about here –

We find a significantly positive influence of the team dummy on fund inflows. The estimate of 0.0503 indicates that team managed funds grow by over 5% more than single managed funds. Given the average yearly growth rate due to net-flows of about 20% this effect is also economically meaningful. Our results suggest that investors either prefer the less extreme and more consistent investment styles followed by teams and the stronger persistence of their performance or they prefer the team management approach per se. The higher inflows into team-managed funds might explain why so many fund families have used the team management approach in recent years, although the (small) differences in fund performance documented in Section VI.1 would rather suggest to employ single managers.

In sum, our analysis of the consequences of team management shows, that team-managed funds slightly underperform single-managed funds. However, team-managed funds show a higher persistence in their performance and they experience significantly larger inflows as compared to single-managed funds.

VII Conclusion

In recent years, team management has become increasingly popular in the mutual fund industry. This study empirically analyses potential determinants of fund management choice, the managerial behavior of teams as compared to single managers, and the consequences of team management on fund performance, performance persistence, and inflows. This first comprehensive analysis of team management in the mutual fund industry offers several interesting findings:

²⁷ All variables that are not known to the investor at the beginning of year t are included with their values at the end or in year $t-1$. In accordance with the literature, we use the logarithm of the age and size of the fund and the family.

Looking at the determinants of fund management structure we find that fund management choice is a strategic decision, made usually uniformly for all funds at the fund family level. Our results support the view that teams are primarily employed for more extensive and complex tasks. Families following a team management approach usually manage funds that are on average larger and operate in segments where expertise in different fields is required, e.g. in the balanced funds segment.

Regarding the behavior of fund managers, we find that teams take on less overall fund risk than single managers. This result is mainly driven by a lower level of unsystematic risk. In addition, they alter their risk to a lesser extent as response to prior performance as compared to single managers. Our findings based on newly developed measures for a fund's style extremity and style consistency over time provide evidence that team-managed funds follow less extreme investment styles and are more consistent in their style over time. These behavioral differences confirm the idea that team decision-making represents an averaging among individual positions and entails a strong diversification-of-opinion effect which also ensures a higher continuity in management over time. In sum, our study supports the view that decisions made by individuals and teams differ.

What does this mean for investors? Examining the consequences of fund management structure on fund performance, we find some evidence that team management has a negative impact on performance. The performance differences decrease if we take the higher amount of unsystematic risk taken by team-managed funds into account. Although there are no big differences in performance, team-managed funds exhibit significantly higher performance persistence. A possible explanation for this finding lies in the higher continuity in management of team managed-funds which leads not only to a more consistent style, but, eventually, also to higher persistence of fund performance.

Finally, what do our results imply for investment companies? Looking at risk adjusted returns, the investor is not better off buying team-managed funds. Nevertheless, our findings show that team-managed funds experience significantly larger inflows than single-managed funds. This seems surprising at first sight. However, when caring about fund residual risk, changing risk, style drift, and performance persistence, funds with more than one manager seem to be more attractive for investors. Many investment companies have started to make heavy use of teams instead of single-managers in recent years. Given the higher cash inflows into team-managed funds, this has been a reasonable choice.

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Figure 1

Mutual Fund Management Structures

This figure plots the percentage of single manager and team-managed funds in our sample between 1994 and 2003.

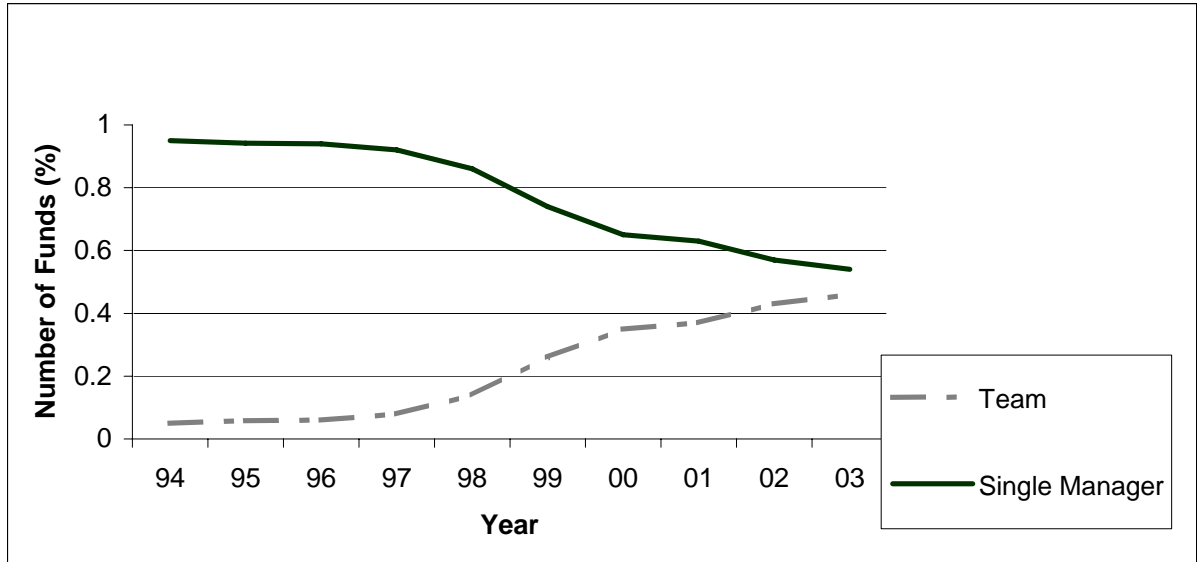


Figure 2

Mutual Fund Management Structures by Market Segment

This figure plots the percentage of single and team-managed funds in different market segments for the year 2003. The ICDI objective code, identified by Standard & Poors's Fund Services, is used to define market segments: aggressive growth (AG), balanced (BAL), global equity (GE) global income (GI), international equity (IE) income (IN), long term growth (LG), sector (SE), utility (UT), and total return (TR).

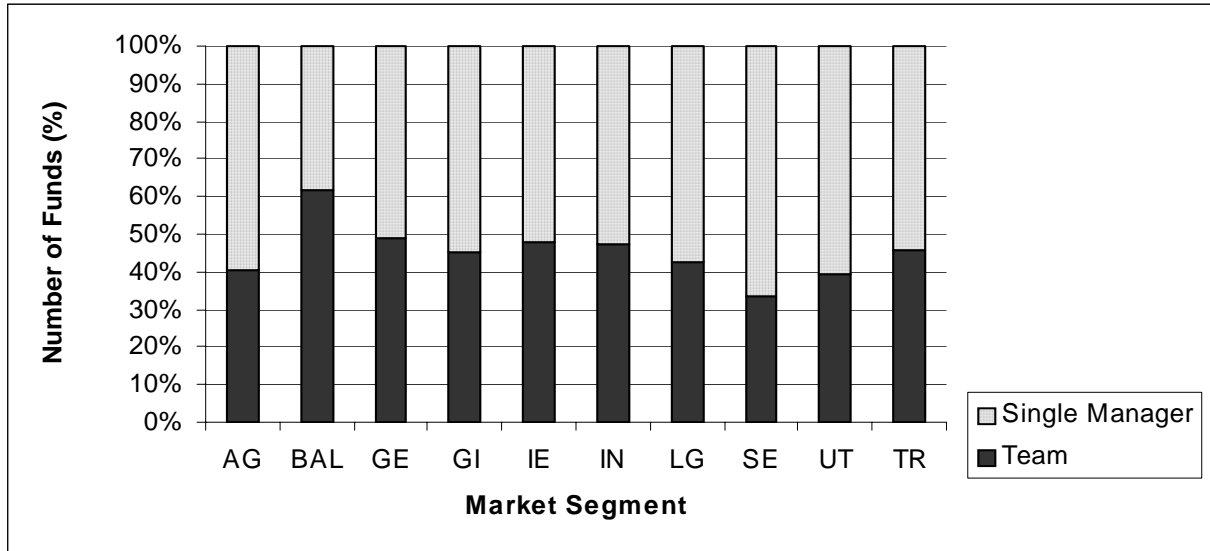


Figure 3

Frequency of Team Management

This figure plots the distribution of mutual fund families in our sample according to the percentage of team-managed funds within a family.

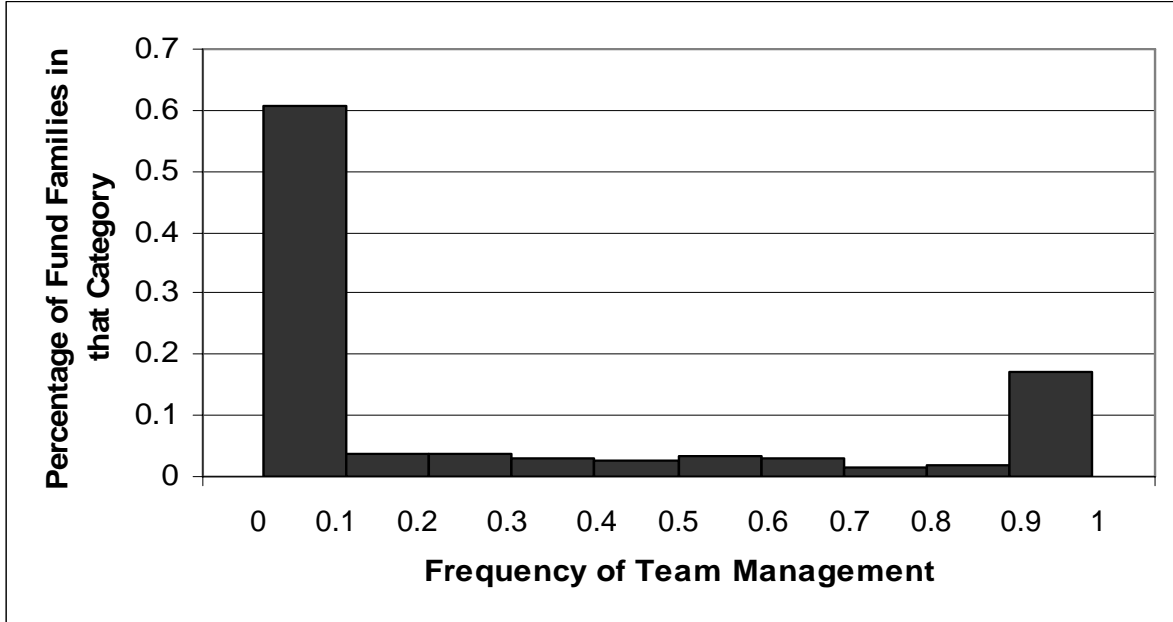


Table 1

Summary Statistics

Table 1 presents summary statistics of the actively managed equity mutual funds included in the paper. Funds are grouped by their management structure (All, Team, and Single Manager). The last column shows the differences in fund characteristics between team- and single-managed funds. The number of observations is 14,848.

	All (Mean)	Team (Mean)	Single Manager (Mean)	Difference (Mean)
Age (in Years)	9.70	8.86	10.04	-1.18***
Total Net Assets (in Millions)	842.04	997.22	791.01	206.21***
Turnover Ratio (in %)	114.02	145.86	101.56	44.30***
Total Fees (in %)	1.40	1.29	1.44	-0.15***

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 2

Determinants of Fund Management Structure (Fund Level)

This table reports the coefficients of a logit regression of the following form:

$$Prob(\text{Team Management})_{i,t} = F\left(\beta_1(\text{Size})_{i,t-1} + \sum_k \beta_k(\text{Segment})_{i,t} + \beta_2(\text{Family Policy})_{i,t-1} + \beta_3(\text{Age})_{i,t-1} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t}\right)$$

In this model, i is the index for the individual fund. *Team Management* denotes a fund's management structure (team managed or single managed). *Size* is computed as the logarithm of a fund's total net assets. *Segment* are dummy variables that equal one if the fund belongs to the respective market segment, and zero otherwise. *Family Policy* indicates the percentage of team-managed funds in a fund's family. *Age* is computed as the logarithm of a fund's age in years. The Regression also includes time dummies, $D(y)$. The number of observations is 13,078.

	Coefficients	Percentage Change
Size	0.1046***	[31]
AG	-0.2134*	[-17]
BAL	0.9339***	[102]
GE	0.8709***	[81]
IE	0.5815***	[60]
IN	0.1096	[10]
LG	0.0525	[4]
SF	-0.4574***	[-33]
UT	-0.1258	[-10]
TR	0.0460	[45]
Family Policy	6.0101***	[231]
Age	-0.1751***	[-13]
Pseudo R²	0.50	

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 3

Determinants of Fund Management Structure (Family Level)

This table reports the coefficients of a logit regression of the following form:

$$\text{Prob}(\text{Team Family})_{jt} = F\left(\beta_1 (\text{Average Fund Size})_{jt-1} + \sum_k \beta_k (\text{Fam Segment})_{jt} + \beta_2 (\text{Number of Funds})_{jt-1} + \beta_3 (\text{Family Age})_{jt-1} + \beta_4 (\text{Average Fund Age})_{jt-1} + \sum_y \alpha_y \cdot D(y)_{jt} + \varepsilon_{jt}\right)$$

In this model, j is the index for fund families. *Team Family* is a indicator variable that equals one if more than 50 % of funds in a family are managed by a team, and 0 if more than 50 % are individually managed. *Average Fund Size* is calculated as the logarithm of the average total net assets (TNA) of member funds. *Fam Segments* denotes the percentage of a family's funds active in the respective market segment. *Number of Funds* and *Family age* are computed as the logarithm of total number of funds and the age of the family, respectively. *Average Fund Age* is the logarithm of the average age of member funds. The regression also includes time dummies, $D(y)$. The number of observations is 2,575.

	Coefficients	Percentage Change
Average Fund Size	0.3710***	[49]
AG (%)	-0.6148	[-11]
BAL (%)	3.2923***	[44]
GE (%)	-1.2666	[-16]
IE (%)	0.0512	[1]
IN (%)	0.3107	[2]
LG (%)	-0.5599	[-12]
SF (%)	-1.1240**	[-14]
UT (%)	-5.8192	[-17]
TR (%)	0.2886	[3]
Number of Funds	0.2701**	[23]
Family Age	-1.0130***	[-46]
Average Fund Age	0.4324	[23]
Pseudo R²	0.23	

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 4

Average Fund Risk

This table reports the coefficients of the following three regressions:

$$\text{Model 1: } \text{Fund Risk}_{i,t} = \beta_1 (\text{Team Dummy})_{i,t} + \beta_2 (\text{Age})_{i,t-1} + \beta_3 (\text{Size})_{i,t-1} + \beta_4 (\text{Turnover})_{i,t-1} + \sum_k \beta_k (\text{Segment})_{i,t} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t}$$

$$\text{Model 2: } \text{Systematic Risk}_{i,t} = \beta_1 (\text{Team Dummy})_{i,t} + \beta_2 (\text{Age})_{i,t-1} + \beta_3 (\text{Size})_{i,t-1} + \beta_4 (\text{Turnover})_{i,t-1} + \sum_k \beta_k (\text{Segment})_{i,t} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t}$$

$$\text{Model 3: } \text{Unsystematic Risk}_{i,t} = \beta_1 (\text{Team Dummy})_{i,t} + \beta_2 (\text{Age})_{i,t-1} + \beta_3 (\text{Size})_{i,t-1} + \beta_4 (\text{Turnover})_{i,t-1} + \sum_k \beta_k (\text{Segment})_{i,t} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t}$$

Fund Risk represents the overall fund risk, measured by the standard deviation of fund return. *Systematic Risk* is a fund's beta from a regression of fund excess return on market excess return, *Unsystematic Risk* is measured by the standard deviation of residual fund return using the same regression. *Team Dummy* equals one if the fund is team-managed, otherwise zero. *Age* and *Size* are the logarithm of fund age and total net assets, respectively. *Turnover* denotes the turnover ratio. Regressions include market segment and time dummies. The number of observations is 13,248.

	Fund Risk	Unsystematic Risk	Systematic Risk
Team Dummy	-0.0019091***	-0.0024905***	-0.0043339
Age	-0.0007183***	0.0000852	-0.0152120***
Size	0.0003664***	-0.0006771***	0.0183566***
Turnover	0.0010278***	0.0005373***	0.001353***
R²	0.871	0.781	0.855

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 5

Changing Risk

This table reports the coefficients of the following regression:

$$\text{Change in Risk}_{i,t} = \beta_1 (\text{Perf Rank})_{i,t}^{(1)} + \beta_2 (\text{Team Dummy})_{i,t} \cdot (\text{Perf Rank})_{i,t}^{(1)} + \beta_3 (\text{Risk})_{i,t}^{(1)} + \beta_4 (\text{Change in Segment Risk}) + \varepsilon_{i,t}$$

*Change in Risk*_{*i,t*} is measured by the difference between the standard deviations of individual fund *i*'s return in the first and the second part of year *t*. *Perf Rank* denotes the return rank of the fund *i* in its segment after the first part of the year. *Team Dummy* is a dummy variable that takes on the value one, if the fund is team-managed, and zero otherwise. *Change in Segment Risk* reflects the change in risk of fund *i*'s segment and is measured by the difference between the median standard deviations of fund returns in the respective segment in the first and the second part of the year. The number of observations is 14,848.

	Estimated Coefficients
Performance Rank (first part of the year)	0.0083***
Team Dummy · Performance Rank	-0.0040**
Risk (first part of the year)	-0.3624***
Change in Segment Risk	0.8886***
R²	66.86%

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 6

Investment Style: Average Fund Style

This table reports the coefficients of the following regression:

$$\text{Factor Weighting}_{i,t}^f = \beta_1 (\text{Team Dummy})_{i,t} + \beta_2 (\text{Age})_{i,t-1} + \beta_3 (\text{Size})_{i,t-1} + \beta_4 (\text{Turnover})_{i,t-1} + \sum_k \beta_k (\text{Segment})_{i,t} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t}$$

Factor Weighting is fund *i*'s weighting on the *f*th factor (Market, *SMB*, *HML*, or *MOM*), estimated for each fund in year *t* by using the Carhart four factor model. *Team Dummy* equals one if the fund is team-managed, and zero otherwise. *Age* and *Size* are the logarithm of fund age and total net assets, respectively. *Turnover* denotes the turnover ratio. Regressions include market segment, *Segment*, and time dummies, *D(y)*. The number of observations is 14,003.

	SMB	HML	MOM
Team Dummy	-0.0108	-0.0081	0.0054
Age	-0.0097**	0.0115**	-0.0046
Size	-0.0109***	-0.0141***	0.0099***
Turnover	0.00017	-0.0091**	0.0023
R²	0.382	0.125	0.065

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 7

Investment Style: Extremity

This table reports the average extremity of team- and single-managed funds and their difference in the sample period (1994 – 2003). Extremity of a fund's investment style, *EM*, is defined in terms of the average deviations of the individual Carhart (1997) factor weightings on the SMB, HML, and MOM portfolios from the weightings of a (hypothetical) benchmark fund in the respective market segment with average style characteristics (*style benchmark*). Column 2 shows the results on the aggregate extremity measure (*EM*) as defined in the main text in (10), columns 3 to 5 present the average deviation of the factor weightings from style benchmarks for each of the three factors separately. The number of observations is 14,003.

	Extremity			
	EM	SMB	HML	MOM
Single Manager (SM)	1.02557	1.02644	1.01169	1.03857
Team (T)	0.90220	0.90743	0.92225	0.87692
Team – Single Manager	-0.12337***	-0.11901***	-0.08944***	-0.16165***

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 8

Investment Style: Consistency

This table reports the average style drift of team- and single-managed funds and their difference in the sample period (1994 – 2003). Style drift captures a fund's style variability through time, measured as the average standard deviation of the three factor loadings on the SMB, HML, and MOM portfolios (absolute style drift, SDM^{abs}) and the average standard deviation of the individual deviations of the three factor loadings from style benchmarks (relative style drift, SDM^{rel}), respectively. Column 2 and 7 show the results on the aggregate style drift measures, SDM^{abs} and SDM^{rel} , as defined in (11) and (12), respectively, in the main text. Columns 3 – 5 and 7 – 9 present the average deviation of the factor weightings from style benchmarks for each of the three factors separately. The number of observations is 1,405.

	Style Drift							
	SDM^{abs}	absolut			SDM^{rel}	relative		
		SMB	HML	MOM		SMB	HML	MOM
Single Manager (SM)	1.053	1.047	1.030	1.081	1.049	1.045	1.036	1.067
Team (T)	0.809	0.804	0.861	0.762	0.796	0.815	0.850	0.723
Team – Single Manager	-0.244***	-0.244***	-0.169***	-0.319***	-0.253***	-0.231***	-0.186***	-0.344***

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 9

Performance: Portfolio Analysis

This table summarizes the (monthly) abnormal returns before and after expenses using the Cahart (1997) four-factor model for different management portfolios for the period 1994 – 2003. At the end of each year, we divide the sample into two portfolios, single manager and team-managed fund portfolio, and compute the equally weighted average factor-adjusted return. Difference (Team – Single Manager) is a portfolio constructed by subtracting single-managed from team-managed fund returns. The number of observations is 14,831.

	Abnormal Return	
	Before Expenses	After Expenses
Single Manager (SM)	-0.00067***	-0.00190***
Team (T)	-0.00127***	-0.00240***
Difference: (Team - Single Manager)	-0.00060	-0.00050

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 10

Performance Analysis: Multivariate Regression

This table reports the coefficients of the following regression:

$$Perf_{i,t} = \beta_1 (Team\ Dummy)_{i,t} + \beta_2 (Perf)_{i,t-1} + \beta_3 (Age)_{i,t-1} + \beta_4 (Size)_{i,t-1} + \beta_5 (Turnover)_{i,t-1} + \beta_6 (Expenses)_{i,t-1} + \sum_k \beta_k (Segment)_{i,t} + \sum_y \alpha_y \cdot D(y)_{i,t} + \varepsilon_{i,t}$$

Perf is the abnormal return of fund *i*, measured by the Carhart (1997) four factor model and a modified version of the appraisal ratio of Treynor and Black (1973), respectively. *Team Dummy* equals one if the fund is managed by a team, and zero otherwise. *Age* is the logarithm of age and *Size* is the logarithm of total net assets. *Turnover* denotes the turnover ratio and *Expenses* denotes the expense ratio. Regressions include market segment, *Segment*, and time dummies, *D(y)*. The number of observations is 13,228.

	Four Factor Abnormal Return	Appraisal Ratio
Team Dummy (T)	-0.00056**	-0.0295*
Previous Performance	-0.01536	0.03277***
Age	0.00051***	0.01913**
Size	-0.00049***	-0.02082***
Expenses	-0.17034***	-0.695635***
Turnover	-0.00008	-0.00962***
R²	0.195	0.173

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 11

Performance Persistence: Portfolio Analysis

This table reports the summary statistics on portfolios of team-managed funds (Panel A) and single-managed funds (Panel B) formed on their previous 12 month objective adjusted return. At the end of each year, funds are sorted according to their management structure into single manager and team portfolios. For each of the two portfolios, funds are ranked based on the 12-month objective adjusted return. Funds with the highest (lowest) return go into portfolio 1 (10). The decile portfolios are rebalanced yearly. Column 2 shows the yearly excess return on the decile portfolios, columns 3 to 7 present the results for the Cahrhart (1997) four factor model. Panel C summarizes the results on the differences in the spread (1 – 10) between team and single manager portfolios. The number of observations is 14,831.

Portfolio	Monthly	Four Factor Model				
	Excess Return	Alpha	Market	SMB	HML	MOM
Panel A: Single Manager						
1	0.00884	-0.00172	0.98359	0.48402	-0.02486	0.26823
2	0.00741	-0.00136	0.93627	0.28402	0.09549	0.11848
3	0.00696	-0.00144	0.92309	0.19367	0.11858	0.10259
4	0.00632	-0.00108	0.90059	0.10484	0.11943	0.03531
5	0.00557	-0.00122	0.86714	0.08116	0.12405	0.00096
6	0.00510	-0.00151	0.86502	0.07611	0.16754	-0.03196
7	0.00478	-0.00152	0.87256	0.07090	0.16025	-0.06569
8	0.00370	-0.00275	0.90897	0.10909	0.18014	-0.09459
9	0.00350	-0.00289	0.93737	0.17201	0.16993	-0.13331
10	0.00216	-0.00265	0.97846	0.25514	0.03013	-0.29347
1 – 10 Spread	0.00668	0.00093	0.00513	0.22888***	-0.05499	0.56169***
Panel B: Team						
1	0.00970	0.00007	0.90381	0.41795	-0.09773	0.27418
2	0.00681	-0.00201	0.88714	0.26813	0.05897	0.17805
3	0.00656	-0.00149	0.82624	0.10342	0.06598	0.06109
4	0.00542	-0.00032	0.83589	0.09234	0.11208	0.03545
5	0.00464	-0.00261	0.86688	0.06672	0.17395	0.03267
6	0.00523	-0.00073	0.81713	-0.00004	0.09770	-0.01826
7	0.00415	-0.00192	0.83950	0.09957	0.20044	-0.03377
8	0.00261	-0.00398	0.84707	0.08370	0.14661	-0.06857
9	0.00319	-0.00393	0.97694	0.16555	0.22182	-0.10455
10	0.00019	-0.00623	1.05332	0.22171	0.16295	-0.22383
1 – 10 Spread	0.00951	0.00631*	-0.14951*	0.19625**	-0.26068	0.49802***
Panel C: Difference Team – Single Manager						
1 – 10 Spread	0.00283	0.00538**	-0.15464***	-0.03264	-0.20568***	-0.06367**

*** 1 % significance, ** 5 % significance, * 10 % significance

Table 12

Inflow of New Money

This table reports the coefficients of the following regression:

$$\begin{aligned} Fund\ Flow_{i,t} = & \beta_1(Team\ Dummy)_{i,t-1} + \beta_2(Fund\ Flow)_{i,t-1} + \beta_3(Perf\ Rank)_{i,t-1} + \beta_4(Perf\ Rank)_{i,t-1}^2 + \beta_5(Risk)_{i,t-1} \\ & + \beta_6(Age)_{i,t-1} + \beta_7(Size)_{i,t-1} + \beta_8(Turnover)_{i,t-1} + \beta_9(Fees)_{i,t-1} + \beta_{10}(Segment\ Flow)_{i,t} \\ & + \beta_{11}(Family\ Size)_{i,t-1} + \beta_{12}(Family\ Age)_{i,t-1} + \beta_{13}(Family\ Flow)_{i,t} + \varepsilon_{i,t} \end{aligned}$$

$Fund\ Flow_{i,t}$ is the relative growth of fund i in year t due to inflows of new money. *Team Dummy* is a dummy variable that take on the value one if fund is managed by a team, and zero otherwise. *Perf Rank* is the return rank of the individual fund i in its segment, while *Risk* denotes the annualized return standard deviation of this fund. *Age*, *Size*, *Turnover*, and *Fees* denote the logarithm of the age of fund i , the logarithm of the total net assets under management of the fund, the turnover rate of the fund and the fee burden of the fund. *Segment Flow* and *Family Flow* is the growth rate of the segment and the family a fund belongs to, respectively, which is due to inflows of new money. These values are calculated net of the inflows into fund i . *Family Size* and *Family Age* are the logarithm of the total net assets under management (net of the total net assets of the respective fund) in fund i 's family and the age of the family of fund i . All explanatory variables, except *Segment Flow* and *Family Flow* are lagged by one year. The number of observations is 6,928.

	Estimated Coefficients
Team Dummy	0.0504**
Previous Flow	0.0623***
Previous Performance Rank	-0.2762
Squared Previous Performance Rank	0.8088***
Previous Fund Risk	0.5584
Age	-0.0071
Size	-0.1390***
Previous Turnover	0.0032
Fees	-1.5303
Segment Flow	0.7068***
Family Size	0.0527***
Family Age	0.0245
Family Flow	0.9364***
R²	16.01%

*** 1 % significance, ** 5 % significance, * 10 % significance