

Unsuccessful Teams

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Abstract

We examine whether the consequences of failed teamwork are shared equally. In the mutual fund industry, labor market outcomes for members of mixed-gender teams are asymmetric. Following fund closures, female team-managers are more likely to exit the fund family and the industry than male team-managers. This gender gap in exit does not seem to be driven by a gender gap in skill. Our evidence suggests that employers engage in attributional rationalization—they allocate more blame for unsuccessful teamwork to females. Our results provide an explanation for the 3.8% decline in the fraction of female fund managers between 1999 and 2015.

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1. Introduction

A notorious problem with teamwork is that it is difficult to infer individual inputs from group outputs. This can lead to inefficient labor market outcomes in settings in which teamwork is ubiquitous and it is common for individuals to be members of different groups. Academic research is an obvious example of such a setting. But, there are many others, e.g. corporate boards and management consulting. When making individual hiring, pay, promotion, and firing decisions in these settings, an important question is how much weight to put on the group outcome. Research in psychology suggests that credit or blame for team outcomes may be over- or underattributed to some team members based on prior performance expectations, a phenomenon Heilman and Haynes (2005) call attributional rationalization. Using the US mutual fund industry as our laboratory, we provide the first field evidence that attributional rationalization in the context of failed groupwork can have important labor market consequences.

The mutual fund industry is an ideal setting in which to test the importance of attributional rationalization for several reasons. First, unlike other settings, e.g. corporate boards, team-managed funds co-exist with sole managed funds. This allows us to contrast labor market outcomes for team members with those of individuals. Second, while opinions on the characterization of a successful mutual fund team may vary, we can identify an observable and intuitive proxy for fund failure: the closure of a fund. This contrasts with other settings in which unsuccessful tasks are not publicly-observed. For example, unsuccessful academic projects are not published. Unsuccessful pharmaceutical research does not result in the production of a drug, etc. Third, fund managers' names and management periods for each fund are public information, which allows us to construct measures of labor market outcomes. Fourth, fund management is a relatively homogenous task with easy to measure outcomes. The mutual fund industry also has other features that we can exploit to help rule out competing explanations, such as variation in the types of funds.

Attributional rationalization attributes more of a team’s success and failure to a team member for whom success and failure is ex ante expected. In our setting, it is natural to consider the mutual fund manager’s gender to be an important determinant of attributional rationalization. Since there are relatively fewer women than men in the finance industry (Lutton and Davis, 2015; Adams, Barber and Odean, 2016; Dunleavy, 2017; Lerner et al., 2017), employers might consider finance to be more of a male domain. According to Heilman and Haynes (2005), if a task is considered male sex-typed, males are expected to succeed while females are expected to fail. This suggests that following an unsuccessful outcome, evaluations of women’s performance in mixed gender teams will be more negative than those of men in finance.

Our results are consistent with this hypothesis. Using Morningstar data from 1990-2015, we find that female managers working in teams are more likely to leave the fund family and the industry following fund closures than their male counterparts. We find no gender gap in exit for managers who manage at least one fund alone. These contrasting results suggest that employers allocate more blame for unsuccessful teamwork to female managers when individual-level assessments are unavailable.¹

Differences in skill do not seem to explain our results. Using risk-adjusted returns of funds of each manager as proxies for skill, we find that the distribution of the alphas of male solo managers who remain in the industry dominates that of female solo managers who exit the industry. But, the distribution of alphas between male team managers who remain in the industry and female team managers who exit the industry are similar. Male team managers who exit also have similar alphas. Basically, the skill of the individual team managers is indistinguishable from the skill of the teams they are members of. In the absence of a signal of individual skill, such as sole-managed fund performance, skill differences are an unlikely explanation for the higher exit rates of women

¹Egan et al. (2017) document discrimination in punishment for individual misconducts of financial advisors and find evidence that is consistent with taste-based discrimination of employers.

in team managed funds.²

While it is difficult to distinguish between quits and fires, our evidence suggests that the gender gap in exit following the closure of a team fund is more likely to be due to dismissal rather than resignation. For example, there is no gender gap in exit following the closure of subadvised funds, for which the fund family has no staffing authority. There is also no gender gap in exit when the decision to exit is more likely to be voluntary. We use the mutual fund scandal in 2003 as a natural experiment that increases the probability of managers' voluntary resignation. Following the scandal, the tainted fund families experienced large outflows of investors' money from their funds. Since managers' pay depends on assets under management, we hypothesize that managers employed by the tainted fund families would try to move to other fund families. Such a move is unlikely to be initiated by the tainted fund family; it should be voluntary. Our results show that the probability of exit of managers from the tainted fund families increased significantly following the scandal. But, the increased probability of exit was the same for male and female managers.

To our knowledge, the literature on attributional rationalization is relatively small, presumably because it is difficult to find good settings in which to test its presence. Heilman and Haynes (2005) introduced the theory and terminology of attributional rationalization and provided evidence of its existence in a laboratory setting. In their experiments, participants allocate less credit for successful group outcomes to female team members than their male counterparts unless individual-level assessments are available. Heilman and Haynes argue that source ambiguity results in attributional rationalization in the context of successful group outcomes. Haynes and Lawrence (2012) extend the idea to unsuccessful group outcomes. They document that participants in experiments allocate more blame to female team members than to male team members in the absence of individual-level assessments. Sarsons (2017) provides evidence suggesting that attributional rationalization is im-

²Berk et al. (2017) show that fund families add value by promoting and demoting fund managers according to their assessment of managers' skills and ability. The authors focus on internal allocation of managers and exclude the cases of termination of employment.

portant outside the laboratory setting. She documents that gender plays a role in tenure decisions of economists who work in teams. Unlike male economists, female economists are less likely to be tenured when they coauthor than when they solo author.

Our paper contributes to the small literature on attributional rationalization by documenting that it can have important labor market consequences. Gender diversity in the mutual fund industry is low (Sargis and Lutton, 2016; Dunleavy, 2017; Lerner et al., 2017). In the second quarter of 2015, the fraction of female fund managers was only 9%, decreasing from its peak level of 13% in the third quarter of 1999. In the 1990s, gender diversity increased because more female managers were hired than male managers. While the hiring rates of male and female managers eventually equalized, female managers started exiting the industry at a higher rate. Most noticeable is the higher exit rate of female fund managers following fund closure. Female managers are about 30% more likely to leave the industry than male managers following fund closures. If the gender gap in exit continues and a quarter of managers experience fund closures every year, we estimate gender diversity will decrease from 9% to less than 7% in 15 years.

2. Data and methodology

2.1. Data

We use Morningstar Direct for data for managers and fund families of open-ended mutual funds. It is free of survivorship bias. The database provides the first and the last date of management of each fund manager for a given fund. We aggregate all share classes and create a time series of mutual fund managers for every fund at the end of each quarter from the first quarter of 1990 to the second quarter of 2015. We define a team-managed fund as a fund with at least two managers. A solo-managed fund has only one manager. A fund becomes team-managed when the number of

managers increases from one to several.

We identify the gender of fund managers by their first name, using U.S. Census Bureau data. The fund manager is considered female if females make up at least 90% of the population with the first name. Otherwise, the manager is considered male. When we cannot find the first name in the U.S. Census Bureau data, we use other open sources, such as Facebook user data and a baby name guesser. If none of the sources includes the first name, we do not identify the manager's gender. We identify gender of about 97% of the mutual fund managers. We define diversity as the ratio of the number of females to the total number of managers. When a fund family does not have any female fund manager, i.e., diversity of zero, we call the advisor a male-only family.

A mutual fund advisor often employs other advisor(s) for fund management. Morningstar Direct provides data about whether the fund is sub-advised or own-advised. We classify managers of own-advised funds as own-managers and those of sub-advised funds as sub-managers. Note that sub-managers are employees of the fund's subadvisor, not of the advisor. Some fund managers manage own-managed funds for their own fund family and sub-advised funds for other fund families at the same time. In these instances, we classify them as own-managers. In other words, sub-managers are those who manage only sub-advised funds. We cannot identify the employers of sub-managers because subadvisors' names are often missing. The database also does not provide data to map multiple managers to each subadvisor when fund management is outsourced to multiple subadvisors.

Figure 1 (A) plots time series of the number of male and female managers represented by a solid line and a dashed line, respectively. Gender diversity is shown in (B). Overall, gender diversity improved until late 1990s and reached a peak level of about 13% in the third quarter of 1999. Starting from the fourth quarter of 1999, the female ratio decreases, and it is about 9% at the end of the second quarter of 2015.

The database does not provide dates that fund managers join and leave the fund family. Instead,

we use the first and the last dates that the fund manager manages funds that belong to the advisor. We define the hired date as the earliest date among of the first dates of the manager for the funds of the fund family. Similarly, we assume that the manager leaves the fund family on the latest date of the last dates. When the manager is a sub-manager, the same definitions apply. However, a sub-manager does not work for the advisor, that is, not hired or fired by the advisor. The “hire” date of a sub-manager is interpreted as the date that the manager starts managing a sub-advised fund for the fund family. The “fire” date is when the manager ceases to manage a sub-advised fund for the fund family. Another case where “hire” or “fire” is not meaningful is when a fund family employs only one fund manager. It is reasonable to think that the manager has full control of all the decisions. We exclude those one-manager families from the sample for all our analyses.

2.2. Unsuccessful group outcome

The Morningstar database provides obsolete dates of mutual funds. As for liquidation, it is the date on or after which the fund will distribute all its remaining assets pro rate to shareholders of record. The date serves as the record date for determining shareholders who are entitled to receive the fund’s liquidation proceeds. The board of directors or trustees of the fund (and the shareholders of the fund in some cases) must approve liquidation and, then, notify the shareholders and the general public of the details, including the closing date. Upon the approval of liquidation, the fund effectively ceases its business as an investment company. At that time, mutual funds typically suspend the sale of fund shares and the fund managers begin the process of paying debt, setting aside reserves and converting its portfolio securities to cash and cash equivalents.

We use mutual funds’ liquidation and merger as a proxy for unsuccessful outcomes. Mutual funds are liquidated for a variety of reasons. However, it is reasonable to argue that successful funds would be the last candidates for voluntary liquidation. Also, a fund family would not decide

to sell a fund to another fund family if the fund was viewed as a successful outcome. On the other hand, we do not consider an event that a mutual fund is merged to another fund of the same fund family. Such an internal merger might occur for reasons other than unsuccessful results. For example, a fund family might consolidate funds with similar investment objectives. Figure 2 shows a time-series of fund closures in the mutual fund industry. Almost no mutual funds were closed in 1990s when the industry was in a boom.

We examine determinants of mutual funds' liquidation or external merger to test above view that these are unsuccessful outcomes. The dependent variable is a dummy variable that takes the value of one if the fund is closed in a given quarter t . The independent variables include fund performance and characteristics and advisor-level variables at the end of the prior quarter $t-1$. The regressions also include the fraction of all funds closed (industry closure ratio) in a given quarter and fund family fixed effects as follows:

$$Fund\ closure_{i,j,t} = X_{i,t-1}\beta + Z_{j,t-1}\gamma + I_t\delta + \alpha_j + \epsilon_{i,j,t}, \quad (1)$$

where $X_{i,t-1}$ is a vector of fund characteristics and performance of the fund i at time $t-1$, $Z_{j,t-1}$ a vector of family-level variables of the advisor j at time $t-1$, I_t the closure ratio of all funds in the sample at time t , and α_j fixed effects of the advisor j . The standard errors are clustered by advisor and time.

Table 2 provides the results. We find profitable funds are less likely to be terminated. Mutual fund families charge fund shareholders on a fixed-ratio basis, i.e., expense ratio times assets under management. Positive money flows increase assets under management. Therefore, higher assets under management (size), higher expense ratios, and higher investors' flows generate more revenues. The results show that funds with such characteristics are less likely to close. Funds are also more

likely to close when more peer funds are closed within the fund family or in the industry. Most fund characteristics are not significant determinants of fund closures. The results show that the number of fund managers, i.e., solo-or team-managed, is not an important determinant of fund termination. Also, gender diversity does not affect fund closures. Fund families do not terminate a fund because the fund is managed by more or fewer female managers. The last row of Table 2 shows the coefficient estimates on diversity when the regressions exclude the advisor fixed effects. The estimates are not significantly different from zero.

Given that fund families tend to close funds that generate low revenues, fund closures must be viewed as unsuccessful outcomes. When a solo-managed fund is closed, attribution of blame might be straightforward. On the other hand, it might be difficult to assess the performance of fund managers at the individual-level when the fund is team-managed. Therefore, it is important to distinguish closures of solo-managed and team-managed funds.

Moreover, we consider both own-managed funds and sub-managed funds for fund closures. A fund family outsources only fund management to a sub-advisor. It is not the sub-advisor but the fund family who makes a decision to liquidate or sell a fund. On the other hand, managers of sub-advised funds are employees of the sub-advisor, not the advisor. It is the sub-advisor's decision whom to assign or not assign to the sub-advised fund. When a sub-manager stops managing funds for a fund family, that decision is not driven by the fund family, such as a termination of the employment contract by the employer.

2.3. Methodology

The length of time between the approval of liquidation and the closing date entirely depends on the fund. Given no data on approval dates of liquidation, we use the closing date as a proxy and look at a one-year window. We look at the next four quarters (including the current quarter),

and obtain the fraction of the closed funds that the manager manages. The fund managers might leave the fund family prior to the close date given that the liquidation decision is already made. Or the managers might leave the fund family after fund closures. We use the same one-year window and define a dummy variable “leave” that takes the value of one if the manager i leaves the fund family j over the following four quarters up to the quarter $t + 3$ and zero otherwise. We examine the relationship between the probability of leaving the fund family and the fund closure ratio and, in particular, whether the relationship depends on one of demographic characteristics, gender. Our basic regression is

$$leave_{i,j,t+3} = g_i + c_{i,j,t+3} + g_i * c_{i,j,t+3} + I_{t+3}\delta + \alpha_j + \epsilon_{i,j,t+3}, \quad (2)$$

where g_i is a dummy variable of gender that take the value of one if the manager i is female and $c_{i,j,t+3}$ is the fund closure ratio of the manager i of the fund family j over the four quarters from the quarter t to the quarter $t + 3$. The two variables of gender and fund closure interact to capture any difference between male and female managers in the effect of fund closures on the probability of leaving the fund family. We also control for the fraction of managers who leave the fund industry, I_{t+3} , over the same time period. The last variable α_j is fixed effects of the fund family j . The standard errors are clustered by fund family and time to take into account correlations of errors within the same fund family and within the same time period.

The regression also includes control variables at the manager and the fund family level:

$$leave_{i,j,t+3} = g_i + c_{i,j,t+3} + g_i * c_{i,j,t+3} + I_{t+3}\delta + \alpha_j + Y_{i,t}\beta + Z_{j,t}\gamma + \epsilon_{i,j,t+3}, \quad (3)$$

where $Y_{i,t}$ is a vector of control variables of the manager i measured four quarters ago (i.e., at the beginning of the quarter t), such as the total assets and the total number of funds under

management and the tenure (in years) of the manager i at the fund family. A manager typically manages multiple funds. We also average diversity and the number of managers across funds that the manager manages. In addition, we control for a variety of family variables $Z_{j,t}$, including the diversity, size, and age, measured four quarters ago. Finally, we cause those control variables to interact with the gender variable g_i in some regressions.

We run separate regressions in the above for subsamples of managers. We first form two groups of fund managers: managers in diverse fund families and managers in male-only fund families. We are interested in the differences between male and female managers with regard to their employment events, in particular, a decision to exit the fund family. Therefore, we focus on fund families with at least one female fund manager and separate them from those without any female fund managers. We further divide the two groups of managers into four groups. We use two criteria of funds: team- or solo-managed funds and own- or sub-advised funds. The first group of managers are team-managers who manage own-advised funds. The second group are team-managers who manage sub-advised funds, i.e., who are employed by sub-advisors. The other two groups are similarly formed except that they manage funds alone, not in groups.

Another important employment event is leaving the fund industry. We define the time of the event as the last date that a manager manages a mutual fund. We run the regressions in Equations (2) and (3) with the dependent variable “leave” equal to one when the manager leaves the fund industry and zero otherwise.

3. Empirical results

3.1. Overview of employment

We first look at overall employment outcomes of managers who are employed by the fund family. Given that almost 65% of advisors employ no female fund managers on average, we group managers into three categories: male managers in diverse fund families, female managers in diverse fund families, and male managers in male-only fund families. We use the first group—male managers in diverse fund families—as a benchmark. We examine the probability of managers in other groups leaving or joining fund families relative to the probability of the benchmark group. The comparisons take into account time-fixed effects and correlations within the fund family. We also divide the sample into two periods around the time when gender diversity in the mutual fund industry started to decrease, i.e., the fourth quarter of 1999.

Table 3 Panel A compares the probability of leaving the fund family per quarter. Female managers are more likely to leave the fund family than male managers in diverse fund families on average. The difference of probability is about 0.52%, i.e., 2.1% per year, on average. We also examine the difference separately before and after the fourth quarter of 1999. The gender difference in the probability to leave the fund family is not statistically significant before the fourth quarter of 1999. It is pronounced in the second period of the sample, i.e., from the fourth quarter of 1999 to the second quarter of 2015. The difference between female managers and male managers in diverse fund families is over 0.63% per quarter or 2.5% per year (significant at the 1% significance level). It is also economically sizable. Suppose 2% of male managers leave the fund family every quarter and the initial ratio of the number of female managers to the total number of managers is 10%. Then the diversity ratio will drop to less than 8% in a decade. On the contrary, female managers had a high probability to get hired than male managers before the fourth quarter of 1999. The difference is

almost 1.3% per quarter. However, it decreases to 0.13% and is not significantly different from zero at the 10% significance level in the second period of the sample. These contrasting results suggest that gender diversity is much lower after the fourth quarter of 1999 because of higher termination of employment contracts of female managers and a similar hire rate between male and females.

We find that managers of subadvised funds are more likely to stop managing funds for the fund family than their counterparts, who are employed by the fund family. Managers of subadvised funds also have a higher probability to start managing funds for the fund family by about 1.5% per quarter.

3.2. Unsuccessful outcomes and employment

3.2.1. Informal analyses

We examine labor market outcomes of unsuccessful work in the context of the mutual fund industry. Our main interest is in the effect of unsuccessful group work on the probability of leaving the job. We focus on mutual fund managers who work in teams and the probability that they will leave the fund family (and the fund industry) around fund closures.

Table 4 provides the results of informal analyses, i.e., the probability without controlling for other factors that might be associated with the labor market events. Male team-managers who are employed by the fund family have a probability of around 39% to leave the fund family over the next four quarters amid a fund closure over the same period. Female counterparts have a higher likelihood of 46%. This additional 7% of female managers who leave the fund family actually quit their career entirely, i.e., they leave the industry as well. We also find similar results for managers who are not employed by the fund family but by subadvisors. Female team-managers for subadvised funds have a higher likelihood than male team manager to quit managing funds for the fund family and quit their career entirely. The difference is about 5%.

Managers are more likely to leave the fund family around fund closures when they manage funds alone than in groups. The likelihood is 54% for male solo-managers, which is 15% higher than the case of male team-managers. Attribution of blame for fund closures would be more straightforward for one manager than multiple managers. The results are consistent with a view that attribution of blame influences subsequent decisions in labor markets, such as employment. When leaving the fund family around fund closures, about two-thirds of male solo-managers quit their career entirely while one-third of them move to another fund family. Similar to team-managers, we also find that female solo-managers are more likely to leave the fund family than male solo-managers are. About 75% of female solo-managers leave the fund family around fund closures. About 41% of them find a job elsewhere after leaving. This is a higher fraction of managers than that of male solo-managers (one-third). Equivalently, a lower fraction (59%) of solo-female managers leave the industry around fund closures than their male counterparts.

On the other hand, solo-managers for sub-advised funds have a slightly higher probability of quitting managing funds for the fund family around at least one closure of their funds than those for own-advised funds. The likelihood is about 60%. Similar to solo-managers employed by the fund family, two-thirds of solo sub-managers who stop managing the funds for the fund family—equivalently 40%—leave the industry entirely, and the rest of 20% move to a different fund family. More female team-managers employed by sub-advisors quit their career. The likelihood is almost 55%. Only 14% is the likelihood that solo-female managers for sub-advised funds will not quit their career around fund closures.

3.2.2. Panel regressions

We control for other factors that might be relevant to a manager's decision to leave the fund family. Table 5 presents results of the regressions in Equations (2) and (3) for managers employed

by the fund family. The dependent variable for the regressions (1) to (3) is a dummy variable that takes the value of one if a manager working in teams leaves the fund family over the following four quarters. Our main explanatory variable is a ratio of fund closures, which is equal to the number of funds that are closed over the next four quarters divided by the total number of funds that the manager manages at the beginning of the period. The fund closure ratio increases the probability of leaving the fund family. For example, a team manager whose funds are all closed has a higher probability of leaving the fund family by 54% than a team manager who has no funds closed. Consistent with the previous informal analyses, such an effect of fund closures is more pronounced for female team-managers. The difference of 54% increases to 58% for females and remains large and significant after controlling for variables at the manager level and the family level. In contrast to fund closures, we find no significant differences in the effect of other variables on the probability of leaving the fund family between male and female team-managers (regression (3)). Finally, a female team manager is more likely to leave the fund family, on average but the difference becomes economically and statistically insignificant when other variables are controlled for (regressions (2) and (3)).

Panel (B) provides the results when managers are not employed by the fund family but manage funds for the fund family in teams as sub-advisors. We find no gender differences in the effect of fund closures on the probability of a manager in teams leaving the fund family. Both male and female sub-managers in teams have the same probability, 50%, to quit managing funds for the fund family when all their funds belonging to the fund family are closed. We contrast the results with the results when the managers are employed by the fund family: female team-managers are more likely than male team-managers to leave the fund family around fund closures. Given that the fund family cannot exercise power for their sub-managers but only for their own employees, the results support a view that more female managers leave the fund family around fund closures because of

a higher likelihood of employment terminations by their employer.

Table 5 also presents results for managers in fund families with no female managers. Whether managers work for male-only managers as own-managers or sub-managers, fund closures have a more significant effect on the probability to leave the fund family than managers in gender-diverse fund families. When the male manager has all his funds closed, the probability increases by more than 70%.

We run the same regressions for managers who manage funds alone, not in teams. Closures of funds managed by a single manager provide individual-level feedback. Given that fund closures may be viewed as failures, attribution of blame for failures is not ambiguous for solo-managers, unlike managers in groups. The results are presented in Table 6. Fund closures increase the probability of a solo-manager leaving the fund family as high as about 55%. Moreover, fund closures have the same effects on the probability, whether a solo-manager is male or female. We contrast these results with those when managers work in teams. Female managers are more likely to leave the fund family around fund closures than male managers when they work in teams, but not when they manage funds alone. The results support a view that more blame is attributed to females for unsuccessful teamwork when the work is a male-sex-typed task (Haynes and Lawrence (2012)). Given that fund management has been dominated by men, male managers might be expected to perform better than female managers. Such stereotype-based expectations result in attribution of more blame to females for failures when the source is ambiguous, such as closures of funds managed by a group.

Moreover, we find no gender difference for sub-managers who manage funds alone. They stop managing funds for the fund family with a same likelihood around fund closures irrespective of gender. The results are consistent with our previous discussion about team-managers for sub-advised funds.

We also present results for solo-managers in families that have no female managers in Table 6. We find the effect of fund closures on the probability for a male manager to leave the fund family similar to the case where the manager works in teams. The probability is about 70%, much higher than that for male managers in gender-diverse families.

Table 7 and 8 repeat the same analyses except that the dependent variable is a dummy variable that takes the value of one when the manager leaves the industry. This is one of two events that occur when a manager leaves the fund family. The manager might find a job at another fund family or permanently quit his or her career. We find that the results are similar to the results shown in Tables 5 and 6. Female managers employed by the fund family are more likely to quit their career when they manage funds in groups with male managers. In all other cases, for instance, where female managers are employed by sub-advisors (not the fund families) or female managers manage funds alone, female managers do not have a higher probability of leaving the industry around fund closures than male managers.

3.2.3. Mutual fund scandal

Fund managers might decide to leave the fund family amid legal troubles of their fund families. In particular, defamation reduces assets under management because outflows of investors' money increase and inflows of investors' money decrease. Given that management fees are proportional to assets under management, managers' pay would also decrease due to legal scandal of fund families. Also, significant legal troubles might even challenge operations of fund families. As such, it is reasonable to argue that mutual fund managers employed by tainted fund families are more likely to leave the fund families and move to other fund families. Yet, it would not affect the probability of leaving the industry. Note that leaving the fund family must be a voluntary decision rather than termination by the employer. Therefore, we expect no differences between males and females when

they leave the fund family in the middle of their employers' legal trouble.

We use the mutual fund scandal in 2002 as exogenous events that might increase mutual fund managers' probability of leaving the fund family but not the probability of quitting their career. The additional explanatory variables include a dummy variable that takes the value of one if the fund family is one of the scandal fund families and the time is between 2002 and 2004. We also construct variables by multiplying the dummy variable with a dummy variable that takes the value of one if the manager is female and to the fund closure ratio. As before, the dependent variable is a dummy variable that takes the value of one if the manager leaves the fund family.

Table 9 presents the results for own-managers and sub-managers in Panel A and B, respectively. As conjectured, fund managers employed by tainted fund families are more likely to leave them during the troubled time, whether they manage funds in teams or alone. We do not find any difference in the scandal effect between male and female fund managers. Panel B shows that the scandal effect is limited to only the fund managers employed by the scandal fund families, not the managers who are employed by sub-managers. In fact, we see that the probability to quit managing funds for the family decreases in some cases amid the mutual fund scandal. This could be related to a higher probability for the scandal fund families to lose their own employees and, thereby, more demand for sub-managers. We also find no difference in the effect of fund closures for the scandal fund families during the scandal time.

We run the same regressions in Table 9 except that the dependent variable is a dummy variable that takes the value of one if the manager leaves the industry. The results are presented in Table 10. We do not find any effect of the scandal on the probability that the manager leaves the fund industry, whether they manage funds in group or alone and whether they are employed by the scandal fund families or manage their funds as an employee of the sub-advisors. Consistent with Table 9, we find solo sub-managers for the scandal fund families are less likely to leave the fund

industry during the scandal times. We also find no gender difference in the scandal effect in any case.

3.3. Gender and performance

One might provide skill differences as an explanation why female managers working in mixed-gender groups are more likely to leave the fund family around fund closures. We estimate each manager's abnormal returns relative to Carhart's (1997) four factors. In particular, we compare male managers who stay in the mutual fund industry and female managers who have left the industry. Figure 3 shows the distribution of the t-statistics of the abnormal returns of managers by gender, in particular, the percentiles of 1, 5, 10, 90, 95, and 99. Figures (A) and (B) provide the results for team managers using Carhart's four-factor model. The distribution of the t-statistics in (A) show that male team managers who stay do not necessarily outperform female team managers who leave. Similar conclusions hold for t-statistics of the abnormal returns of managers who experience fund closures as shown in (B). We focus on those two groups but the results hold for any managers working in teams. Team managers who stay in the industry do not necessarily outperform their counterparts who leave the industry.

Figure 3 (C) compares t-statistics of returns of male solo-managers who stay and female solo-managers who leave the industry. The first group's distribution of the t-statistics dominates that of the second group. Male solo-managers who still work as fund managers seem to have superior performance compared with female solo-managers who have quit their career. The t-statistics of abnormal returns of managers who had their funds closed are plotted in Figure (D). Overall, male solo-managers who stay have higher abnormal returns than female solo-managers who leave. These results contrast with managers who manage funds in teams. Solo-managers who continue their career as fund manager outperform solo-managers who quit their career.

5. Conclusions

This paper examines discrimination in punishment for failure across gender in the context of mutual fund managers. We find that female fund managers working in teams are punished for unsuccessful outcomes in the labor markets disproportionately relative to male team-managers. Female team-managers are 20% more likely to lose their jobs amid fund closures than male team-managers. Also, female managers working in teams are 30% more likely to retire amid fund closures than their male counterparts.

Several explanations have been proposed to explain low representation of women in many industries, such as hiring discrimination against women and career interruptions. Our results suggest an alternative explanation. Gender discrimination in punishment for teamwork failure has led to lower diversity in the mutual fund industry. The fraction of female fund managers decreased from 13.2% in 1999 to 9.4% in 2015. It will decrease to less than 7% by 2030 provided that the gender gap continues and a quarter of managers have their funds closed every year.

We find higher rates of employment termination and retirement of female fund managers consistent with attributional rationalization. Given that the task is considered to be a male role, females are expected to fail. As a result, employers and prospective employers allocate more blame for failure to female team-managers than to male team-managers when individual performance is not available. Subsequently, women are more likely to be dismissed than men following unsuccessful outcomes.

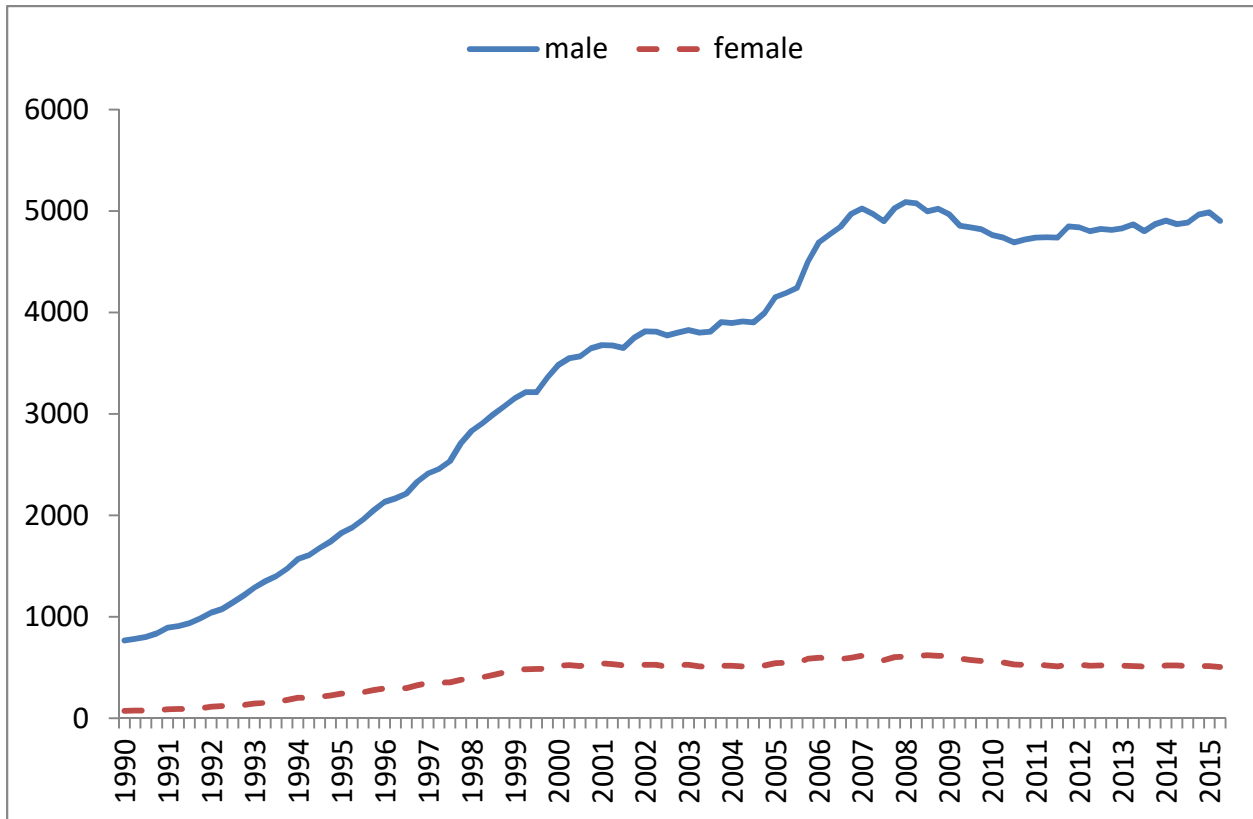
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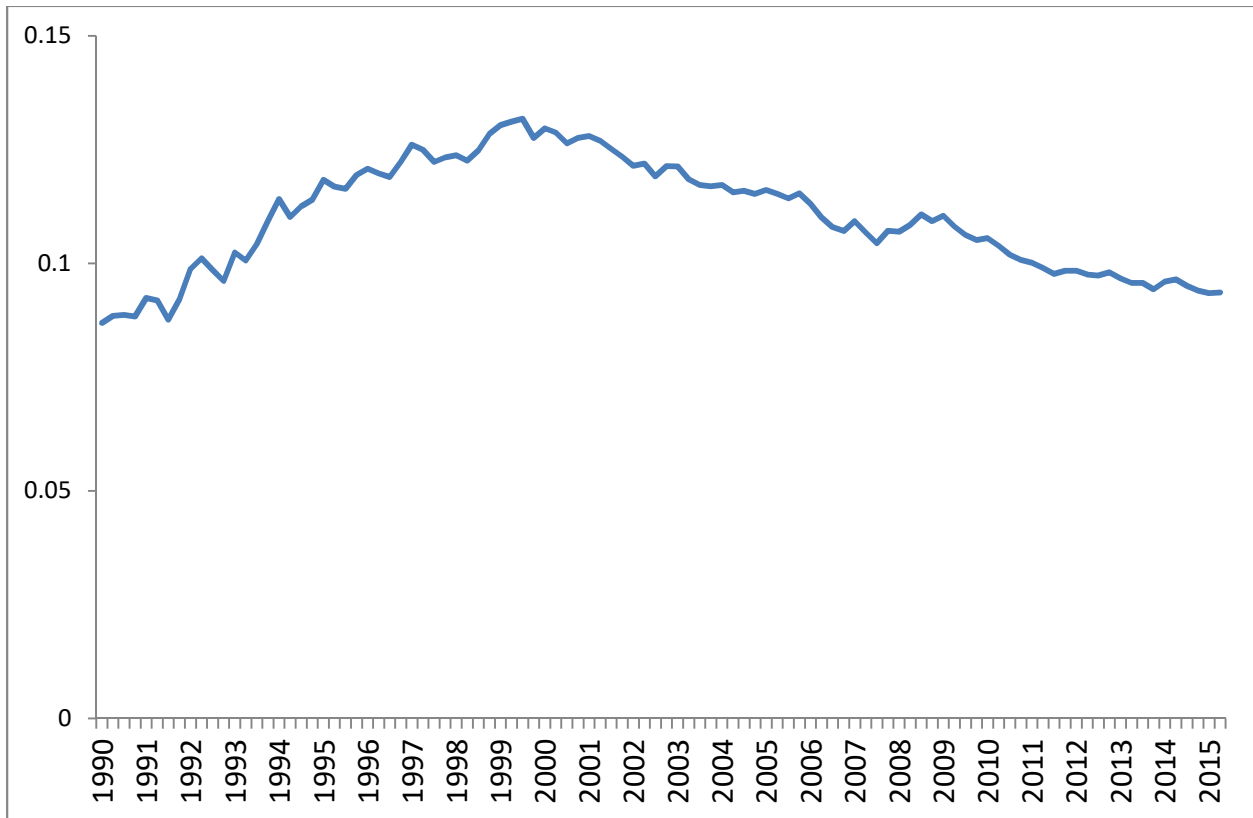
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Figure 1.

(A) Number of managers by gender



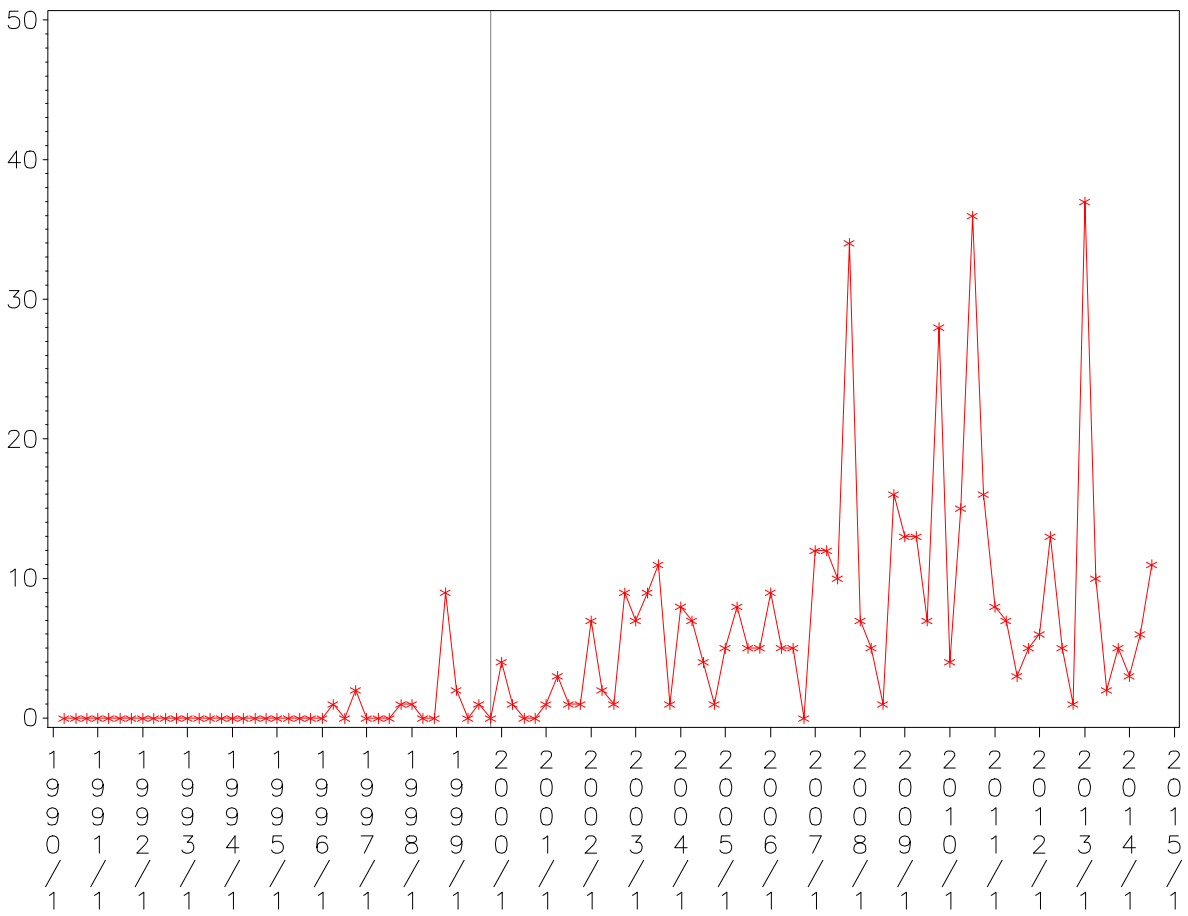
(B) Gender diversity



Note: Figure (A) plots a time series of the number of male and female managers represented by a solid line and a dashed line, respectively. Figure (B) plots a time series of the fraction of female managers. The data period is from 1990 Q1 to 2015 Q2.

Figure 2.

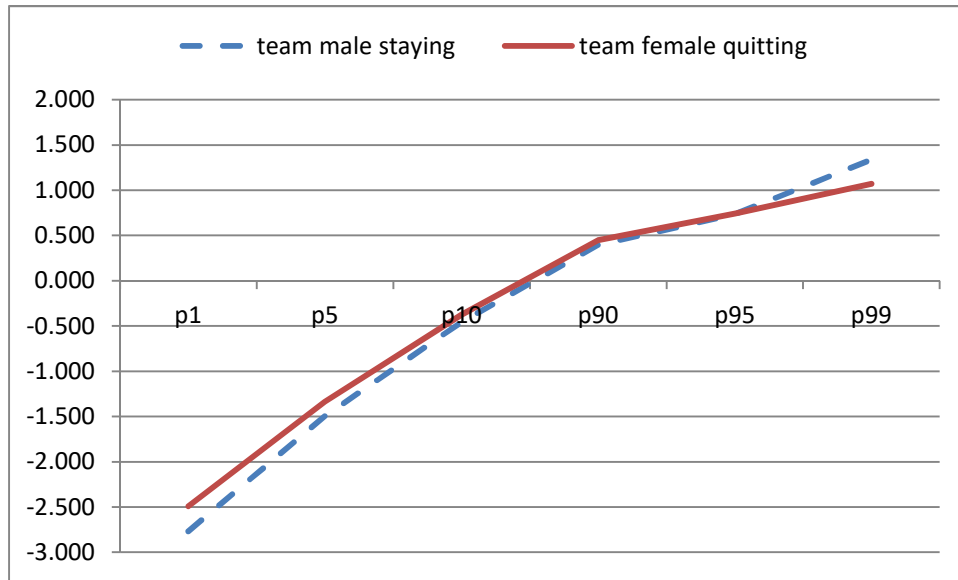
Quarterly number of fund closures (excluding one-manager family)



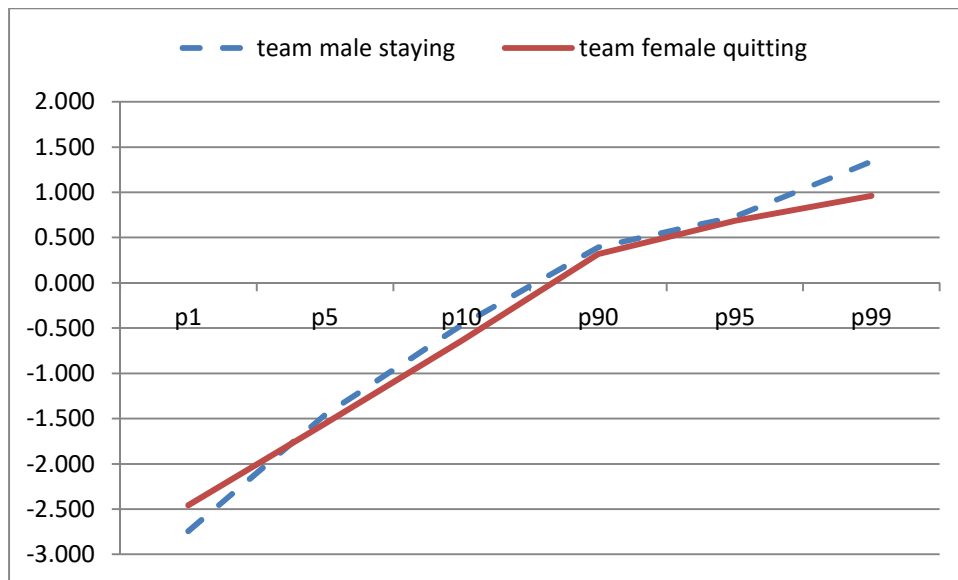
Note: A time series of the fraction of the number of funds closed over a quarter is shown from 1990 Q1 to 2015 Q2.

Figure 3.

(A) T-statistics of Carhart alpha of team managers



(B) T-statistics of Carhart alpha of team managers who experience fund closures



(C) T-statistics of Carhart alpha of solo managers



(D) T-statistics of Carhart alpha of solo managers who experience fund closures



Note: The distributions of abnormal returns and the t-statistics of individual managers are plotted. Abnormal returns are estimated as the intercept of the regressions with four factors by Carhart (1997). The distribution is represented by 6 percentile points: 1st, 5th, 10th, 90th, 95th, and 99th. Figure (A) and (C) show, respectively, the distribution of the t-statistics of managers who work only in teams and who manage at least one fund alone. Similarly, Figures (B) and (D) show the distributions for managers who experience fund closures. We group managers by

retirement and gender. The figures show two groups: male managers who have not retired and female managers who have retired as of 2015 Q2. The data period is from 1990 Q1 to 2015 Q2.

Table 1. Descriptive statistics

	total family		male family		total fund		team ratio		average fund		average manager	
	average	s.d.	average	s.d.	average	s.d.	average	s.d.	average	s.d.	average	s.d.
(A) all quarters												
own	317	93	204	56	1631	597	0.74	0.11	4.971	0.658	6.45	0.32
sub	178	42	89	16	1256	545	0.57	0.15	6.756	2.339	12.08	0.72
(B) 1990 Q1-1999 Q3												
own	222	79	146	42	986	444	0.63	0.06	4.276	0.486	5.44	0.16
sub	146	47	90	20	648	300	0.41	0.07	4.254	0.624	5.73	0.15
(C) 1999 Q4-2015 Q2												
own	379	26	241	23	2051	102	0.81	0.06	5.423	0.199	7.11	0.20
sub	200	17	88	13	1651	176	0.67	0.08	8.383	1.418	16.21	0.56
	total male		male family male		total female		diversity		total one manager		one manager female	
	average	s.d.	average	s.d.	average	s.d.	average	s.d.	average	s.d.	average	s.d.
(A) all quarters												
own	1775	672	738	250	217	84	0.11	0.01	144	26	7	3
sub	987	443	245	63	132	50	0.12	0.01	-	-	-	-
(B) 1990 Q1-1999 Q3												
own	1048	478	484	143	134	77	0.11	0.02	131	32	7	3
sub	503	186	192	46	77	32	0.13	0.01	-	-	-	-
(C) 1999 Q4-2015 Q2												
own	2248	165	903	144	271	18	0.11	0.01	152	16	8	3
sub	1302	220	279	48	168	15	0.12	0.01	-	-	-	-
	fund birth		fund closure		male hire		female hire		male fire		female fire	
	average	s.d.	average	s.d.	average	s.d.	average	s.d.	average	s.d.	average	s.d.
(A) all quarters												
own	190	63	86	60	0.038	0.018	0.045	0.036	0.019	0.007	0.024	0.015
sub	154	63	73	67	0.047	0.021	0.052	0.035	0.025	0.011	0.033	0.022
(B) 1990 Q1-1999 Q3												
own	154	82	22	20	0.055	0.016	0.072	0.043	0.015	0.006	0.018	0.016
sub	105	67	9	10	0.062	0.021	0.071	0.043	0.017	0.009	0.023	0.022
(C) 1999 Q4-2015 Q2												
own	212	36	125	39	0.026	0.009	0.028	0.015	0.021	0.006	0.028	0.012
sub	184	39	112	54	0.037	0.015	0.040	0.021	0.030	0.009	0.040	0.019

Note: The table presents the average and the standard deviation of the variables in the first row (A) from 1990 Q1 to 2015 Q2; (B) from 1990 Q1 to 1992 Q2; and (C) from 1992 Q3 to 2014 Q5. The sample is divided into two groups depending on whether the manager manages subadvised funds. Own represents funds that are managed by employees of the fund family. Sub represents funds that are managed by employees of subadvisors. Total family (fund) is the number of families (funds) in the sample at the end of each quarter. Male family is the number of families with no female managers. Team ratio is the number of team funds divided by the total number of funds. Average fund (manager) is the average number of funds (managers) of a fund family. Total male (female) is the number of male (female) managers at the end of the quarter. Male family male is the number of male managers in male families. Diversity is the ratio of the number of female managers to the total number of managers. Total one manager is the number of managers in fund families with only one manager. The sample excludes such cases. One manager female is the number of female managers in fund families with only one manager. Fund birth (closure) is the number of funds that experience inceptions (closures) over the past 4 quarters. Male (female) hire is the ratio of the number of new male (female) hires over the quarter to the number of male (female) managers at the beginning of the quarter. Male (female) fire is the ratio of the number of male (female) managers leaving the family over the quarter to the number of male (female) managers at the beginning of the quarter. The sample is from Morningstar, and the period covers from 1990 Q1 to 2015 Q2.

Table 2. Fixed effects regressions of fund closure (estimates and p-values)

	(A) all fund families				(B) diverse families				(C) male only families	
	all funds		own-managed funds		diverse funds		own-managed funds		all funds	
diversity	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
	(0.937)	(0.890)	(0.898)	(0.924)	(0.895)	(0.925)	(0.898)	(0.990)		
# managers (10's)	0.007	0.000	0.001	-0.005	0.007	0.001	0.001	-0.006	0.006	-0.003
	(0.233)	(0.936)	(0.741)	(0.250)	(0.235)	(0.896)	(0.846)	(0.250)	(0.506)	(0.723)
size (trillions)	-0.331	-0.151	-0.304	-0.151	-0.325	-0.130	-0.307	-0.134	-0.325	-0.216
	(0.014)	(0.104)	(0.012)	(0.037)	(0.014)	(0.184)	(0.004)	(0.025)	(0.132)	(0.253)
age (10's)	0.002	-0.002	0.003	-0.001	0.002	-0.002	0.004	0.000	0.002	-0.001
	(0.236)	(0.262)	(0.183)	(0.780)	(0.324)	(0.288)	(0.212)	(0.860)	(0.375)	(0.668)
index fund	-0.002	-0.004	0.002	0.000	-0.002	-0.004	0.002	0.001	-0.001	-0.004
	(0.481)	(0.207)	(0.713)	(0.960)	(0.503)	(0.252)	(0.739)	(0.862)	(0.710)	(0.109)
expense ratio (%)	-0.102	-0.075	-0.091	-0.064	-0.114	-0.079	-0.109	-0.068	-0.063	-0.064
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.009)	(0.017)
net return (%)	-0.002	-0.003	-0.002	-0.003	-0.002	-0.003	-0.002	-0.004	-0.002	-0.002
	(0.674)	(0.195)	(0.627)	(0.129)	(0.726)	(0.152)	(0.638)	(0.065)	(0.669)	(0.615)
flow (%)	-0.003	-0.002	-0.002	-0.002	-0.003	-0.002	-0.001	-0.001	-0.003	-0.002
	(0.000)	(0.000)	(0.001)	(0.002)	(0.000)	(0.001)	(0.082)	(0.104)	(0.000)	(0.000)
industry closure ratio	0.216	0.045	0.209	0.056	0.204	0.026	0.208	0.038	0.239	0.090
	(0.000)	(0.005)	(0.000)	(0.008)	(0.000)	(0.102)	(0.000)	(0.091)	(0.000)	(0.010)
family closure ratio		0.793		0.689		0.855		0.773		0.639
		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)
family # funds (10's)		0.001		0.000		0.001		0.001		0.002
		(0.276)		(0.704)		(0.188)		(0.562)		(0.456)
family diversity		-0.001		0.003		0.006		0.013		
		(0.803)		(0.625)		(0.470)		(0.195)		
family # managers (10's)		0.000		0.000		0.000		0.000		0.002
		(0.859)		(0.578)		(0.893)		(0.443)		(0.159)
family size (trillions)		-0.015		-0.008		-0.013		-0.007		-0.036
		(0.008)		(0.103)		(0.012)		(0.154)		(0.090)
family age (10's)		0.002		0.003		0.002		0.003		0.004
		(0.053)		(0.010)		(0.202)		(0.064)		(0.111)
sub managed dummy	0.006	0.005	0.000	0.000	0.007	0.005	0.000	0.000	0.006	0.007
	(0.009)	(0.028)	(0.000)	(0.000)	(0.024)	(0.127)	(0.000)	(0.000)	(0.063)	(0.022)
Rsquared	0.005	0.141	0.005	0.119	0.005	0.137	0.005	0.122	0.004	0.151
observations	211851	211851	119746	119746	162443	162443	81801	81801	49408	49408
diversity from OLS regressions	0.002	0.000	0.004	0.000	0.002	0.000	0.003	0.000		
	(0.541)	(0.939)	(0.154)	(0.905)	(0.598)	(0.929)	(0.349)	(0.939)		

Note: The regressions are run separately for (A) all fund families; (B) diverse fund families; and (C) male-only fund families. Diverse fund families have at least one female manager and male-only fund families have no female managers. Own-managed funds are managed by managers who are employed by the fund family. The dependent variable is a dummy variable that takes the value of one when a share class of the fund is closed. The independent variable is presented in the first column. Diversity is the ratio of the number of female managers to the total number of managers of the fund. # managers (10s) is the total number of managers in tens. Size (trillions) is the assets under management in trillion dollars. Age (10s) is the time since the inception date of the fund in a unit of 10 years. Index fund is a dummy variable that takes the value of one if the fund is an index fund. Expense ratio is the annual expense ratio as disclosed in the most recent annual report in a unit of 100 (i.e., 10000%). Net return and flow are returns after expenses and net money flows for the fund, respectively, for the last one year, in a unit of 100 (i.e., 10000%). Industry closure ratio is the ratio of number of funds liquidated or merged to outside funds to the total number of funds in the industry except for the fund in question over the same quarter. Family closure ratio is similar to the industry closure ratio except that only the funds in the same family are considered. Family # fund (10s), family diversity, family # managers (10s), family size (trillions), family age (10s) are similarly defined as the fund variables. Subadvised dummy takes the value of one if the fund is submanaged (i.e., managed by outside subadvisors). The estimation also includes fund family fixed effects and the standard errors are clustered by time (quarter). Diversity from OLS regressions report the coefficient estimate on the variable of diversity from the regressions without the fund family fixed effects. The data period is from 1990 Q1 to 2015 Q2.

Table 3. Probability of a manager's leaving or joining a fund family (%)
(benchmark: male manager in a diverse family)

	(1)		(2)		(3)	
	estimate	pvalue	estimate	pvalue	estimate	pvalue
(A) Probability of leaving a fund family						
(A) all quarters						
female manager	+0.521	(0.000)	+0.617	(0.000)	+0.554	(0.000)
male manager in a male family	-0.425	(0.005)			-0.242	(0.127)
submanager			+0.663	(0.000)	+0.613	(0.001)
(B) 1990 Q1-1999 Q3						
female manager	+0.062	(0.690)	+0.177	(0.276)	+0.063	(0.687)
male manager in a male family	-0.330	(0.105)			-0.310	(0.121)
submanager			+0.195	(0.359)	+0.164	(0.447)
(C) 1999 Q4-2015 Q2						
female manager	+0.627	(0.000)	+0.721	(0.000)	+0.671	(0.000)
male manager in a male family	-0.460	(0.009)			-0.211	(0.257)
submanager			+0.764	(0.000)	+0.716	(0.000)
(B) Probability of joining a fund family						
(a) all quarters						
female manager	+0.274	(0.005)	+0.307	(0.001)	+0.348	(0.000)
male manager in a male family	-0.253	(0.102)			+0.155	(0.292)
submanager			+1.327	(0.000)	+1.360	(0.000)
(b) 1990 Q1-1999 Q3						
female manager	+1.268	(0.000)	+1.280	(0.000)	+1.274	(0.000)
male manager in a male family	-0.112	(0.708)			-0.016	(0.955)
submanager			+0.799	(0.013)	+0.797	(0.012)
(c) 1999 Q4-2015 Q2						
female manager	+0.038	(0.721)	+0.072	(0.499)	+0.132	(0.219)
male manager in a male family	-0.275	(0.109)			+0.254	(0.125)
submanager			+1.444	(0.000)	+1.503	(0.000)

Note: The table presents the difference (%) between the probability that a manager in the first column will leave the fund family and the probability that a male manager will leave a diverse fund family (i.e., fund family with at least one female manager) over a quarter. For example, the probability for a male manager to leave the male-only fund family minus the probability for a male manager to leave a diverse fund family. Submanager represents managers who manage subadvised funds for the fund family and are employed by the subadvisors. The estimation includes quarter fixed effects and the p-values are based on standard errors that are clustered by fund family. Panel (B) is the same as Panel (A) except that the probability is for hiring. The data period is from 1990 Q1 to 2015 Q2.

Table 4. Managers' probability of leaving or experiencing fund closures (estimates and pvalue; clustered by time)

		leave the family		leave the industry		leave the family only		leave the family given fund closures		leave the industry given fund closures		leave the family only given fund closures	
		male	+female	male	+female	male	+female	male	+female	male	+female	male	+female
own	solo	0.109 (0.000)	0.027 (0.002)	0.072 (0.000)	0.019 (0.001)	0.037 (0.000)	0.008 (0.088)	0.540 (0.000)	0.211 (0.000)	0.357 (0.000)	0.085 (0.022)	0.183 (0.000)	0.127 (0.001)
own	team	0.133 (0.000)	0.017 (0.000)	0.083 (0.000)	0.022 (0.000)	0.050 (0.000)	-0.005 (0.005)	0.392 (0.000)	0.070 (0.000)	0.227 (0.000)	0.072 (0.000)	0.165 (0.000)	-0.002 (0.811)
sub	solo	0.122 (0.000)	0.024 (0.006)	0.074 (0.000)	0.030 (0.000)	0.048 (0.000)	-0.006 (0.189)	0.604 (0.000)	0.080 (0.054)	0.398 (0.000)	0.147 (0.001)	0.206 (0.000)	-0.067 (0.017)
sub	team	0.156 (0.000)	0.022 (0.000)	0.084 (0.000)	0.026 (0.000)	0.072 (0.000)	-0.004 (0.026)	0.388 (0.000)	0.054 (0.000)	0.171 (0.000)	0.045 (0.000)	0.217 (0.000)	0.010 (0.352)

Note: The table presents the probability of the event in the first row. Leave the family (industry) is the event where the manager leaves the fund family or stops managing funds for the fund family. Leave the industry is a retirement event. Leave the family only is the event where the fund manager leaves the fund family and moves to another fund family. The event given fund closures is the event conditional on the event of closures of at least one fund. Managers are grouped by own (managers employed by the fund family) and sub (managers employed by subadvisors) and further grouped by solo (managers who manage at least one fund alone) and team (managers who manage all funds in teams). The data period is from 1990 Q1 to 2015 Q2.

Table 5. Team managers' probability of leaving the fund family

(A) own managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
female	0.009	(0.052)	0.005	(0.455)	-0.017	(0.503)				
fund closure	0.536	(0.000)	0.523	(0.000)	0.523	(0.000)	0.723	(0.000)	0.716	(0.000)
fund closure*female	0.045	(0.035)	0.043	(0.050)	0.044	(0.047)				
industry quit ratio	0.678	(0.000)	0.611	(0.000)	0.610	(0.000)	0.195	(0.121)	0.168	(0.211)
diversity			0.035	(0.026)	0.034	(0.066)				
# manager			0.011	(0.000)	0.011	(0.000)			0.024	(0.000)
size			-3.513	(0.015)	-3.498	(0.023)			-7.935	(0.386)
managing funds			-0.015	(0.017)	-0.014	(0.024)			-0.015	(0.003)
tenure			0.005	(0.000)	0.005	(0.000)			0.005	(0.000)
age			0.001	(0.077)	0.001	(0.076)			0.001	(0.149)
family diversity			-0.110	(0.082)	-0.120	(0.071)			0.000	(0.000)
family # manager			0.000	(0.360)	0.000	(0.269)			0.001	(0.203)
family size			-0.063	(0.059)	-0.058	(0.102)			-0.268	(0.808)
family age			0.000	(0.956)	0.000	(0.825)			-0.002	(0.025)
diversity*female					0.012	(0.775)				
manager*female					0.001	(0.593)				
size*female					-0.053	(0.802)				
managing funds*female					-0.003	(0.273)				
tenure*female					0.000	(0.865)				
age*female					0.000	(0.803)				
family diversity*female					0.014	(0.808)				
family # manager*female					0.000	(0.020)				
family size*female					-0.003	(0.513)				
family age*female					0.002	(0.102)				
observations	115,938		110,774		110,774		61,381		56,247	
Rsquared	0.089		0.096		0.097		0.219		0.213	
(B) sub managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
female	0.015	(0.004)	0.010	(0.066)	0.033	(0.221)				
fund closure	0.507	(0.000)	0.491	(0.000)	0.491	(0.000)	0.733	(0.000)	0.726	(0.000)
fund closure*female	0.027	(0.335)	0.025	(0.400)	0.023	(0.428)				
industry quit ratio	0.406	(0.006)	0.302	(0.029)	0.300	(0.031)	0.584	(0.020)	0.549	(0.039)
diversity			0.043	(0.005)	0.047	(0.006)				
# manager			0.004	(0.000)	0.004	(0.000)			0.014	(0.011)
size			1.894	(0.914)	5.323	(0.761)			-83.077	(0.112)
managing funds			-0.033	(0.000)	-0.033	(0.000)			-0.038	(0.000)
tenure			0.007	(0.000)	0.007	(0.000)			0.010	(0.000)
age			0.000	(0.472)	0.001	(0.386)			0.001	(0.740)
family diversity			-0.089	(0.190)	-0.073	(0.290)			0.000	(0.000)
family # manager			0.001	(0.010)	0.001	(0.011)			0.003	(0.044)
family size			-0.433	(0.301)	-0.459	(0.280)			-1.290	(0.638)
family age			-0.001	(0.220)	-0.001	(0.234)			0.002	(0.460)
diversity*female					-0.026	(0.598)				
manager*female					0.000	(0.810)				
size*female					-6.470	(0.002)				
managing funds*female					0.002	(0.713)				
tenure*female					0.004	(0.129)				
age*female					-0.001	(0.546)				
family diversity*female					-0.062	(0.302)				
family # manager*female					0.000	(0.657)				
family size*female					0.068	(0.072)				
family age*female					0.000	(0.578)				
observations	164,215		151,384		151,384		21,368		18,708	
Rsquared	0.092		0.106		0.107		0.257		0.266	

Note: The dependent variable is a dummy variable that takes the value of one if the manager leaves the fund family. Only managers working in teams are considered. The regressions are separately run for (A) own managers, who are employed by the fund family and (B) sub managers, who are not employed by the fund family but by the subadvisors. We also group managers by the diversity of the fund family. Diverse fund family employs at least one female fund manager. Male-only fund family has no female fund managers. Independent variables are presented in the first column and the coefficients and p-values are presented. Female is a dummy variable that takes the value of one if the manager is female. Fund closure is the ratio of funds liquidated or merged to outside funds over the last four quarters to the total number of funds managed by the manager. Industry is the ratio of managers who quit the industry to the total number of managers in the industry. Diversity of the average fraction of female managers of the funds under management of the manager. # manager is the average number of managers of the funds under management of the manager. Size is the total assets under management of the manager. Managing funds is the number of the funds under management of the manager. Tenure is the time of the manager at the fund family in years. Age is the average age of the funds under management of the manager. Variables at the family level are similarly defined. The regressions include the family fixed effects and the standard errors are clustered by fund family and time. The data period is from 1990 Q1 to 2015 Q2.

Table 6. Solo managers' probability of leaving the fund family

(A) own managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
female	0.007	(0.415)	0.027	(0.384)	-0.018	(0.852)				
fund closure	0.547	(0.000)	0.545	(0.000)	0.544	(0.000)	0.686	(0.000)	0.692	(0.000)
fund closure*female	0.102	(0.069)	0.085	(0.142)	0.088	(0.127)				
industry quit ratio	0.296	(0.005)	0.343	(0.005)	0.351	(0.004)	0.265	(0.063)	0.307	(0.062)
diversity			-0.019	(0.585)	-0.136	(0.062)				
# manager			-0.010	(0.109)	-0.005	(0.466)			-0.009	(0.505)
size			-4.093	(0.065)	-3.925	(0.100)			6.706	(0.007)
managing funds			-0.010	(0.007)	-0.009	(0.012)			-0.017	(0.001)
tenure			0.004	(0.000)	0.004	(0.000)			0.004	(0.001)
age			0.000	(0.542)	0.000	(0.656)			-0.001	(0.374)
family diversity			-0.049	(0.434)	-0.012	(0.841)			0.000	(0.000)
family # manager			0.000	(0.230)	0.000	(0.242)			0.001	(0.148)
family size			0.290	(0.488)	0.259	(0.581)			-0.857	(0.083)
family age			-0.002	(0.038)	-0.002	(0.073)			-0.001	(0.465)
diversity*female					0.202	(0.097)				
manager*female					0.002	(0.897)				
size*female					-1.414	(0.556)				
managing funds*female					0.001	(0.800)				
tenure*female					-0.002	(0.560)				
age*female					0.001	(0.663)				
family diversity*female					-0.108	(0.258)				
family # manager*female					0.000	(0.441)				
family size*female					0.016	(0.851)				
family age*female					-0.001	(0.715)				
observations	25,476		24,316		24,316		14,839		13,805	
Rsquared	0.120		0.122		0.123		0.206		0.205	
(B) sub managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
female	0.030	(0.007)	0.029	(0.618)	-0.283	(0.296)				
fund closure	0.620	(0.000)	0.621	(0.000)	0.620	(0.000)	0.714	(0.000)	0.696	(0.000)
fund closure*female	0.051	(0.441)	0.055	(0.409)	0.050	(0.465)				
industry quit ratio	0.211	(0.170)	0.558	(0.007)	0.559	(0.005)	1.288	(0.000)	1.292	(0.000)
diversity			-0.005	(0.934)	-0.010	(0.917)				
# manager			-0.008	(0.000)	-0.008	(0.001)			0.023	(0.289)
size			-19.640	(0.000)	-18.452	(0.000)			57.571	(0.482)
managing funds			-0.011	(0.002)	-0.011	(0.001)			-0.035	(0.025)
tenure			0.003	(0.015)	0.003	(0.016)			0.008	(0.002)
age			0.000	(0.869)	0.000	(0.939)			0.001	(0.481)
family diversity			-0.039	(0.541)	-0.019	(0.777)			0.000	(0.000)
family # manager			0.000	(0.207)	0.000	(0.182)			-0.005	(0.014)
family size			0.496	(0.003)	0.481	(0.004)			16.050	(0.000)
family age			-0.003	(0.064)	-0.003	(0.053)			0.002	(0.472)
diversity*female					0.217	(0.382)				
manager*female					0.047	(0.412)				
size*female					-3.522	(0.176)				
managing funds*female					-0.003	(0.893)				
tenure*female					0.001	(0.515)				
age*female					-0.002	(0.225)				
family diversity*female					-0.074	(0.544)				
family # manager*female					0.000	(0.767)				
family size*female					0.113	(0.001)				
family age*female					0.004	(0.085)				
observations	27,800		25,217		25,217		8,523		7,244	
Rsquared	0.124		0.133		0.135		0.235		0.238	

Note: See the note for Table 5. The only difference is that only solo-managers, who manage at least one fund alone, are considered.

Table 7. Team managers' probability of leaving the fund industry

(A) own managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
female	0.016	(0.000)	0.010	(0.061)	-0.028	(0.279)				
fund closure	0.305	(0.000)	0.297	(0.000)	0.297	(0.000)	0.478	(0.000)	0.472	(0.000)
fund closure*female	0.060	(0.023)	0.059	(0.027)	0.058	(0.030)				
industry quit ratio	0.232	(0.031)	0.229	(0.050)	0.232	(0.048)	0.037	(0.700)	0.010	(0.920)
diversity			0.037	(0.003)	0.035	(0.045)				
# manager			0.006	(0.002)	0.005	(0.001)			0.016	(0.000)
size			-0.320	(0.015)	-0.330	(0.026)			-0.193	(0.774)
managing funds			-0.011	(0.010)	-0.011	(0.016)			-0.011	(0.025)
tenure			0.004	(0.000)	0.004	(0.000)			0.004	(0.000)
age			0.001	(0.222)	0.001	(0.122)			0.000	(0.991)
family diversity			-0.084	(0.087)	-0.108	(0.048)			0.000	(0.000)
family # manager			0.000	(0.980)	0.000	(0.918)			0.001	(0.123)
family size			-0.002	(0.417)	-0.001	(0.657)			-0.040	(0.406)
family age			0.001	(0.170)	0.001	(0.279)			-0.001	(0.321)
diversity*female					0.024	(0.521)				
manager*female					0.002	(0.374)				
size*female					-0.057	(0.773)				
managing funds*female					-0.004	(0.075)				
tenure*female					0.000	(0.725)				
age*female					-0.001	(0.376)				
family diversity*female					0.068	(0.215)				
family # manager*female					0.000	(0.331)				
family size*female					-0.002	(0.700)				
family age*female					0.002	(0.068)				
observations	115,938		110,774		110,774		61,381		56,247	
Rsquared	0.046		0.055		0.055		0.134		0.134	
(B) sub managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
female	0.020	(0.000)	0.019	(0.000)	0.032	(0.151)				
fund closure	0.166	(0.000)	0.158	(0.000)	0.158	(0.000)	0.263	(0.000)	0.245	(0.000)
fund closure*female	0.031	(0.183)	0.028	(0.241)	0.027	(0.249)				
industry quit ratio	0.181	(0.009)	0.168	(0.023)	0.168	(0.023)	0.073	(0.661)	0.064	(0.747)
diversity			0.020	(0.148)	0.012	(0.381)				
# manager			0.001	(0.007)	0.001	(0.008)			0.006	(0.085)
size			-0.991	(0.308)	-0.736	(0.440)			-6.839	(0.000)
managing funds			-0.015	(0.000)	-0.015	(0.000)			-0.023	(0.001)
tenure			0.004	(0.000)	0.004	(0.000)			0.007	(0.000)
age			0.000	(0.426)	0.000	(0.335)			-0.001	(0.478)
family diversity			-0.022	(0.582)	-0.006	(0.872)			0.000	(0.000)
family # manager			0.000	(0.210)	0.000	(0.143)			0.001	(0.269)
family size			-0.017	(0.534)	-0.020	(0.470)			-0.194	(0.188)
family age			-0.001	(0.362)	-0.001	(0.371)			0.003	(0.090)
diversity*female					0.040	(0.308)				
manager*female					0.001	(0.316)				
size*female					-4.707	(0.001)				
managing funds*female					0.003	(0.509)				
tenure*female					0.001	(0.629)				
age*female					0.000	(0.670)				
family diversity*female					-0.092	(0.079)				
family # manager*female					0.000	(0.034)				
family size*female					0.050	(0.168)				
family age*female					0.000	(0.699)				
observations	164,215		151,384		151,384		21,368		18,708	
Rsquared	0.021		0.027		0.028		0.058		0.065	

Note: See the note for Table 5. The only difference is that the dependent variable is a dummy variable that takes the value of one if the manager leaves the fund industry.

Table 8. Solo managers' probability of leaving the fund industry

(A) own managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
female	0.012	(0.143)	0.016	(0.522)	-0.073	(0.373)				
fund closure	0.323	(0.000)	0.316	(0.000)	0.316	(0.000)	0.414	(0.000)	0.409	(0.000)
fund closure*female	-0.005	(0.939)	-0.004	(0.949)	0.001	(0.991)				
industry quit ratio	0.114	(0.293)	0.173	(0.150)	0.178	(0.135)	0.071	(0.544)	0.026	(0.843)
diversity			-0.003	(0.914)	-0.105	(0.039)				
# manager			-0.012	(0.004)	-0.009	(0.073)			-0.010	(0.314)
size			-0.553	(0.001)	-0.630	(0.000)			0.463	(0.017)
managing funds			-0.007	(0.002)	-0.007	(0.004)			-0.013	(0.002)
tenure			0.004	(0.000)	0.004	(0.000)			0.003	(0.001)
age			0.001	(0.279)	0.001	(0.215)			0.000	(0.925)
family diversity			-0.020	(0.675)	0.017	(0.747)			0.000	(0.000)
family # manager			0.000	(0.093)	0.000	(0.056)			0.000	(0.560)
family size			0.047	(0.096)	0.060	(0.028)			-0.054	(0.178)
family age			0.000	(0.935)	0.000	(0.942)			0.001	(0.595)
diversity*female					0.212	(0.013)				
manager*female					0.007	(0.443)				
size*female					0.522	(0.769)				
managing funds*female					0.000	(0.988)				
tenure*female					-0.002	(0.454)				
age*female					-0.001	(0.786)				
family diversity*female					-0.104	(0.255)				
family # manager*female					0.000	(0.618)				
family size*female					-0.082	(0.112)				
family age*female					0.000	(0.784)				
observations	25,476		24,316		24,316		14,839		13,805	
Rsquared	0.062		0.068		0.069		0.117		0.116	
(B) sub managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
female	0.023	(0.027)	-0.020	(0.661)	-0.117	(0.529)				
fund closure	0.288	(0.000)	0.290	(0.000)	0.289	(0.000)	0.265	(0.000)	0.254	(0.000)
fund closure*female	0.121	(0.098)	0.117	(0.117)	0.112	(0.140)				
industry quit ratio	0.163	(0.274)	0.322	(0.066)	0.322	(0.060)	0.720	(0.000)	0.631	(0.016)
diversity			0.044	(0.353)	-0.022	(0.749)				
# manager			-0.003	(0.142)	-0.002	(0.342)			0.013	(0.432)
size			-1.775	(0.000)	-1.652	(0.000)			4.262	(0.546)
managing funds			-0.007	(0.002)	-0.006	(0.010)			-0.031	(0.003)
tenure			0.003	(0.001)	0.003	(0.000)			0.005	(0.077)
age			0.000	(0.873)	0.000	(0.911)			0.000	(0.857)
family diversity			-0.047	(0.360)	-0.041	(0.447)			0.000	(0.000)
family # manager			0.000	(0.135)	0.000	(0.073)			-0.004	(0.045)
family size			0.043	(0.000)	0.039	(0.000)			1.225	(0.002)
family age			-0.001	(0.062)	-0.001	(0.030)			0.003	(0.264)
diversity*female					0.118	(0.473)				
manager*female					-0.011	(0.740)				
size*female					-2.749	(0.168)				
managing funds*female					-0.007	(0.499)				
tenure*female					0.000	(0.646)				
age*female					-0.001	(0.414)				
family diversity*female					0.016	(0.902)				
family # manager*female					0.000	(0.999)				
family size*female					0.135	(0.000)				
family age*female					0.003	(0.114)				
observations	27,800		25,217		25,217		8,523		7,244	
Rsquared	0.054		0.060		0.063		0.063		0.073	

Note: See the note for Table 6. The only difference is that the dependent variable is a dummy variable that takes the value of one if the manager leaves the fund industry.

Table 9. Managers' probability of leaving the fund family following the mutual fund scandal

(A) own team-managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
scandal	0.051	(0.001)	0.054	(0.000)	0.054	(0.000)	-0.003	(0.913)	-0.004	(0.891)
female	0.010	(0.048)	0.005	(0.387)	-0.018	(0.473)				
scandal*female	-0.020	(0.419)	-0.026	(0.322)	-0.022	(0.408)				
death ratio	0.539	(0.000)	0.526	(0.000)	0.526	(0.000)	0.723	(0.000)	0.716	(0.000)
female*death ratio	0.044	(0.040)	0.042	(0.058)	0.043	(0.054)				
scandal*death ratio	-0.111	(0.159)	-0.109	(0.162)	-0.109	(0.164)	0.077	(0.730)	-0.047	(0.879)
control variables	No		Yes		Yes		No		Yes	
control variables*female	No		No		Yes		No		No	
observations	115,938		110,774		110,774		61,381		56,247	
Rsquared	0.090		0.097		0.097		0.219		0.213	
(B) own solo-managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
scandal	0.031	(0.046)	0.042	(0.005)	0.042	(0.006)	0.059	(0.009)	0.069	(0.012)
female	0.009	(0.270)	0.031	(0.307)	-0.024	(0.803)				
scandal*female	-0.059	(0.173)	-0.066	(0.148)	-0.060	(0.180)				
death ratio	0.539	(0.000)	0.537	(0.000)	0.536	(0.000)	0.686	(0.000)	0.693	(0.000)
female*death ratio	0.102	(0.069)	0.085	(0.142)	0.088	(0.129)				
scandal*death ratio	0.113	(0.314)	0.118	(0.293)	0.118	(0.293)	-0.296	(0.086)	-0.322	(0.026)
control variables	No		Yes		Yes		No		Yes	
control variables*female	No		No		Yes		No		No	
observations	25,476		24,316		24,316		14,839		13,805	
Rsquared	0.121		0.123		0.124		0.206		0.205	
(C) sub team-managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
scandal	0.025	(0.160)	0.009	(0.745)	0.010	(0.703)	-0.007	(0.781)	0.030	(0.380)
female	0.015	(0.003)	0.011	(0.051)	0.034	(0.211)				
scandal*female	-0.114	(0.012)	-0.109	(0.018)	-0.121	(0.008)				
death ratio	0.506	(0.000)	0.490	(0.000)	0.490	(0.000)	0.729	(0.000)	0.724	(0.000)
female*death ratio	0.028	(0.321)	0.026	(0.383)	0.024	(0.407)				
scandal*death ratio	0.077	(0.692)	0.068	(0.735)	0.067	(0.735)	0.143	(0.010)	0.055	(0.448)
control variables	No		Yes		Yes		No		Yes	
control variables*female	No		No		Yes		No		No	
observations	164,215		151,384		151,384		21,368		18,708	
Rsquared	0.092		0.106		0.107		0.258		0.266	
(D) sub solo-managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
scandal	-0.108	(0.000)	-0.098	(0.002)	-0.098	(0.002)	-0.027	(0.000)	-0.053	(0.319)
female	0.030	(0.008)	0.029	(0.616)	-0.287	(0.292)				
scandal*female	0.074	(0.030)	0.057	(0.143)	0.029	(0.508)				
death ratio	0.615	(0.000)	0.615	(0.000)	0.614	(0.000)	0.713	(0.000)	0.696	(0.000)
female*death ratio	0.051	(0.444)	0.056	(0.409)	0.051	(0.459)				
scandal*death ratio	0.228	(0.102)	0.226	(0.112)	0.227	(0.112)	0.132	(0.000)	0.150	(0.011)
control variables	No		Yes		Yes		No		Yes	
control variables*female	No		No		Yes		No		No	
observations	27,800		25,217		25,217		8,523		7,244	
Rsquared	0.125		0.133		0.135		0.235		0.238	

Note: The dependent variable is a dummy variable that takes the value of one if the manager leaves the fund family. Regressions are separately run for groups of managers. Own managers are employed by the fund family. Submanagers are employed by subadvisors. Team managers manage funds only in teams. Solo managers manage at least one fund alone. The independent variables are presented in the first column. Scandal is a dummy variable that takes the value of one if the fund family is one of the tainted fund families in the mutual fund scandal in 2003 and the time falls between 2003 and 2005.

Table 10. Managers' probability of leaving the fund industry following the mutual fund scandal

(A) own team-managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
scandal	0.010	(0.732)	0.015	(0.585)	0.015	(0.579)	-0.018	(0.447)	-0.016	(0.559)
female	0.016	(0.001)	0.011	(0.054)	-0.028	(0.265)				
scandal*female	0.004	(0.833)	-0.002	(0.943)	0.000	(0.987)				
death ratio	0.306	(0.000)	0.298	(0.000)	0.298	(0.000)	0.479	(0.000)	0.473	(0.000)
female*death ratio	0.060	(0.020)	0.058	(0.024)	0.057	(0.027)				
scandal*death ratio	-0.030	(0.652)	-0.033	(0.596)	-0.033	(0.596)	-0.237	(0.031)	-0.304	(0.035)
control variables	No		Yes		Yes		No		Yes	
control variables*female	No		No		Yes		No		No	
observations	115,938		110,774		110,774		61,381		56,247	
Rsquared	0.040		0.048		0.049		0.107		0.107	
(B) own solo-managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
scandal	-0.010	(0.533)	-0.002	(0.916)	-0.002	(0.908)	0.034	(0.215)	0.048	(0.046)
female	0.011	(0.166)	0.016	(0.538)	-0.072	(0.372)				
scandal*female	0.004	(0.897)	-0.002	(0.956)	0.005	(0.882)				
death ratio	0.322	(0.000)	0.315	(0.000)	0.314	(0.000)	0.416	(0.000)	0.411	(0.000)
female*death ratio	-0.005	(0.931)	-0.004	(0.943)	0.000	(0.998)				
scandal*death ratio	0.023	(0.803)	0.026	(0.785)	0.027	(0.775)	-0.705	(0.000)	-0.726	(0.000)
control variables	No		Yes		Yes		No		Yes	
control variables*female	No		No		Yes		No		No	
observations	25,476		24,316		24,316		14,839		13,805	
Rsquared	0.056		0.061		0.062		0.099		0.097	
(C) sub team-managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
scandal	0.012	(0.700)	0.004	(0.919)	0.004	(0.907)	-0.028	(0.354)	-0.013	(0.648)
female	0.021	(0.000)	0.019	(0.000)	0.032	(0.149)				
scandal*female	-0.017	(0.795)	-0.004	(0.958)	-0.004	(0.947)				
death ratio	0.167	(0.000)	0.159	(0.000)	0.159	(0.000)	0.267	(0.000)	0.251	(0.000)
female*death ratio	0.031	(0.170)	0.028	(0.230)	0.027	(0.238)				
scandal*death ratio	-0.104	(0.108)	-0.109	(0.103)	-0.108	(0.106)	-0.142	(0.444)	-0.181	(0.355)
control variables	No		Yes		Yes		No		Yes	
control variables*female	No		No		Yes		No		No	
observations	164,215		151,384		151,384		21,368		18,708	
Rsquared	0.019		0.025		0.025		0.048		0.052	
(D) sub solo-managers	diverse family						male only family			
	(1)		(2)		(3)		(4)		(5)	
	est	pvalue	est	pvalue	est	pvalue	est	pvalue	est	pvalue
scandal	-0.028	(0.443)	-0.019	(0.000)	-0.019	(0.000)	0.123	(0.000)	0.106	(0.000)
female	0.023	(0.034)	-0.024	(0.000)	-0.082	(0.000)				
scandal*female	0.229	(0.000)	0.210	(0.000)	0.220	(0.000)				
death ratio	0.292	(0.000)	0.294	(0.000)	0.293	(0.000)	0.260	(0.000)	0.253	(0.000)
female*death ratio	0.115	(0.106)	0.112	(0.000)	0.107	(0.000)				
scandal*death ratio	-0.100	(0.285)	-0.108	(0.000)	-0.107	(0.000)	0.617	(0.000)	0.617	(0.000)
control variables	No		Yes		Yes		No		Yes	
control variables*female	No		No		Yes		No		No	
observations	27,800		25,217		25,217		8,523		7,244	
Rsquared	0.050		0.055		0.058		0.053		0.057	

Note: See the note for Table 9. The only difference is that the dependent variable is a dummy variable that takes the value of one if the manager leaves the fund industry.