Sex Matters: Gender Differences in a Professional Setting*

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Sex Matters: Gender Differences in a Professional Setting

Abstract

This paper shows that gender differences exist in a professional setting where managers have a similar educational background and work experience. Using data from the U.S. mutual fund industry we find that female managers are more risk averse, follow less extreme and more consistent investment styles and trade less than male managers. Although female and male managers do not differ in average performance, female managers receive significantly lower inflows. This suggests that they might be stereotyped as less skilled. Furthermore, they mainly work in companies that are large, well established and that are located in less conservative states of the U.S.

1 Introduction

In this paper we investigate whether behavioral differences between women and men exist in a professional setting. There is a large body of empirical literature documenting such differences in the general population (see, e.g., Birley (1989), Feingold (1994), and Barber and Odean (2001)). However, it is often argued that these differences are not attributable to gender, but to a different educational or professional background (see, e.g., Tsui and Gutek (1984) and Schubert, Brown, Gysler, and Brachinger (1999)). Several papers claim that gender differences should thus not be observed in a managerial subpopulation (see, e.g., Master and Meier (1988), Birley (1989), and Johnson and Powell (1994)). We analyze the behavior of female and male U.S. equity fund managers to investigate whether the preconception of gender differences among professionals is either prejudice or fact. This is an important question since a social construction of gender differences that do not exist would lead to a discriminatory economic system where women and men perform types of work distinct from their innate endowments (see, e.g., McCrate (1988)). As a consequence, performance might be negatively affected which is especially important in the mutual fund industry, where more than 7.5 trillion USD are currently invested (see, e.g., Bogle (2005)).

We examine gender differences along three broad dimensions. First, we examine risk aversion of female and male fund managers. Perhaps the best documented difference between women and men is that women are more risk averse than men. In a meta-analysis of 150 studies, Byrnes, Miller, and Schafer (1999) report very consistent results of a higher risk aversion among women than among men. This finding also holds for financial risk taking (see, e.g., Jianakoplos and Bernasek (1998), Sunden and Surette (1998), and Barber and Odean (2001)). Second, we examine the investment styles female and male fund managers pursue. Experimental evidence from Cadsby and Maynes (2005) suggests that women tend to behave more like one another than men, i.e. their decisions are less individually oriented and more in line with the decisions of others. Third, we investigate gender differences in trading activity. According to Barber and Odean (2001) and Dorn and Huberman (2005), female retail investors trade less than their male counterparts. Additionally, they find that the higher trading activity of male investors hurts their performance and conclude that male investors are more overconfident than female investors. We investigate whether this finding also holds for female and male fund managers.

The analysis of gender differences in a professional setting of fund managers has several major advantages. First, it allows us to isolate gender effects from characteristics like education and career backgrounds that might be correlated with the manager's gender. Second, we consciously decided to investigate the behavior of females who actively decided to work as a fund manager and we only compare managers of funds that belong to the same market segment. Thus, endogeneity problems should be mitigated. Third, unlike the data used in studies on gender differences among CEOs (see, e.g., Bertrand and Hallock (2001) and Wolfers (2006)) the mutual fund industry provides observations taken from a relatively homogenous working environment with clearly defined tasks. All managers investigated in this study have to manage an equity fund and their performance is directly quantifiable. This facilitates the isolation of gender effects from any intervening variables.

Our empirical investigation of all single managed U.S. equity mutual funds from 1994 to 2003 shows that behavioral differences between female and male fund managers exist. We find that female fund managers are more risk averse than male fund managers. They deviate less from benchmarks. Furthermore, female fund managers follow less extreme investment styles and their investment styles are more stable over time than those of male fund managers. Our results also show that female fund managers trade less than male fund managers. However, using various risk-adjusted performance measures, we do not find any significant difference in the average performance of female and male managed funds. We therefore can not conclude that male fund managers trade more because they are more overconfident since this should lead to a worse performance of male managed funds (see, e.g., Barber and Odean (2001)). Finally, we find that female managed funds exhibit higher performance persistence than male managed funds, while male managed funds are more likely than female managed funds to achieve extreme performance ranks if we do not adjust performance for investment styles. Overall, where directly comparable, the differences we document are less pronounced than those reported in studies investigating gender differences within the general population.

Our results have important implications for fund investors. Female fund managers have some characteristics like high performance persistence as well as high reliability with respect to their investment styles that might be desirable from a fund investor's point of view. If fund investors care about these characteristics, female managed funds should receive higher money inflows than male managed funds. However, there is also a large body of evidence suggesting that female managers in upper levels of organizations are stereotyped as less skilled than male managers (see, e.g., Heilman, Martell, and Simon (1989), Oakley (2000), and Atkinson, Baird, and Frye (2003)). This might lead to lower inflows into female managed funds than into male managed funds. Our analysis shows that the growth rate due to inflows of new money of female managed funds is only half that of male managed funds. This suggests that stereotyping might also be an issue in the mutual fund industry: First, fund investors simply might not want to invest with a female manager (see, e.g., Atkinson, Baird, and Frye (2003) and Bigelow and McLean Parks (2006)). Second, fund companies might advertise female managed fund less than male managed funds. Third, brokers could be more prone to promote male managed funds (see, e.g., Wang (1994)). Finally, the financial press might report less or less favorably about female fund managers than about male fund managers (see, e.g., Kahn and Goldenberg (1991)). Unfortunately, the data available to us does not allow us to discriminate between these four potential explanations for lower inflows into female managed funds.

The provocative question that arises from our finding of lower inflows into female managed funds is why a fund management company employs female managers at all, given that they want to maximize money inflows and eventually profits. Thus, our final analysis focuses on the determinants of fund companies employing female managers. We find that large and well-established fund companies are more likely to employ female fund managers than smaller and younger companies. There are several potential explanations for this finding: first, such large and well-established companies face a high risk of being sued for discrimination if they do not employ women (see, e.g., Bradford (2005)). Given their size, they also have a larger risk of reputational losses due to anti-discrimination lawsuits (see, e.g., Holzer (1998)). According to Bradford (2005) such costs are especially high for lawsuits due to gender discrimination. Second, large and well-established fund companies offer higher job security and could thus be a preferred employer from a risk-averse female fund manager's point of view. Third, these companies often cater to large institutional investors who regularly require workforce diversity from the investment companies they do business with. We also find that female fund managers mainly work in companies located in less conservative states of the United States.

This paper contributes to several strands of the literature. First, we contribute to the literature on gender differences (see, e.g., Feingold (1994), Byrnes, Miller, and Schafer (1999), Bertrand and Hallock (2001), Barber and Odean (2001), and Wolfers (2006)) by showing that behavioral differences exist in a professional setting of female and male fund managers. Second, we contribute to the literature on the influence of manager characteristics on managerial outcomes (see, e.g., Rajagopalan and Datta (1996), Betrand and Schoar (2003), and Nelson (2005)) and to the recent literature on the influence of fund managers' characteristics on the success of funds (see, e.g., Chevalier and Ellison (1997) and Baks (2003)) by examining the influence of a fund manager's gender on fund performance. The impact of gender on fund performance is also examined in Atkinson, Baird, and Frye (2003) who investigate gender differences for a small sample of fixed-income fund managers. In a univariate setting, they find no gender differences in performance. Finally, we contribute to the large sociopolitical debate on gender discrimination (see, e.g., Blau and Kahn (1992), Francois (1998), (2000), and Croson and Gneezy (2004)) by showing that stereotyping against females might also be an issue in the mutual fund industry. Although the gender differences we find do not support the view that female fund managers are less qualified to manage a fund, there seems to be a prejudice within the industry against them.

The paper proceeds as follows. Section 2 contains a description of our data and the construction of our main variables. Our empirical results on behavioral differences between female and male fund managers are presented in Section 3. Consequences of gender differences between female and male fund managers for investors and fund companies are analyzed in Section 4. Section 5 examines which fund companies employ female managers and Section 6 concludes.

2 Data

2.1 Principal Data Sources

Our primary data source is the CRSP Survivor Bias Free Mutual Fund Database.[1] It covers virtually all U.S. open-end mutual funds and provides information on fund returns, fund management structures, total net-assets, investment objectives, fund managers' identity, and other fund characteristics.

We focus on actively managed equity funds that invest more than 50% of their assets in stocks and exclude bond, money market and index funds. We use the ICDI objective codes identified by Standard & Poor's Fund Services to define the market segment in which a fund operates. This leaves us with 10 different equity fund segments.[2] The ICDI classification is available from 1994 on. Our data ends in 2003. Thus, our study covers the time period from January 1994 to December 2003.

[1] Source: CRSP, 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 Elton, Gruber, and Blake (2001) and Carhart (1997).

[2] Specifically, we use the following ten equity fund segments: AG (Aggressive Growth), BAL (Balanced Funds), GE (Global Equity), GI (Growth and Income), IE (International Equity), IN (Income), LG (Long-term Growth), SE (Sector Funds), UT (Utility Funds) and TR (Total Return).

We aggregate all share classes of the same fund to avoid multiple counting. Although multiple share classes are listed as separate entries in the CRSP database, they are backed by the same portfolio of assets and have the same portfolio manager. They usually only differ with respect to their fee structure. Following the approach in Daniel, Grinblatt, Titman, and Wermers (1997), we identify the share classes of a fund by matching fund names and characteristics such as fund management structure, turnover, and fund holdings in asset classes.

Baer, Kempf, and Ruenzi (2006) and Massa, Reuter, and Zitzewitz (2006) show that team managed funds and single managed funds behave differently. Thus, we concentrate our analysis on single managed funds and exclude all team managed funds and funds for which CRSP gives multiple manager names from our analysis. This allows us to disentangle differences in managerial behavior that are due to the management structure (team vs. single managed) from differences that can be attributed to the gender (female vs. male managed).

To identify the gender of the fund managers in our sample we use the first name of the manager which is usually given in the CRSP database. Overall, we are able to identify the gender of the fund manager in 99.39% of all cases.[3] The age and the education of the fund managers are obtained from the Morningstar Principia Pro CD's.[4]

2.2 Summary Statistics

Our final sample contains 13,547 fund year observations, out of which 12,075 have a male manager and 1,472 have a female manager. These observations are from a total of 3,333 distinct funds. Figure 1 shows the total number of male and female managed funds as well as the percentage share of female managed funds over our sample period.

[3] The appendix provides further details pertaining to the gender identification process.

[4] Since we are only able to identify the age and the education for 50% of the managers in our sample, we substitute missing data with the conditional mean based on the manager's gender to maintain the size of our sample.

— Please insert FIGURE 1 approximately here —

While the total number of female managed funds increases slightly over time, the share of female managed funds is low and constant at around 10% in each year. Although a rise of female professionals can be observed for several higher paying "traditionally male" occupations (see, e.g., Black and Juhn (2000)), the share of female fund managers in the mutual fund industry does not rise within our sample period. This is astonishing given that the share of women with a degree in finance in 2003 is about 30% (Master) to 35% (Bachelor), and the share of female CFA-charterholders rose from 17.1% in 1994 to 25% in 2003.[5] Thus, the increasing number of women who aspire to a job in the financial area is not employed as mutual fund managers.

Table 1 reports summary statistics for various characteristics of the female and male managed funds as well as the female and male fund managers in our sample.

— Please insert TABLE I approximately here —

Female managers are responsible for smaller funds. The average size of a female managed fund is 676.53 million USD, while the average size of a male managed fund is 806.08 million USD. The mean age of the funds managed by male and female managers is similar (10.12 vs. 10.07 years). With respect to fees, we find no clear pattern. While expense ratios are slightly higher for male managed funds than for female managed funds (1.48% p.a. vs. 1.42% p.a.), total loads are lower for male managed funds than for female managed funds (2.09% vs. 2.62%). The mean age of a female fund manager is 41.41 years and the mean age of a male fund manager is 44.67 years. Female managers have an average tenure with a fund of four years, while the average tenure of a male manager with a fund is about five years. The difference in education shows that males in our sample are more likely to possess an undergraduate, master, or PhD degree. Based on a two sided t-test, all differences are highly

[5]Source: United States Department of Education, National Center for Education Statistics and CFA-Institute.

significant. This indicates that funds managed by male and female managers as well as the managers themselves differ with respect to various characteristics. As these characteristics might influence managerial behavior, we will control for them in the following analysis.

2.3 Variable Construction

Performance Variables

We investigate the performance of a fund based on its risk-adjusted abnormal returns. Specifically, we calculate yearly Jensen (1968) Alphas, yearly Fama and French (1993) three-factor Alphas, and yearly Carhart (1997) four-factor Alphas. These performance measures are obtained by running the following regression for each fund i and each year t:

$$
\begin{aligned}
R_{i,m,t} - R_{f,m,t} &= \alpha_{i,t}^{Jen} + \beta_{i,M,t}(R_{M,m,t} - R_{f,m,t}) + \varepsilon_{i,m,t}^{Jen}, & (1)\\
R_{i,m,t} - R_{f,m,t} &= \alpha_{i,t}^{TF} + \beta_{i,M,t}(R_{M,m,t} - R_{f,m,t}) + \beta_{i,S,t}SMB_{m,t} \\
&\quad + \beta_{i,H,t}HML_{m,t} + \varepsilon_{i,m,t}^{TF}, & (2)\\
R_{i,m,t} - R_{f,m,t} &= \alpha_{i,t}^{FF} + \beta_{i,M,t}(R_{M,m,t} - R_{f,m,t}) + \beta_{i,S,t}SMB_{m,t} \\
&\quad + \beta_{i,H,t}HML_{m,t} + \beta_{i,MO,t}MOM_{m,t} + \varepsilon_{i,m,t}^{FF}, & (3)
\end{aligned}
$$

where $R_{i,m,t} - R_{f,m,t}$ denotes fund i's excess return over the risk-free rate in month m of year t and $R_{M,m,t} - R_{f,m,t}$ denotes the excess return fund's market segment over the risk-free rate, respectively.[6] $SMB_{m,t}$ is the return difference between small and large capitalization stocks, $HML_{m,t}$ denotes the return difference between high and low book-to-market stocks and $MOM_{m,t}$ is the return difference between stocks with high and low previous year's

[6]Because there are no appropriate benchmarks available for all of the ICDI-objectives in our sample, we compute the return of the fund's market segment as the average return of all funds in the same ICDI-objective. Alternatively, we also use the Fama and French (1993) market factor. Results (not reported) are not affected by this. All results not reported in the paper are available from the authors upon request.

returns in month m of year t.[7] The estimated alphas, $\hat{\alpha}_{i,t}^{Jen}$, $\hat{\alpha}_{i,t}^{TF}$, and $\hat{\alpha}_{i,t}^{FF}$, from (1) to (3) are our performance measures for fund i in year t.[8] We also compute a modified version of the Treynor and Black (1973) Appraisal Ratio as additional performance measure. It is calculated by dividing the four-factor abnormal return by the standard deviation of the residuals of the four-factor regression, thereby taking into account idiosyncratic risk:

$$AppraisalRatio_{i,t} = \frac{\hat{\alpha}_{i,t}^{FF}}{\sigma(\varepsilon_{i,m,t}^{FF})}. \tag{4}$$

Measure of Performance Persistence

In order to be able to directly compare the performance persistence between female and male managed funds, we construct a measure of performance persistence for each individual fund in the following way: First, we calculate the performance rank for each fund i in each year t, $PerfRank_{i,t}$. Ranks are based on one of the performance measures introduced above. They are calculated for each segment and each year separately and normalized so that they are evenly distributed between zero and one. The best fund gets assigned the rank number one. Second, we calculate the performance persistence of a fund i, $PerformancePersistence_i$, as the variation of its yearly performance ranks over time measured by the time series standard deviation of ranks:[9]

$$PerformancePersistence_i = STD(PerfRank_{i,t}). \tag{5}$$

[7]The market, the size, and the value portfolio returns were taken from Kenneth French's website `http://mba.tuck.dartmouth.edu/pages/faculty/ken.french`, while the momentum factor was kindly provided by Mark Carhart.

[8]These estimates can be quite noisy since they are from a regression with only twelve observations. However, we do not think that this affects our results since we use a large cross-section of data and are only interested in the difference between the female and male subsamples.

[9]We only calculate $PerformancePersistence_i$ if at least three years of performance ranks are available for fund i. Results are not qualitatively affected if we require at least four or five years of data instead.

The less a fund's performance rank varies over time, i.e. the lower PP_i, the more persistent is the fund's performance.

Risk Measures

Similar as in Barber and Odean (2001) we calculate four risk measures:[10] (i) $TotalRisk_{i,t}$, is computed as fund i's monthly return standard deviation in year t. (ii) The fund's systematic risk, $SystematicRisk_{i,t}$, is defined as the factor loading on the market factor in Model (1), $\beta_{i,M,t}$ (see, e.g., Chevalier and Ellison (1999a)). (iii) Unsystematic risk, $UnsystematicRisk_{i,t}$, is measured by the standard deviation of fund i's residual fund return, $\sigma(\varepsilon_{i,m,t})$, from (1).[11] (iv) Barber and Odean (2001) also use the loading on the small-firm factor SMB as risk-measure, arguing that small firms tend to be riskier. We follow this approach and compute the factor loading on the Fama and French (1993) SMB factor, $\beta_{i,S,t}$, from the three-factor Model (2) for each fund in each year as fourth risk measure, $SmallFirmRisk_{i,t}$.[12]

Style Measures

To capture the style of a fund, we compute the factor-weightings, $FactorWeighting^f_{i,t}$, on the style factors, with $f = SMB$, HML, and MOM. This means we extract $\hat{\beta}_{i,S,t}$, $\hat{\beta}_{i,H,t}$, and $\hat{\beta}_{i,MO,t}$ from yearly estimates of Model (3) for each fund. Based on these factor weightings we calculate a *style extremity* measure, $EM_{i,t}$, for each fund i in each year t.[13] The style extremity of a fund is reflected in unconventional high or low weightings on the SMB, HML, and MOM factor as compared to the average factor weighting of comparable

[10]Three of the four measures we use are directly comparable to those suggested in Barber and Odean (2001). However, while they also use the average time series standard deviation of all stocks in a portfolio, due to a lack of data availability, we use the unsystematic risk component instead.

[11]Alternatively, we also use the market factor loading from the three- and four-factor model and the respective standard deviation of the residuals from these models as our measures of the systematic and unsystematic risk of a fund, respectively. Results (not reported) are very similar.

[12]Alternatively, we estimate $SmallFirmRisk_{i,t}$ from the four factor Model (3) as well as from a two factor model including only the market and the SMB factor as suggested by Barber and Odean (2001). Our results (not reported) remain stable.

[13]This methodology closely follows Baer, Kempf, and Ruenzi (2006).

funds. The average factor weighting, $(AverageFactorWeighting_f)^k_{i,t}$, is calculated for each market segment k and each style factor f for each year t. We calculate the yearly absolute differences between fund factor weightings and the corresponding average factor weighting for each fund. In order to make these differences comparable across the three factors, we rescale them by the mean difference of the corresponding market segment in the respective year. This leaves us with three extremity measures for each fund corresponding to the three style factors $f = SMB$, HML, and MOM:

$$EM^f_{i,t} = \frac{|(FactorWeighting_f)_{i,t} - (AverageFactorWeighting_f)^k_{i,t}|}{\frac{1}{N^k_t}\sum_{i=1}^{N^k_t}|(FactorWeighting_f)_{i,t} - (AverageFactorWeighting_f)^k_{i,t}|}, \tag{6}$$

where k defines the market segment fund i belongs to, N^k_t is the number of funds in this segment in year t and f represents the f^{th} factor. A higher value of $EM^f_{i,t}$ of a fund i corresponds to a more extreme factor weighting on factor f, i.e. to a more extreme style of this fund as compared to the average fund in its segment in year t. A fund with average style extremity has, by construction, an extremity measure of one for each of the factors.

To get an aggregate measure of the style extremity for each fund, we average the three individual factor extremity measures as defined in (6) on the fund level:

$$EM_{i,t} = \frac{1}{3}\sum_f EM^f_{i,t}. \tag{7}$$

To analyze how stable the style of a fund is, we develop a measure for a fund's *style variability* over time, based on its weightings on the SMB, HML, and MOM factor.[14] We

[14] Previously used measures for style consistency are a fund's tracking error or the R^2 from a factor model (e.g. Brown and Harlow (2005)). The former can be estimated as the volatility of the difference between fund returns and those of a corresponding benchmark. The latter, R^2, captures the portion of a fund's variability

first calculate a style variability measure for each style factor f of a fund i in the following way:

$$SVM_i^f = \frac{STD(FactorWeighting_f)_i}{\frac{1}{N_t^k}\sum_{i=1}^{N_t^k} STD(FactorWeighting_f)_i}. \quad (8)$$

SVM_i^f represents the style variability of fund i with respect to a specific factor f. It is calculated as the rescaled standard deviation STD of its factor loading f over time. Standard deviations are rescaled by the average factor weighting standard deviation of all funds in the corresponding market segment.[15]

In a last step, the individual factor style variability measures, SVM_i^f, are aggregated on the fund level to get a measure for the overall stability of a fund's style over time:[16]

$$SVM_i = \frac{1}{3}\sum_f SVM_i^f. \quad (9)$$

A higher value of the factor-individual as well as aggregate style variability measures indicates a less stable investment style over time. A fund with average style variability has, by construction, a variability measure of one.

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that is explained by the variance of benchmark portfolios. These variables can indicate a fund's active risk. However, they do not necessarily capture a fund's style variability over 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.

[15] To calculate this measure, we first compute the standard deviations of a fund's yearly factor weightings over time. We exclude funds that have less than three years of data and funds with a manager change during the observation period.

[16] Alternatively, we also measure a fund's style variation relative to the movements of a fund with average style characteristics in the respective market segment k. This allows us to control for shifting style-characteristics of the market segment a fund belongs to. Our results (not reported) do not depend on whether we use this relative measure or the measure introduced above.

3 Investment Behavior of Female and Male Fund Managers

We start our empirical investigation of the question whether gender differences exist within the professional context of U.S. mutual fund managers by analyzing the behavior of female and male fund managers along three broad dimensions. First, we analyze gender differences in risk taking (Section A). Second, we investigate if female and male fund managers differ in terms of their investment styles (Section B). Third, we look at differences with respect to trading activity (Section C). Finally, where possible, we compare our results with findings from studies on retail investors (Section D).

3.1 Risk Taking

There is a broad consensus in the literature that women are more risk averse than men (see, e.g., Barber and Odean (2001) and Byrnes, Miller, and Schafer (1999)). To examine whether differences in risk-taking also exist between female and male fund managers, we relate various risk measures of a fund to the fund manager's gender and other potentially relevant fund and manager characteristics:

$$\begin{aligned} FundRisk_{i,t} &= \beta_1 \cdot FemaleDummy_{i,t} + \beta_2 \cdot FundAge_{i,t-1} + \beta_3 \cdot FundSize_{i,t-1} \\ &\quad +\beta_4 \cdot Turnover_{i,t-1} + \beta_5 \cdot ManagerAge_{i,t} + \beta_6 \cdot Undergraduate_{i,t} \\ &\quad +\beta_7 \cdot Master_{i,t} + \beta_8 \cdot PhD_{i,t} + \varepsilon_{i,t}. \end{aligned} \tag{10}$$

In this equation, $FundRisk_{i,t}$ reflects one of the four risk measures for fund i in year t as defined in Section I.C. $FemaleDummy_{i,t}$ is a dummy variable that equals one if the manager of fund i in year t is female, and zero otherwise. Thus, a negative estimate for the influence of this dummy indicates that female fund managers take less risk.

Chevalier and Ellison (1997) suggest that the risk taking of fund managers depends on the age and the size of the fund. Thus, we include, $FundAge_{i,t-1}$, defined as the logarithm of fund i's age in years, and $FundSize_{i,t-1}$, defined as the logarithm of a fund's total net-assets in million USD (TNA), in our regression. Golec (1996) shows that trading activity is related to fund risk. Thus, we also include a fund's yearly turnover rate, $Turnover_{i,t-1}$.[17] Since Chevalier and Ellison (1999b) and Golec (1996) suggest that manager characteristics like age and education might influence managerial behavior, we include the manager's age in years, $ManagerAge_{i,t}$ and the manager's education which is captured by the following dummy variables: $Undergraduate_{i,t}$ ($Master_{i,t}$, $PhD_{i,t}$) takes on the value one if the manager of fund i in year t holds an undergraduate (master, PhD) degree, and zero otherwise. We estimate Model (10) with time and segment fixed effects. Including segment fixed effects controls for the average riskiness of the funds in a specific segment. It also mitigates potential self-selection and endogeneity effects. It is possible that women work in specific segments either because they choose to do so or because their employer wants them to do so. For example, if women self-select or are allocated to funds in less risky segments, this would result in a seemingly less risky behavior of female fund managers if we would not estimate our model with segment fixed effects.[18] Table II summarizes our findings.

— Please insert TABLE II approximately here —

The female dummy has a negative influence for all four risk measures analyzed. It is significant for small-firm risk and unsystematic risk. These findings suggest that female fund managers are moderately more risk averse than male fund managers.[19] Thus, gender differences with respect to risk taking exist in a professional setting. They do not vanish

[17] We lag these explanatory variables by one year to mitigate potential endogeneity problems.

[18] To investigate whether female managers are more likely to work in risky (less-risky) segments, we compute the share of female managers in every market segment used in this study. Results (not reported) suggest no significant difference of the distribution of female managers between the segments.

[19] This finding contradicts the results of Bliss and Potter (2002) who find that women take more risk. However, given the univariate nature of their investigation their results are difficult to interpret.

despite of the comparable educational and professional background female and male fund managers have.

With respect to our control variables, findings generally correspond to those reported in earlier studies. There is no difference in the systematic risk component between female and male fund managers, the average market beta is 0.9425 for female managers and 0.9501 for male managers. Thus, female and male fund managers follow risk strategies that are close to the market. The significant difference in the unsystematic risk component is a hint that male managers pursue more active investment styles by taking more active bets while female managers avoid active risk and herd closer towards the market. In the following section we examine the investment styles followed by female and male fund managers in more detail.

3.2 Investment Styles

Style Extremity

We start our inquiry of gender differences in investment styles by comparing the extremity of the investment styles pursued by female and male fund managers. Based on our results of significantly lower unsystematic risk taken by female fund managers, we expect them to follow less extreme investment styles than male fund managers.

We analyze the style extremity measures as defined in (6) and (7) and relate a fund's style extremity, $EM^{f}_{i,t}$, to a female-dummy and the same independent variables as in Model (10). Results are presented in Table III.

— Please insert TABLE III approximately here —

We find a highly significant negative influence of the female dummy on our extremity measures. Female fund managers follow less extreme investment styles than male fund managers. This finding holds for the aggregate style extremity measure, $EM_{i,t}$, (Column 2) as well as for the three factor individual style extremity measures, $EM^{f}_{i,t}$, (Columns 3 to 5).

Style Variability

In the next step we examine how stable investment styles of male and female managed funds are over time by analyzing the style variability measures defined in (8) and (9). Results on the average style variability of female and male managed funds are presented in Table IV.

— Please insert TABLE IV approximately here —

Our results show that the style variability is significantly lower for female managed funds, i.e. female fund managers follow more stable investment styles over time than male fund managers. This finding holds for the overall style variability measure (Column 2) as well as for the three factor individual style variability measures (Columns 3 to 5).

These results show that there are clear differences with respect to the investment styles female and male fund managers follow. They again suggest that gender differences do exist in a professional setting.

3.3 Trading Activity

We now investigate whether female fund managers trade less than male fund managers. We measure a fund's trading activity by its turnover ratio. We relate a fund's turnover ratio to the same explanatory variables as in Model (10). Nicolosi, Peng, and Zhu (2004) show that previous performance reinforces a manager's overconfidence and eventually trading activity. Furthermore, Fortin, Michelson, and Jordan-Wagner (1999) find that manager tenure is negatively related to a fund's turnover ratio. Therefore, we also add lagged fund performance, $Performance_{i,t-1}$, and manager tenure, $ManagerTenure_{i,t}$, as additional explanatory variables.[20] Table V summarizes the findings.

[20] Performance is measured by the Carhart (1997) four-factor Alpha and the tenure of fund i's manager is measured in years. Using Jensen (1968) one-factor Alphas, Fama and French (1993) three-factor Alphas

— Please insert TABLE V approximately here —

Our results clearly indicate that female fund managers trade less than male fund managers. The estimate for the influence of the female dummy is statistically significant at the 5% level. The coefficient of -0.077 indicates that female managed funds have a turnover ratio that is by an economically meaningful 8% p.a lower than that of comparable male managed funds. However, the difference between the expense ratio of female and male managed funds is only -0.06 indicating that trading costs of female and male managed funds do not largely differ. Thus, to relate our finding on gender differences in trading activity to overconfidence, we first have to investigate gender differences in performance.

3.4 Relation to Results for Retail Investors

We document clear behavioral differences between female and male fund managers. This shows that gender differences are not completely mitigated by a professional setting. However, where directly comparable, gender differences between female and male fund managers are less pronounced as compared to those between female and male retail investors. With respect to risk taking, we show that female fund managers take significantly less small-firm risk and unsystematic risk. Analyzing the risk-taking behavior of female and male retail investors, Barber and Odean (2001) find highly significant differences for all four risk measures they analyze. Furthermore, gender differences with respect to trading activity are also less pronounced in our managerial subpopulation: Dorn and Huberman (2005) and Barber and Odean (2001) report that female retail investors trade about 45% to 35% less than male retail investors. These numbers are clearly larger than the difference of 8% we document to exist between the trading activity of female and male fund managers.

To sum up our results from Section II, we find clear evidence of behavioral differences between female and male fund managers. Although they are partially mitigated by the pro-

or the modified Appraisal Ratio as defined in Section I instead of the Carhart (1997) four-factor Alphas as performance measure does not influence the results (not reported).

fessional setting (in those cases where we can compare them to results for retail investors), gender differences still exist. We find that male fund managers tend to be more aggressive which is reflected in higher risk taking and in more extreme investment styles. Furthermore, their investment styles change more rapidly over time. Finally, the trading activity of male fund managers is significantly higher than that of female fund managers. Taken together, our findings show that fund investors can generally use the manager's gender as an easily observable indication for a fund manager's investment behavior.

4 Consequences for Fund Performance

We now examine whether the behavioral differences documented in Section II are strong enough to have an impact on managerial outcomes. First, we investigate the influence of behavioral differences between female and male fund managers on fund performance (Section A). This allows us to examine the question whether the larger trading activity of male fund managers can be attributed to a higher overconfidence of male fund managers. Second, we examine whether fund inflows depend on the fund manager's gender (Section B).

4.1 Performance

Findings from earlier studies suggest that behavioral differences between fund managers have consequences on fund performance. For example, Barber and Odean (2000) show that high trading activity hurts performance while Brown and Harlow (2005) document a positive influence of stable investment styles on performance. Thus, based on our findings from the previous section we might expect female managers to outperform male managers because female fund managers trade less and follow more stable investment styles over time. We start our performance analysis with a portfolio approach, comparing the performance of two portfolios consisting of female and male managed funds, respectively. Then, we examine performance in a multivariate setting. Finally, we investigate whether there are any differences between female and male fund managers with respect to the distribution of performance ranks or with respect to performance persistence.

Portfolio Evidence

We examine performance differences between portfolios consisting of female and male managed funds, respectively. At the end of each year, we assign all funds according to their manager's gender to a female managed fund portfolio (F) or a male managed fund portfolio (M). For each portfolio we compute a return time series by equally weighting the funds' returns for the following year.[21] We measure the performance of these portfolios by the abnormal return measures described in Section 2.3 To examine performance differences, we analyze a portfolio that is constructed by subtracting male managed fund portfolio returns from female managed fund portfolio returns (F-M). We examine performance before as well as after subtracting expenses. The first better assesses the actual investment ability of a fund manager, whereas mutual fund investors are ultimately interested in the latter. Table VI summarizes our results.

— Please insert TABLE VI approximately here —

We find that the female as well as the male managed fund portfolios generally generate negative abnormal returns before expenses (Panel A) and after expenses (Panel B). When analyzing the difference portfolio (F–M), we find no statistically significant difference.[22] This finding holds irrespective of whether we examine abnormal returns before or after subtracting expenses and irrespective of whether we analyze Jensen (1968) one-factor Alphas, Fama and French (1993) three-factor Alphas, or Carhart (1997) four-factor Alphas. In the next step, we extend our analysis to a multivariate regression framework.

Multivariate Evidence

[21] Instead of testing equally weighted portfolios, we also analyze value-weighted fund portfolios. Results (not reported) are very similar.

[22] A similar result is reported by Atkinson, Baird, and Frye (2003) for fixed income funds.

We now examine the performance at the individual fund level rather than at the fund portfolio level. This allows us to control for the influence of fund as well as manager individual characteristics on performance. We relate the performance of fund i in year t, measured by the one-, three- and four-factor Alphas, to a female dummy and the same control variables as in Model (10). Additionally, we include the lagged performance. To take into account the effect of gender differences in unsystematic risk (see Section II), we also analyze an extended version of the Appraisal Ratio of Treynor and Black (1973), $AppraisalRatio_{i,t}$, as defined in (4). Results are presented in Table VII.

— Please insert TABLE VII approximately here —

There is no significant difference between the performance of female and male managed funds. The influence of the female dummy is not significant at conventional levels for the abnormal return measures (Columns 2–4) as well as the Appraisal Ratio (Column 5). This confirms findings from the portfolio approach. Our result suggests that the market for mutual fund managers is efficient in the sense that it is not possible to generate abnormal returns by following an investment strategy based on a manager characteristic as easily observable as gender. Although female and male fund managers differ in terms of investment behavior, these differences are not reflected in average fund performance. Note that our finding of a lower trading activity of female fund managers from Section 3.3 does therefore not necessarily hint at gender differences in overconfidence. According to Barber and Odean (2001) trading activity of an overconfident investor will deteriorate performance because trading costs are higher than returns. Since we find no difference in performance between female and male managed funds, we can not attribute the higher turnover ratio of male managed funds to overconfidence.

Dispersion of Performance Ranks

Although average performance is similar, the dispersion of performance ranks might differ between female and male managed funds. We expect the more extreme style bets of male managed funds (see Section II) to be reflected in more extreme performance outcomes of these funds if we do no adjust performance for the investment styles of fund managers. To get a first idea about the dispersion of performance, we compute the share of male managers in different percentiles of the performance distribution. Results are summarized in Figure II.

— Please insert FIGURE II approximately here —

We observe a U-shaped relationship between the share of male managers and performance percentiles, when performance is measured by the Jensen (1968) Alpha (Panel A). This indicates that female managers are more likely to achieve moderate performance ranks, while male managers are more likely to achieve extreme (good or bad) performance ranks. Note that this result vanishes if we base our examination on the three- or four-factor Alphas (Panels B and C). Extreme style bets can lead to extreme performance ranks if performance is measured based on the Jensen (1968) Alpha since the three- and four-factor Alphas control for differences in investment styles.

To test the statistical significance of our graphical result, we relate the probability of a fund to achieve a specific performance percentile to a female dummy and various fund characteristics by estimating the following logit model:

$$
\begin{aligned}
Prob(Percentile)_{i,t} \quad = \quad & \beta_1 \cdot FemaleDummy_{i,t} + \beta_2 \cdot FundAge_{i,t-1} \\
& + \beta_3 \cdot FundSize_{i,t-1} + \beta_4 \cdot Turnover_{i,t-1} \\
& + \beta_5 \cdot ManagerAge_{i,t} + \beta_6 \cdot Undergraduate_{i,t} \\
& + \beta_7 \cdot Master_{i,t} + \beta_8 \cdot PhD_{i,t} + \varepsilon_{i,t},
\end{aligned} \tag{11}
$$

where $Prob(Percentile)_{i,t}$ is the probability that the performance of fund i is in the indicated percentile, *Percentile*, in year t. We test the probability of a fund being among the top or bottom 1% and 5%, respectively, of all funds in a given year t. Results are presented in Table VIII.[23]

— Please insert TABLE VIII approximately here —

Panel A presents results for the probability of a female managed fund to achieve a performance rank among the best or worst 1% of all funds. We find that female managed funds are significantly less likely to end up among the best or worst 1% of all funds when performance ranks are based on Jensen (1968) Alphas. Results are similar if we look at the probability of a fund achieving a performance among the 5% most extreme outcomes (Panel B). Like in our graphical results, this finding only holds if we examine Jensen (1968) Alphas and vanishes if we control for the fund manager's investment styles analyzing the three- or four-factor Alphas. This confirms our reasoning that more extreme performance outcomes of male fund managers are driven by the more extreme style bets they take as compared to female fund managers.

Performance Persistence

For investors it is important whether past performance is an indication about future performance. In order to directly examine differences in performance persistence we analyze the persistence measure, $PerformancePersistence_i$, defined in (5) as the standard deviation of fund i's performance ranks over time. Results on the average levels of $PerformancePersistence_i$ for female and male fund managers for different performance measures are presented in Table IX.

— Please insert TABLE IX approximately here —

Our results show that the performance ranks of male managers are more variable over time than those of female managed funds. This suggests that the performance of female

[23]For the sake of brevity we only report estimated coefficients for the influence of the female dummy.

managed funds is more persistent than the performance of male managed funds. This result holds irrespective of the specific performance measure chosen to calculate ranks. Using three- and four-factor Alphas, the difference is even more pronounced. Thus, differences in performance persistence are not driven by the differences in style variability documented in Section II.B. These findings show that past performance is a better indicator of future performance for female managed funds than for male managed funds.

Taken together, our results from Section III.A show that behavioral differences between female and male fund managers have consequences for managerial outcomes: The more extreme style bets of male fund managers lead to more extreme Jensen's Alphas as compared to those of female fund managers. Furthermore, female fund managers' performance is significantly more persistent than that of male fund managers. Nevertheless, average performance does not differ between the two groups.

4.2 Fund Flows

Our previous analysis shows that female managed funds have some desirable characteristics from an investor's point of view: Female fund managers follow more stable and thus more reliable investment styles and their funds show a higher performance persistence. We now examine whether fund investors care about these characteristics by relating relative net-inflows (=inflows-outflows) of new money, $Flow_{i,t}$, into a fund to a female dummy and several characteristics that have proven to influence fund net-inflows.[24]

Specifically, we have to control for the influence of past performance on fund net-inflows. Ippolito (1992) shows, that past performance has a nonlinear impact on fund net-inflows. In our case, it is especially important to capture the non-linearity of the influence of past performance, because male managed funds are more likely to achieve extreme performance

[24] Since there are no data on real net-inflows of new money into individual funds, we rely on the method suggested in Sirri and Tufano (1998) and calculate relative fund net-inflows by subtracting the internal growth of a fund due to the returns earned on assets under management, $r_{i,t}$, from the total growth rate of the fund's total net-assets, TNA, under management: $Flow_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1}}{TNA_{i,t-1}} - r_{i,t}$.

ranks than female managed funds (see Section III.A). Thus, we use two alternative models suggested in the literature to capture this non-linearity. Firstly, we follow Barber, Odean, and Zheng (2005) and estimate a quadratic performance flow relationship.[25] Alternatively, we use a piecewise linear regression approach as suggested by Sirri and Tufano (1998) and estimate distinct slope coefficients for different performance quintiles.[26] We also include lagged net-inflows of a fund as control variable. Furthermore, we include fund age, fund size, manager age and education as well as turnover and fund risk measured by the total return standard deviation. These variables are defined in the same way as above. We also control for the influence of fund fees, defined as the sum of the yearly total expense ratio and 1/7 of the total load fees.[27] To account for characteristics of the company the fund belongs to, we additionally include company size, the age of the fund company, and the relative net-inflows into the fund company (net of the fund's own net-inflows). Factors affecting net-inflows of new money into the whole segment the fund belongs to are considered by adding the growth rate due to net-inflows of the respective market segment.

We estimate the model by applying Fama and MacBeth (1973) regressions as well as a pooled regression approach with time fixed effects. Estimation results for the squared rank specification are presented in Columns 2 and 4 of Table X while results for the piecewise linear regression approach are presented in Columns 3 and 5.

— Please insert TABLE X approximately here —

[25]We use ranks based on raw returns as Patel, Zeckhauser, and Hendricks (1991) show, that ordinal performance measures can explain fund net-inflows much better than cardinal measures. Ranks are calculated based on raw returns for each year and segment separately and are distributed between 0 and 1. Instead of using ranks based on raw returns, we also use ranks based on other performance measures like the three- or four-factor Alpha. Results (not reported) are very similar.

[26]The piecewise linear regression coefficients are calculated according to the following definitions: $Quintile1_{i,t-1} = \min(PerfRank_{i,t-1}, 0.2)$, $Quintile2-4_{i,t-1} = \min(PerfRank_{i,t-1} - Quintile1_{i,t-1}, 0.6)$ and $Quintile5_{i,t-1} = PerfRank_{i,t-1} - (Quintile1_{i,t-1} + Quintile2-4_{i,t-1})$. We follow Sirri and Tufano (1998) by grouping the three middle quintiles together. Results (not reported) do not change if we model a distinct slope coefficient for each of the five performance quintiles instead of grouping the three middle quintiles together.

[27]This measure for the total fee burden is suggested in Sirri and Tufano (1998). They assume an average holding period of fund investors of seven years.

Our findings show that net-inflows of female managed funds are much lower than those of male managed funds: The estimate for the influence of the female dummy suggests that a female managed fund grows by about 17% p.a. less than a comparable fund that is managed by a male fund manager. Given that the average fund in our sample grows by 35% p.a., this means that a female managed fund grows at only about half the speed than a comparable fund that is managed by a male fund manager. This result is very stable, irrespective of whether we use Fama and MacBeth (1973) regressions (Columns 2 and 3) or pooled regressions (Columns 4 and 5).[28] The much lower net-inflows into female managed funds might be one explanation why there is only such a low and not rising proportion of female fund managers in our sample (see Section I.B).

There are several possible reasons for our surprisingly strong finding of much lower net-inflows into female managed funds than into male managed funds: First, fund investors might have some negative preconception about the abilities of female fund managers and therefore prefer to invest their money into male managed funds. A recent experimental study by Bigelow and McLean Parks (2006) provides evidence that investors in a hypothetical IPO invest less in a company managed by a female CEO than in an otherwise identical company with a male CEO. However, an empirical study of Mohan and Chen (2004) suggests that IPO pricing is unrelated to gender. Furthermore, most fund investors are probably not aware of the manager's gender. Thus, the potential negative preconception of fund investors about female fund managers might only partly account for our finding. Second, the fund management company might discriminate against female fund managers by not advertising female managed funds to the same degree as male managed funds.[29] According to Gallaher, Kaniel, and Starks (2006) and Jain and Wu (2000) a lower degree of

[28]Regarding our results on the influence of the control variables, we find a strong influence of fund size on the net-inflows into a fund. Since female fund managers on average manage smaller funds (see Table I), it is possible that a non-linear influence of fund size on fund net-inflows affects our result. Therefore, we rerun the regression introducing fund size to the power of two and three as explanatory variables. Results (not reported) are not affected.

[29]To gain more insight into the question whether fund companies might discriminate against female managers we also investigate differences in promotion by looking at manager changes of a fund. Unfortunately, the number of observations is too small to draw any statistical conclusions. Interestingly, a female fund manager is mostly substituted by a female and vice versa.

advertisement leads to lower fund inflows. Third, fund brokers might stereotype female fund managers as less able and thus promote male managed funds more often than female managed funds. A survey conducted by Wang (1994) suggests some machismo among brokers: Sales representatives at brokerages spend more time on advising men than women, offer a wider variety of investments to men and try harder to acquire men as customers. Finally, the financial press might be biased against female fund managers and report less about them. Kahn and Goldenberg (1991) provide some evidence for gender bias in the media by showing that female candidates for the U.S. Senate receive less news coverage than male candidates. According to Kaniel, Starks, and Vasudevan (2005) low media coverage leads to low fund inflows. Unfortunately, the data available to us does not allow us to distinguish between these possible explanations.

5 Who employs Female Managers?

Why should a fund management company employ a female manager at all, if she does not perform better than a male manager but generates profoundly lower net-inflows? As a profit maximizing fund management company is ultimately interested in net-inflows of new money and female fund managers generate significantly lower net-inflows (see Section III.B), one could argue that even the small share of about 10% female fund managers in our sample is still surprisingly high. Thus, what kind of companies do employ female fund managers?

We argue that women are more likely to be employed by fund companies with specific characteristics. Specifically, we expect female fund managers to mainly work in large and well-established companies for three reasons. First, large and well-established companies are more likely to be sued in anti-discrimination lawsuits and also have a higher reputational capital at stake (see, e.g., Bradford (2005) and Holzer (1998)). Second, large companies regularly cater to institutional investors. These institutional clients often ask for workforce diversity from the companies they do business with. Third, large and well-established companies are associated with higher job security (see, e.g., Winter-Ebmer (2001)). Female fund managers are likely to prefer such companies because they are more risk averse than male fund managers (see Section II.A).

Using a fund company's total assets under management in its equity funds as a proxy for its size and using its age as a proxy for its reputation, we expect a positive influence of both measures on the likelihood that a fund company employs female fund managers.[30] We also examine whether socio-demographic characteristics of the population of the fund company's location matter for the employment of women. According to Gornick (1999) women's employment rates are significantly lower than men's in conservative countries. Accordingly, we expect that fund companies located in conservative states employ less female managers than fund companies located in less conservative states. We construct proxies for the political attitude of the population in the state a fund company is located from survey answers from the American National Election Studies Survey.[31] As a first proxy, we use the median degree of conservatism of all respondents in the state company j is located in, $MDCons_j$. As an alternative proxy we calculate the median attitude towards women liberation from that survey, $MDWomLib_j$.[32] We examine the determinants of the share of female fund managers within a fund company j in year t, $Share(FemaleManagers)_{j,t}$, by estimating the following multivariate model:

$$\begin{aligned} Share(FemaleManagers)_{j,t} &= \beta_1 \cdot CompanySize_{j,t-1} + \beta_2 \cdot CompanyAge_{j,t-1} \\ &\quad + \beta_3 \cdot MDCons_j + \beta_4 \cdot MDWomLib_j \\ &\quad + \sum_k \beta_k \cdot Segment^k_{j,t} + \varepsilon_{i,t}. \end{aligned} \tag{12}$$

[30] Alternatively, we also use the number of equity funds offered by the company as a proxy for its size. Results (not reported) are very similar.

[31] The National Election Studies, Center for Political Studies, University of Michigan. The ANES Guide to Public Opinion and Electoral Behavior (`http://www.electionstudies.org/nesguide/nesguide.htm`).

[32] Details on the construction of these proxies can be found in the Appendix.

In this regression, $CompanySize_{j,t-1}$ and $CompanyAge_{j,t-1}$ denote the size of the fund company, measured by the logarithm of the total assets under management of all equity funds within the fund company, and the logarithm of the age of the fund company in years, respectively.

We control for the segments the fund company is doing business in by adding $Segment^k_{j,t}$, the share of its funds company j offers in segment k. Panel A in Table XI summarizes our findings.[33]

— Please insert TABLE XI approximately here —

Our results show that large and well-established fund companies employ more female fund managers. We find a significantly positive influence of the size as well as the age of the fund company on the share of female fund managers being employed in this fund company (Columns 2 to 5). Columns 3 to 5 of Panel A contain results where we include the proxies for the conservatism of the population of a fund company's location. Fund companies located in less conservative states of the United States are more likely to employ female fund managers. Irrespective of whether we include only one of the proxies (Columns 3 and 4) or both of them simultaneously (Column 5), we always find a highly significant influence in the expected direction: $MDCons_j$ influences the likelihood of the employment of women negatively, while $MDWomLib_j$ has a positive influence.

Instead of using OLS analysis as above, we also relate the probability of a fund company employing a female manager to the same explanatory variables as in Model (12) using a logit model. Results are presented in Panel B of Table XI. They confirm our results obtained from the OLS estimation that female fund managers are more likely to work in large and well-established fund companies located in less conservative states of the United States.

[33] Since our dependent variable is constrained to values between zero and one, we also employ a censored regression approach (Tobit-estimation). Results (not reported) are very similar.

6 Conclusion

This paper examines the question whether gender differences exist in a professional setting. It is often argued that a similar education and professional background offset gender differences (see, e.g., Schubert, Brown, Gysler, and Brachinger (1999) and Tsui and Gutek (1984)). In contrast, using data from the U.S. mutual fund industry, we document several important differences in the way female and male managers behave.

First, we show that female fund managers are more risk averse than male fund managers. Specifically, we find that female fund managers take less unsystematic risk and less small firm risk, while overall return risk does not differ systematically. The significantly higher idiosyncratic risk of male fund managers we document hints at more active trading strategies as compared to female fund managers. This reasoning is confirmed by our examination of investment styles. Female fund managers follow significantly less extreme investment styles as compared to male fund managers. Furthermore, female managers' investment styles are more stable over time. We also find that male managers trade more, which is reflected in a significantly higher turnover rate of male managed funds as compared to that of female managed funds. A higher turnover ratio is regularly interpreted as an indication of overconfidence (see, e.g., Barber and Odean (2001)). However we do not find a negative impact of male managers' increased trading activity on performance. Overall, our results show that behavioral differences between women and men do not vanish if we examine their behavior in a professional setting. Thus, we think that gender differences are fact rather than prejudice. However, the differences we find are less pronounced than those documented for retail investors. This shows that gender differences are only partially attenuated by a professional setting.

Our findings on behavioral differences between male and female fund managers also have important implications for fund investors. They suggest that investors preferring moderate and stable investment styles should invest in female managed funds, while more daring investors interested in funds that take more active bets should choose male managed funds.

We also document an influence of behavioral differences between female and male fund managers on managerial outcomes. Although we find no significant differences in average performance between female and male managed funds, male fund managers are more likely to achieve an extreme (good or bad) performance rank than female managers. Furthermore, the performance of female fund managers is more persistent over time than that of male fund managers.

These results show that female fund managers might have some desirable characteristics from a fund investor's point of view. However, female managed funds grow with only half the speed than comparable male managed funds. Since we find no fundamental reason for this result, one implication is that the large sociopolitical debate on gender discrimination does also apply to the mutual fund industry. We identify several groups of market participants who could, willingly or unwillingly, discriminate against female fund managers, thereby causing the surprisingly low money net-inflows into female managed funds. (i) Fund investors might prefer male managed funds. (ii) The fund management company might spend less resources on the advertisement of female managed funds than on the advertisement of male managed funds. Furthermore, the fund company might allocate female fund managers to less important or less attractive funds. (iii) Fund brokers might promote male managed funds more than female managed funds. (iv) The financial press might report less about female fund managers than about male fund managers.

Finally, our result of lower net-inflows into female managed funds raises the provocative question, why fund companies that are ultimately interested in high money net-inflows employ female fund managers at all. We find that female fund managers are more likely to work in large and well established fund companies. There are several explanations for this finding. First, these companies face a higher risk of being sued for discrimination than smaller and younger companies. Second, large and well established companies often cater to large institutional investors who regularly require workforce diversity from the investment companies they do business with. Finally, those companies offer a higher job security. This is a characteristic specifically female fund managers might be concerned with given their higher risk aversion documented above.

Appendix

Gender Classification

To identify a fund manager's gender we first extract the manager's first name from the CRSP database. From a list published by the United States Social Security Administration (SSA) that contains the most popular first names by gender for the last 10 decades we get 2,179 different male and 2,515 different female first names that also account for differences in spelling.[34] We then match this list with the first names obtained from the CRSP database and thereby classify most of the managers as male or female. Remaining names are those we could not clearly classify as male or female, i.e. foreign names or ambiguous names. We were able to identify most of the foreign names by asking foreign exchange students from the respective country. For the remaining cases, we try to identify fund managers' gender by several internet sources like the fund prospectus, press releases or photographs that reveal their gender. This leaves us with an identification rate of 99,39%.

Construction of Conservatism and Women Liberation Proxies

Our proxy for the degree of conservatism in a certain state of the United States is constructed from the American National Election Survey 1948 – 2002 Cumulative Data File.[35] This survey is conducted to get an impression of the public opinion towards different topics and contains two questions that are of interest for our analysis. These are about the degree of conservatism and the attitude towards women liberation of the survey participants. These questions have to be answered with a so called "feeling thermometer". Thermometer questions are introduced as follows:

[34] First names that appeared for both sexes have been excluded from the SSA-List. For further information see `http://www.ssa.gov`.

[35] The National Election Studies, Center for Political Studies, University of Michigan. The ANES Guide to Public Opinion and Electoral Behavior (`http://www.electionstudies.org/nesguide/nesguide.htm`). Any opinion, findings and conclusions or recommendations expressed in this paper are those of the authors and do no necessarily reflect those of the funding agencies of the survey.

> "We'd also like to get your feelings about some groups in American society. When I read the name of a group, we'd like you to rate it with what we call a feeling thermometer. Ratings between 50 degrees-100 degrees mean that you feel favorably and warm toward the group; ratings between 0 and 50 degrees mean that you don't feel favorably towards the group and that you don't care too much for that group. If you don't feel particularly warm or cold toward a group you would rate them at 50 degrees. If we come to a group you don't know much about, just tell me and we'll move on to the next one."

We extract answers from the conservatives-thermometer and the women's movement-feeling thermometer that were given during our sample period from 1994 to 2002.[36] The survey also contains the state where the respective respondent grew up, so that we can construct a table with the median answer to the respective question that was given by all respondents from a certain state of the United States during our sample period.[37]

This list is matched with our sample of fund companies. To identify the geographical location of a fund company's headquarter, we use a list provided by Jerry Parwada (University of New South Wales, Sydney). Missing addresses of fund families that we did not find in this list have been hand collected from several internet resources.

In the last step we match the degree of conservatism and the attitude towards women movement of the respective state taken from ANES with the fund company's location.

[36] We are not able to cover the last year of our sample period, 2003, as no data is available from the survey for this period yet. Furthermore, we exclude answers given to a female interviewer to preclude a potential social desirability bias (see Richman, Kiesler, Weisband, and Drasgow (1999)).

[37] In many cases, participants do not live in the states they once grew up anymore. We do not expect this to systematically bias our results. Nevertheless, for robustness we alternatively also used election results from the presidential elections in the various states of the United States to classify states as conservative or not conservative. Sates are classified as conservative, if the Republicans got more votes than the Democrats in the last elections, and vice versa. We find very similar results (not reported) than those using the proxies described above.

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Table I: Descriptive Statistics

	Female Manager	*Male Manager*	*Difference*
Fund Size (in Millions)	676.53	806.08	-129.55^{***}
Fund Age (in years)	10.12	10.07	0.05^{***}
Expense Ratio (in percent)	1.42	1.48	-0.06^{***}
Total Loads (in percent)	2.62	2.09	0.53^{***}
Manager Age (in years)	41.41	44.67	-3.26^{***}
Manager Tenure (in years)	4.17	5.22	-1.05^{***}
Undergraduate Degree (in percent)	66.67	83.78	-17.11^{**}
Master Degree (in percent)	39.95	48.68	-8.73^{**}
PhD Degree (in percent)	2.59	4.56	-1.97^{**}

Notes: This table shows the average fund and manager characteristics based on our sample of all single managed U.S. equity funds from January 1994 to December 2003. The second column contains average characteristics for female managed funds and female fund managers. The third column contains average characteristics for male managed funds and male fund managers. The last column contains the difference between the average characteristics of female and male fund managers. Significance is calculated based on a two-sided t-test. *** 1% significance, ** 5% significance, * 10% significance.

Table II: Individual Fund Risk

	$Total$ $Risk_{i,t}$	$Systematic$ $Risk_{i,t}$	$SmallFirm$ $Risk_{i,t}$	$Unsystematic$ $Risk_{i,t}$
$FemaleDummy_{i,t}$	-0.0007	-0.0027	-0.0269^{**}	-0.0014^{***}
$FundAge_{i,t-1}$	-0.0008^{*}	-0.0262^{***}	-0.0161^{*}	0.0009^{**}
$FundSize_{i,t-1}$	0.0001	0.0169^{***}	-0.0166^{***}	-0.0012^{***}
$Turnover_{i,t-1}$	0.0006^{*}	0.0063	-0.0024	0.0005^{*}
$ManagerAge_{i,t}$	-0.0001^{***}	-0.0022^{***}	-0.0007	-0.0001
$Undergraduate_{i,t}$	-0.0008	-0.0107	0.0026^{*}	-0.0001
$Master_{i,t}$	-0.0002	-0.0074	-0.0299^{*}	0.0002
$PhD_{i,t}$	-0.0002	-0.0145	-0.0324	-0.0003
R^2	0.4123	0.3265	0.1883	0.3839%
$Observations$	$10,478$	$10,478$	$10,478$	$10,478$

Notes: This table shows the estimates of various risk measures regressed on a female fund manager dummy, $FemaleDummy_{i,t}$, as well as fund and manager characteristics. The dependent variable is the fund's total risk measured by its return time series standard deviation, the fund's systematic risk, defined as the factor loading on the market factor from the Jensen (1968) one-factor model, the fund's small firm risk, defined as the loading on the small firm factor from the Fama and French (1993) three-factor model, and the fund's unsystematic risk, defined as the standard deviation of the residuals from the Jensen (1968) one-factor model, respectively. $FemaleDummy_{i,t}$ is a dummy variable that takes on the value one, if a fund i is managed by a female manager in year t, and zero otherwise. $FundAge_{i,t-1}$ is the lagged natural logarithm of fund i's age in years. $FundSize_{i,t-1}$ is the lagged natural logarithm of the fund's size in million USD and $Turnover_{i,t-1}$ is the fund's lagged turnover rate. $ManagerAge_{i,t}$ is the age of the fund manager in years. $Undergraduate_{i,t}$, $Master_{i,t}$, and $PhD_{i,t}$ are dummy variables that take on the value one, if the manager of the fund holds an undergraduate, Master, and PhD degree, respectively. The sample is from January 1994 to December 2003. The regressions are estimated with time and segment fixed effects. *** 1% significance, ** 5% significance, * 10% significance.

Table III: Style Extremity

	$EM_{i,t}$	$EM_{i,t}^{SMB}$	$EM_{i,t}^{HML}$	$EM_{i,t}^{MOM}$
$FemaleDummy_{i,t}$	-0.1040^{***}	-0.0911^{***}	-0.0904^{***}	-0.1305^{***}
$FundAge_{i,t-1}$	0.0273^{***}	0.0072	0.0400^{***}	0.0347^{***}
$FundSize_{i,t-1}$	-0.0599^{***}	-0.0564^{***}	-0.0510^{***}	-0.0725^{***}
$Turnover_{i,t-1}$	0.0153	0.0147	0.0122	0.0190
$ManagerAge_{i,t}$	-0.0010	-0.0015	0.0006	-0.0021
$Undergraduate_{i,t}$	0.0301	-0.0184	0.0375	0.0711
$Master_{i,t}$	-0.0117	0.0489	-0.0451	-0.0389
$PhD_{i,t}$	0.0183	0.0703	-0.0138	-0.0017
R^2	76.22%	0.6732	0.6741	0.6175
$Observations$	$10,137$	$10,137$	$10,137$	$10,137$

Notes: This table shows the estimates of the funds' style extremity measures for the aggregate style extremity measure (Column 2) as well as for the factor individual style extremity measures (Columns 3 to 5) regressed on a female fund manager dummy, $FemaleDummy_{i,t}$, as well as fund and manager characteristics. The factor individual style extremity measures are defined in (6) in the main text as the yearly rescaled absolute differences between a fund i's factor weightings on the SMB, the HML, and the momentum factor from the Carhart (1997) four-factor model and the corresponding average factor weighting of all funds in the same segment and year. The aggregate style extremity measure is defined in (7) in the main text as the average of the three factor individual style extremity measures. $FemaleDummy_{i,t}$ is a dummy variable that takes on the value one, if a fund i is managed by a female manager in year t, and zero otherwise. $FundAge_{i,t-1}$ is the lagged natural logarithm of fund i's age in years. $FundSize_{i,t-1}$ is the lagged natural logarithm of the fund's size in million USD and $Turnover_{i,t-1}$ is the fund's lagged turnover rate. $ManagerAge_{i,t}$ is the age of the fund manager in years. $Undergraduate_{i,t}$, $Master_{i,t}$, and $PhD_{i,t}$ are dummy variables that take on the value one, if the manager of the fund holds an undergraduate, Master, and PhD degree, respectively. The sample is from January 1994 to December 2003. The regressions are estimated with time and segment fixed effects. *** 1% significance, ** 5% significance, * 10% significance.

Table IV: Style Variability

	SVM_i	SVM_i^{SMB}	SVM_i^{HML}	SVM_i^{MOM}
Female Manager	0.7901	0.7916	0.8026	0.7760
Male Manager	1.0144	1.0143	1.0136	1.0154
Difference	-0.2244^{***}	-0.2227^{***}	-0.2110^{***}	-0.2394^{***}

Notes: This table shows the average style variability of female and male managed funds for the aggregate style variability measure (Column 2) as well as for the factor individual style variability measures (Columns 3 to 5). The factor individual style variability measures are defined in (8) in the main text as the rescaled time series standard deviations of a fund's factor loading on the SMB, the HML, and the momentum factor from the Carhart (1997) four-factor model. The aggregate style variability measure is defined in (9) in the main text as the average of the three factor individual style variability measures. Differences in style variability between female and male fund managers are given in the third line. The sample is from January 1994 to December 2003. Significance is calculated based on a two-sided t-test. *** 1% significance, ** 5% significance, * 10% significance.

Table V: Trading Activity

	$Turnover_{i,t}$
$FemaleDummy_{i,t}$	-0.0767^{**}
$FundAge_{i,t-1}$	-0.0183
$FundSize_{i,t-1}$	-0.0735^{***}
$ManagerAge_{i,t}$	-0.0039
$Undergraduate_{i,t}$	-0.0210
$Master_{i,t}$	0.2140^{***}
$PhD_{i,t}$	0.0716
$Performance_{i,t-1}$	0.4681
$ManagerTenure_{i,t}$	-0.1915^{***}
R^2	0.7740
$Observations$	$10,139$

Notes: This table shows the estimates of the turnover ratio of a fund regressed on a female fund manager dummy, $FemaleDummy_{i,t}$, as well as fund and manager characteristics. $FemaleDummy_{i,t}$ is a dummy variable that takes on the value one, if a fund i is managed by a female manager in year t, and zero otherwise. $FundAge_{i,t-1}$ is the lagged natural logarithm of fund i's age in years. $FundSize_{i,t-1}$ is the lagged natural logarithm of the fund's size in million USD and $Turnover_{i,t-1}$ is the fund's lagged turnover rate. $ManagerAge_{i,t}$ is the age of the fund manager in years. $Undergraduate_{i,t}$, $Master_{i,t}$, and $PhD_{i,t}$ are dummy variables that take on the value one, if the manager of the fund holds an undergraduate, Master, and PhD degree, respectively. $Performance_{i,t-1}$ is the lagged performance of fund i measured by its Carhart (1997) four-factor Alpha. $ManagerTenure_{i,t}$ is the tenure of fund i's manager at this fund in years. The sample is from January 1994 to December 2003. The regressions are estimated with time and segment fixed effects. *** 1% significance, ** 5% significance, * 10% significance.

Table VI: Performance - Portfolio Approach

Panel A: Performance Before Expenses			
	Female	*Male*	*Difference*
$Jensen - Alpha_{i,t}$	0.0000	−0.0001	0.0001
$Three - Factor - Alpha_{i,t}$	−0.0007	−0.0007	0.0000
$Four - Factor - Alpha_{i,t}$	−0.0011	−0.0007	−0.0004
Panel B: Performance After Expenses			
	Female	*Male*	*Difference*
$Jensen - Alpha_{i,t}$	−0.0012	−0.0013	0.0001
$Three - Factor - Alpha_{i,t}$	−0.0019**	−0.0019*	0.0000
$Four - Factor - Alpha_{i,t}$	−0.0022**	−0.0019**	−0.0003

Notes: This table shows the average abnormal returns of equally weighted fund portfolios for female (Column 2) and male (Column 3) fund managers. Abnormal returns are calculated as the Jensen [1968] Alpha, the Fama and French (1993) three-factor Alpha, and the Carhart (1997) four-factor Alpha as defined in (1), (2) and (3) in the main text. The difference portfolio (Column 3) is calculated by subtracting returns of the male managed portfolio from returns of the female managed portfolio. Results in Panel A are based on returns before expenses, results in Panel B are based on returns after expenses. The sample is from January 1994 to December 2003. *** 1% significance, ** 5% significance, * 10% significance.

Table VII: Performance - Multivariate Analysis

	$Jensen-$ $Alpha_{i,t}$	$Three-Factor-$ $Alpha_{i,t}$	$Four-Factor-$ $Alpha_{i,t}$	$Appraisal-$ $Ratio_{i,t}$
$FemaleDummy_{i,t}$	0.0000	−0.0004	−0.0004	−0.0181
$Performance_{i,t-1}$	0.1212***	0.0583***	0.0152	0.0616***
$FundAge_{i,t-1}$	0.0003**	0.0002	0.0003*	0.0156*
$FundSize_{i,t-1}$	−0.0004***	−0.0003***	−0.0003***	−0.0170***
$Expenses_{i,t-1}$	−0.0986***	−0.0768**	−0.0980***	−2.1968***
$ManagerAge_{i,t}$	0.0001*	−0.0000	−0.0000	−0.0005
$Undergraduate_{i,t}$	−0.0001	−0.0003	−0.0004	−0.0330
$Master_{i,t}$	0.0007*	0.0004	0.0451	0.0006
$PhD_{i,t}$	0.0002	0.0010	0.0138	0.0011
R^2	0.2066	0.1068	0.1143	0.0697
$Observations$	10,136	10,136	10,136	10,136

Notes: This table shows the estimates of fund performance regressed on a female fund manager dummy, $FemaleDummy_{i,t}$, as well as fund and manager characteristics. The performance of a fund is defined as the Jensen [1968] Alpha from (1) in the main text (Column 2), the Fama and French (1993) three-factor Alpha from (2) in the main text (Column 3), its Carhart (1997) four-factor alpha from (3) in the main text, and a modified version of its Treynor and Black [1973] Appraisal Ratio (Column 4), defined in (4) in the main text as the alpha from the Carhart (1997) four-factor Alpha divided by the standard deviation of the residuals from the four-factor regression (3) in the main text. $FemaleDummy_{i,t}$ is a dummy variable that takes on the value one, if a fund i is managed by a female manager in year t, and zero otherwise. $Performance_{i,t-1}$ is the lagged performance of fund i. $FundAge_{i,t-1}$ is the lagged natural logarithm of fund i's age in years. $FundSize_{i,t-1}$ is the lagged natural logarithm of the fund's size in million USD and $Turnover_{i,t-1}$ is the fund's lagged turnover rate. $ManagerAge_{i,t}$ is the age of the fund manager in years. $Undergraduate_{i,t}$, $Master_{i,t}$, and $PhD_{i,t}$ are dummy variables that take on the value one, if the manager of the fund holds an undergraduate, Master, and PhD degree, respectively. The sample is from January 1994 to December 2003. The regressions are estimated with time and segment fixed effects. *** 1% significance, ** 5% significance, * 10% significance.

Table VIII: Performance Dispersion

Panel A: Female Managers in Top/Bottom 1%			
	Top or Bottom 1%	*Top 1%*	*Bottom 1%*
$JensenAlpha_{i,t}$	-1.1035^{***}	-0.9931^{*}	-1.1694^{**}
$ThreeFactorAlpha_{i,t}$	0.0711	-0.1430	0.2258
$FourFactorAlpha_{i,t}$	-0.1132	-0.2002	-0.0458
Panel B: Female Managers in Top/Bottom 5%			
	Top or Bottom 5%	*Top 5%*	*Bottom 5%*
$JensenAlpha_{i,t}$	-0.2892^{**}	-0.1236	-0.4148^{**}
$ThreeFactorAlpha_{i,t}$	-0.1537	-0.1327	-0.1522
$FourFactorAlpha_{i,t}$	-0.1455	-0.0981	-0.1669

Notes: This table shows the estimates of the probability of a female managed fund to reach the top or bottom 1% (Panel A) or the top or bottom 5% (Panel B) performance percentile regressed on a female fund manager dummy as well as the same fund and manager characteristics as in Table II. The female fund manager dummy takes on the value one, if a fund i is managed by a female manager in year t, and zero otherwise. Only the estimates for the influence of the female fund manager dummy are reported. Performance is calculated by the Jensen [1968] Alpha, Fama and French (1993) three-factor Alpha, and the Carhart (1997) four-factor Alpha as defined in (1), (2) and (3) in the main text. The model is estimated by a probit regression with time and segment fixed effects. The sample is from January 1994 to December 2003. *** 1% significance, ** 5% significance, * 10% significance.

Table IX: Performance Persistence

	Female	*Male*	*Difference*
$JensenAlpha_{i,t}$	0.2340	0.2612	-0.0272^{***}
$ThreeFactorAlpha_{i,t}$	0.2381	0.2702	-0.0321^{***}
$FourFactorAlpha_{i,t}$	0.2425	0.2704	-0.0279^{***}

Notes: This table shows the average time series standard deviation over performance ranks of female managed funds (Column 2) and of male managed funds (Column 3). Performance is defined as the Jensen [1968] Alpha, the Fama and French (1993) three-factor Alpha, and the Carhart (1997) four-factor Alpha as defined in (1), (2) and (3) in the main text. Column 4 contains the difference between the average time series standard deviation of performance ranks between female and male managed funds. The sample is from January 1994 to December 2003. Significance is calculated based on a two-sided t-test. *** 1% significance, ** 5% significance, * 10% significance.

Table X: Fund Flows

	FMB-Approach	*FMB-Approach*	*pooled regression*	*pooled regression*
$FemaleDummy_{i,t}$	-0.1692^{**}	-0.1815^{**}	-0.1551^{***}	-0.1590^{***}
$PerfRank_{i,t-1}$	-0.4504		-0.3815	
$PerfRank^2_{i,t-1}$	1.0375^{*}		1.006^{***}	
$Quintile1_{i,t-1}$		0.7826^{*}		1.0955^{*}
$Quintile2-4_{i,t-1}$		0.1584^{*}		0.1855
$Quintile5_{i,t-1}$		3.5092^{**}		3.5025^{***}
$Flow_{i,t-1}$	0.1350^{***}	0.1232^{***}	0.1179^{***}	0.1050^{**}
$FundRisk_{i,t-1}$	1.2294	0.9337	1.2879	1.4255
$FundAge_{i,t-1}$	-0.0704^{**}	-0.0712^{***}	-0.0488	-0.0468
$FundSize_{i,t-1}$	-0.2012^{**}	-0.2031^{**}	-0.2139^{***}	-0.2153^{***}
$Turnover_{i,t-1}$	-0.0037	-0.0065	-0.0052	-0.0055
$Fees_{i,t-1}$	-0.0753	-0.0810	-0.1192	-0.1221
$SegmentFlow_{i,t}$	2.0256^{*}	$2.0487*$	1.0353^{**}	1.0765^{**}
$CompanyFlow_{i,t}$	0.9471^{***}	0.9350^{***}	0.9608^{***}	0.9538^{***}
$CompanySize_{i,t-1}$	0.1108^{**}	0.1086^{**}	0.1186^{***}	0.1186^{***}
$CompanyAge_{i,t-1}$	0.0107	0.0104	0.0103^{*}	0.0105^{**}
$ManagerAge_{i,t}$	0.0011	0.0008	0.0010	0.0010
$Undergraduate_{i,t}$	0.1733	0.1782	0.1817	0.1873
$Master_{i,t}$	-0.2240	-0.2227	-0.2400	-0.2476
$PhD_{i,t}$	0.4394	0.4277	0.4475	0.4432
R^2			0.0899	0.0911
Observations			$8,334$	$8,334$

Notes: This table shows the estimates of fund net-inflows regressed on a female fund manager dummy, $FemaleDummy_{i,t}$, as well as fund, manager and fund company characteristics. Fund net-inflows are calculated by subtracting the internal growth of a fund due to the returns earned on assets under management from the total growth rate of the fund's total net-assets under management. $FemaleDummy_{i,t}$ is a dummy variable that takes on the value one, if a fund i is managed by a female manager in year t, and zero otherwise. To capture the non-linearity of the performance-flow relationship we include the performance of fund i in the previous year $t-1$, $PerfRank_{i,t-1}$, as well as the squared performance of fund i in the previous year $t-1$, $PerfRank^2_{i,t-1}$ (Columns 2 and 4). Alternatively, we use a piecewise linear regression approach (Columns 3 and 5) and include piecewise linear regression coefficients calculated according to the following definitions: $Quintile1_{i,t-1} = \min(PerfRank_{i,t-1}, 0.2)$, $Quintile2-4_{i,t-1} = \min(PerfRank_{i,t-1} - Quintile1_{i,t-1}, 0.6)$ and $Quintile5_{i,t-1} = PerfRank_{i,t-1} - (Quintile1_{i,t-1} + Quintile2-4_{i,t-1})$. $Flow_{i,t-1}$ is the lagged net-inflow into fund i. $FundRisk_{i,t-1}$ is the lagged return time series standard deviation of fund i. $FundAge_{i,t-1}$ is the lagged natural logarithm of fund i's age in years. $FundSize_{i,t-1}$ is the lagged natural logarithm of the fund's size in million USD and $Turnover_{i,t-1}$ is the fund's lagged turnover rate. $Fees_{i,t-1}$ is defined as the sum of the yearly total expense ratio and 1/7 of the total load fees. $SegmentFlow_{i,t}$ is the growth rate of fund i's market segment due to net-inflows in year t. $CompanyFlow_{i,t}$ is the growth rate of fund i's fund company due to net-inflows in year t. $SegmentFlow_{i,t}$ and $CompanyFlow_{i,t}$ are calculated net of the net-inflows into fund i. $CompanySize_{i,t-1}$ is the lagged natural logarithm of the fund company's size in million USD and $CompanyAge_{i,t-1}$ is the lagged natural logarithm of the fund company's age in years. $ManagerAge_{i,t}$ is the age of the fund manager in years. $Undergraduate_{i,t}$, $Master_{i,t}$, and $PhD_{i,t}$ are dummy variables that take on the value one, if the manager of the fund holds an undergraduate, Master, and PhD degree, respectively. The model is estimated by Fama and MacBeth (1973) regressions (Columns 2 and 3) as well as a pooled regression approach with time fixed effects (Columns 4 and 5). The sample is from January 1994 to December 2003. *** 1% significance, ** 5% significance, * 10% significance.

Table XI: Characteristics of Fund Companies Employing Female Fund Managers

Panel A: OLS Estimation				
	$Share(FemaleManagers)_{j,t}$			
$CompanySize_{j,t-1}$	0.0047***	0.0045***	0.0046***	0.0047***
$CompanyAge_{j,t-1}$	0.0020*	0.0021*	0.0020	0.0022*
$MDCons_j$		−0.0004***		−0.0003***
$MDWomLib_j$			0.0003***	0.0002***
R^2	18.48%	20.24%	20.67%	21.16%
$Observations$	3,658	2,888	2,752	2,707
Panel B: Probit Estimation				
	$Prob(FemaleManager)_{j,t}$			
$CompanySize_{j,t-1}$	0.5549***	0.5538***	0.5803***	0.5864***
$CompanyAge_{j,t-1}$	0.0767*	0.0808*	0.0559	0.0628
$MDCons_j$		−0.0120***		−0.0074**
$MDWomLib_j$			0.081**	0.0038
$PseudoR^2$	0.2834	0.2948	0.3057	0.3117
$Observations$	3,658	2,888	2,752	2,707

Notes: This table shows the estimates of an OLS regression (Panel A) with the share of female fund managers within a fund company j in year t, $Share(FemaleManagers)_{j,t}$, regressed on fund company characteristics as well as demographic characteristics of the population of the state the fund company is located in. $CompanySize_{j,t-1}$ and $CompanyAge_{j,t-1}$ denote the lagged size of fund company j, measured by the logarithm of the total assets under management of all equity funds within the fund company, and the lagged age of fund company j, measured by the lagged logarithm of the age of the fund company in years, respectively. $MDCons_j$ is the median degree of conservatism of all respondents in the state company j is located in and $MDWomLib_j$ is the median attitude towards women liberation of all respondents from the American National Election Survey in the state fund company j is located in. Alternatively, we estimate a logit-model (Panel B) and include the probability that the fund company j employs any female fund manager in year t, $Prob(FemaleManager)_{j,t}$, as dependent variable. The sample is from January 1994 to December 2003. The regressions are estimated with time and segment fixed effects. *** 1% significance, ** 5% significance, * 10% significance.

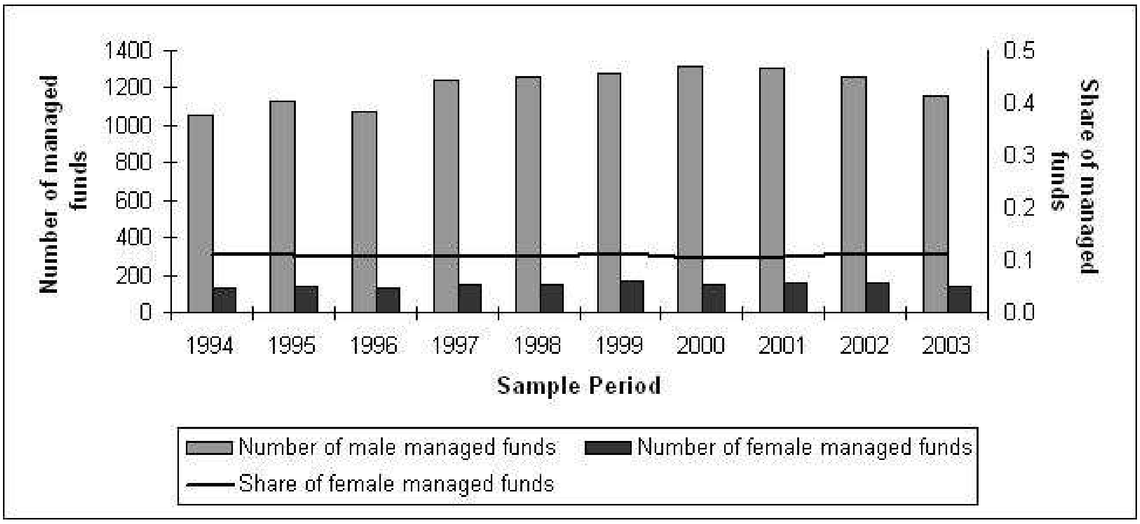
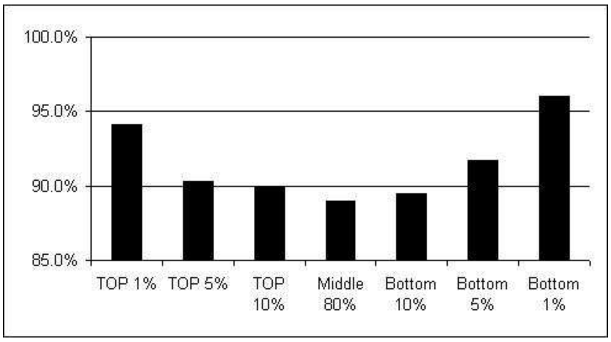
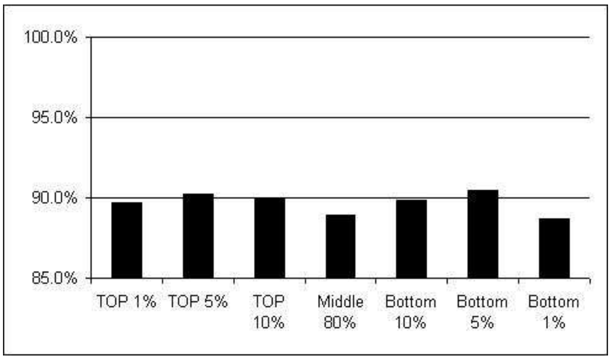


Figure I: Distribution of Funds by Manager Gender

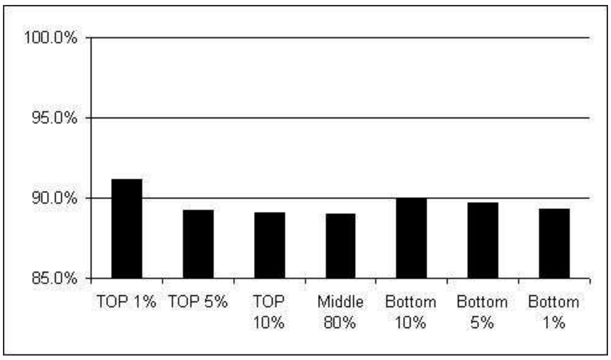
Notes: Total number of female and male managed funds (bars) and share of female managed funds (line) plotted. The sample consists of all female and male fund managers responsible for at least one single managed equity fund from January 1994 to December 2003. Data is taken from the CRSP Survivor Bias Free Mutual Fund Database.



Panel A: Jensen's Alpha



Panel B: Three Factor Alpha



Panel C: Four Factor Alpha

Figure II: Dispersion of Performance

Notes: Percentage of male managers within different performance percentiles plotted. The performance for each fund in each year is measured by its Jensen [1968] Alpha (Panel A), its Fama and French (1993) three-factor Alpha (Panel B), and its Carhart (1997) four-factor Alpha (Panel C). The distribution of male fund managers within performance percentiles is given by the share of male fund managers within the top and bottom 1%, the top and bottom 5%, the top and bottom 10%, as well as the middle 80% of all funds.