

Managerial Characteristics and European Mutual Funds Performance

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Abstract

We investigate the relation between observable managerial characteristics (i.e., gender, age, tenure, professional qualifications, and advanced education), and performance in European equity diversified mutual funds. We find that differences in the risk-adjusted alphas are statistically significant only in the cases of subgroups formed on the basis of age, tenure, and professional qualifications (i.e., CFA). We also find that gender, and advanced education (i.e., MBA) are not significantly related to fund performance. We report, however, a significant positive relation with age, a significant negative relation with tenure, and a significant positive relation with turnover. Differences in risk-taking, measured by fund beta, are not significantly related with most managerial characteristics except for age and tenure, with the former negatively and the latter positively related to risk taking.

Keywords: Managerial characteristics, Mutual funds, Risk-adjusted performance, Risk-taking

JEL: G23, G2

1. Introduction

The global mutual fund industry has grown considerably over the last two decades with total net assets increasing from \$6.96 trillion in 2000 to over to \$49.3 trillion by the end of 2017, of which equity funds hold almost 45% (ICI, 2017). Despite the growing interest in active fund management among investors, its track record has been rather unimpressive. Indeed, there is considerable evidence that the performance of actively managed equity funds is rather poor and that in most cases fails to beat a set of benchmarks on a net of fees basis (see, e.g., Fama and French, 2010; Carhart, 1997; Gruber, 1996; Del Guercio and Reuter, 2014; Busse et al., 2010). However, some studies provide evidence that fund managers display some skill (see, e.g., Grinblatt and Titman, 1992; Hendricks et al., 1993; Brown and Goetzmann, 1995; Elton et al., 1996). These studies argue that measures of fund performance depend on the time period examined and that they are sensitive to the benchmark used (see, e.g., Ippolito, 1989; Elton et al., 1993; Roll, 1978).

Despite the fact that European equity mutual funds hold about 24% (i.e., \$5.26 trillion) of the total worldwide net assets in equity mutual funds (i.e., \$13.63 trillion), most of the mutual fund literature focuses on the US fund market (ICI, 2017). Exemptions include Otten and Bams (2002) who find that European mutual funds generate a positive net of fees alpha, Ferreira et al. (2013) who find that country characteristics can explain the performance of European funds beyond their characteristics, and Banegas et al. (2013) who find that several macroeconomic variables can help predict the performance of European mutual funds. Further, European country-specific studies include Dermine and Röller (1992) who examine the presence of economies of scale in French mutual funds; Ward and Saunders (1976), Blake and Timmermann (1998), and Blake et al. (2017) who examine the performance of UK funds; and Dahlquist et al. (2000), and Cesari and Panetta (2002) who study the performance of Swedish and Italian mutual funds respectively.

The objective of our study is to examine whether the observable managerial characteristics of age, gender, tenure, advanced education (i.e., MBA), and professional qualifications (i.e., CFA) are significantly related to the performance and the risk-taking of European equity funds. The part of the mutual fund literature that is closely related to our paper examines the relation between managerial characteristics and US mutual fund performance. These studies tend to conclude that managerial characteristics that indicate ability, skills, effort, and knowledge (i.e., higher SAT and GMAT scores, MBA degree from highly ranked school, CFA designation) are positively related to fund performance.¹ Intuitively, these characteristics should be related to fund performance because managers who display them should have greater human capital and therefore better performance. Chevalier and Ellison (1999) examine the relation between a manager's age, average composite SAT score at the manager's undergraduate institution, and whether the manager holds an MBA. They find that managers who attend undergraduate institutions with higher overall SAT scores generate higher risk-adjusted excess returns. They attribute this finding to the greater innate abilities of the manager, the benefits of a better education, and to the information benefits of a better professional network (e.g., Cohen et al., 2010). Gottesman and Morey (2006) confirm that the mean GMAT score of a manager's MBA program is positively and significantly related to the fund's performance. Further, they report that managers who hold MBAs from *Business Week's* top 30 programs have superior performance to the performance of managers with an MBA from an unranked program and managers without MBA degrees. Golec (1996) also finds that investors can expect greater risk-adjusted performance from young managers who hold an MBA and also have longer tenure in their funds.

¹ SAT stands for Scholastic Assessment Test and is a test intended to assess writing, critical reading, and maths skills for university and college admission in the US. GMAT stands for Graduate Management Admission Test and is a test intended to assess certain analytical, writing, quantitative, verbal, and reading skills for admission to a graduate management program, such as an MBA. CFA stands for Chartered Financial Analyst and is a designation that certifies the skills and knowledge of investment and financial professionals.

Although the human capital argument can also be applied to the case of manager tenure, one could also argue that managers with longer tenures have a lower drive to excel than managers who have only been recently put in charge and have yet to prove themselves (see, e.g., Golec, 1996). Chevalier and Ellison (1999) also argue that young managers do better because they are eager to advance their careers and therefore work harder than older managers; or they may do worse because of a lack of experience. Shukla and Singh (1994) report that funds with at least one CFA manager outperform funds with no CFA manager; similar findings are reported by Switzer and Huang (2007). There is a number of reasons why the performance of female fund managers might be different from the performance of funds managed by males. First, if investors are prejudiced against females, then funds managed by female managers might receive lower fund inflows compared to funds managed by male managers, which subsequently might lead to inferior performance (see, e.g., Niessen-Ruenzi and Ruenzi, 2018; Rakowski and Wang, 2009). Second, research shows that female investors are more risk averse (see, e.g., Niessen-Ruenzi and Ruenzi, 2018; Byrnes et al., 1999; Sunden and Surette, 1998; Barber and Odean, 2001), which in equilibrium is expected to lead to lower returns.² Further, Barber and Odean (2001) show that male managers trade 45% more than female managers, which results in a net return reduction of 2.65% per annum compared to a reduction of 1.72% per annum for female managers.

Interestingly, most of the literature on the relation between managerial characteristics and fund performance focuses on the US fund market. This gap in the literature serves as the main motivation for our paper. Our study is also motivated by the fact that investors increasingly pay attention to who manages their funds. Indeed, information services (e.g., Morningstar, Bloomberg, Thompson Reuters) include biographies of fund managers, while the

² A recent study, though, by Kirchler et al. (2018) find no significant differences in the risk-taking behavior of financial professionals of different gender.

performance of managers at large funds typically make front page news in the business sections of magazines and newspapers. An important question that arises, therefore, is whether a fund's performance is related to managerial characteristics. A potentially significant relation between managerial characteristics and fund performance has clear economic implications for the selection of mutual funds by investors and likewise for the selection of managers by mutual funds, given that total net assets held by European domiciled equity funds increased from about \$2.00 trillion in 2000 to \$5.26 trillion in 2017 (ICI, 2017). The findings of our study also have implications for the efficiency of the European fund industry, as in efficient markets no specific kind of manager should be able to consistently beat the market and earn abnormal returns.

We use monthly returns as well as information on observable managerial characteristics over the period from January 2008 to December 2018 for 383 Europe domiciled diversified equity funds. We first examine the performance of funds run by managers with different characteristics by using as proxies for performance the alphas obtained from CAPM that controls for market risk, Fama and French's (1992) three-factor model that also controls for size and book-to-market, Carhart's (1997) four-factor model that also controls for momentum, and Fama and French's (2015) five-factor model that also controls for profitability and investment patterns. Our first set of results indicate that differences in the risk-adjusted alphas are statistically significant only in the cases of subgroups formed on the basis of age, tenure, and the CFA designation. This evidence shows that managerial characteristics like gender and whether the manager is an MBA holder are not strongly related to a fund's performance. We then examine the relation between fund excess monthly returns, relative to the funds' primary benchmarks, and managerial characteristics. We find no statistically significant impact of gender or an MBA on the excess returns. However, age, tenure, and CFA are all statistically significant. In particular, older managers with shorter tenure perform better than young managers and managers with longer tenure. Indeed, a 10-year increase in the manager's age

generates about 1.03% additional excess returns per annum, but a 10-year increase in managerial tenure leads to about 0.42% lower excess returns per annum. Further, fund managers with a CFA generate an additional excess return of 2.53% per annum. We then use a battery of Fama-MacBeth cross-sectional regressions (Fama and MacBeth, 1973) to examine the relation between risk-adjusted excess returns and managerial characteristics. We find that age and the CFA designation are significantly and positively, and tenure significantly and negatively, related to the fund's risk-adjusted performance. Gender and an MBA are statistically insignificant for all model specifications. In relation to the fund characteristics, we also find that turnover is significantly and positively related to risk-adjusted performance.³ Differences in fund risk-taking, as measured by CAPM beta, are not statistically significant for most managerial characteristics except for age and tenure, which have negative and positive relations to risk-taking, respectively.

Our paper makes several contributions. First, we contribute to the broad literature on the performance of mutual funds, especially the literature that examines the relation between managerial characteristics and performance (e.g., Chevalier and Ellison, 1999; Golec, 1996; Atkinson et al., 2003). Second, we contribute to the currently limited literature on the behavior of European domiciled equity funds (e.g., Otten and Bams, 2002; Ferreira et al., 2013; Banegas et al., 2013). Third, we provide evidence that age, gender, advanced education (i.e., MBA), and professional qualifications (i.e., CFA) are not significantly related to fund performance, which might have important implications for investors when selecting a fund.

The rest of the paper proceeds as follows: In Section 2, we explain the sample selection process and describe our fund dataset. Section 3 presents our methodology and our empirical results. Section 4 summarises and concludes our paper.

³ While most prior studies document a negative impact of turnover on performance they tend to use returns net of fees and other expenses. Our study, however, uses gross returns as it is only concerned with the performance of the fund managers, which might explain our finding.

2. Data Selection and Description

2.1 Sample construction

All data come from Morningstar Direct and cover the period from January 2008 to December 2018. The use of a relatively short sample period and cross-sectional data, as well as the inclusion of dead funds in our sample reduces the potential issues that might relate to survivorship bias, and the big strategic and operational changes that took place in the fund industry over the last decade (Brown et al., 1992). The initial sample contains 3,360 diversified equity funds that domicile in continental Europe and have an investment focus on either France, Germany, Europe, or the Eurozone. We exclude index funds and ETFs because their managers are not involved in active fund management. We also drop sector-specific funds and funds not assigned to one of the Global Investment Fund Sector (GIFS) classes as well as all non-Euro denominated funds. Further, we drop those funds for which there are less than 60 consecutive monthly returns available because this is the minimum number of returns we use in our empirical analysis. In the case of funds with multiple share classes, we use only the oldest share class as the representative one. We also exclude funds for which there is no data on their managers, or where only the first initial of the manager's name is provided that makes the identification difficult or at least imprecise. We also exclude all team-managed funds from our sample. It would be possible to include team-managed funds and choose, for example, the manager with the longest tenure to stand in for the whole or identify a lead manager as, for example, in Li et al. (2011). While this has the advantage of a larger sample size, it is rather unrealistic to attribute the performance of the fund to a single manager simply because he or she has the longest tenure or has some other characteristic that sets him or her apart from the other managers. Chen et al. (2004) also note that the organizational structures of team-managed and solo-managed funds differ. This difference makes them hard to compare, and thus

performance attribution becomes difficult without knowledge of how responsibilities are divided within the fund.

Morningstar's tenure variable is calculated as of the end of the sample period.⁴ Thus, for the current manager to have managed the fund for the whole sample period, a tenure of at least five years (i.e., 60 months) is necessary. Although other studies such as Chevalier and Ellison (1999) only require managers to have solely managed the fund for a sufficient part of the sample period, for the sake of more accurate performance attribution we include a fund in our sample only if a single manager was in charge over the whole five-year period. For funds that are only team-managed for part of our sample period, but the sole manager was part of that team, we include the fund in our sample. For example, if a fund was team-managed only between 2012 and 2013, we include the fund in our sample if the sole manager from 2013 onwards was part of the management team during the period from 2012 to 2013.

To establish the gender of the fund managers, we looked up their first names in the Popular Baby Names database that is publicly available on the website of the US Social Security Administration.⁵ Identifying the gender in this way worked well for most funds. The remaining managers were assigned a gender manually, which in most cases was straightforward (e.g. Tommi, Cédric, José, Fabio, etc.). Where the name was uncommon or unisex it was confirmed using either the GenderChecker website, the pronouns (i.e., he/she) in the manager biographies available on Morningstar, or via an internet search for the manager's name.⁶

To obtain the manager's age, we adopted a slightly different approach than Chevalier and Ellison (1999), Atkinson et al. (2003), and Li et al. (2011), who assumed that managers were 21 years old upon graduation. These studies used data on US funds that tended to use US

⁴ Morningstar reports both the longest and the average manager tenure that in the case of a single manager are identical.

⁵ <https://www.ssa.gov/oact/babynames/limits.html>

⁶ www.genderchecker.com

educated managers where three-year undergraduate degrees are common. Our sample though is dominated mainly by funds domiciled in either France or Germany and only in recent years have these countries adapted their higher education systems in such a way that bachelor degrees usually take three years and masters degrees take between one and two years.⁷ Therefore, we take a different approach in calculating the age of the fund manager. In those cases where the fund manager holds an undergraduate degree from a US or UK university, we follow the 21-year rule adopted by previous studies. For all other managers we take the year in which managers started studying for their first degree as a proxy for when they were 18 or 19 years old.⁸ The graduation dates are sometimes available in the manager biography sections in Morningstar and in those cases when they are not available we retrieved them either from the managers' LinkedIn profiles, the CityWire website, or their funds' websites.

We followed the same approach to obtain information on the educational background of the fund managers and whether managers held an MBA degree and/or a CFA designation. Further, some managers might not report all of their educational achievements and professional qualifications on LinkedIn, which might introduce some bias in our sample. However, since both the CFA and MBA are prestigious qualifications for financial professionals, we expect most managers to list them online for reputational reasons and, therefore, that the impact of underreporting of fund managers' educational achievements to be miniscule. In summary, we miss MBA- and CFA-related information for about 27% of the funds in our sample and age-related information for about 36%.

⁷ The traditional French undergraduate degree (i.e., *Maîtrise*) typically takes four years to complete, whereas the German undergraduate degree (i.e., *Diplom*) is awarded once students have successfully passed all programme modules and completed their thesis. This process could take anywhere between four and ten years. In some cases, even longer than that since German and French universities do not charge tuition fees that makes longer studying periods more frequent than in the US or the UK.

⁸ While some federal states have changed this in recent years, secondary school in Germany usually takes nine instead of 8 years. Hence, some school leavers will be 19 instead of 18 years old when they first enrol at university.

2.2 Data description

The final sample consists of 383 funds, of which 86 are dead, that is comparable to the sample size of similar studies on manager characteristics; for example, 492 in Chevalier and Ellison (1999) and 358 in Babalos et al. (2015). Table 1 provides an overview of the funds in our sample based on S&P's Global Investment Fund Sector (GIFS) classification. Apparently, large-cap funds are the most popular type of fund in our sample with the Europe Large-cap Blend Equity funds (124) constituting almost one third of our sample. The fraction of female-managed funds in our sample is 14.62%, which is larger than in most comparable studies. For example, Chevalier and Ellison (1999) report a 7% share of female managers in their sample, Atkinson et al. (2003) report a percentage of 5.6%, Niessen-Ruenzi and Ruenzi (2018) a percentage close to 11%, and Babalos et al. (2015) use a sample with 16.5% female managers. The number of funds with managers holding an MBA and/or a CFA are relatively evenly distributed across the different fund types. The average managerial age has a low value of 41 years and a high value of 50.5 years, while the average tenure ranges from 8.25 years to 13.43 years.

Insert Table 1 about here

In addition to the managerial characteristics, we collect fund data that includes the funds' monthly excess return, monthly standard deviation, monthly size, annual management fee, annual maximum front-loaded sales charge, and annual turnover ratio.⁹ The data on the monthly returns is calculated by taking the change between the starting and ending net asset values within a month, reinvesting all income and capital gains distributions during that month, and dividing by the starting net asset value. No adjustments are made for differences in the funds' fees or other costs such as sales charges. This is because although fees have an impact

⁹ Size is the monthly total net assets of the fund in millions of euros, management fee is the percentage of the fund's monthly net assets paid to its manager, maximum front load is the maximum sales charge of a fund, and turnover is the percentage of the fund portfolio's holdings that have changed over the past year.

on investors' take-home return, our focus is on the fund managers' portfolio performance. We also calculate the excess monthly return for each fund by taking the difference between its monthly return and the monthly return of its primary benchmark as specified in the fund's brochure. The primary benchmarks for each fund type are listed in Table 2. These benchmark indices are constructed using stocks from the main developed stock markets in Europe. Summary statistics of our main data are also reported in Table 3 below. Panel A contains summary statistics of fund characteristics, while Panel B contains summary statistics of managerial characteristics.

Insert Table 2 about here

Insert Table 3 about here

On average, female-managed funds have a marginally higher excess return, are slightly riskier, are smaller in size, charge a lower management fee, but a similar front load compared to male-managed funds. Further, although previous studies (e.g., Barber and Odean, 2001) show that male investors trade more than female investors, which manifests itself in higher turnover ratios, this is not the case in our sample. In fact, female managers trade considerably more than their male peers. There are only minor differences in tenure and age, but males more frequently hold an MBA and/or a CFA, with only the former being significantly different from the percentage of female managers. Fund managers older than 46 years old have on average a better performance (i.e., 0.93%) than younger managers (i.e., 0.82%) although this superior performance comes with higher risk (i.e., 0.42) and turnover (i.e., 99.70%). In addition, although managers with a short tenure trade considerably more than managers with a long tenure, the performance and risk of their funds are almost identical. CFA holders have, on average, a superior performance, tend to manage larger funds, and trade considerably less compared to managers with no CFA. Funds with managers with no MBA degree have a slightly better performance, which however, comes with higher risk and greater turnover.

The average age of all fund managers in our dataset is just above 47 years with a tenure of about 10.7 years. Further, 16.5% of all managers have a CFA designation and 8.3% an MBA degree. These numbers do not vary a lot between male and female managers with the exemption of female managers with an MBA and a CFA. Explaining the low fraction of female managers with an MBA (i.e., 2.20%) is quite difficult. Domicile effects are not the cause as the fraction of MBA graduates is very similar across the different European countries. We consider the following as possible explanations: fund managers quite frequently have a background in the disciplines of Science, Technology, Engineering, and Mathematics (STEM). Females are underrepresented in STEM disciplines and therefore are likely to more often have a business background than men. As a result, they might choose to pursue an MBA less often than men as they already have an academic background in business. Further, females might less often expect to hold a management position later in their career and therefore decide not to pursue an MBA. Underreporting the academic qualifications of female managers on LinkedIn might also be possible. These explanations might also explain the lower number of female managers with a CFA (i.e., 1) as opposed to the male managers with a CFA in our sample (i.e., 41).

Moreover, the fraction of managers with an MBA and/or a CFA in our sample is lower than in other studies. For example, Atkinson et al. (2003) report that 58.21% of males and 46.67% of female have an MBA, with 37.31% of male and 45% of female managers holding a CFA. Golec (1996) reports that 64% of the managers in his sample have MBAs. However, both of these studies use US data. Indeed, the most obvious reason for the lower fraction of managers with an MBA and/or a CFA in our sample is that both qualifications are much less common in continental European countries than in the US and the UK. Unfortunately detailed statistics about holders of CFA charters are quite difficult to obtain, but Germany's CFA society, for example, discloses that it has roughly 2,500 members, 95% (i.e., 2,375) of which hold CFA

charters.¹⁰ The French CFA society discloses that in 2014 there were about 700 members.¹¹ To put these numbers into perspective, between 1963 and 2016, 209,561 candidates worldwide had passed the CFA Level 3 exam, most of whom likely to have been based in the US and the UK; indeed, the CFA society of New York alone has more than 10,000 members.¹² MBA graduates are also much less common in Germany. Further, although pursuing a part-time MBA is very popular in the US and most of the English-speaking world, in continental Europe this idea has only started to develop in the years following the *Bologna Process*.¹³ Although MBA graduates are also uncommon in France, French executive MBA programmes offered by a number of prestigious business schools (e.g., INSEAD, EDHEC, HEC Paris) nowadays are frequently ranked amongst the best in the world in the Financial Times rankings.¹⁴ These rankings contrast with not a single German MBA programme making it into the top 50.

3. Methodology and Empirical Results

3.1. The performance of European equity mutual funds

We first apply the CAPM, Fama and French's three-factor model (3FF), Carhart's four-factor momentum model (4FF), and the more recent Fama and French's five factor model (5FF), respectively, to the excess monthly returns to obtain the alphas and factor betas for the different risk factor models (Fama and French, 1993; Carhart, 1997; Fama and French, 2015). All the European risk factors were obtained from Kenneth French's website.¹⁵ Specifically, we apply the following factor models:

$$CAPM: R_{p,t} - R_{B,t} = \alpha_p + \beta_p(R_{M,t} - r_{f,t}) + \varepsilon_{p,t}$$

¹⁰ <https://www.cfa-germany.de/de/infos-fuer-arbeitgeber/erfolgsfaktor-cfa>.

¹¹ <https://www.cfasociety.org/France/Pages/About.aspx>.

¹² <https://www.cfany.org/>.

¹³ The *Bologna Process* is a cooperative of 48 European countries in the field of higher education that aim at ensuring comparability in the standards and quality of higher education qualifications.

¹⁴ <http://rankings.ft.com/businessschoolrankings/global-mba-ranking-2017>

¹⁵ http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

$$3FF: R_{p,t} - R_{B,t} = \alpha_p + \beta_p(R_{M,t} - r_{f,t}) + \gamma_pSMB_t + \delta_pHML_t + \varepsilon_{p,t}$$

$$4FF: R_{p,t} - R_{B,t} = \alpha_p + \beta_p(R_{M,t} - r_{f,t}) + \gamma_pSMB_t + \delta_pHML_t + \theta_pMOM_t\varepsilon_{p,t}$$

$$5FF: R_{p,t} - R_{B,t}$$

$$= \alpha_p + \beta_p(R_{M,t} - r_{f,t}) + \gamma_pSMB_t + \delta_pHML_t + \theta_pMOM_t + \rho_pPRF_t \\ + \kappa_pINV_t + \varepsilon_{p,t}$$

(1)

where $R_{p,t} - R_{B,t}$ is the excess monthly return of fund p that is defined as the difference between the return on fund p , $R_{p,t}$, in month t and the return on the fund's primary benchmark, $R_{B,t}$, in month t . α_p is the alpha of the fund, also known as *selectivity skill*, and it is a proxy for the performance of the fund that can be attributed to the skill of the manager after controlling for common risk factors. $R_{M,t} - r_{f,t}$ is the excess return on the market index that is defined as the difference between the return on the market index, $R_{M,t}$, in month t and the risk-free rate, $r_{f,t}$, in month t . As a proxy for the risk-free rate we use the one-month government bond rate. SMB_t and HML_t are the size and the book-to-market factors in Fama and French (1993) respectively, MOM_t is the momentum factor from Carhart (1997), and PRF_t and INV_t are the profitability and investment pattern factors of Fama and French (2015) respectively. β_p , γ_p , δ_p , θ_p , ρ_p , and κ_p are the coefficients to be estimated. Finally, $\varepsilon_{p,t}$ is an error term.

Under the null hypothesis of no selectivity skill, the estimated coefficient for the fund's alpha should be equal to zero. Our empirical results are presented in Table 4. The results are presented for the whole sample as well as for pairs of subgroups of the sample to get a better understanding of the risk-adjusted performance differences between fund managers with different characteristics. These pairs of subgroups are defined in terms of gender, age of less or more than 46 years old, tenure less than nine years or greater or equal to nine years, with or without a CFA, and with or without an MBA. For age and tenure, the integer closest to the

median value is a cut-off point for the split into two groups. For the different risk-adjusted models we employ, the percentage of the estimated alphas that are statistically significant at the 95% level ranges from 17.23% to 25.32%. The average alphas for the whole sample tend to be statistically equal to zero with the exemption of the average 3FF alpha, which is negative and significant at the 5% level. The average alphas for each of the subgroups are usually not significantly different from zero with the exception of the old managers (i.e., age greater or equal to 46 years), shorter tenured managers (i.e., tenure less than 9 years), and managers with a CFA designation. These results indicate that regardless of gender, the fund managers who have good risk-adjusted performance tend to be old and of short tenure. In general, our results are in line with those of Fama and French (2010), Carhart (1997), Gruber (1996), Wermers (2000), Del Guercio and Reuter (2014), and Busse et al. (2010), who also present evidence that on average mutual funds fail to beat a set of benchmarks.

Insert Table 4 about here

Table 5 contains the results of a two-tailed *t*-test of the differences between the sample means of each of the pairs of subgroups. Female-managed funds on average have a higher risk-adjusted alpha in all but the 5FF model. However, the alphas of female-managed funds are statistically significant less often than the alphas of male-managed funds. In any case the difference in the alphas between male- and female-managed funds is not statistically significant at the 10%. For example, the *p*-value for the difference in the 3FF alphas is 0.173 and indicates a non-significant difference in the monthly alpha of about 0.08 in favor of female over male managers. Additionally, there is no statistically significant difference between male and female managers in terms of systematic risk, with female-managed funds having only marginally higher betas.

Insert Table 5 about here

When we examine the difference in risk-adjusted alphas of young and old managers, the results indicate that older managers tend to have a somehow better performance than younger managers. For example, the difference in the CAPM alphas of young and old managers is a monthly -0.031% which is statistically significant at the 5% level. This better risk-adjusted performance of older managers also comes with lower systematic risk. Indeed, the betas of fund portfolios managed by older managers tend to be 0.194 lower than the betas of the portfolios managed by young managers. This difference is also statistically significant at the 5% level. The results related to the 3FF alphas confirm our findings, which, however, are not statistically supported by the 4FF and 5FF models. Further, the results indicate that the longer tenured fund managers tend to perform worse than shorter tenured managers. For example, shorter tenured managers generate a higher 3FF alpha than the longer tenured managers of 0.57% which is statistically significant at the 10% level. It should be noted, however, that this higher alpha comes with greater exposure to diversifiable risk. CFA designation holders also seem to generate higher risk adjusted alphas which come with lower systematic risk. The difference in risk-adjusted alphas of fund portfolios managed by CFA holders and no CFA holders is 0.051% and is statistically significant at the 5% level. The results from the other models follow the same pattern, which, however, with the exemption of the 3FF model, they are not statistically significant. Finally, it seems that there is no difference in the risk-adjusted alphas of fund portfolios managed by managers holding an MBA and portfolios managed by managers without an MBA.

3.2 Relation between Managerial Characteristics and Excess Fund Performance

We follow Chevalier and Ellison (1999) and estimate simple regressions to examine whether the fund excess monthly return is related to managerial characteristics. Specifically, we estimate the following model:

$$ExcessReturn_{p,t} = c + \pi \cdot V_{p,t} + \varepsilon_{p,t}$$

(2)

where $ExcessReturn_{p,t}$ is the excess monthly return of fund p in month t (defined in equation 1), c is a constant term, $V_{p,t}$ is the vector of managerial characteristics, π is the vector of coefficients to be estimated, and $\varepsilon_{p,t}$ is an error term. The vector of managerial characteristics includes the following variables: Age_p and $Tenure_p$ which are the age and tenure of the manager for fund p , respectively, and $Gender_p$, MBA_p , and CFA_p which are binary variables for fund p that take the value of one for women and zero for men, one for having an MBA and zero otherwise, and one for having a CFA and zero otherwise, respectively. We also construct and include the following two variables. First, $Age * Tenure_p$ is a cross-term added to study the interaction effects between age and tenure for fund p . This variable has higher values for older managers with long tenures at their funds and low values for younger managers with short tenures at their funds. The effect of tenure also increases as managers get older, that is, the impact of tenure is strongest for old managers and weakest for young managers. The term can be interpreted as a proxy for experience, and hence we call this the experience variable. Second, $CFA * MBA_p$ is a dummy variable that takes the value of one if the manager of fund p has both a CFA and an MBA and zero otherwise.

We divide these characteristics into several groups and we report the regression results estimated using Newey and West (1987) corrected standard errors in Table 6. The first group comprises Age, Tenure, Gender, MBA, and CFA (column 1). The second group comprises Age and Tenure (column 2). The third group comprises Age, Tenure, and Age*Tenure (column 3). The fourth group comprises only Gender (column 4). The fifth group comprises CFA and MBA (column 5). And, the sixth group comprises all managerial characteristics, as well as Age*Tenure and CFA*MBA (column 6). To ease the interpretation of the estimated

coefficients, we standardize all non-dummy variables to have a mean of zero and a standard deviation of one.

An examination of the first specification model (column 1) shows that there is no statistically significant impact of gender or an MBA on the excess returns of European equity funds. These results contrast with those of Niessen-Ruenzi and Ruenzi (2018) who find that female fund managers receive lower inflows and therefore tend to achieve lower returns than male fund managers; and Chevalier and Ellison (1999), Gottesman and Morey (2006), and Golec (1996) who find that fund managers holding an MBA from a highly ranked institution have superior performance to those without an MBA. Therefore, these results indicate that in continental Europe mutual funds, male managers and those with an MBA do not necessarily have higher human capital than female managers and/or those without an MBA. However, age, tenure, and the CFA designation are all statistically significant at the 1%, 5%, and 10% levels, respectively. This is in line with Chevalier and Ellison (1999) who find that younger managers with longer tenures at their funds should generate the highest excess returns. They explain that this might be due to younger managers more often working at funds that charge lower fees. Further, as expected, older managers with shorter tenures perform better than young managers and managers with longer tenures, although the aggregate impact is not very strong. Indeed, a 10-year increase in the manager's age is predicted to generate about 1.03% additional excess return per annum, but a 10-year increase in managerial tenure is expected to lead to about 0.42% higher excess return per annum. The managerial characteristic with the largest impact is by far the CFA designation. CFA holders generate an additional excess return of 2.53% per annum. Similar results are reported by Shukla and Singh (1994), and Switzer and Huang (2007).

Insert Table 6 about here

The other specification models (columns 2-6) show that age is positive and statistically significant in all model specifications, although the age effect is rather small. The Age*Tenure is positive and statistically significant in all the models it is included in. Tenure is statistically significant at the 10% level although it's impact declines when the experience variable (i.e., Age*Tenure) is included. Gender remains statistically insignificant in all specification models. There is also some evidence that managers with a CFA perform better than those without one, while there is no evidence that managers with an MBA do better than those without. In addition to the CFA and MBA dummy, the coefficient estimate for the CFA*MBA variable indicates a statistically insignificant effect, which is likely due to the small number of managers who have both qualifications.

3.3 Relation between Managerial Characteristics and Risk-Adjusted Fund Performance

In this section, we examine the relation between managerial characteristics and the risk-adjusted fund performance. As proxies for a fund's performance we assume the alphas obtained from the single factor CAPM, the three factor Fama and French (1993), the four factor Carhart (1997), and the five factor Fama and French (2015) models. Specifically, we estimate Fama-MacBeth cross-sectional regressions (Fama and MacBeth, 1973) of the form:

$$Alpha_{p,t} = c + \kappa \cdot V_{p,t} + \varepsilon_{p,t}$$

(3)

where $Alpha_{p,t}$ is the alpha for fund p in month t obtained from the four different risk-adjusted models we assume in equation 1, c is a constant term, $V_{p,t}$ is the vector of managerial characteristics, κ is the vector of coefficients to be estimated, and $\varepsilon_{p,t}$ is an error term. The vector of managerial characteristics contains the following variables: Age_p , $Tenure_p$, $Gender_p$, MBA_p , CFA_p , $Age * Tenure_p$, and $CFA * MBA_p$ (defined in equation 2). For control, we also include the fund's management fee, maximum front load, and turnover. We

divide these characteristics into several groups. The first group comprises Age and Tenure (column 1). The second group comprises Age, Tenure, and Age*Tenure (column 2). The third group comprises CFA and MBA (column 3). The fourth group comprises CFA, MBA, and CFA*MBA (column 4). The fifth group comprises Gender (column 5). The sixth group comprises Age, Tenure, CFA, MBA, and Gender (column 6). And, the seventh group comprises all managerial and fund characteristics as well as the two constructed variables (column 7). The results with Newey and West (1987) corrected standard errors are reported in Table 7. To ease the interpretation of the estimated coefficients, we cross-sectionally standardize all non-dummy variables to have a mean of zero and a standard deviation of one.

Insert Table 7 about here

Age and tenure remain positive and statistically significant across the majority of different model specifications. Gender mostly remains a statistically insignificant predictor, although it is significant at the 10% level in model (7) of the 3FF alpha cross-sectional regressions. The effect of gender, however, is not consistent across models, although as discussed earlier, while female managers have slightly higher alphas, on average, the difference between male and female managers is not statistically significant. Additionally, Gender's sign changes based on the model specification. Previously identified statistically significant effects of a CFA designation remain statistically significant across all pricing models. Similarly, the impact of an MBA remains statistically insignificant. In general, our results indicate that with the exemption of age, tenure, CFA designation, and fund turnover, the other main observable managerial characteristics do not have a statistically significant impact on a fund's performance. To a large extent, our results are in line with those reported in the relevant literature on the performance of US mutual funds (see, e.g., Chevalier and Ellison, 1999; Golec, 1996; Shukla and Singh, 1994). Interestingly, the CFA*MBA is always positive and takes its maximum value of 0.733 when the 4FF alphas are used; nevertheless, it remains statistically

insignificant. Further, some models indicate a weak positive and statistically significant effect of turnover that ranges from 0.100% to 0.448% additional monthly return per one-standard deviation increase in turnover. Some studies such as Golec (1996) report that turnover is negatively related to performance. A possible explanation for this different finding is that these studies tend to use returns adjusted for expenses such as management fees. Higher turnover will cause higher costs for order execution that might lead to a lower return for investors and might explain the negative relation between turnover and fund performance. Age*Tenure is both highly insignificant and alternating in sign in all model specifications, which indicates an effect that is neither significant nor consistent. The Fee and Front Load variables are not significantly related to fund performance in any of the models, but the estimated coefficient for Fee is consistently positive across all model specifications. Thus, while the effect is not statistically significant, the funds that charge higher fees perform better before expenses are accounted for. Likewise, high front loads seem to negatively impact performance, although the effect is not statistically significant.

3.4 Relation between Managerial Characteristics and Risk-taking

In this section, we examine the relation between managerial characteristics and the risk-taking behavior of funds' portfolios. For that reason, we use Fama-MacBeth cross-sectional regressions of the betas obtained from the CAPM model on managerial characteristics.¹⁶ In particular, we estimate the following regression model:

$$\beta_{p,t} = c + \lambda \cdot V_{p,t} + \varepsilon_{p,t}$$

(4)

¹⁶ We have also examined the relation between managerial characteristics and the betas obtained from the Fama and French (1993) three-factor, the Carhart (1997) four-factor, and the Fama and French (2015) five-factor models. The results were qualitatively similar leading to the same conclusions.

where $\beta_{p,t}$ is the CAPM beta of fund p in month t , c is a constant term, $V_{p,t}$ is the vector of fund characteristics defined in equation 3, λ is the vector of coefficients to be estimated, and $\varepsilon_{p,t}$ is an error term. The characteristics are divided into several groups as in Table 7.

Table 8 reports the regression coefficients estimated with Newey and West (1987) corrected standard errors. To ease the interpretation of the estimated coefficients, we cross-sectionally standardize all non-dummy variables to have a mean of zero and a standard deviation of one.

Insert Table 8 about here

Age has a negative and statistically significant effect on fund risk-taking across all model specifications that indicates that older managers are more reluctant to take on risk relative to younger managers. The full specification model, for example, predicts that a one-standard deviation increase in age results in a 0.032 decrease in fund beta. In fact, the difference in betas between the youngest (31 years old) and oldest (73 years old) managers in our sample in model (5) is 0.134, which is quite a large risk difference. Tenure is only statistically significant in two out of the three of the models it is included in, but its sign is consistently positive across all of them; the sample size in model (6) is the smallest and might explain the insignificant coefficient for Tenure. According to model (5), a one-standard deviation increase in Tenure predicts an additional beta of 0.035. The longest-tenured manager in the sample has a tenure of 32.71 years and the shortest-tenured manager has a tenure of 5.04 years. The difference in fund beta between them is predicted to be 0.146 in model (5). These results are, in general, in line with Golec (1996). Overall, younger managers with longer tenure at their funds take the highest risk.

In model (2) both CFA and MBA have coefficients that are statistically insignificant. The addition of CFA*MBA to account for the effect of managers with both qualifications renders the variables positive and statistically significant; although the cross-term itself is

statistically insignificant. The estimates from model (3) show that a manager who holds a CFA but not an MBA has an additional beta of 0.048. Inversely, a manager with an MBA but not a CFA has an additional beta of 0.043. However, a manager with both qualifications has a beta that is lower by -0.178, although part of the effect is not statistically significant. The average betas of the subgroups differ only marginally and are around 0.86 for managers with a CFA or an MBA, and about 0.83 for managers who hold both. In summary, the differences in risk-taking are not significantly related with most managerial characteristics except for age and tenure, with the former negatively and the latter positively related to risk-taking.

5. Conclusion

We use a sample of 383 European diversified equity funds to examine the relation between fund performance and risk-taking, and observable managerial characteristics: the managers' age, tenure, gender, advanced education (i.e., MBA) and professional qualifications (i.e., CFA). In our empirical analysis we account for common risk factors like market risk (i.e., beta), the Fama and French (1993) size and book-to-value factors, the Carhart (1997) momentum factor, and the Fama and French (2015) profitability and investment pattern factors. We also control for fund characteristics such as management fees, maximum front-loaded sales charge, and turnover.

Our preliminary analysis indicates that the average alphas for the funds in our sample as well as for subgroups of funds formed on the basis of managerial characteristics tend to be significantly different from zero. Further, when we compare the alphas, we find no statistically significant difference between the different subgroups of funds. The regressions for the fund excess monthly returns on managerial characteristics show that there is no statistically significant impact of gender or an MBA on the excess returns of European equities funds. However, age and tenure are statistically significant at the 1% and 10% levels, respectively;

the impact of age is positive while the impact of tenure is negative. Interestingly, older managers with shorter tenure perform better than young managers and managers with longer tenures, although the aggregate impact is not very strong. The managerial characteristic with the largest impact by far is a CFA. This characteristic generates an additional excess return of 1.56% per annum. Finally, experience (i.e., Age*Tenure) has a negative and statistically significant impact on a fund's excess return that probably indicates that fund managers become more risk averse the older they become and the more time they manage a fund. Fama-MacBeth cross-sectional regressions of the alphas obtained from the single factor CAPM, the three-factor Fama and French (1993), the four-factor Carhart (1997), and the five-factor Fama and French (2015) models on managerial characteristics indicate that age, gender, MBA, and a CFA are not significantly related to a fund's risk-adjusted performance. However, we report a significant negative relation with tenure. The betas from Fama-MacBeth cross-sectional regressions are then estimated to examine the relation between funds' risk-taking and managerial characteristics. We find a negative and statistically significant impact from age, and a positive and statistically significant impact from tenure on a fund's beta. We find no significant evidence that any of the other characteristics are related to a fund's risk-taking.

Our study contributes to the literature on mutual fund performance because it is one of the very few studies with a focus on European mutual funds instead of US funds, which is typical in the literature. We also use a more recent dataset with a clear attribution of fund performance, and we present results that may have important implications for investors when selecting a fund.

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Table 1. Sample overview

This table provides a summary of the managerial characteristics of the funds in our sample by fund type. The fund type is defined according to S&P's Global Investment Fund Sector (GIFS). 'Number of Funds' indicates the number of funds in our sample, 'Female' is the number of funds with a female manager, '% Female' is the percentage of funds with a female manager in our sample, 'MBA' is the number of funds in which the manager holds an MBA degree, 'CFA' is the number of funds in which the manager has the CFA designation, 'Average age' is the average manager's age in years, and 'Average tenure' is the average manager's tenure in a particular fund. All fund data come from Morningstar and cover the period from January 2008 to December 2018.

Fund Type	Number of funds	Female	% Female	MBA	% MBA	CFA	% CFA	Average age (years)	Average tenure (years)
Europe Equity Income	11	1	9.09	1	9.09	1	9.09	43.86	9.33
Europe Flex-cap Equity	43	4	9.30	2	4.65	8	18.60	47.81	10.18
Europe Large-cap Blend Equity	124	25	20.16	8	6.45	15	12.10	46.24	9.72
Europe Large-cap Growth Equity	22	2	9.09	0	0.00	4	18.18	45.29	8.25
Europe Large-cap Value Equity	40	5	12.50	2	5.00	8	20.00	43.52	10.84
Europe Mid-cap Equity	14	5	35.71	1	7.14	2	14.29	46.40	10.02
Europe Small-cap Equity	14	0	0.00	1	7.14	1	7.14	47.50	11.86
Eurozone Large-cap Equity	11	1	9.09	1	9.09	0	0.00	46.86	11.75
France Large-cap Equity	51	8	15.69	3	5.88	1	1.96	50.50	12.52
France Small/Mid-cap Equity	37	5	13.51	3	8.11	1	2.70	51.74	13.43
Germany Large-cap Equity	12	0	0.00	0	0.00	3	25.00	45.60	11.92
Germany Small/Mid-cap Equity	4	0	0.00	1	25.00	2	50.00	41.00	8.99
Total	383	56	14.62	23	6.01	46	12.01	46.39	10.73

Table 2. Fund types and primary benchmarks

This table lists the primary benchmarks of the fund types in our sample as reported by Morningstar Direct. The MSCI Europe High Dividend Yield index comprises large- and mid-cap stocks across 15 European developed stock markets and is designed to reflect the performance of equities with higher dividend income and quality characteristics than average dividend yields that are both sustainable and persistent. The MSCI Europe index comprises large- and mid-cap stocks across 15 European developed stock markets. The MSCI Europe Growth index includes large- and mid-cap stocks across 15 European developed stock markets that show growth characteristics. The MSCI Europe Value index comprises large- and mid-cap stocks across 15 European developed stock markets that show value characteristics. The MSCI Europe SMID index comprises mid- and small-cap stocks across 15 European developed stock markets. The MSCI Europe Small-cap index comprises small-cap stocks across 15 European developed stock markets. The MSCI EMU index comprises large-cap stocks across 10 European developed stock markets. The Euronext Paris CAC40 comprises the 40 French stocks with the largest capitalisation. The Euronext Paris CAC Mid 60 comprises the second 60 largest capitalized French stocks. The FSE DAX TR EUR comprises the 30 German stocks with the largest capitalization. The MSCI Germany Small-cap comprises German stocks of small capitalization. The 15 European developed stock markets are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the UK. The 10 European developed stock markets are Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, and Spain. All fund data come from Morningstar and cover the period from January 2008 to December 2018.

Fund Type	Primary Benchmark
Europe Equity Income	MSCI Europe High Dividend Yield
Europe Flex-cap Equity	MSCI Europe
Europe Large-cap Blend Equity	MSCI Europe
Europe Large-cap Growth Equity	MSCI Europe Growth
Europe Large-cap Value Equity	MSCI Europe Value
Europe Mid-cap Equity	MSCI Europe SMID
Europe Small-cap Equity	MSCI Europe Small-cap
Eurozone Large-cap Equity	MSCI EMU
France Large-cap Equity	Euronext Paris CAC40
France Small/Mid-cap Equity	Euronext Paris CAC Mid 60
Germany Large-cap Equity	FSE DAX TR EUR
Germany Small/Mid-cap Equity	MSCI Germany Small-cap

Table 3. Summary statistics of the mutual fund sample

This table contains summary statistics for all funds in our sample as well as for different pairs of subgroups of funds defined on the basis of managerial characteristics. The pairs of subgroups are defined in terms of gender (i.e., Male, Female), age (i.e., age of less than 46 years, age of more than 46 years), tenure (i.e., tenure less than 9 years, tenure of greater or equal to 9 years), CFA designation (CFA holder, no CFA holder), and MBA qualification (i.e., MBA holder, and no MBA holder). For age and tenure, the integer closest to the median value was chosen as a cut-off for the split into two groups. ‘Number of Funds’ is the number of funds in a particular group, and ‘Excess Return’ is the average monthly return defined as the difference between a fund’s monthly return and the return on the fund’s primary benchmark. ‘Standard Deviation’ is the standard deviation of the fund excess monthly returns, ‘Size’ is the average monthly total net assets of the fund in millions of euros, ‘Management Fee’ is the average percentage of the fund’s monthly net assets paid to its manager, ‘Maximum Front Load’ is the average of the maximum sales charge for the funds in our sample, and ‘Turnover’ is the average percentage of the fund portfolios’ holdings that have changed over the past year for all funds in a particular subgroup. All fund data come from Morningstar and cover the period from January 2008 to December 2018.

Panel A: Fund characteristics

	Number of Funds	Excess Return (%)	Standard Deviation	Size (million €)	Management Fee (%)	Maximum Front Load (%)	Turnover (%)
All	383	0.80	0.43	211.95	1.55	2.93	100.78
Male	327	0.82	0.41	216.91	1.58	2.92	111.41
Female	56	0.89	0.47	183.70	1.36	2.98	127.28
Age < 46	121	0.82	0.38	265.66	1.53	2.66	88.66
Age ≥ 46	125	0.93	0.42	241.00	1.59	3.07	99.70
Tenure < 9	185	0.82	0.40	247.01	1.52	2.72	131.82
Tenure ≥ 9	198	0.84	0.38	183.11	1.57	3.13	96.12
CFA	46	0.98	0.43	417.26	1.57	3.16	77.10
No CFA	232	0.88	0.47	220.70	1.53	2.85	101.50
MBA	23	0.82	0.38	213.12	1.68	2.45	56.37
No MBA	255	0.85	0.41	257.52	1.52	2.94	88.63

Panel B: Managerial characteristics

	Male	Female	Average age (years)	Average tenure (years)	CFA (%)	MBA (%)
All	327	56	47.09	10.73	16.50	8.30
Male	327	-	46.92	10.72	17.70	9.50

Continued

Table 3 continued

	Male	Female	Average age (years)	Average tenure (years)	CFA (%)	MBA (%)
Female	-	56	48.00	10.78	10.90	2.20
Age < 46	105	16	40.25	9.19	25.62	8.26
Age ≥ 46	102	23	53.71	12.03	6.40	8.80
Tenure < 9	155	30	43.73	6.99	18.12	9.42
Tenure ≥ 9	172	26	50.18	14.23	15.00	7.14
CFA	41	5	42.23	9.32	-	8.67
No CFA	191	41	47.94	10.65	-	8.19
MBA	22	1	48.29	9.44	17.39	-
No MBA	210	45	46.89	10.52	16.47	-

Table 4. Monthly alphas

This table contains the average monthly alphas obtained by regressing the excess monthly fund returns on CAPM that controls for market risk on the Fama and French's (1993) three-factor model (3FF) that also controls for size and book-to-market, on Carhart's (1997) four-factor model (4FF) that also controls for momentum, and on the Fama and French's (2015) five-factor model (5FF) that also controls for profitability and investment patterns. The beta coefficient reported in the table is obtained from CAPM. The pairs of subgroups are defined in terms of gender (i.e., Male, Female), age (i.e., age of less than 46 years, age of more than 46 years), tenure (i.e., tenure less than 9 years, tenure of greater or equal to 9 years), CFA designation (CFA designation holder, no CFA designation holder), and MBA qualification (i.e., MBA holder, and no MBA holder). For age and tenure, the integer closest to the median value was chosen as a cut-off for the split into two groups. As a proxy for the risk-free rate, we use the one-month T-bill rate. As a proxy of the market return, we use the monthly return of the MSCI Europe index. The number of funds used in the estimation is given in parentheses. In all regressions we use Newey and West's (1987) corrected standard errors. The *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All the European risk factors were obtained from Kenneth French's website. All fund data come from Morningstar and cover the period from January 2008 to December 2018.

		CAPM alpha	Beta	3FF alpha	4FF alpha	5FF alpha
All (383)	Average	0.036**	0.889	0.023*	0.040**	0.026
	# Significant alphas	83	-	97	92	66
	Negative alphas	44	-	74	77	52
	% Significant alphas	21.67%	-	25.32%	24.02%	17.23%
Male (327)	Average	0.012	0.901	0.011	0.019	0.022
	# Significant alphas	55	-	91	82	60
	Negative alphas	37	-	80	77	38
	% Significant alphas	16.81%	-	27.82%	25.07%	18.34%
Female (56)	Average	0.019	0.931	0.021	0.022	0.019
	# Significant alphas	11	-	7	9	3
	Negative alphas	6	-	4	5	1
	% Significant alphas	19.64%	-	14.29%	16.07%	5.35%
Age < 46 (121)	Average	0.033*	0.914	0.089**	-0.012	0.069**
	# Significant alphas	33	-	37	39	29
	Negative alphas	10	-	12	14	11
	% Significant alphas	27.27%	-	30.58%	32.23%	23.97%
Age ≥ 46 (125)	Average	0.037*	0.932	-0.005	-0.018	0.072**
	# Significant alphas	31	-	27	36	33
	Negative alphas	9	-	17	16	16
	% Significant alphas	24.80%	-	21.60%	28.80%	26.40%
Tenure < 9 (185)	Average	0.039*	0.925	-0.014*	-0.005	0.166**
	# Significant alphas	42	-	46	50	38
	Negative alphas	22	-	28	31	15
	% Significant alphas	22.70%	-	24.86%	27.03%	20.54%
Tenure ≥ 9 (198)	Average	0.074*	0.918	0.132***	-0.080**	-0.051*
	# Significant alphas	44	-	49	41	42
	Negative alphas	17	-	22	19	20
	% Significant alphas	22.22%	-	24.75%	20.71%	21.21%

continued

Table 4 continued

		CAPM alpha	Beta	3FF alpha	4FF alpha	5FF alpha
CFA (46)	Average	0.086*	0.938	0.065*	0.016	0.041*
	# Significant alphas	17	-	18	16	18
	Negative alphas	6	-	11	10	9
	% Significant alphas	36.96%	-	39.13%	34.78	39.13%
No CFA (232)	Average	0.028	0.936	-0.018	-0.010	0.039
	# Significant alphas	89	-	78	98	82
	Negative alphas	32	-	39	37	41
	% Significant alphas	38.36%	-	33.62%	42.24%	35.34%
MBA (23)	Average	0.025	0.908	-0.007	-0.013	-0.011
	# Significant alphas	9	-	7	10	8
	Negative alphas	3	-	3	4	3
	% Significant alphas	39.13%	-	30.43%	43.48%	34.78%
No MBA (255)	Average	0.009	0.920	-0.031	-0.016	0.040
	# Significant alphas	88	-	100	91	101
	Negative alphas	29	-	46	53	42
	% Significant alphas	34.51%	-	39.22%	35.69%	39.61%

Table 5. Differences in sample means of estimated monthly alphas between different sub-groups

This table contains the differences between the sample means of the estimated monthly alphas between the different managerial groups. The alphas are obtained by regressing the excess monthly fund returns on CAPM that controls for market risk, on the Fama and French's three-factor model (3FF) that also controls for size and book-to-market, on Carhart's four-factor model (4FF) that also controls for momentum, and on the Fama and French's five-factor model (5FF) that also controls for profitability and investment patterns. 'Young' managers are the fund managers that are younger than 46 years old (i.e., Age<46), while 'Old' managers are managers who are at least 46 years old (i.e., Age≥46). 'Short' tenures are the managers with a tenure less than 9 years (i.e., Tenure<9), while 'Long' tenures are the managers with at least 9 years of tenure (i.e., Tenure≥9). '*p*-value' is the *p*-value of the two-tailed *t*-test that the sample alphas are equal assuming unequal variances. All the European risk factors were obtained from Kenneth French's website. All fund data come from Morningstar and cover the period from January 2008 to December 2018.

	CAPM alpha	Beta	3FF alpha	4FF alpha	5FF alpha
Gender difference (Male – Female)	-0.038	-0.018	-0.079	-0.010	0.023
<i>p</i> -value	0.401	0.256	0.173	0.518	0.229
Age difference (Young – Old)	-0.031	0.194	-0.028	-0.008	-0.010
<i>p</i> -value	0.072	0.046	0.042	0.402	0.365
Tenure difference (Short – Long)	0.094	-0.148	0.057	0.083	0.101
<i>p</i> -value	0.030	0.062	0.064	0.101	0.043
CFA difference (CFA charter – no CFA charter)	0.051	-0.025	0.042	0.022	0.019
<i>p</i> -value	0.092	0.031	0.495	0.618	0.889
MBA difference (MBA holder – no MBA holder)	0.033	-0.001	0.023	-0.031	-0.040
<i>p</i> -value	0.467	0.703	0.666	0.711	0.719

Table 6. Relation between excess monthly returns and managerial characteristics

This table contains the coefficient estimates for the regressions of the funds' excess monthly returns on managerial characteristics for different specification models. 'Obs' is the number of funds used in the estimation, and 'Gender' is a dummy variable that takes the value of 1 if the fund manager is female, and 0 if the fund manager is male. 'MBA' is a dummy variable that takes the value of 1 if the fund manager holds an MBA, and 0 if the fund manager does not hold an MBA. 'CFA' is a dummy variable that takes the value of 1 if the fund manager has a CFA designation, and 0 if the fund manager does not have a CFA designation. 'Age*Tenure' is a cross-term added to study the interaction effects between age and tenure. 'CFA*MBA' is a dummy variable that takes the value of 1 if the manager has both a CFA designation and an MBA degree. In all regressions we use Newey and West's (1987) corrected standard errors. The *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All fund data come from Morningstar and cover the period from January 2008 to December 2018.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.254***	0.410***	0.123	0.764***	0.814***	0.087*
Age	0.086***	0.016***	0.023***			0.016***
Tenure	0.035**	0.028*	0.007*			0.010*
Age*Tenure			0.014**			0.061***
Gender	0.025			0.042		0.035
CFA	0.211*				0.035	0.079**
MBA	-0.049				-0.021	-0.051
CFA*MBA						0.242
Adj-R²	0.26	0.19	0.22	0.11	0.09	0.16
Obs	241	246	246	383	278	241

Table 7. Relation between risk-adjusted excess monthly returns and managerial characteristics

This table contains the coefficient estimates for the Fama-MacBeth cross-sectional regressions of the funds' excess monthly returns on managerial characteristics for different specification models. As a proxy for a fund's performance, we use the alphas obtained from the single factor CAPM (Panel A), the three-factor Fama and French (1993) (Panel B), the four-factor Carhart (1997) (Panel C), and the five-factor Fama and French (2015) (Panel D) models. We divide these characteristics into several groups. The first group comprises Age and Tenure. The second group comprises Age and Tenure as well as the constructed Age*Tenure variable. The third group comprises CFA and MBA. The fourth group comprises CFA and MBA as well as the CFA*MBA variable. The fifth group comprises Gender. The sixth group comprises Age, Tenure, CFA, MBA, and Gender. And, the seventh group comprises all managerial characteristics, the two constructed variables as well as the control variables of Fee, Front Load, and Turnover. 'Obs' is the number of funds used in the estimation, and 'Gender' is a dummy variable that takes the value of 1 if the fund manager is female, and 0 if the fund manager is male. 'MBA' is a dummy variable that takes the value of 1 if the fund manager holds an MBA, and 0 if the fund manager does not hold an MBA. 'CFA' is a dummy variable that takes the value of 1 if the fund manager has a CFA designation, and 0 if the fund manager does not have a CFA designation. 'Age*Tenure' is a cross-term added to study the interaction effects between age and tenure. 'CFA*MBA' is a dummy variable that takes the value of 1 if the manager has both a CFA designation and an MBA degree. 'Fee' is the management fee, and 'Front Load' is the maximum front-loaded sales charge on initial investment. 'Turnover' is the percentage of assets that a fund trades on average per year. To ease the interpretation of the estimated coefficients, we cross-sectionally standardize all non-dummy variables to have a mean of 0 and a standard deviation of 1. In all regressions we use Newey and West's (1987) corrected standard errors with 3 lags. The *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All the European risk factors were obtained from Kenneth French's website. All fund data come from Morningstar and cover the period from January 2008 to December 2018.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: CAPM alpha							
Constant	0.022		0.008	0.062	-0.003	-0.017	-0.023
Age	0.034*	0.028*				0.014*	0.021*
Tenure	0.031*	0.022*				0.041*	0.026
Age*Tenure		0.051					-0.047*
Gender					0.048	-0.089	0.166
CFA			0.062*	-0.000		0.118*	0.136**
MBA			0.032	0.043		0.053	0.101
CFA*MBA				0.564			0.105
Fee							0.008
Front Load							-0.035
Turnover							0.112*
Adj-R ²	0.12	0.18	0.11	0.23	0.090	0.14	0.18
Obs	246	246	278	278	383	241	168
Panel B: 3FF alpha							
Constant	-0.082		-0.102***	-0.088***	-0.155***	-0.098	-0.116
Age	0.023*	0.015				0.034*	0.064*
Tenure	0.066*	0.042*				0.032**	0.036*

continued

Table 7 continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age*Tenure		-0.020					0.015
Gender					-0.008	-0.044	0.131*
CFA			0.051*	-0.016		0.199**	0.221*
MBA			0.015	-0.104		0.016	-0.021
CFA*MBA				0.106			0.102
Fee							0.019
Front Load							-0.024
Turnover							0.195*
Adj-R²	0.011	0.023	0.020	0.035	0.026	0.014	0.032
Obs	246	246	278	278	383	241	168
<i>Panel C: 4FF alpha</i>							
Constant	-0.052		-0.077	0.030	-0.062	-0.152	-0.150
Age	0.087*	0.082*				0.128**	0.122*
Tenure	0.117**	0.107*				0.088	0.151*
Age*Tenure		0.032					-0.041
Gender					0.023	0.021	0.073
CFA			0.028	-0.076		0.188*	0.199**
MBA			-0.011	-0.019		0.074	-0.089
CFA*MBA				0.733			0.718*
Fee							0.042
Front Load							-0.031
Turnover							0.100*
Adj-R²	0.016	0.021	0.024	0.019	0.013	0.031	0.028
Obs	246	246	278	278	383	241	168
<i>Panel D: 5FF alpha</i>							
Constant	-0.049		0.144	0.037	0.098	-0.073	0.119
Age	0.150*	0.127*				0.101	0.157*
Tenure	0.179**	0.072*				0.164**	0.090
Age*Tenure		-0.041					0.301*
Gender					-0.028	-0.020	0.032
CFA			-0.002	-0.106		0.135*	0.254**
MBA			-0.100	0.009		-0.106	-0.073
CFA*MBA				0.505			0.089
Fee							0.019
Front Load							-0.022
Turnover							0.448**
Adj-R²	0.019	0.027	0.026	0.017	0.015	0.011	0.026
Obs	246	246	278	278	383	241	168

Table 8. Relation between risk-taking and managerial characteristics

This table contains the coefficient estimates from the Fama-MacBeth cross-sectional regression of fund CAPM betas on managerial characteristics for different specification models. We divide these characteristics into several groups. The first group comprises Age and Tenure. The second group comprises Age and Tenure as well as the Age*Tenure variable. The third group comprises CFA and MBA. The fourth group comprises CFA and MBA as well as the CFA*MBA variable. The fifth group comprises Gender. The sixth group comprises Age, Tenure, CFA, MBA, and Gender. And, the seventh group comprises all managerial characteristics, the two variables Age*Tenure and CFA*MBA as well as the control variables of Fee, Front Load, and Turnover. ‘Obs’ is the number of funds used in the estimation, and ‘Gender’ is a dummy variable that takes the value of 1 if the fund manager is female, and 0 if the fund manager is male. ‘MBA’ is a dummy variable that takes the value of 1 if the fund manager holds an MBA, and 0 if the fund manager does not hold an MBA. ‘CFA’ is a dummy variable that takes the value of 1 if the fund manager has a CFA designation, and 0 if the fund manager does not have a CFA designation. ‘Age*Tenure’ is a cross-term added to study the interaction effects between age and tenure. ‘CFA*MBA’ is a dummy variable that takes the value of 1 if the manager has both a CFA designation and an MBA degree. ‘Fee’ is the management fee, and ‘Front Load’ is the maximum front-loaded sales charge on initial investment. ‘Turnover’ is the percentage of assets that a fund trades on average per year. To ease the interpretation of the estimated coefficients, we cross-sectionally standardize all non-dummy variables to have a mean of 0 and a standard deviation of 1. In all regressions we use Newey and West’s (1987) corrected standard errors with 3 lags. The *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All fund data come from Morningstar and cover the period from January 2008 to December 2018.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	0.773***		0.873***	0.953***	0.927***	0.884***	0.903***
Age	-0.032**	-0.037**				-0.026***	-0.029**
Tenure	0.029*	0.018				0.018	0.031*
Age*Tenure		0.011					0.009
Gender					0.014	0.003	-0.005
CFA			0.015	0.046**		0.063**	0.071**
MBA			-0.001	0.039*		0.049*	0.035*
CFA*MBA				-0.179		-0.249	-0.319
Fee							-0.003
Front Load							0.014
Turnover							0.017
Adj-R²	0.019	0.033	0.024	0.017	0.012	0.041	0.055
Obs	246	246	278	278	383	241	168