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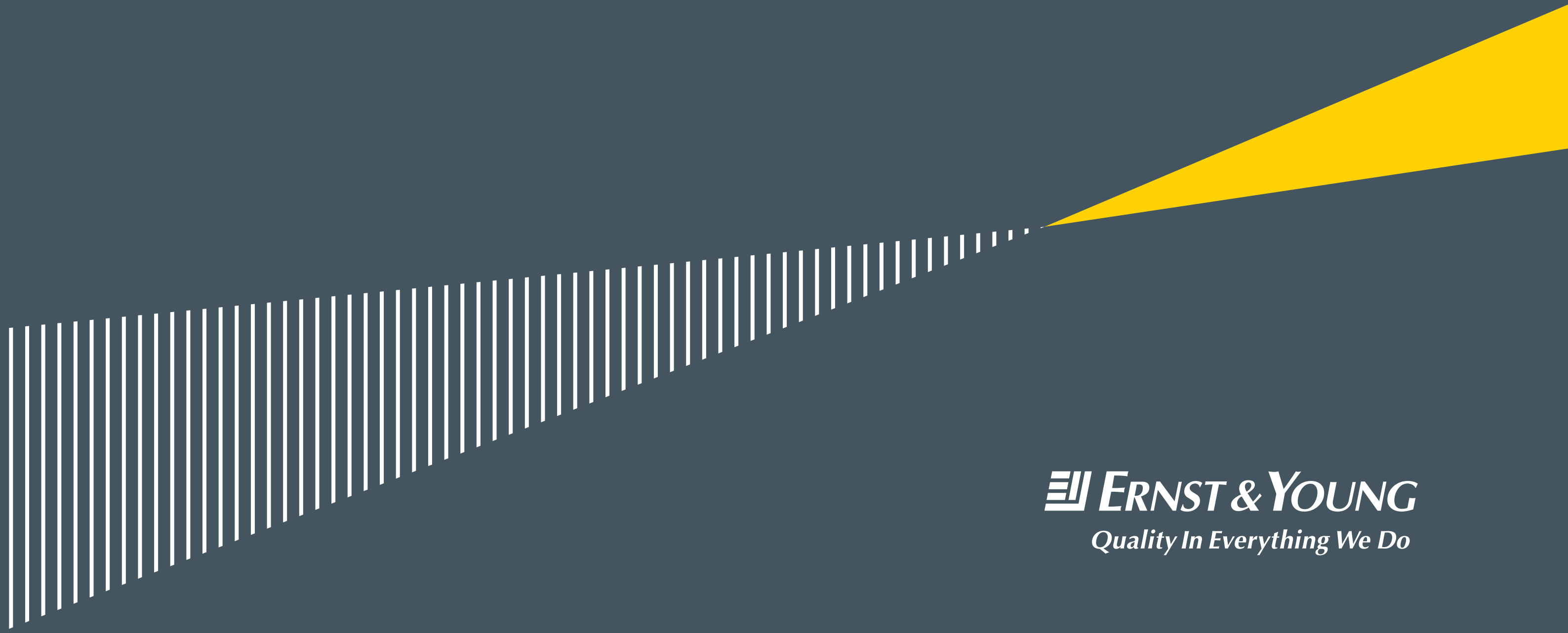

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Do firm characteristics influence mutual fund performance? An empirical study for European mutual funds

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Abstract
This study investigates the influence of fund management firm characteristics on mutual fund performance. Using a sample of European-domiciled open-end equity funds for the period 1998-2008, this study finds that the funds of private companies have performed better than the funds of public companies. The degree of focus, the volume of assets under management, and the number of funds offered by a fund management firm also have a positive impact on fund performance. In addition to these four firm characteristics, we find that non-European and U.K. fund managers had better-performing funds.

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[1] We would like to thank Joost Driessen and Jenke ter Horst for their helpful comments.

Introduction

Mutual fund selection is an important task of investment managers, and the performance of the mutual fund is a major factor in the selection process. Several determinants of mutual fund performance have been identified in the literature. Managers' skills, such as timing and selection abilities, have been found to positively influence fund performance. Fund characteristics, such as the fund size or the fund's total expense ratio, have also been found to influence performance. Most of the literature has treated mutual funds as if they are a stand-alone entity. This is not always appropriate, since a mutual fund typically belongs to a broader organizational structure, the fund management firm (the fund family). The fund family may impact the decisions of the fund and could potentially have a significant effect on the fund and its performance. Furthermore, there might be performance spill-over effects between funds within a family [see for example Ivkovic (2002) and Gaspar et al. (2006)]. Without an understanding of the role of the fund family we might ignore significant influences on the behavior and performance of individual funds. Literature on this subject however, is not yet very extensive.

In this paper, we contribute to the existing literature and investigate the influence of firm characteristics on fund performance in further detail. We investigate the impact of several factors on the performance of European mutual funds. We argue that the number of funds in the fund family, the ownership (public or private) of the firm, and the size and focus of the firm all influence fund performance.

Most of the existing mutual fund literature is focused on the U.S., which has the largest and perhaps most mature mutual fund industry in the world. Nonetheless, it would be very interesting to see whether the results found for the U.S. are also valid in Europe. The mutual fund industry in Europe is growing and becoming more and more important. Investment fund assets in Europe have doubled in size during the past decade, from €3,042 billion at the end of 1998 to €6,142 at the end of 2008[2]. At the end of 2008, the U.S. mutual fund industry represented 51% of the global mutual fund industry, but Europe was second, representing 33% of the world's mutual fund industry.[3] Despite its size and importance, the European mutual fund industry has received little attention in the finance literature. Some argue that this is due to the differences in the institutional setting of the industry in different European countries. Since the creation of the Economic and Monetary Union, however, European financial markets are becoming increasingly integrated and these institutional differences are disappearing.

Several papers have already addressed individual European countries but not Europe as a whole. Otten and Schweitzer (2002), Otten and Bams (2002) and Ramos (2009) find that, within European countries, the mutual fund industry is more concentrated than the U.S. Furthermore, the number of funds offered in Europe is much greater than in the U.S., leading to a much smaller average fund size in Europe. Overall, they find that the European industry is still lagging the U.S. in terms of total asset size, average fund size, and market importance. None of these papers investigates the impact of firm characteristics on fund performance.

The theory

Hypothesis 1: funds managed by a publicly owned company underperform those managed by a private company.

Whether or not the fund management firm is listed on the stock exchange is likely to influence fund performance. In a private firm the management are often also shareholders in the firm. This mitigates the agency conflicts between the manager and the shareholder. Ferris and Yan (2009) argue that the organizational form of a fund management firm influences its focus (short- or long-term). Publicly listed firms typically have dispersed ownership and are subject to mandatory disclosure requirements. Public companies' stocks are traded on an active market and followed by analysts. These characteristics drive public companies to focus heavily on short-term performance. Privately held companies, however, typically have concentrated and dedicated owners. These firms are not subject to mandatory disclosures and there is no active market for their shares. These characteristics allow private firms to focus on maximizing long-run firm value. Consequently, the agency conflict between fund management and fund investors might be less severe in these companies.

The mutual fund industry is a unique industry for studying the influence of public listing on a firm's performance. There are both public and private firms in the mutual fund industry but private firms do not have to disclose performance information.

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[2] Source: EFAMA
[3] Source: ICI Investment Company Fact book 2009

Their open-end funds, however, are all listed and have to disclose the same level of information as the funds of listed companies. A private firm (especially in Europe) is often owned by a large shareholder [Pagano and Röell (1998)], which is generally more willing and able to monitor the management than a minority shareholder. Private firms are, therefore, likely to be better-monitored than public firms with dispersed ownership. This improved monitoring might also affect fund performance. Ferris and Yan (2009) test this hypothesis for the U.S. market and find that funds of privately held fund management firms significantly outperform those that are managed by a publicly held firm. Bogle (2005) identifies a "conglomeratization" of the U.S. fund industry. Large, often public, financial conglomerates have been taking over smaller, often private, players in the market. He argues that these conglomerates are more interested in increasing their asset base, building revenues, and enhancing their brand names than serving their clients' best needs by improving performance. As a result, he finds that the relative returns of funds managed by private companies were better than 70% of their peers [see also Berkowitz and Qiu (2002)].

Hypothesis 2: **the number of funds that a fund managing firm has under management, has a negative effect on fund performance.**
The number of funds within a family might have an impact on fund performance. Bogle (2005) talks about the "marketingization" of the mutual fund industry. He argues that most major firms now create and market whatever funds they can sell. Massa (1998) also argues that fund proliferation can be seen as a marketing strategy, used by a fund family to make inter-fund comparisons harder and consequently influence the way investors "perceive" funds. Another reason for a fund family to increase the number of funds might be to "steal" market share from rivals and discourage new entrants. Other arguments for the increasing proliferation of funds offered include increasing the probability of creating a star fund instead of a good performance for each fund in the family [Nanda et al. (2006)] or allocating resources unevenly between funds within the same family and thereby treating some funds preferably over others [Guedj and Papastaikoudi (2005)]. Bogle (2005) finds that the funds of U.S. firms focused on offering a few funds almost always outperformed the funds of firms that manage a lot of funds. However, in large fund families there may be greater possibilities to distort the incentives of fund managers. Indeed, Gaspar et al. (2006) find evidence for cross-fund subsidization. These observations lead to our next hypothesis.

Hypothesis 3: **the size of a fund management firm has a positive influence on fund performance**
The size, in terms of assets under management, of the mutual fund family might have an impact on the performance of its funds. Literature from the U.S. finds contradictory results for the influence of size on fund performance and is still inconclusive about this effect. Several papers argue that large families can benefit from economies of scale, such as lower transaction costs, more resources for R&D, and lower expense ratios. Chen et al. (2004) find evidence supporting the presence of economies of scale in the mutual fund industry. Their results show that family size (measured in terms of assets under management) has a (moderate) positive impact on fund performance. Ivkovic (2002) also reports a (moderately) statistically significant positive relationship between risk-adjusted fund performance and family size. Others believe that a large asset base erodes fund performance because of trading costs associated with liquidity or price impact. They argue that bureaucracies and related coordination costs cause diseconomies in large organizations. Consequently, belonging to a large fund family might negatively impact fund performance. In accordance with this argument, Massa and Zhang (2009) study the impact of hierarchical structure on performance. They find results suggesting that funds belonging to less hierarchical structures outperform their peers. Likewise, Dermine and Röller (1992) find significant diseconomies for larger fund management firms in the French mutual fund Industry. However, since the European fund industry is still lagging the U.S. in terms of assets, with average firm and funds sizes being smaller in Europe, we would expect economies of scale to be more important in the case of Europe.

Hypothesis 4: **the degree of focus of a fund management firm positively influences fund performance.**
The strategy of the fund management firm could have an impact on the performance of its funds. Some firms choose to offer a diversified range of funds while others choose to focus on offering funds in a few (niche) strategies. A high degree of product focus may allow a firm to specialize in particular products, resulting in higher quality and/or lower costs. Siggelkow (2003) investigates this issue for the U.S. market and finds results indicating that the performance of a mutual fund improves with the fund family's

degree of focus in that fund's category. U.S. mutual funds that belong to more focused fund providers outperform similar funds offered by more diversified providers. On the other hand, offering funds in several different categories can improve the visibility of the firm in the market and thereby increase possible inflows into its funds. Fund families that pursue such a differentiation strategy could be more concerned with gaining market share than achieving good performance. A higher degree of differentiation might then imply lower performance [see, for example, Khorana and Servaes (2007)]. Another reason why fund families choose to follow a diversified strategy might be to increase the possibility of creating a star fund. Nanda et al. (2004) show that families with higher variation in investment strategies across funds (a diversified strategy) are more likely to generate star performance. But their results also show that portfolios of fund families with high variation in investment strategies across funds significantly underperform portfolios of fund families with low variation in investment strategies across funds (focus strategy).

	With data from Jan 2004			With data from Jan 1998		
	Number of funds	Average return	Standard deviation	Number of funds	Average return	Standard deviation
Asia excluding Japan	204	0.30%	5.8%	124	0.46%	7.3%
Asia including Japan	127	-0.02%	5.0%	71	0.28%	7.1%
Japan	286	-0.22%	5.0%	158	0.12%	6.5%
Emerging markets	186	0.51%	6.6%	95	0.43%	7.6%
Europe including U.K.	1,115	0.04%	4.6%	485	0.21%	5.8%
Europe excluding U.K.	1,070	0.16%	4.9%	470	0.29%	6.0%
U.K.	434	-0.24%	4.7%	254	0.05%	5.1%
Global	1,185	-0.17%	4.2%	342	0.01%	5.1%
U.S.	560	-0.43%	4.3%	217	-0.05%	5.6%
Total	**5,167**			**2,216**		

Table 1 - Monthly net fund return summary statistics
This exhibit displays the summary statistics for the monthly fund return data. All data in this exhibit are monthly data. The returns are net including all dividends. Average returns are per month over the period from 1-01-2004 to 31-12-2008 and the period from 1-01-1998 to 31-12-2008.

Fund performance

Data

We have gathered net return data for open-ended equity funds domiciled in the E.U. for the period 1998-2008 with at least 5 years of data. We chose the period 1998-2008 to get a sufficient sample size and sufficient data. We have divided the sample into two periods, 1998-2008 and 2004-2008 to see whether the results are consistent over time. Morningstar Direct[4] is the primary source of data at the fund level. The domicile countries for which we gathered data are the 11 early entrants of the EMU plus the U.K. and Switzerland.[5] In terms of Net Assets, these countries together represent 94% of the European mutual fund industry. Because funds often have several share classes that are supported by the same underlying portfolio, we have included only the oldest share class of each fund in our sample. The dataset gathered from Morningstar includes: fund name, firm name, net fund returns (in euro), fund domicile, and fund category. We have only included funds with at least five years of data to get reliable (and significant) values for the alphas.[6] This selection results in 5,167 funds belonging to 579 firms. Our sample represents about 42% of the current number of open-end equity funds in Europe listed in Morningstar. To correct for regional differences in market and factor movements and thus, alpha generation, we have divided the sample over nine regions in which the funds invest. Table 1 displays the summary statistics of the fund data for the 5- and 11-year period per region.

The number of funds that have existed over the past 11 years is only half of the number of funds that have existed during the past 5 years. This is in line with the doubled size of the European industry, in terms of assets under management, over the past 11 years.

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[4] See Elton et al. (2001) for a comparison between the accuracy of Morningstar and the CRSP database for the U.S. They find that even the CRSP is not completely bias-free because it suffers from omission bias.

[5] The countries included in the sample are: Austria, Belgium, France, Germany, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Switzerland, and the U.K. We do not include Finland, since its fund industry size, in terms of net assets, is negligible.

[6] The requirement that there are at least five years of data may induce some survivorship bias in the alphas and may bias the estimates in Table 1 upwards. However, as long as the bias is not a function of the fund family characteristics this will not bias the slope coefficients in the regression of the alphas on these characteristics.

Methodology

To calculate fund performance we employ the Fama-French (1993) three-factor model:

$$R_{it} - R_{ft} = \alpha_i + \beta_{0i}(R_{mt} - R_{ft}) + \beta_{1i}SMB_t + \beta_{2i}HML_t + \varepsilon_{it} \qquad (1)$$

where R_{it} is the return of fund i at time t, R_{ft} is the risk-free rate, R_{mt} is the return on the market, SMB_t is the return on the size factor, and HML_t is the return on the book-to-market factor. The market and factor movements are not the same for every region (e.g., a fund that invests in emerging markets is likely to have low correlations with the U.S. factors). We, therefore, construct separate factors for each of the nine regions in which the funds invest. We construct R_m- R_f, SMB, and HML factors using monthly return data from DataStream. The risk-free rate is the monthly three-month Euribor rate.[7] The market factor is the MSCI index for that specific region. The SMB factor is constructed by subtracting the regions' MSCI Large-cap index returns from the regions' MSCI Mid-cap returns[8]. The HML factor is constructed in a similar manner, by subtracting the regions' MSCI Value index returns from the regions' MSCI Growth index returns. All these factors are calculated using net returns, including dividends.

Results

Using the monthly fund returns and the monthly factor data from above, we have run regression (1) for each individual fund in the sample. We run this regression once for all the funds in each region with at least 5 years of data and again for all the funds in the sample with at least 11 years of data. This results in a range of 5-year fund-specific alphas and a range of 11-year fund-specific alphas. We use these alphas as a measure of risk-adjusted performance. The results are summarized in Table 2.

For the 5-year sample, the monthly alpha is -0.111%, this is -1.33% annually. In the 11-year sample, the monthly alpha is -0.033% or annually -0.398%. The coefficient for the market factor is always positive and highly significant (a total sample average of 0.971 for the 11-year period and 0.978 for the 5-year period). The SMB coefficient is also positive and often significant.

Entire sample averages		**5-year average**	**11-year average**
Number of funds		5,167	2,216
Alpha	Coefficient	-0.111%	-0.033%
	Abs. T-Statistic	1.191	1.101
	% significant positive	0.81%	2.53%
	% significant negative	17.51%	12.59%
R_m- R_f	Coefficient	0.978	0.971
	Abs. T-Statistic	22.728***	30.273***
	% significant positive	100%	100%
SMB	Coefficient	0.259	0.332
	Abs. T-Statistic	2.390**	3.512***
	% significant positive	44.09%	60.51%
	% significant negative	6.50%	4.11%
HML	Coefficient	-0.083	-0.101
	Abs. T-Statistic	1.384	2.332**
	% significant positive	6.14%	11.10%
	% significant negative	17.90%	35.33%
R^2	Adjusted	0.872	0.833

Table 2 - Monthly four-factor results for the period 2004-2008 and 1998-2008
This exhibit summarizes the Fama-French regression results for all regions. All data in this exhibit are monthly data. Superscripts *,**,*** denote statistical significance at 10%, 5%, and 1% respectively.

The HML factor is almost always significant and negative for the 11-year period (a significant total sample average of -0.101) but not for the 5-year period (an insignificant total sample average of -0.083). For both periods the adjusted R-squares are relatively close to 1, which indicates that the model can explain a large part of the variations in the fund returns. The alphas gathered from these regressions are used as a measure of fund performance. We have also performed regressions including the Carhart (1997) momentum factor. Since the momentum factor was almost never significant (except for the U.S. sample) we do not report those results here. Table 3 summarizes the sample of alphas per region for the 5-year period. For the 11-year period the results are not reported here but available upon request from the authors. For the 11-year period, the percentage of positive alphas is higher in all regions (41% for the total sample) and more significant (T-stat of 0.841 for the total sample). As can be seen, there are, on average, more negative alphas (total sample average of 71% for the 5-year period and 59% for the 11-year period) and they are more statistically significant than the positive alphas. These

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[7] Because all the funds in our sample are European-domiciled funds, the Euribor is a good proxy for the risk free rate.

[8] We use the Mid-cap index and not the Small-cap index because the latter returns are not available for every region and often represent only very small companies. In this case the Mid-cap index is a better proxy.

5-year averages	Positive alphas sample			Negative alphas sample			Significant alphas sample		
	Percentage	Average	T-stat	Percentage	Average	T-stat	Abs T-stat $\alpha > 1.972$	% Positive alphas	% Negative alphas
Asia excluding Japan	21%	0.130%	0.703	79%	-0.229%	-1.144	11%	0.98%	10.29%
Asia including Japan	28%	0.279%	0.710	72%	-0.313%	-1.499	24%	1.57%	22.83%
Japan	11%	0.146%	0.414	89%	-0.264%	-1.577	30%	0.00%	29.72%
Emerging markets	24%	0.146%	0.501	76%	-0.259%	-1.469	22%	0.54%	21.51%
Europe including U.K.	35%	0.174%	0.725	65%	-0.202%	-1.463	18%	1.17%	16.59%
Europe excluding U.K.	35%	0.208%	0.695	65%	-0.256%	-1.550	22%	0.37%	21.50%
U.K.	35%	0.150%	0.770	65%	-0.186%	-0.986	9%	1.61%	7.14%
Global	25%	0.170%	0.683	75%	-0.207%	-1.230	14%	1.01%	13.25%
U.S.	20%	0.133%	0.565	80%	-0.236%	-1.569	23%	0.18%	22.68%
Total sample	29%	0.176%	0.687	71%	-0.271%	-1.395	18%	0.81%	17.51%

Table 3: Monthly alpha summary statistics
This exhibit summarizes the sample of 5-year alphas. All data in this exhibit are monthly data for the period of 1-01-2004 to 31-12-2008. Percentage is the percentage of positive/negative alphas, average is the average coefficient for alpha within the sample of positive/negative alphas and T-stat is the average T-statistic in the sample of positive/negative alphas. Superscripts *,**,*** denote statistical significance at 10%, 5% and 1% respectively.

results corroborate the findings of Carhart (1997), Ferris and Yan (2008) and Chen et al. (2004).

Firm characteristics

Data

For each fund in the sample we have gathered the relevant family characteristics to investigate the impact of these variables on fund performance. When we look at the firm characteristics we consider the fund family. For the number of funds per family, we take the total number of open-end (so not only equity but also real-estate, money market, and bond funds), funds that a firm has registered in Morningstar Direct. According to EFAMA and ICI statistics, the total number of mutual funds at the end of 2008 was approximately 68,500. In Morningstar, there are 63,172[9] open-end funds registered. This means that Morningstar covers about 92% of the world's mutual fund industry. Data on whether a firm is public or private is gathered from Bloomberg. If a firm is listed on any stock exchange according to Bloomberg it is considered public. If a company went public (or private) during the sample period, it will be marked with the label that it had during the longest period in the sample. For example, ABN AMRO is labeled public because it was listed during the largest part of the sample. The size of a firm is measured in terms of assets under management (AUM) in 2004 and is gathered from Lipper FMI. The year 2004 is in the middle of the sample-period and the last date at which a firm in the sample could have been incorporated. Consequently, each firm in the sample should at least have AUM data from 2004 onwards. To measure a firms' degree of focus we employ a Herfindahl-like index, considering the number of categories that a firm covers and the number of funds it offers in each category:

$$H_i = \sum_{j=1}^{N} s_{ij}^2 \qquad s_{ij}^2 = \frac{\text{Number of funds in category j by firm i}}{\text{Total number of funds held by firm i}} \tag{2}$$

By using this measure, we not only consider the number of funds per category versus the total number of funds, but also the number of categories in which a firm operates. Unfortunately, Morningstar does not provide net asset data for each fund. We cannot, therefore, measure the asset-weighted degree of focus. To determine the number of categories in which a firm operates, we use the Morningstar Global categories. In total, Morningstar identifies 62 global categories. The distribution of the degree of focus for our sample is presented in Figure 1. Where the degree of focus is 100% (approximately 7% in our sample) the firms have only one category and/or fund. These firms are inherently as focused as possible, thus 100%.

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[9] This was the number of open-end funds registered in Morningstar Direct at 16-07-2009.

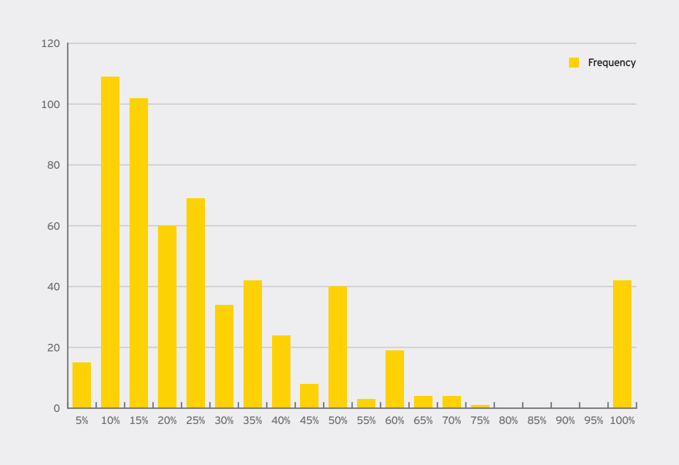

Figure 1 - Degree of focus distribution

Since several studies have indicated that the European fund industry is still lagging the U.S. fund industry, we have also gathered data for country of origin of the firm to see whether European funds underperform non-European funds. We distinguish between three groups of funds: Non-European, U.K., and Continental European. Table 4 displays the summary statistics for the firm-specific data.

There is a large difference between the mean (63) and the median (13) number of funds offered by a firm, which indicates the sample distribution is skewed. Consistently, most master groups in the sample are relatively small, offering a low number of funds. There are, however, several large financial conglomerates in the sample that offer many funds and have an enormous amount of assets under management. Guedj and Papastaikoudi (2005) find an average number of funds per family of 5 for a sample of 479 families in 2002 for the U.S. This is only a fraction of the average of 63 that we have found for Europe. The fact that European companies offer a higher number of funds has already been reported by Otten and Bams (2002).

Another interesting observation is the high percentage of private firms in the sample (73%). This is in contrast with the U.S., where only a very small part of the fund management industry is still private. Bogle (2005) has a sample of 54 asset managers in the U.S., of which only 13 are private [see also Ferris and Yan (2009)]. In Europe the consolidation of the industry is only just getting started. In the European fund industry there are still many small and private independent asset managers present. In the U.S. most small/private asset managers have been taken over by large corporations or were listed on a stock exchange. This is consistent with Pagano and Röell (1998), who argue that in Europe, fewer companies go public than in the U.S. The market share (in terms of number of funds) of public companies, however, is quite similar in both markets. Ferris and Yan (2008) examine a sample of U.S. mutual funds for the period 1992-2004. In their sample, 65% of the funds belong to public companies. In our sample this percentage is 60.5%.

Assets under management exhibit the same pattern as the number of funds, where the difference between the mean and the median is quite substantial. Khorana et al. (2005) find a global mean AUM (in U.S.$ billions) of 189.50 (±211.52) and a median of 9.31 (±10.39) in 2001; also, a quite substantial difference between the mean and the median.

	Number	%	Mean	Median	St. Dev
Total master groups in sample	579	100%			
Number of funds per master group			63	13	152
Private master groups in sample	422	73%			
Funds belonging to private firms	2,039	39.5%			
Public master groups in sample	157	27%			
Funds belonging to public firms	3,124	60.5%			
Master groups with AUM data for 2004	481	83%			
Master group size in million AUM 2004			€ 6,080.20	€ 358.72	€ 18,482.58
Master groups with category data	576	99.5%			
Total categories in Morningstar	62				
Herfindahl focus index			28.38%	20.00%	24.90%
Non-European firms in sample	61	11%			
U.K. firms in sample	99	17%			
European firms in sample	419	72%			

Table 4 - Firm characteristics summary statistics
This exhibit summarizes the sample of firm characteristics for the firms to which the sample of 5,163 funds belong.

	R^2	Adj R^2	F	Observations	Intercept	Log number of funds	Public, 1 if yes	Log AUM 2004	Degree of focus	Non-European, 1 if yes	U.K., 1 if yes
$\alpha_{ij} = c_0 + c_1 Nfunds_j + c_2 D_{public} + c_3 DegreeFocus_j + c_4 D_{Non\text{-}European} + c_5 D_{UK} + \varepsilon_i$											
5-year alphas	0.014	0.013	14.99	5163	-0.197% (-7.04) ***	0.00039 (3.16) ***	-0.045% (-2.88) ***		0.00100 (1.90) *	0.075% (3.61) ***	0.049% (2.78) **
11-year alphas	0.026	0.024	11.75	2216	-0.110% (-2.67) ***	0.00035 (1.55)	-0.051% (-1.64)*		0.00065 (0.73)	0.130% (6.38) ***	0.039% (2.04)**
$\alpha_{ij} = c_0 + c_1 D_{public} + c_2 AUM_j + c_3 DegreeFocus_j + c_4 D_{Non\text{-}European} + c_5 D_{UK} + \varepsilon_i$											
5-year alphas	0.011	0.010	11.36	5163	-0.163% (-6.36) ***		-0.033% (-2.14) **	0.00013 (2.04) **	0.00063 (1.23)	0.073% (3.54) ***	0.044% (2.64)***
11-year alphas	0.028	0.026	12.89	2216	-0.125% (-3.34) ***		-0.055% (-1.95)*	0.00024 (2.22) **	0.00060 (0.67)	0.134% (6.50) ***	0.037% (1.98)**

Table 5 - Monthly firm regression results
This exhibit displays the results of the firm regression for the 5 and the 11-year samples. All data in this exhibit are monthly data. The numbers between parentheses are T-statistics. Superscripts *, ** ,*** denote statistical significance at 10%, 5% and 1% respectively.

When considering the focus of the master groups, most firms in our sample are relatively focused. These findings are all an indication of the fact that the European fund industry is different from the U.S. and may be less consolidated, as has already been reported in several studies [Otten and Schweitzer (2002); Otten and Bams (2002); Ramos (2009)].

Furthermore, 11% of the firms that operate in our sample are non-European. These are often the larger U.S. fund managers who offer so-called offshore funds in Europe.

Methodology

With the fund-specific alphas and the firm-specific data for the firm that the fund belongs to, we estimate the impact of firm characteristics on fund performance, using the following cross-sectional regression:

$$\alpha_{ij} = c_0 + c_1 Nfunds_j + c_2 D_{public} + c_3 AUM_j + c_4 DegreeFocus_j + c_5 D_{Non\text{-}European} + c_6 D_{UK} + \varepsilon_{ij} \tag{3}$$

Where, α_{ij} is the four-factor alpha for fund *i* belonging to firm *j*, $Nfunds_j$ is the logarithm of the number of funds offered by firm *j*, D_{public} is a dummy variable equal to 1 if the firm is public, AUM_j is the logarithm of the assets under management of company *j* in 2004, $DegreeFocus_j$ is a measure of the degree of focus of company *j*, $D_{Non\text{-}European}$ is a dummy variable equal to 1 if the master group's headquarters are located outside Europe, and D_{UK} is a dummy variable equal to 1 if the master group's headquarters are located in the U.K.. Before running this regression, we have checked the cross-correlations between the factors. The results from this check showed that the number of funds and assets under management were too correlated to be included in the same regression. To overcome these multicollinearity issues, we have split the regression above in two separate regressions. Table 5 displays the results for the 5- and 11- year samples. As the errors terms of the regressions could be correlated within the same firm, we have used cluster-robust standard errors. The T-statistics reported in Table 5 are therefore cluster-robust.[10]

Results

The coefficient for log number of funds is positive in all of the regressions and often significant. On a monthly basis the coefficient for log number of funds with 5-year alphas is 0.00036, which implies that for a firm with 100 funds the monthly alpha increases by 0.078% (0.938% annually) compared to a one-fund firm. An explanation for the fact that other U.S. studies have found the reverse relationship to the number of funds could be that the U.S. fund industry is more consolidated than Europe's. In the U.S., the average fund size is much larger than in Europe but the total number of funds offered is much smaller. In the U.S., several large conglomerates dominate the market whereas in Europe there is a large number of small independent fund managers. The fact that in

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[10] To calculate cluster robust standard errors we have used the approach of Cameron et al. (2006) for one-way clustering.

5-year results	R^2	Adj R-square	F	Observations	Intercept	Log number of funds	Public, 1 if yes	Degree of focus	Non-European, 1 if yes	U.K., 1 if yes
	$\alpha_{ij} = c_0 + c_1 \mathrm{Nfunds}_j + c_2 D_{public} + c_3 \mathrm{DegreeFocus}_j + c_4 D_{Non\text{-}European} + c_5 D_{UK} + \varepsilon_i$									
Asia excluding Japan	0,0449	0,0207	1,9	204	-0,241% (-2.794)***	0,00047 (1.399)	-0,0538% (-1.428)	-0,00985 (-0.383)	0,112% (2.736)***	0,031% (0.802)
Asia including Japan	0,0715	0,0331	1.9	127	-0.387% (-2.891)***	0.00139 (2.451)**	-0.1238% (-1.580)	0.00009 (0.030)	0.192% (1.517)	0.140% (1.165)
Japan	0.0267	0.0094	1.5	286	-0.146% (-2.229)**	-0.00020 (-0.710)	-0.0433% (-1.286)	0.0005 (0.436)	-0.029% (-0.846)	-0.010% (-0.295)
Emerging Markets	0.1310	0.1069	5.4	186	-0.303% (-3.780)***	0.00027 (0.794)	-0.0300% (-0.677)	0.0045 (2.33)**	0.206% (4.319)***	0.143% (2.673)***
Europe including U.K.	0.0102	0.0057	2.3	1115	-0.113% (-3.329)***	0.00028 (1.905)*	-0.0488% (-2.636)***	0.00040 (0.581)	0.0718% (2.482)**	0.0221% (0.821)
Europe excluding U.K.	0.0203	0.0157	4.4	1070	-0.245% (-6.313)***	0.00061 (3.646)***	-0.0337% (-1.516)	0.00222 (2.709)***	0.1061% (2.979)***	0.0465% (1.689)*
U.K.	0.0441	0.0330	4.0	434	-0.104% (-1.300)	0.00013 (0.455)	-0.0281% (-0.918)	0.0000 (-0.022)	0.1324% (3.370)***	0.0103% (0.299)
Global	0.0284	0.0243	6.9	1181	-0.142% (-4.400)***	0.00021 (1.575)	-0.0438% (-2.609)***	-0.00088 (-1.284)	0.089% (3.828)***	0.0935% (4.533)***
U.S.	0.0539	0.0454	6.3	560	-0.321% (-6.586)***	0.00046 (2.277)**	-0.0197% (-0.792)	0.00294 (2.497)**	0.0909% (3.692)***	0.1354% (4.727)***

Table 6 - Monthly results per region with log number of funds

This exhibit summarizes the firm regression results for every separate region, for the 5-year sample. All data in this exhibit are monthly data. The numbers between parentheses are T-statistics. Superscripts *, ** , *** denote statistical significance at 10%, 5% and 1% respectively.

Europe a higher number of funds is preferred might indicate that the average fund size in Europe is too small. The firms offering a small number of funds might simply be too small and therefore inefficient. This issue could be solved by offering more funds or by merging one fund into another, thereby increasing the fund's asset base.

In terms of firm size, as measured by assets under management, we have found a significant positive relationship with fund performance. This implies that the funds belonging to firms with large assets under management have performed better. Interestingly, while we obtain clear and often significant results for the impact of size on fund performance, the literature is still inconclusive about this impact. We have found a coefficient for log assets under management of 0.00013 for the 5-year alphas. This coefficient indicates that when a firm has €1,000 million assets under management, its monthly alpha increases by 0.039% (0.47% annually) compared to a fund with one million in assets. These findings are consistent with the findings of Ferris and Yan (2009), Chen et al. (2004), and Ivkovic (2002).

As stated in hypothesis 4 and consistent with previous research, funds belonging to focused firms have performed better than those that belong to less focused and more diversified firms, though the coefficient is small and only moderately significant. For the sample of all 5-year alphas the average coefficient over the two regressions for the degree of focus is small and only significant in the first regression. In the case of the first regression, when a firm has a 50% degree of focus the monthly alpha increases by 0.050% (0.61% annually). Other studies use a similar Herfindahl-like index and also find a positive impact of focus on fund performance [Siggelkow (2003); and Khorana and Servaes (2007)]. Nanda et al. (2004), who use variations in investment strategies across funds as proxy for focus, also find that a more focused strategy improves fund performance.

In addition to the variables used to test our four hypotheses, we have also included two dummy variables to see whether there is a significant difference between the performance of funds managed by Anglo-Saxon (non-European and U.K.) companies and those managed by European companies. A company is labeled "non-European" if the headquarters of the firm are located outside of continental Europe and are labeled "U.K." when the companies' headquarters are located in the U.K. Interestingly, the coefficient for the non-European dummy variable is positive and very significant.

This indicates that funds belonging to European firms have performed worse than their non-European peers, predominantly U.S.-based institutions. In the case of U.K. firms, we also find that they perform better than European firms, though the effect is smaller and only moderately significant.

When we investigate this issue further and run the regressions separately for each region we find that, even for funds domiciled in Europe and investing in Europe, the dummy for non-European is still significant and positive. Furthermore, the dummy for non-European is also positive and often significant for every other region except Japan, implying that non-European managers outperform European managers in every region except Japan (Table 6).

Conclusions

Using a sample of 5,163 open-end European-domiciled mutual funds belonging to 579 firms (families), we find that firm characteristics indeed influence fund performance. With a Carhart four-factor model for nine separate regions, we calculate fund alphas as a measure of fund performance. With the resulting sample of alphas we have performed several cross-sectional regressions including each fund's firm characteristics. Our results indicate that, in contrast with U.S. research, in Europe a larger number of funds per family improves fund performance. This might indicate that in Europe the average firm is not large enough in terms of number of funds or that the average fund size is simply too small to benefit from economies of scale. This is reflected in the large number of small independent asset managers in our sample. In line with previous research in the U.S. and Canada, the funds of privately managed companies have performed better in Europe as well. Whereas existing literature for the U.S. finds contradicting results, we have found a clear positive impact of family size on fund performance. Possible explanations are a larger amount of resources available for research, cost benefits with transaction costs, more visibility in the market, and hence an improved ability to attract skilled managers. Consistent with previous U.S. research, we have found a positive (but only moderately significant) effect of focus on fund performance. The results imply that firms who have a set of related funds have better performance than firms who offer a broad range of different products and/or cover many categories. Interestingly, we have found that the funds of non-European firms have performed significantly better than the funds of European firms. This might indicate that the European industry is not yet mature and there is still room and need for growth, to benefit from economies of scale.

References

Berkowitz, M. K., and J. Qiu, 2003, "Ownership, risk and performance of mutual fund management companies," *Journal of Economics and Business,* Vol. 55, 109-134

Bogle, J. C., 2005, "The mutual fund industry 60 years later: for better or worse?" *Financial Analysts Journal,* Vol. 61, 15-24

Cameron, A. C., J. B. Gelbach, and D. L. Miller, 2006, "Robust inference with multi-way clustering," *NBER working paper no. T*0327

Carhart, M. M., 1997, "On persistence in mutual fund performance," *Journal of Finance,* Vol. 52, 57-82

Chen, J., H. Hong, M. Huang, and J. D. Kubik, 2004, "Does fund size erode mutual fund performance? The role of liquidity and organization," *American Economic Review,* Vol. 94, 1276-1302

Dermine, J., and L-H. Röller, 1992, "Economies of scale and scope in French mutual funds," *Journal of Financial Intermediation,* Vol. 2, 83-93

Elton, E. J., M. J. Gruber, and C. R. Blake, 2001, "A first look at the accuracy of the CRSP mutual fund database and a comparison of the CRSP and Morningstar mutual fund databases," *Journal of Finance,* Vol. 56, 2415-2430

Fama, E. F., and K. R. French, 1993, "Common risk factors in the returns on stocks and bonds," *Journal of Financial Economics,* Vol. 33, No. 1 , 3–56

Ferris, S. P., and X. S. Yan, 2009, "Agency costs, governance, and organizational forms: evidence from the mutual fund industry," *Journal of Banking and Finance,* Vol. 33, 619-626

Gaspar, J-M., M. Massa, and P. Matos, 2006, "Favoritism in mutual fund families? Evidence on strategic cross-fund subsidization," *Journal of Finance,* Vol. 61, 73-104

Guedj, I., and J. Papastaikoudi, 2005, "Can mutual fund families affect the performance of their funds?," *working paper*

Ivkovic, Z., 2004, "Spillovers in mutual fund families: is blood thicker than water?" *Working Paper University of Illinois*

Khorana, A., and H. Servaes, 2007, "Competition and conflicts of interest in the US mutual fund industry," *working Paper Georgia Institute of Technology*

Massa, M., 1998, "Are there too many mutual funds? Mutual funds, market segmentation and financial performance," *working paper Yale and INSEAD*

Massa, M., and L. Zhang, 2009, "The effects of organizational structure on asset management," *working paper INSEAD*

Nanda, V., Z. J. Wang, and L. Zheng, 2004, "Family values and the star phenomenon," *Review of Financial Studies,* Vol. 17, No. 3, 667-698

Otten, R., and D. Bams, 2002, "European mutual fund performance," *European Financial Management,* Vol. 8, 75-101

Otten, R., and M. Schweitzer, 2002, "A comparison between the European and the US mutual fund industry," *Managerial Finance, Vol.* 28, 14-35

Ramos, S. B., 2009, "The size and structure of the world mutual fund industry," *European Financial Management,* Vol. 15, 145-180

Siggelkow, N., 2003, "Why focus? A study of intra-industry focus effects," *Journal of Industrial Economics,* Vol. 51, 121-150

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