

Andreu, Laura; Pütz, Alexander

Working Paper

Choosing two business degrees versus choosing one: What does it tell about mutual fund managers' investment behavior?

CFR Working Paper, No. 12-01 [rev.2]

Provided in Cooperation with:

Centre for Financial Research (CFR), University of Cologne

Suggested Citation: Andreu, Laura; Pütz, Alexander (2016) : Choosing two business degrees versus choosing one: What does it tell about mutual fund managers' investment behavior?, CFR Working Paper, No. 12-01 [rev.2], University of Cologne, Centre for Financial Research (CFR), Cologne

This Version is available at:

<http://hdl.handle.net/10419/150529>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

CFR working paper NO. 12-01

**choosing two business degrees versus
choosing one:**

**what does it tell about mutual fund
managers' investment behavior?**

L. Andreu • A. Pütz

centre for financial research
Look deeper

Choosing two business degrees versus choosing one:
What does it tell about mutual fund managers' investment behavior?

Laura Andreu^a and Alexander Puetz^b

^a landreu@unizar.es, Accounting and Finance Department, University of Zaragoza, Gran Via 2, 50.005 Zaragoza, Spain

^b puetz@wiso.uni-koeln (corresponding author), Department of Finance and Centre for Financial Research (CFR), University of Cologne, Albertus-Magnus-Platz, 50923 Cologne, Germany

November 2016

ABSTRACT

We analyze what a second business degree reveals about the investment behavior of mutual fund managers. Specifically, we compare investment risk and style of managers with both a CFA designation and an MBA degree to managers with only one of these qualifications. We document that managers with both degrees take less risk, follow less extreme investment styles, and achieve less extreme performance outcomes. Our results are consistent with the explanation that managers with a certain personal attitude that makes them take less risk and invest more conventionally choose to gather both qualifications. We rule out several alternative explanations: our results are not driven by the respective contents of the MBA and the CFA program, by the manager's skill, or by the fund family's investment policy.

JEL classification: G23

Keywords: Mutual funds, Investment behavior, Manager education, MBA, CFA

1 Introduction

“An age-old question among those headed into the finance world is whether they need to obtain a CFA, an MBA, or both. Do you think there is a benefit to doing both?”¹ Among mutual fund managers, MBA and CFA are the most common degrees with about 74 percent of the managers having at least one of them.² Several academic studies have analyzed the distinct impact of each single degree on mutual fund performance and risk (see, e.g., Shukla and Singh, 1994; Golec, 1996; Chevalier and Ellison, 1999a; Gottesman and Morey, 2006). In this paper, we examine whether the investment behavior of mutual fund managers who decide to earn both degrees, i.e., a CFA designation additionally to an MBA degree and vice versa, differs from those who earn only one degree.

Gottesman and Morey (2006) document that among managers with at least an MBA or a CFA, 45 percent of those managers gathered both degrees.³ Given the additional effort in terms of time and money to attain a second degree, this raises the question what it reveals about the managers if they decide to earn the second degree. We hypothesize that managers choose two degrees because they have a different personal attitude than managers who choose only one degree. This personal attitude might also influence their investment behavior.

The education literature offers several reasons why people choose a specific educational path. However, it usually concentrates on education decisions before people start their working life (see, e.g., Hvide, 2003; Skatova and Ferguson, 2014). Literature on education among professionals often focuses on the outcome, i.e., showing that education is related to higher wages or less frequent and shorter periods of unemployment (see, e.g.,

¹ This question is taken from an interview between Bloomberg Businessweek's journalist Alison Damast and the CFA Institute Managing Director Thomas Robinson. See Damast (2011).

² See Gottesman and Morey (2006). In our sample there are even 83 percent of the managers with at least an MBA or a CFA.

³ These numbers are calculated from conditional probabilities based on the descriptive statistics given in their article. These numbers are consistent with our sample.

Nickell, 1979; Mincer, 1991; Cohen et al., 1997; Riddell and Song, 2011; OECD, 2014). In contrast, some papers directly analyze professionals' motivations for education and show, for example, that they use education to signal to the market that they have high ability (see, e.g., Spence, 1973; Weiss, 1983; Hvide, 2003). Kinman and Kinman (2001) summarize that managerial learning is mostly driven by extrinsic motivation, i.e., managers are "concerned with competition, evaluation, money, or other advancement". Taken together, the main motivation for managers to gather additional qualifications is related to their career. Hence, we conjecture that managers who invest time and money into a second business degree are more concerned about their career than their single-qualification peers.

Several papers suggest that career concerns influence the risk-taking and the investment style of managers. According to Chevalier and Ellison (1999b), managers with a stronger desire to avoid termination take lower risk levels and follow more conventional investment styles because failing with high risk and unconventional styles is more detrimental to them than failing with low risk and conventional styles. This is also consistent with Scharfstein and Stein (1990) who motivate their analysis with the words of Keynes (1936): "Worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally." Other papers relating career concerns to risk-taking and investment style are, e.g., Holmstrom (1999) and Chen (2015). For example, Holmstrom (1999) argues that managers "dislike investments, which will reveal accurately whether he is a talented manager or not, since these investments make his income most risky". Hence, career concerned managers avoid risky and/or unconventional investments. According to the above papers, differences in career concerns should be reflected in managers' risk-taking and investment style.

Hence, in this paper, we compare the risk and investment style of managers with two business degrees and managers with only one degree. We find that double-degree managers

take significantly lower levels of risk, irrespective of the risk measure we use: return volatility, market beta, unsystematic risk, or tracking error. Furthermore, double degree managers follow more conventional investment styles than managers with only one degree. We measure the conventionality of their investment style through the extremity of their exposure to the non-market factors of the Carhart (1997) four-factor model, i.e. how much does the exposure to these factors deviate from the average exposure of other funds with the same stated investment objective. Our results show that double degree managers make smaller bets on specific styles, i.e. their exposures to the above factors are less extreme than those of single degree managers. In an additional analysis, we test whether the differences in investment behavior are also reflected in the managers' performance. We find that double degree managers achieve less extreme performance outcomes, which is consistent with their lower levels of risk and their less extreme investment styles. However, their average performance does not significantly differ from their single-degree peers.

Overall, the above results are consistent with the explanation that managers with a certain personal attitude, presumably stronger career concerns, choose to gather two degrees instead of only one. To verify this conjecture, we rule out several alternative explanations. First, we show that our results are not driven by the contents managers learn in a CFA or an MBA program. Double degree managers invest more cautiously compared to both managers with only an MBA and managers with only a CFA. This confirms that our results are not specific to any degree and therefore cannot be driven by the contents that managers learn during a specific program. Furthermore, we document that managers do not change their behavior after they earned their second degree.

Second, we test whether differences in skill between double and single degree managers drive our results. It is possible that especially low skill managers choose to earn a second degree, e.g., to compensate for a poor undergraduate degree or an MBA degree from a

less prestigious school. We show that skill, measured by managers' SAT and GMAT scores, does not significantly differ between both manager groups and does not influence our results.

Third, we examine the possibility that our results are the consequence of some unobservable fund family policy. In particular, it is possible that some families only employ managers with two degrees or they advise their managers to get the second degree. If these families also restrict their funds' risk level and investment style, we would spuriously attribute this family policy to the managers' investment behavior. Therefore, we control for an unobservable family policy using family fixed effects. Alternatively, we add the family's size as control variable to our regressions. Our results regarding risk and style remain the same.

Our paper adds to a growing literature on the relation between manager characteristics, particularly business education, and investment behavior. As stated above, several studies have analyzed the distinct impact of an MBA and a CFA, respectively, on fund performance (Shukla and Singh, 1994; Golec, 1996; Chevalier and Ellison, 1999a; Gottesman and Morey, 2006; Dincer et al., 2010). The results of these studies are mixed. While the first two studies find a positive impact of a CFA and an MBA, respectively, on performance, the latter three studies generally do not find an impact. Further studies analyze the relation between investment behavior and other manager characteristics like IQ (Grinblatt et al., 2012), age (Chevalier and Ellison, 1999b), experience (Avery and Chevalier, 1999; Ding and Wermers, 2012), or gender (Niessen-Ruenzi and Ruenzi, 2015). Our paper contributes to this literature by explicitly addressing the case that managers have both an MBA and a CFA degree. Given that about 40% of all mutual fund managers have both degrees, the behavior of this group is of severe relevance for fund investors as well as fund companies. Our results suggest that a certain type of managers decides to get both degrees which results in a different investment behavior of double degree managers. This underlines that it is not enough to only analyze

which impact a specific education has on investment behavior, but also to consider that managers reveal their personal attitudes by the educational path they choose.

To our knowledge, so far, only Dincer et al. (2010) explicitly controlled for having both an MBA and a CFA at the same time while analyzing the distinct impact of each single degree on performance. However, they do not analyze the incremental impact from having two compared to having one business degree and do not investigate differences in extremity of those managers' investment behavior. Furthermore, they only study a short period of three years from 2005-2007.

The remainder of this paper is organized as follows. In Section 2, we describe the data and give an overview on the differences of fund and manager characteristics between managers with one and two business degrees. In Section 3, we analyze risk, style, and performance differences between both groups. Section 4 rules out alternative explanations and Section 5 concludes.

2 Data

The study mainly relies on two data sources: First, we gather information on fund returns, total net assets, investment objectives, and other fund characteristics from the CRSP Survivor Bias Free Mutual Fund database.⁴ Second, to collect information on fund managers' characteristics, we use a set of Morningstar Principia CDs which provide information on the managers' name, the date on which a manager assumed responsibility for the fund, their educational degrees, the schools a manager attained, and the job history of the manager. As the Morningstar information on manager characteristics is available from 1996 on, our sample starts in 1996 and ends in 2009.

⁴ Source: CRSP, Center for Research in Security Prices. Graduate School of Business, The University of Chicago. Used with permission. All rights reserved.

We use the Strategic Insight objective codes and the Lipper objective codes provided in the CRSP database to determine a fund's stated investment objective.⁵ We focus on actively managed, domestic equity funds and exclude bond, money market, and index funds. Specifically, we analyze the following six domestic equity fund investment objectives: Aggressive Growth (AG), Balanced (BL), Growth and Income (GI), Income (IN), Long Term Growth (LG), and Sector Funds (SE).

Many funds offer multiple share classes which are listed as separate entries in the CRSP database. They usually only differ with respect to their fee structure or minimum purchase requirements, having the same portfolio manager and the same portfolio. Thus, to avoid multiple counting, we aggregate all share classes of the same fund.

To gather information on the managers' characteristics, we match all funds from the CRSP database to the funds in the Morningstar database using fund ticker, fund name, and manager name. Through this, we get Morningstar's information on the managers' educational degrees, e.g. whether the manager holds an MBA, a CFA, a non-business master's degree, or a PhD, the school from which a manager attained a specific degree, as well as the year in which they earned their MBA and their undergraduate's degree.⁶ Furthermore, for all managers with an undergraduate degree we obtain information on the average matriculates' SAT score of the institution where they earned their undergraduate degree. Similarly, we collect the GMAT score for all managers with an MBA degree. Information on SAT scores is from the website collegeapps.about.com, while information on GMAT is from the websites mba.com, businessweek.com, and entrepreneur.com. We calculate the managers' industry

⁵ The Strategic Insight (SI) classification is only available till 1998. Thus, we use the Lipper objective codes to classify funds after 1998. To get consistent investment objective classifications over our entire sample period, we match each Lipper objective code to a SI objective code based on the frequency with which funds of a specific Lipper objective code belong to one of the SI objective codes in those consecutive years in which the availability of the SI codes ends and the availability of Lipper begins. Both codes are based on the language that the fund uses in its prospectus to describe how it intends to invest.

⁶ Unfortunately, Morningstar does not report the year in which the managers earned their CFA designation.

tenure from the year that Morningstar reports for a manager to be the first year managing a fund. As the managers' age is not explicitly given in Morningstar, we compute their age from the year in which they got their college degree. To do this, we follow Chevalier and Ellison (1999b) and assume that a manager was 21 upon college graduation. Finally, to collect information on the managers' gender, we follow Niessen-Ruenzi and Ruenzi (2015) and compare the managers' first name to a list published by the United States Social Security Administration (SSA) that contains the most popular first names by gender for the last 10 decades. Additionally, we identify the gender of managers with ambiguous first names from several internet sources like the fund prospectus, press releases, or photographs.

We focus on single managed funds because Bär et al. (2011) show that team managed funds and single managed funds behave differently and it is not clear how the skills and education of single team members translate into the skills and education of a team. This allows us to cleanly analyze the impact of choosing two business degrees on managerial behavior without being influenced by the fund's management structure. Thus, we exclude fund year observations for which Morningstar reports a management team or gives multiple manager names. We also exclude fund-years in which the fund manager changes because we cannot clearly attribute the investment behavior in that year to any of the managers. Furthermore, for some managers Morningstar does not report any educational degree. As it is likely that these managers have some educational degree which is simply not reported in the database, we only keep those observations where the database reports at least an undergraduate degree. Finally, we only keep fund year observations for which 12 months of return data is available. Our final sample consists of 7,241 fund year observations which come from a total of 1,520 distinct funds.

3 Results

3.1 Fund and manager characteristics

To conduct our first analyses, we group managers by the number of business degrees, i.e., exactly one degree (*MBA Xor CFA*) or both degrees (*MBA and CFA*). We assign managers to one of these groups based on all degrees that are reported by Morningstar in any year of the sample period. Thus, also managers who start with one degree, but earn their second degree during the sample period are assigned to the group of managers with two business degrees. This is based on the intuition that we want to capture the managers' personal attitudes, i.e., their career concerns, which they reveal with the educational degrees they attain over time. Since we assume the manager's personal attitudes to be time-invariant, we can infer them from the manager's decision for a second degree, even if the degree is earned in the future. Table 1 reports summary statistics for both groups.

– Please insert TABLE 1 approximately here –

From all fund-year observations in our sample, about 36 percent are managed by managers with both degrees and 47 percent by managers with exactly one degree. Thus, 83 percent have at least one degree. Double degree managers seem to manage larger funds, but the difference is not statistically significant. The funds of these managers have lower expense ratios, lower turnover ratios, and are on average two years older than those funds of managers with only one business degree. As we would expect, managers with two degrees are on average older and have a longer tenure in the fund industry. The fraction of female managers is significantly lower among managers with two business degrees. Furthermore, managers with two business degrees are significantly less likely to also have any other master's degree, but are significantly more likely to additionally have a PhD degree.

3.2 Risk and style

We start our investigation by comparing double degree managers and single degree managers regarding their risk-taking behavior and the conventionality of their investment style. We measure a fund's risk in four ways: total risk, systematic risk, unsystematic risk, and tracking error. To determine a fund's total risk, we calculate its volatility in each year as the annualized standard deviation of its monthly returns. To measure the fund's systematic and unsystematic risk, we first estimate the Jensen (1968) one-factor model for each fund in each year. We then use the fund's beta as measure for systematic risk and compute its unsystematic risk by the standard deviation of the regression's residuals. The tracking error is defined as the standard deviation of the difference between the fund return and its benchmark index return as in Petajisto (2013).⁷

To measure the conventionality of a manager's investment style we employ the extremity measure of Bär et al. (2011), which quantifies how much a fund's exposure to a specific style deviates from the average exposure of the funds with the same stated investment objective. The more extremely a manager deviates from the average exposure, the more unconventional is her investment style. To compute the extremity measure, we first estimate Carhart (1997)'s four-factor model for each fund in each year. Each factor of this model (the size factor, the value factor, and the momentum factor) represents an investment style. We construct one extremity measure for each style as follows:

$$EM(S)_{i,t} = \frac{|\beta_{i,t}^S - \bar{\beta}_{k,t}^S|}{\frac{1}{N_t^k} \cdot \sum_{j=1}^{N_t^k} |\beta_{j,t}^S - \bar{\beta}_{k,t}^S|} \quad (1)$$

where S represents the investment style analyzed (*SMB*, *HML*, and *MOM*, respectively) and N_t^k is the number of funds with a specific stated investment objective k in

⁷ The data for tracking error were taken from Antti Petajisto's website, <http://www.petajisto.net/data.html>.

year t . $EM(S)_{i,t}$ shows high values for funds which strongly deviate in their exposure to a specific style ($\beta_{i,t}^S$) from the average exposure of their peer group with the same stated investment objective ($\bar{\beta}_{k,t}^S$) in absolute terms. Thus, a significantly higher or a significantly lower factor loading as compared to the peer group's average will result in a large extremity measure. To normalize the extremity measure, we divide it by the average deviation from the peer group in a respective year. This normalization makes our style extremity measure comparable across styles, stated investment objectives, and time. Additionally, we compute an average style extremity measure for each fund across the three investment styles as:

$$EM(style)_{i,t} = \frac{1}{3} \cdot \left(EM(SMB)_{i,t} + EM(HML)_{i,t} + EM(MOM)_{i,t} \right) \quad (2)$$

To examine how double degree managers differ from single degree managers with respect to risk and style extremity, we regress the above measures on a dummy variable *MBA and CFA* that equals one if both business degrees are reported for a specific manager and zero otherwise. To directly compare double degree managers to single degree managers, we also add the dummy *No MBA or CFA* that equals one if a manager has neither an MBA nor a CFA. Thus, our reference group consists of managers who have exactly one business degree and we can interpret the coefficient on the *MBA and CFA* dummy as the difference in risk and style extremity between double and single degree managers.

We add further control variables to our regressions: As shown in Table 1, managers with two business degrees typically manage funds with different characteristics compared to managers with only one business degree. Thus, we add the logarithm of a fund's lagged size, the fund's lagged expense ratio, its lagged turnover ratio, and the fund's age as additional explanatory variables. Second, we take into account that managers with two business degrees typically exhibit different personal characteristics. In particular, we also control for other educational degrees by adding dummy variables for any other master's degree and a PhD.

Next, we add a dummy that equals one for a female manager and zero otherwise. Furthermore, we add the managers' industry tenure and the managers' age to the regressions. The managers' age is calculated from the year in which they earned their undergraduate degree. If this year is missing, we follow Gottesman and Morey (2006) and set the manager's age to zero while adding a dummy to the regression which equals one for observations with missing manager age.

Additionally, to control for any unobservable time or investment objective effects that could equally affect all funds in a given year or with a particular stated investment objective, respectively, we include fixed effects for the years and stated investment objectives, respectively, in the risk level regressions. Since style extremity measures are already adjusted for time and stated investment objective, we do not include the respective fixed effects in the extremity regressions.

All analyses are done at the fund-year level using pooled OLS. To take into account the panel structure of our data, we cluster the standard errors in our regressions by fund following Rogers (1993). Results are reported in Table 2.

– Please insert TABLE 2 approximately here –

The results show that managers with two business degrees choose significantly lower risk levels and follow less extreme investment styles than managers with one business degree. The coefficient of *MBA and CFA* is significantly negative for all types of risk and all styles, typically at the 1%-significance level.

To visualize the risk- and style-results, in Figures 1 and 2 we show the fraction of double degree managers in risk and style quintiles, respectively.

– Please insert FIGURE 1 approximately here –

– Please insert FIGURE 2 approximately here –

In each year and for each stated investment objective, funds of which managers have at least one business degree are sorted into risk and style quintiles. In case of risk in Figure 1, Quintile 1 represents the lowest risk level while Quintile 5 represents the highest risk level. Typically, the fraction of double degree managers decreases with increasing risk quintiles. Regarding style exposure in Figure 2, Quintiles 1 and 5 represent opposing styles. In particular, for the SMB factor, Quintile 1 stands for a low SMB-beta, i.e., a high exposure to large companies while Quintile 5 stands for a high SMB-beta, i.e., a high exposure to small companies. For the SMB factor, the lowest fraction of double degree managers is in the most extreme quintiles. For the HML factor, the lowest fraction of double degree managers is in the lowest HML beta quintile, i.e., double degree managers avoid growth stocks, but not value stocks. Furthermore, double degree managers mostly avoid extreme momentum stocks, but also contrarian stocks, as can be seen from the quintiles of the momentum beta.

3.3 Performance

The next analysis examines whether the observed differences in investment behavior also show up in the funds' performance outcomes. First, we examine whether having two business degrees is related to better average performance. Second, we study whether performance extremity, i.e. the deviation from the peer group with the same stated investment objective, differs between double and single degree managers.

We use four different measures for a fund's average yearly performance: return, Jensen (1968)'s one-factor alpha, Fama and French (1993)'s three-factor alpha, and Carhart (1997)'s four-factor alpha.⁸ To quantify performance extremity we again follow the approach of Bär et al. (2011) and calculate an extremity measure $EM(P)$ in each year:

⁸ The alpha measures are determined based on a yearly estimation of the respective factor models. The factor-mimicking portfolio returns for the respective factors and the risk-free rate were taken from Kenneth French's website, http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

$$EM(P)_{i,t} = \frac{|P_{i,t} - \bar{P}_{k,t}|}{\frac{1}{N_t^k} \cdot \sum_{j=1}^{N_t^k} |P_{j,t} - \bar{P}_{k,t}|} \quad (3)$$

where P stands for the respective performance measure. Performance extremity $EM(P)_{i,t}$ represents the absolute deviation of a fund i 's performance from the average performance of all funds with the same stated investment objective k , divided by the average absolute deviation of all funds with the same stated investment objective. N_t^k is the number of funds in investment objective k in year t . We calculate the extremity measure for each of the four performance measures.

We then regress the performance measures on the *MBA and CFA* dummy and the control variables as in the previous section. Results are reported in Table 3.

– Please insert TABLE 3 approximately here –

The results suggest that there is no significant difference in average performance between double degree managers and single degree managers. In the first four columns, none of the coefficients of *MBA and CFA* is significantly different from zero. However, double degree managers show significantly less extreme performance outcomes. In the last four columns, the coefficients of *MBA and CFA* are significantly negative at the 1%- and 5%-level.

To get a better intuition of the results, in Figure 3 we again show the fraction of double degree managers in performance quintiles.

– Please insert FIGURE 3 approximately here –

In each year and for each stated investment objective, funds of which managers have at least one business degree are sorted into performance quintiles. Quintile 1 represents the lowest performance and Quintile 5 represents the highest performance. For all four performance measures, the fraction of double degree managers in the extreme quintiles is

particularly low compared to the fraction in the middle quintiles. Thus, single degree managers more often achieve performance outcomes in the extreme quintiles while double degree managers more often achieve performance outcomes in the middle quintiles.

Overall, managers with both an MBA and a CFA take significantly lower risk levels, follow more conventional investment styles and, consequently, achieve less extreme performance outcomes. This is consistent with the idea that managers with different personal attitudes, i.e. presumably managers who pay more attention to their career, choose to get both degrees.

4 Alternative explanations

Even that our results are consistent with the explanation that a certain type of managers chooses two degrees, there are some alternative explanations that might drive our results. To rule out these alternative explanations, we conduct several additional tests. For the sake of brevity, we do not report the results of these tests but only describe the analyses in this section.

4.1 Contents of education

An alternative explanation is that the managers learn something during their education which lets them take lower risk and follow more conventional investment styles. We investigate this alternative explanation using two different tests: First, we compare double degree managers separately to managers with only an MBA and to managers with only a CFA, respectively. Second, we compare investment behavior of the same manager before and after the manager attained the second qualification.

4.1.1 Specific degree

If our results were driven by the contents that managers learn during their education, only one specific degree should drive the results. For example, if managers learn to take lower risk in the CFA program, but not in the MBA program, we could find lower risk of double degree managers compared to single degree managers which was solely driven by the difference between double degree managers and managers with only an MBA.⁹ To test this alternative explanation, we compare double degree managers separately to managers with an MBA and a CFA, respectively. The results show that our findings are not driven by a specific degree. The results do not depend on whether single degree managers have an MBA or a CFA. Moreover, we can see that there is no difference between managers with only an MBA degree and managers with only a CFA degree.¹⁰

4.1.2 Investment behavior before and after second degree

We analyze whether managers change their behavior after they got their second degree (while managing the same fund). In total there are 21 manager-fund combinations where the managers got their second degree during our sample period. For each of these 21 observations, we calculate the mean of the risk, style, and performance variables across the years before and after the manager got the second degree, respectively.¹¹ Then we compare the mean before the second degree to the mean of the variable after the second degree using a paired t-test. Our results show that none of the variables is significantly different in the years after the manager attained the second degree compared to the years before the second degree.

⁹ If learning to take lower risk was part of both programs, we would not expect to see any difference between double degree managers and single degree managers.

¹⁰ This result differs from the findings of Dincer et al. (2010) who find that CFA managers reduce and MBA managers increase portfolio risk. However, if we restrict our sample to the period 2005-2007 as in their paper, our results partially support their findings.

¹¹ Since Morningstar does not report the year in which the managers earned their CFA designation, we proxy for this year with the first year the CFA designation is mentioned for this manager in the database.

These tests suggest that the observed differences in risk-level, style extremity, and performance extremity are not due to the education contents of the MBA and CFA programs. Hence, our results are still consistent with the explanation that the managers' personal attitudes, i.e. their career concerns, are responsible for the investment behavior of double degree managers.

4.2 Manager skill

Another alternative explanation could be that managers with both degrees differ from managers with one degree with respect to their skill.¹² For example, managers might decide to get a second degree to compensate for either a weak undergraduate degree or a weak MBA degree. As these managers know about their low skill, they might try to avoid deviations from the crowd and invest close to the benchmark as well as follow conventional investment styles.

To test this explanation, we check whether double degree managers differ from single degree managers with respect to their skill. We use two different measures for skill. First, we use the average matriculates SAT score of the school that the managers got their undergraduate degree from. Second, for all managers with at least an MBA, we use the average matriculates GMAT score of their business school. First, we simply compare the means of GMAT and SAT scores between double degree and single degree managers. Results show that GMAT is significantly higher for double degree managers while there is no significant difference for SAT scores. Thus, it is not likely that double degree managers take lower risk and follow more conventional investment styles due to lower skill. Nevertheless, we also add the managers' skill as additional control variable to our initial regressions. Our results remain the same.

¹² We did not control for skill in our regressions in Section 3, because we use two different specifications to measure skill and we have several missing observations for our skill measures. Thus, we decided to present this control separately from the other manager characteristics.

4.3 Family effects

Finally, we examine the possibility that the decision to get both degrees is driven by the fund family. It is possible that particular families only employ managers with both degrees or they advise their managers to get the second degree. If these families also restrict the risk and investment style of their managers, we might spuriously attribute this to the second business degree. In our sample, there are 440 families that employ managers with at least an MBA or a CFA. From these families, 95 employ only double degree managers, 167 employ only single degree managers, and 178 employ both. Our first conjecture is that double and single degree managers could be employed by families of different size. To examine this possibility, we compare the average number of funds per family as well as the family's assets under management between both manager groups. The results show that the funds of double degree managers belong to smaller families on average. To make sure that our results are not driven by the size of the fund family, we add the number of funds in the family as an additional control to our regressions. In a second specification, we use the logarithm of the family's assets under management. In a third specification, to capture any unobservable but time-invariant heterogeneity in fund families as, e.g., different employment policies, we add family fixed effects to our regressions. Overall, our results do not change.

5 Conclusion

The relation between education and fund managers' investment behavior has been examined in several academic studies. These studies usually focused on the distinct impact of an MBA degree and a CFA designation as these are the most common qualifications among fund managers. One aspect that has yet been neglected in these studies is the question whether those managers who decide to get both degrees differ from those who only get one degree.

In this paper, we compare managers who get both an MBA degree and a CFA designation at the same time to managers which only choose one of these qualifications. We document several new findings: First, managers with both degrees show significantly lower risk levels and less extreme investment styles compared to managers with exactly one business degree. Second, managers who get both degrees show less extreme performance outcomes than managers with only one degree. Third, the average performance does not significantly differ between the two groups.

We conjecture that the decision to get both an MBA and a CFA reveals the personal attitudes of a mutual fund manager, presumably her career concerns. We rule out several alternative explanations. Our results are not driven by fund characteristics such as size, expense ratio, turnover ratio, or fund age. Similarly, manager characteristics like the managers' age, their tenure, their gender, or the managers' skill do not explain our results. Furthermore, we rule out that the contents learned from a specific degree or family specific effects are responsible for the observed behavior of double degree managers.

Given that about 40% of all mutual fund managers have both an MBA and a CFA degree our results have implications for different groups. Fund investors may use the double degree as an additional characteristic to evaluate managers in the fund selection process. If they prefer lower risk levels and less extreme performance outcomes, they are better off with a fund that is managed by a manager with both an MBA degree and a CFA designation, particularly since the average performance between double and single degree managers does not significantly differ. Also fund companies could use the double degree as an indication of managers' personal attitudes. A better understanding of the incentives of these managers should benefit fund governance. However, the implications of our results are not limited to the mutual fund industry. Since the MBA and the CFA are common degrees in the entire financial sector, we should also expect other financial managers to show similar behavior.

REFERENCES

- Avery, C.N., Chevalier, J.A., 1999. Herding over the career. *Economics Letters* 63, 327-333.
- Bär, M., Kempf, A., Ruenzi, S., 2011. Is a team different from the sum of its parts? Evidence from mutual fund managers. *Review of Finance* 15, 359-396.
- Carhart, M.M., 1997. On persistence in mutual fund performance. *Journal of Finance* 52, 57-82.
- Chen, Y., 2015. Career concerns and excessive risk taking. *Journal of Economics & Management Strategy* 24, 110-130.
- Chevalier, J., Ellison, G., 1999a. Are some mutual fund managers better than others? Cross-sectional patterns in behavior and performance. *Journal of Finance* 54, 875-899.
- Chevalier, J., Ellison, G., 1999b. Career concerns of mutual fund managers. *Quarterly Journal of Economics* 114, 389-432.
- Cohen, D., Arnaud, L., Saint-Paul, G., 1997. French unemployment: A transatlantic perspective. *Economic Policy* 25, 267-291.
- Damast, A., 2011. Q&A: Becoming a chartered financial analyst. *BusinessWeek* (April 28, 2011).
- Dincer, O.C., Gregory-Allen, R.B. Shawky, H.A., 2010. Are you smarter than a CFA'er? Manager qualifications and portfolio performance. Working paper.
- Ding, B., Wermers, R., 2012. Mutual fund performance and governance structure: The role of portfolio managers and boards of directors. Working paper.
- Fama, E.F., French, K.R., 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* 33, 3-56.
- Golec, J.H., 1996. The effects of mutual fund managers' characteristics on their portfolio performance, risk and fees. *Financial Services Review* 5, 133-148.
- Gottesman, A.A., Morey, M.R., 2006. Manager education and mutual fund performance. *Journal of Empirical Finance* 13, 145-182.
- Grinblatt, M., Keloharju, M., Linnainmaa, J.T., 2012. IQ, trading behavior, and performance. *Journal of Financial Economics* 104, 339-362.
- Holmstrom, B., 1999. Managerial incentive problems: A dynamic perspective. *The Review of Economic Studies* 66, 169-182.
- Hvide, H. K., 2003. Education and the allocation of talent. *Journal of Labor Economics* 21, 945-977.
- Jensen, M.C., 1968. The performance of mutual funds in the period 1945-1964. *Journal of Finance* 23, 389-416.
- Keynes, J.M., 1936. *The general theory of employment*. London: Macmillan.
- Kinman, G., Kinman, R., 2001. The role of motivation to learn in management education. *Journal of Workplace Learning* 13, 132-144.
- Mincer, J., 1991. Education and unemployment. NBER Working Paper.
- Nickell, S., 1979. Education and lifetime patterns of unemployment. *Journal of Political Economy* 87, 117-131.
- Niessen-Ruenzi, A., Ruenzi, S., 2015. Sex matters: Gender bias in the mutual fund industry. Working paper.
- OECD 2014. Indicator A5: How does educational attainment affect participation in the labour market?, *Education at a Glance 2014: OECD Indicators*, OECD Publishing. <http://dx.doi.org/10.1787/888933115711>.
- Petajisto, A., 2013. Active share and mutual fund performance. *Financial Analysts Journal* 69, 73-93.

- Riddell, W. C., Song, X., 2011. The impact of education on unemployment incidence and re-employment success: Evidence from the U.S. labour market. *Labour Economics* 18, 453-463.
- Rogers, W., 1993. Regression standard errors in clustered samples. *Stata Technical Bulletin* 13, 19-23.
- Scharfstein, D.S., Stein, J.C., 1990. Herd behavior and investment. *American Economic Review* 80, 465-479.
- Shukla, R., Singh, S., 1994. Are CFA charterholders better equity fund managers. *Financial Analyst Journal* 50, 68-74.
- Skatova, A., Ferguson, E., 2014. Why do different people choose different university degrees? Motivation and the choice of degree. *Frontiers in Psychology* 5, 1-15.
- Spence, M., 1973. Job market signaling. *The Quarterly Journal of Economics* 87, 355-374.
- Weiss, A., 1983. A sorting-cum-learning model of education. *Journal of Political Economy* 91, 420-442.

Figure 1: Fraction of double degree managers in risk quintiles

This figure shows the fraction of managers with both an MBA and a CFA degree in five risk quintiles, compared to managers with at least one of these degrees. In each year and for each stated investment objective, funds of which managers have at least one business degree are sorted into risk quintiles. Risk is measured by (a) annualized standard deviation of its fund's monthly returns, i.e. total risk, (b) the fund's beta from Jensen (1968)'s one-factor model as systematic risk, (c) the standard deviation of Jensen (1968)'s one-factor model residuals as unsystematic risk, and (d) the tracking error as in Petajisto (2013).

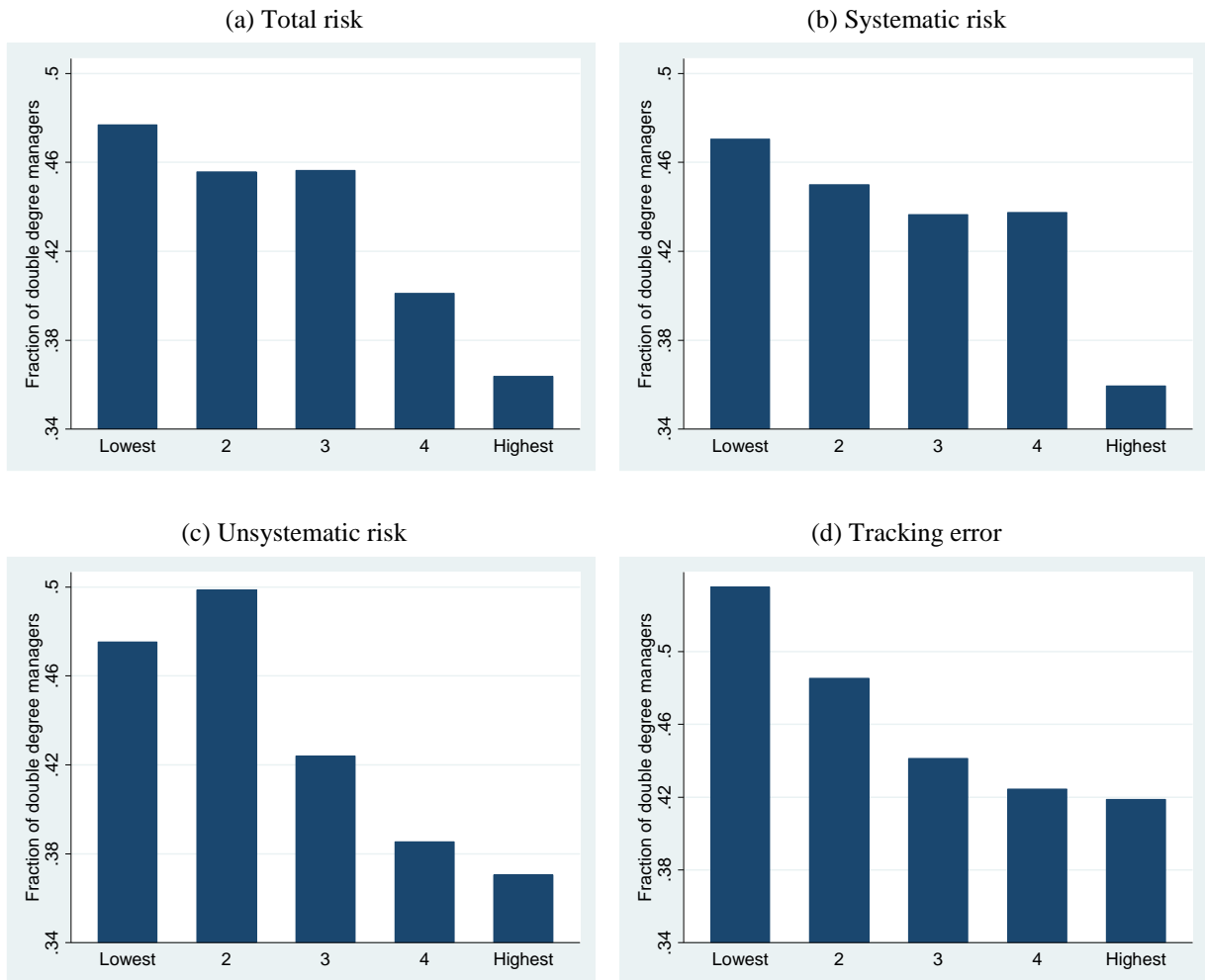


Figure 2: Fraction of double degree managers in style quintiles

This figure shows the fraction of managers with both an MBA and a CFA degree in five style quintiles, compared to managers with at least one of these degrees. In each year and for each stated investment objective, funds of which managers have at least one business degree are sorted into style quintiles. Style is measured by the respective betas of Carhart (1997)'s four-factor model, i.e., (a) the size beta, (b) the value beta, and (c) the momentum beta.

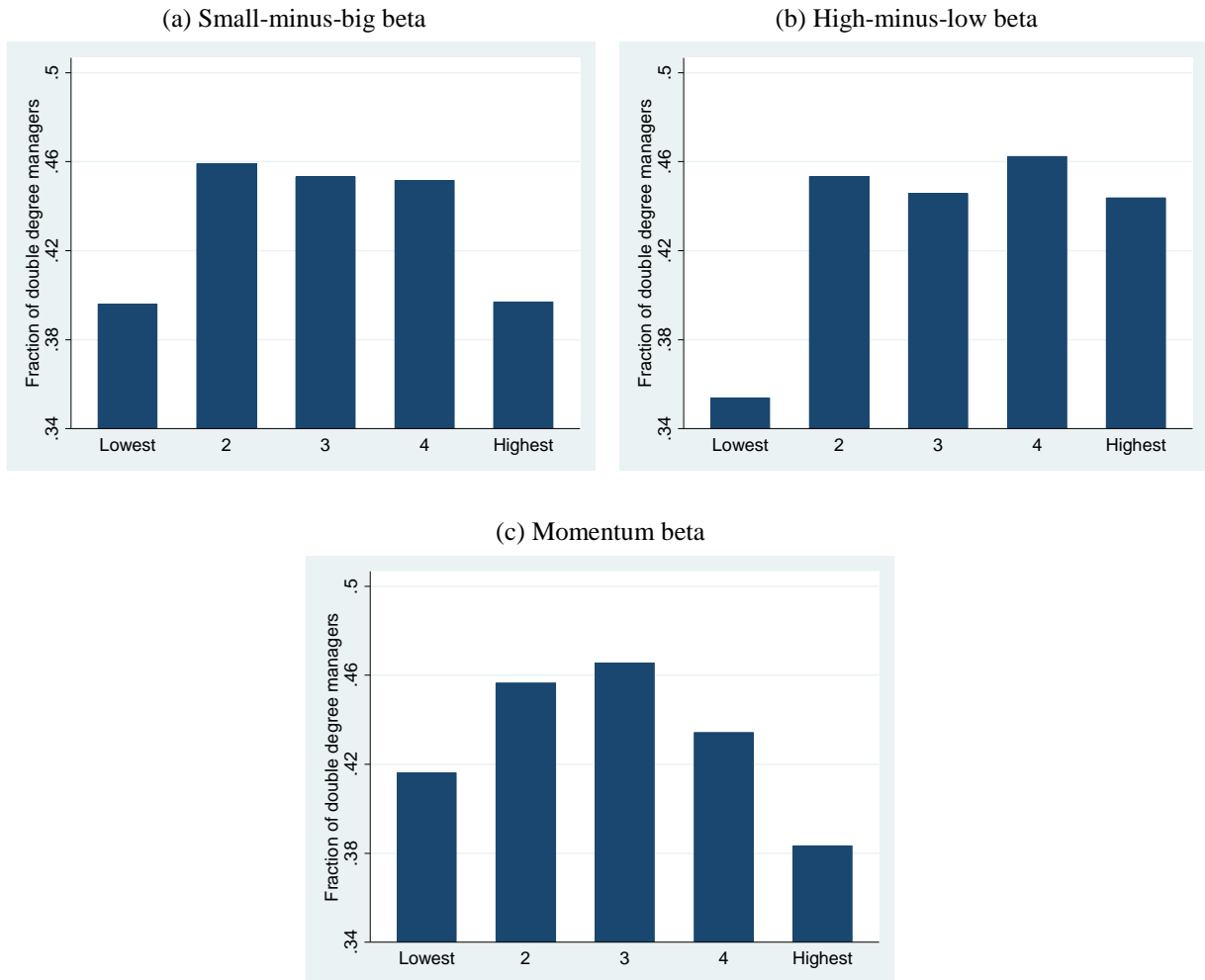


Figure 3: Fraction of double degree managers in performance quintiles

This figure shows the fraction of managers with both an MBA and a CFA degree in five performance quintiles, compared to managers with at least one of these degrees. In each year and for each stated investment objective, funds of which managers have at least one business degree are sorted into performance quintiles. Fund performance is measured by (a) Return, (b) Jensen alpha, (c) Fama/ French alpha, and (d) Carhart alpha.

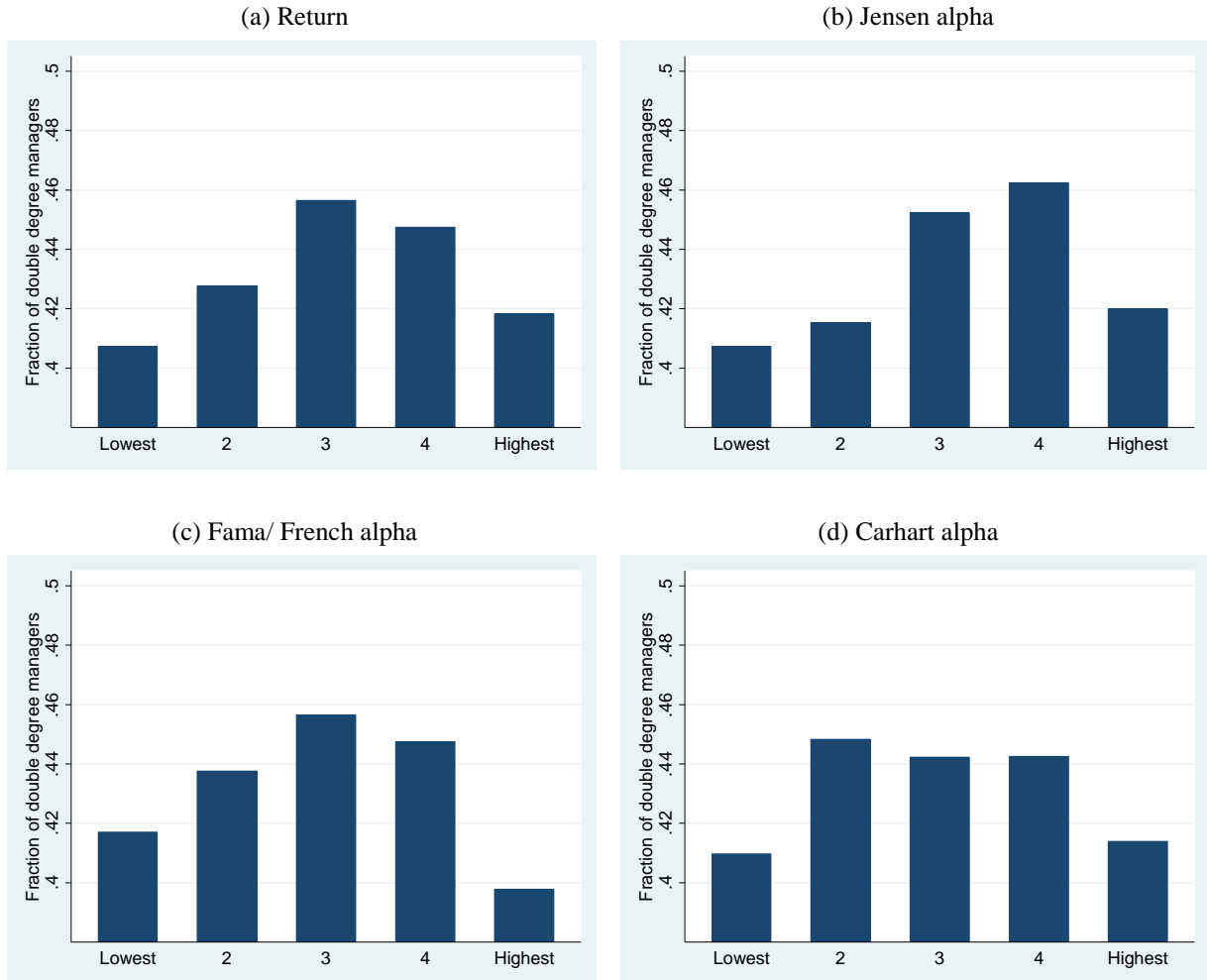


Table 1: Differences in fund and manager characteristics

This table presents summary statistics on several fund and manager characteristics for managers with one business degree (*MBA Xor CFA*), managers with two business degrees (*MBA and CFA*), and the difference between the two groups. We assign managers to one of these two groups based on all degrees that are reported by Morningstar in any year of the sample period. The fund and manager characteristics examined are: the fraction of funds managed, the fund's size (TNA in million USD), the expense ratio, the turnover ratio, the fund's age, the manager's age, the manager's industry tenure, the fraction of female managers, the fraction of managers with a non-MBA master, and the fraction of managers with a PhD. The significance levels for the difference in means between both groups are based on t-tests. ***, **, and * denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

	<i>One business degree (MBA Xor CFA)</i>	<i>Two business degrees (MBA and CFA)</i>	Difference
<i>Funds managed (fraction in %)</i>	47.37%	35.93%	-
<i>Fund size (in million USD)</i>	1,349.5	1,500.9	151.40
<i>Expense ratio (%)</i>	1.35	1.30	-0.04***
<i>Turnover ratio (%)</i>	91.43	85.54	-5.89**
<i>Fund age (in years)</i>	13.19	15.06	1.87***
<i>Manager age (in years)</i>	45.74	47.82	2.08***
<i>Industry tenure (in years)</i>	10.13	10.87	0.74***
<i>Female managers (fraction in %)</i>	11.30	8.94	-2.36***
<i>Other master (fraction in %)</i>	16.21	8.07	-8.14***
<i>PhD (fraction in %)</i>	0.96	3.34	2.38***

Table 2: Risk level and style extremity

This table presents results from pooled OLS regressions of fund risk level and style extremity measures on the dummy variable *MBA and CFA*. This dummy equals one if both degrees (a CFA and an MBA) are reported for a specific manager and zero otherwise. To directly compare double degree managers to single degree managers, we also add the dummy *No MBA or CFA* to our regressions. This variable equals one if neither an MBA nor a CFA is reported for the specific manager. Thus, our reference group consists of managers who have exactly one business degree and we can interpret the coefficient on the *MBA and CFA* dummy as the difference in risk and style extremity, respectively, between double and single degree managers. As dependent variables, we use four measures of a fund's risk and four measures a fund's style extremity. We measure a fund's risk in four ways: total risk, systematic risk, unsystematic risk, and tracking error. We construct three style-extremity measures, one for each style: SMB, HML, and MOM, respectively. The style extremity measures are based on the absolute deviation of a fund's exposure to a specific style (β) from the average exposure of the funds with the same stated investment objective. Thus, a significantly higher or a significantly lower factor loading as compared to the peer group's average will result in a large extremity measure. Additionally, we compute an average style extremity measure for each fund across the three investment styles. The control variables at the fund level are: the logarithm of a fund's lagged size, the fund's lagged expense ratio, the fund's lagged turnover ratio, the fund's age. We also take into account the manager's characteristics. In particular, we control for a manager's other educational degrees by adding dummy variables for any other master's degree and a PhD. Next, we add a dummy that equals one for a female manager and zero otherwise. Furthermore, we add the managers' industry tenure and the managers' age to the regressions. *Time FE* indicates whether the regression includes time-fixed effects. *Investment objective FE* indicates whether the regression includes fixed effects for the stated investment objective. Robust p-values, presented in parentheses, are based on Rogers (1993) standard errors clustered by fund. ***, **, and * denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

	<i>Total risk</i>	<i>Systematic risk</i>	<i>Unsystematic risk</i>	<i>Tracking error</i>	<i>EM(style)</i>	<i>EM(SMB)</i>	<i>EM(HML)</i>	<i>EM(MOM)</i>
<i>MBA and CFA</i>	-0.0099*** (0.000)	-0.0367** (0.047)	-0.0079*** (0.000)	-0.0055** (0.017)	-0.1090*** (0.000)	-0.1069*** (0.002)	-0.1082*** (0.001)	-0.1120*** (0.001)
<i>Ln(size)</i>	0.0015* (0.056)	0.0152*** (0.004)	-0.0013*** (0.005)	-0.0022*** (0.000)	-0.0190*** (0.005)	-0.0222** (0.014)	-0.0142* (0.072)	-0.0206** (0.016)
<i>Expense ratio</i>	0.0129*** (0.000)	0.0770*** (0.001)	0.0086*** (0.000)	0.0150*** (0.000)	0.1455*** (0.000)	0.1457*** (0.000)	0.1424*** (0.000)	0.1483*** (0.000)
<i>Turnover ratio</i>	0.0091*** (0.000)	0.0316* (0.068)	0.0081*** (0.000)	0.0086*** (0.000)	0.0878*** (0.000)	0.0868*** (0.000)	0.0475** (0.028)	0.1292*** (0.000)
<i>Fund age</i>	0.0000 (0.808)	0.0001 (0.848)	0.0000 (0.594)	0.0001* (0.092)	0.0006 (0.590)	0.0002 (0.852)	-0.0002 (0.844)	0.0018 (0.185)
<i>No MBA or CFA</i>	-0.0032 (0.491)	-0.0210 (0.463)	-0.0003 (0.913)	0.0023 (0.644)	0.0067 (0.880)	0.0535 (0.331)	-0.0241 (0.641)	-0.0094 (0.845)
<i>Other master</i>	-0.0017 (0.620)	0.0107 (0.639)	-0.0031 (0.203)	-0.0006 (0.846)	-0.0339 (0.329)	-0.0054 (0.902)	-0.0448 (0.271)	-0.0514 (0.221)
<i>PhD</i>	-0.0225*** (0.001)	-0.1548*** (0.001)	-0.0058 (0.141)	-0.0120*** (0.002)	-0.0399 (0.381)	-0.0008 (0.991)	-0.0426 (0.533)	-0.0764 (0.209)
<i>Female</i>	-0.0109*** (0.001)	-0.0200 (0.330)	-0.0128*** (0.000)	-0.0134*** (0.000)	-0.1699*** (0.000)	-0.1500*** (0.001)	-0.2148*** (0.000)	-0.1450*** (0.000)
<i>Industry tenure</i>	-0.0006** (0.013)	-0.0042*** (0.003)	-0.0001 (0.665)	0.0005** (0.020)	-0.0000 (0.997)	-0.0011 (0.705)	-0.0012 (0.661)	0.0022 (0.437)
<i>Manager age</i>	0.0001 (0.580)	-0.0001 (0.919)	0.0003*** (0.008)	0.0005** (0.011)	0.0059*** (0.002)	0.0074*** (0.002)	0.0055** (0.027)	0.0048** (0.038)
<i>Missing manager age</i>	0.0067 (0.461)	0.0092 (0.872)	0.0144** (0.015)	0.0188** (0.016)	0.2434*** (0.004)	0.3045*** (0.003)	0.2394** (0.029)	0.1863* (0.068)
<i>Constant</i>	0.1222*** (0.000)	0.9143*** (0.000)	0.0640*** (0.000)	0.0420*** (0.000)	0.6054*** (0.000)	0.5578*** (0.000)	0.6691*** (0.000)	0.5893*** (0.000)
<i>Time FE</i>	Yes	Yes	Yes	Yes	No	No	No	No
<i>Investment objective FE</i>	Yes	Yes	Yes	Yes	No	No	No	No
<i>Observations</i>	6,412	6,412	6,412	3,988	6,412	6,412	6,412	6,412
<i>R²</i>	51.2%	19.6%	49.6%	38.0%	6.0%	3.6%	2.7%	3.8%

Table 3: Performance

This table presents results from pooled OLS regressions of fund performance measures on the dummy variable *MBA and CFA*. This dummy equals one if both degrees (a CFA and an MBA) are reported for a specific manager and zero otherwise. To directly compare double degree managers to single degree managers, we also add the dummy *No MBA or CFA* to our regressions. This variable equals one if neither an MBA nor a CFA is reported for the specific manager. Thus, our reference group consists of managers who have exactly one business degree and we can interpret the coefficient on the *MBA and CFA* dummy as the difference in performance between double and single degree managers. As dependent variables, we use four measures of a fund's average yearly performance and four measures of performance extremity. To measure average yearly performance, we use the fund's return, Jensen (1968)'s one-factor alpha, Fama and French (1993)'s three-factor alpha, and Carhart (1997)'s four-factor alpha. The performance extremity measures are based on the absolute deviation of the fund's performance from the average performance of the funds with the same stated investment objective. The control variables at the fund level are: the logarithm of a fund's lagged size, the fund's lagged expense ratio, the fund's lagged turnover ratio, and the fund's age. We also take into account the manager's characteristics. In particular, we control for a manager's other educational degrees by adding dummy variables for any other master's degree and a PhD. Next, we add a dummy that equals one for a female manager and zero otherwise. Furthermore, we add the managers' industry tenure and the managers' age to the regressions. *Time FE* indicates whether the regression includes time-fixed effects. *Investment objective FE* indicates whether the regression includes fixed effects for the stated investment objective. Robust p-values, presented in parentheses, are based on Rogers (1993) standard errors clustered by fund. ***, **, and * denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

	<i>Return</i>	<i>Jensen alpha</i>	<i>Fama/ French alpha</i>	<i>Carhart alpha</i>	<i>EM(return)</i>	<i>EM(Jensen alpha)</i>	<i>EM(Fama/ French alpha)</i>	<i>EM(Carhart alpha)</i>
<i>MBA and CFA</i>	0.0014 (0.731)	0.0039 (0.229)	-0.0014 (0.637)	-0.0016 (0.586)	-0.0931*** (0.004)	-0.0846** (0.010)	-0.0989*** (0.003)	-0.0870*** (0.009)
<i>Ln(size)</i>	-0.0050*** (0.000)	-0.0038*** (0.000)	-0.0024*** (0.002)	-0.0024*** (0.002)	-0.0231*** (0.004)	-0.0291*** (0.000)	-0.0353*** (0.000)	-0.0361*** (0.000)
<i>Expense ratio</i>	-0.0017 (0.674)	-0.0048 (0.195)	-0.0056 (0.113)	-0.0066* (0.055)	0.1689*** (0.000)	0.1844*** (0.000)	0.1615*** (0.000)	0.1582*** (0.000)
<i>Turnover ratio</i>	0.0031 (0.348)	-0.0018 (0.470)	-0.0053** (0.044)	-0.0048* (0.061)	0.1233*** (0.000)	0.1189*** (0.000)	0.1499*** (0.000)	0.1347*** (0.000)
<i>Fund age</i>	0.0002** (0.025)	0.0001* (0.074)	0.0000 (0.719)	0.0000 (0.786)	0.0004 (0.688)	0.0015 (0.161)	0.0026** (0.036)	0.0026** (0.043)
<i>No MBA or CFA</i>	-0.0032 (0.540)	-0.0001 (0.972)	-0.0042 (0.303)	-0.0028 (0.497)	0.0153 (0.761)	0.0089 (0.865)	-0.0444 (0.342)	-0.0368 (0.411)
<i>Other master</i>	0.0074 (0.152)	0.0060 (0.152)	0.0051 (0.205)	0.0038 (0.342)	-0.0123 (0.744)	-0.0379 (0.347)	-0.0229 (0.597)	-0.0459 (0.287)
<i>PhD</i>	-0.0020 (0.830)	-0.0040 (0.619)	-0.0109 (0.177)	-0.0093 (0.264)	-0.1198* (0.074)	-0.1626*** (0.003)	-0.0791 (0.195)	-0.0565 (0.345)
<i>Female</i>	-0.0036 (0.552)	-0.0041 (0.409)	-0.0052 (0.243)	-0.0056 (0.187)	-0.1920*** (0.000)	-0.1793*** (0.000)	-0.1676*** (0.000)	-0.1763*** (0.000)
<i>Industry tenure</i>	-0.0003 (0.323)	-0.0004 (0.145)	-0.0005* (0.083)	-0.0003 (0.283)	0.0055** (0.044)	0.0036 (0.188)	0.0030 (0.273)	0.0021 (0.452)
<i>Manager age</i>	-0.0003 (0.332)	-0.0003 (0.215)	-0.0003 (0.111)	-0.0004** (0.047)	0.0066*** (0.005)	0.0051** (0.036)	0.0080*** (0.000)	0.0086*** (0.000)
<i>Missing manager age</i>	-0.0187 (0.161)	-0.0168 (0.113)	-0.0173* (0.081)	-0.0211** (0.033)	0.2802*** (0.006)	0.1992* (0.052)	0.3529*** (0.000)	0.3612*** (0.000)
<i>Constant</i>	0.2439*** (0.000)	0.0419*** (0.001)	0.0348*** (0.003)	0.0376*** (0.001)	0.4650*** (0.000)	0.5662*** (0.000)	0.4519*** (0.000)	0.4654*** (0.000)
<i>Time FE</i>	Yes	Yes	Yes	Yes	No	No	No	No
<i>Investment objective FE</i>	Yes	Yes	Yes	Yes	No	No	No	No
<i>Observations</i>	6,412	6,412	6,412	6,412	6,412	6,412	6,412	6,412
<i>R²</i>	63.0%	12.5%	8.4%	8.9%	4.8%	4.6%	5.2%	4.9%

CFR Working Papers are available for download from www.cfr-cologne.de.

Hardcopies can be ordered from: Centre for Financial Research (CFR),
Albertus Magnus Platz, 50923 Koeln, Germany.

2016

No.	Author(s)	Title
16-12	A.Betzer, M. Ibel, H.S. Lee, P. Limbach, J.M. Salas	Are Generalists Beneficial to Corporate Shareholders? Evidence from Sudden Deaths
16-11	P. Limbach, M. Schmid, M. Scholz-Daneshgari	Do CEOs Matter? Corporate Performance and the CEO Life Cycle
16-10	V. Agarwal, R. Vashishtha, M. Venkatachalam	Mutual fund transparency and corporate myopia
16-09	M.-A. Göricke	Do Generalists Profit from the Fund Families' Specialists? Evidence from Mutual Fund Families Offering Sector Funds
16-08	S. Kanne, O. Korn, M.Uhrig-Homburg	Stock Illiquidity, Option Prices and Option Returns
16-07	S. Jaspersen	Market Power in the Portfolio: Product Market Competition and Mutual Fund Performance
16-06	O. Korn, M.-O. Rieger	Hedging With Regret
16-05	E. Theissen, C. Westheide	Call of Duty: Designated Market Maker Participation in Call Auctions
16-04	P. Gomber, S. Sagade, E. Theissen, M.C. Weber, C. Westheide	Spoilt for Choice: Order Routing Decisions in Fragmented Equity Markets
16-03	T.Martin, F. Sonnenburg	Managerial Ownership Changes and Mutual Fund Performance
16-02	A.Gargano, A. G. Rossi, R. Wermers	The Freedom of Information Act and the Race Towards Information Acquisition
16-01	G. Cici, S. Gibson, C. Rosenfeld	Cross-Company Effects of Common Ownership: Dealings Between Borrowers and Lenders With a Common Blockholder

2015

No.	Author(s)	Title
15-17	O. Korn, L. Kuntz	Low-Beta Investment Strategies

15-16	D. Blake, A.G. Rossi, A. Timmermann, I. Tonks, R. Wermers	Network Centrality and Pension Fund Performance
15-15	S. Jank, E. Smajlbegovic	Dissecting Short-Sale Performance: Evidence from Large Position Disclosures
15-14	M. Doumet, P. Limbach, E. Theissen	Ich bin dann mal weg: Werteffekte von Delistings deutscher Aktiengesellschaften nach dem Frosta-Urteil
15-13	G. Borisova, P.K. Yadav	Government Ownership, Informed Trading and Private Information
15-12	V. Agarwal, G.O. Aragon, Z. Shi	Funding Liquidity Risk of Funds of Hedge Funds: Evidence from their Holdings
15-11	L. Ederington, W. Guan, P.K. Yadav	Dealer spreads in the corporate Bond Market: Agent vs. Market-Making Roles
15-10	J.R. Black, D. Stock, P.K. Yadav	The Pricing of Different Dimensions of Liquidity: Evidence from Government Guaranteed Bank Bonds
15-09	V. Agarwal, H. Zhao	Interfund lending in mutual fund families: Role of internal capital markets
15-08	V. Agarwal, T. C. Green, H. Ren	Alpha or Beta in the Eye of the Beholder: What drives Hedge Fund Flows?
15-07	V. Agarwal, S. Ruenzi, F. Weigert	Tail risk in hedge funds: A unique view from portfolio holdings
15-06	C. Lan, F. Moneta, R. Wermers	Mutual Fund Investment Horizon and Performance
15-05	L.K. Dahm, C. Sorhage	Milk or Wine: Mutual Funds' (Dis)economies of Life
15-04	A. Kempf, D. Mayston, M. Gehde-Trapp, P. K. Yadav	Resiliency: A Dynamic View of Liquidity
15-03	V. Agarwal, Y. E. Arisoy, N. Y. Naik	Volatility of Aggregate Volatility and Hedge Funds Returns
15-02	G. Cici, S. Jaspersen, A. Kempf	Speed of Information Diffusion within Fund Families
15-01	M. Baltzer, S. Jank, E. Smajlbegovic	Who trades on momentum?

2014

No.	Author(s)	Title
14-15	M. Baltzer, S. Jank, E. Smajlbegovic	Who Trades on Monumentum?
14-14	G. Cici, L. K. Dahm, A. Kempf	Trading Efficiency of Fund Families: Impact on Fund Performance and Investment Behavior
14-13	V. Agarwal, Y. Lu, S. Ray	Under one roof: A study of simultaneously managed hedge funds and funds of hedge funds
14-12	P. Limbach, F. Sonnenburg	Does CEO Fitness Matter?

14-11	G. Cici, M. Gehde-Trapp, M. Göricke, A. Kempf	What They Did in their Previous Life: The Investment Value of Mutual Fund Managers' Experience outside the Financial Sector
14-10	O. Korn, P. Krischak, E. Theissen	Illiquidity Transmission from Spot to Futures Markets
14-09	E. Theissen, L. S. Zehnder	Estimation of Trading Costs: Trade Indicator Models Revisited
14-08	C. Fink, E. Theissen	Dividend Taxation and DAX Futures Prices
14-07	F. Brinkmann, O. Korn	Risk-adjusted Option-implied Moments
14-06	J. Grammig, J. Sönksen	Consumption-Based Asset Pricing with Rare Disaster Risk
14-05	J. Grammig, E. Schaub	Give me strong moments and time – Combining GMM and SMM to estimate long-run risk asset pricing
14-04	C. Sorhage	Outsourcing of Mutual Funds' Non-core Competencies
14-03	D. Hess, P. Immenkötter	How Much Is Too Much? Debt Capacity And Financial Flexibility
14-02	C. Andres, M. Doumet, E. Fernau, E. Theissen	The Lintner model revisited: Dividends versus total payouts
14-01	N.F. Carline, S. C. Linn, P. K. Yadav	Corporate Governance and the Nature of Takeover Resistance

2013

No.	Author(s)	Title
13-11	R. Baule, O. Korn, S. Saßning	Which Beta is Best? On the Information Content of Option-implied Betas
13-10	V. Agarwal, L. Ma, K. Mullally	Managerial Multitasking in the Mutual Fund Industry
13-09	M. J. Kamstra, L.A. Kramer, M.D. Levi, R. Wermers	Seasonal Asset Allocation: Evidence from Mutual Fund Flows
13-08	F. Brinkmann, A. Kempf, O. Korn	Forward-Looking Measures of Higher-Order Dependencies with an Application to Portfolio Selection
13-07	G. Cici, S. Gibson, Y. Gunduz, J.J. Merrick, Jr.	Market Transparency and the Marking Precision of Bond Mutual Fund Managers
13-06	S. Bethke, M. Gehde-Trapp, A. Kempf	Investor Sentiment, Flight-to-Quality, and Corporate Bond Comovement
13-05	P. Schuster, M. Trapp, M. Uhrig-Homburg	A Heterogeneous Agents Equilibrium Model for the Term Structure of Bond Market Liquidity
13-04	V. Agarwal, K. Mullally, Y. Tang, B. Yang	Mandatory Portfolio Disclosure, Stock Liquidity, and Mutual Fund Performance
13-03	V. Agarwal, V. Nanda, S.Ray	Institutional Investment and Intermediation in the Hedge Fund Industry
13-02	C. Andres, A. Betzer, M. Doumet, E. Theissen	Open Market Share Repurchases in Germany: A Conditional Event Study Approach

13-01 J. Gaul, E. Theissen A Partially Linear Approach to Modelling the Dynamics of Spot and Futures Price

2012

No.	Author(s)	Title
12-12	M. Gehde-Trapp, Y. Gündüz, J. Nasev	The liquidity premium in CDS transaction prices: Do frictions matter?
12-11	Y. Wu, R. Wermers, J. Zechner	Governance and Shareholder Value in Delegated Portfolio Management: The Case of Closed-End Funds
12-10	M. Trapp, C. Wewel	Transatlantic Systemic Risk
12-09	G. Cici, A. Kempf, C. Sorhage	Do Financial Advisors Provide Tangible Benefits for Investors? Evidence from Tax-Motivated Mutual Fund Flows
12-08	S. Jank	Changes in the composition of publicly traded firms: Implications for the dividend-price ratio and return predictability
12-07	G. Cici, C. Rosenfeld	A Study of Analyst-Run Mutual Funds: The Abilities and Roles of Buy-Side Analysts
12-06	A. Kempf, A. Pütz, F. Sonnenburg	Fund Manager Duality: Impact on Performance and Investment Behavior
12-05	L. Schmidt, A. Timmermann, R. Wermers	Runs on Money Market Mutual Funds
12-04	R. Wermers	A matter of style: The causes and consequences of style drift in institutional portfolios
12-03	C. Andres, A. Betzer, I. van den Bongard, C. Haesner, E. Theissen	Dividend Announcements Reconsidered: Dividend Changes versus Dividend Surprises
12-02	C. Andres, E. Fernau, E. Theissen	Should I Stay or Should I Go? Former CEOs as Monitors
12-01	L. Andreu, A. Pütz	Choosing two business degrees versus choosing one: What does it tell about mutual fund managers' investment behavior?

2011

No.	Author(s)	Title
11-16	V. Agarwal, J.-P. Gómez, R. Priestley	Management Compensation and Market Timing under Portfolio Constraints
11-15	T. Dimpfl, S. Jank	Can Internet Search Queries Help to Predict Stock Market Volatility?
11-14	P. Gomber, U. Schweickert, E. Theissen	Liquidity Dynamics in an Electronic Open Limit Order Book: An Event Study Approach
11-13	D. Hess, S. Orbe	Irrationality or Efficiency of Macroeconomic Survey Forecasts? Implications from the Anchoring Bias Test
11-12	D. Hess, P. Immenkötter	Optimal Leverage, its Benefits, and the Business Cycle
11-11	N. Heinrichs, D. Hess, C. Homburg, M. Lorenz, S. Sievers	Extended Dividend, Cash Flow and Residual Income Valuation Models – Accounting for Deviations from Ideal Conditions

11-10	A. Kempf, O. Korn, S. Saßning	Portfolio Optimization using Forward - Looking Information
11-09	V. Agarwal, S. Ray	Determinants and Implications of Fee Changes in the Hedge Fund Industry
11-08	G. Cici, L.-F. Palacios	On the Use of Options by Mutual Funds: Do They Know What They Are Doing?
11-07	V. Agarwal, G. D. Gay, L. Ling	Performance inconsistency in mutual funds: An investigation of window-dressing behavior
11-06	N. Hautsch, D. Hess, D. Veredas	The Impact of Macroeconomic News on Quote Adjustments, Noise, and Informational Volatility
11-05	G. Cici	The Prevalence of the Disposition Effect in Mutual Funds' Trades
11-04	S. Jank	Mutual Fund Flows, Expected Returns and the Real Economy
11-03	G.Fellner, E.Theissen	Short Sale Constraints, Divergence of Opinion and Asset Value: Evidence from the Laboratory
11-02	S.Jank	Are There Disadvantaged Clienteles in Mutual Funds?
11-01	V. Agarwal, C. Meneghetti	The Role of Hedge Funds as Primary Lenders

2010

No.	Author(s)	Title
10-20	G. Cici, S. Gibson, J.J. Merrick Jr.	Missing the Marks? Dispersion in Corporate Bond Valuations Across Mutual Funds
10-19	J. Hengelbrock, E. Theissen, C. Westheide	Market Response to Investor Sentiment
10-18	G. Cici, S. Gibson	The Performance of Corporate-Bond Mutual Funds: Evidence Based on Security-Level Holdings
10-17	D. Hess, D. Kreutzmann, O. Pucker	Projected Earnings Accuracy and the Profitability of Stock Recommendations
10-16	S. Jank, M. Wedow	Sturm und Drang in Money Market Funds: When Money Market Funds Cease to Be Narrow
10-15	G. Cici, A. Kempf, A. Puetz	The Valuation of Hedge Funds' Equity Positions
10-14	J. Grammig, S. Jank	Creative Destruction and Asset Prices
10-13	S. Jank, M. Wedow	Purchase and Redemption Decisions of Mutual Fund Investors and the Role of Fund Families
10-12	S. Artmann, P. Finter, A. Kempf, S. Koch, E. Theissen	The Cross-Section of German Stock Returns: New Data and New Evidence
10-11	M. Chesney, A. Kempf	The Value of Tradeability
10-10	S. Frey, P. Herbst	The Influence of Buy-side Analysts on Mutual Fund Trading
10-09	V. Agarwal, W. Jiang, Y. Tang, B. Yang	Uncovering Hedge Fund Skill from the Portfolio Holdings They Hide
10-08	V. Agarwal, V. Fos, W. Jiang	Inferring Reporting Biases in Hedge Fund Databases from Hedge Fund Equity Holdings

10-07	V. Agarwal, G. Bakshi, J. Huij	Do Higher-Moment Equity Risks Explain Hedge Fund Returns?
10-06	J. Grammig, F. J. Peter	Tell-Tale Tails: A data driven approach to estimate unique market information shares
10-05	K. Drachter, A. Kempf	Höhe, Struktur und Determinanten der Managervergütung- Eine Analyse der Fondsbranche in Deutschland
10-04	J. Fang, A. Kempf, M. Trapp	Fund Manager Allocation
10-03	P. Finter, A. Niessen- Ruenzi, S. Ruenzi	The Impact of Investor Sentiment on the German Stock Market
10-02	D. Hunter, E. Kandel, S. Kandel, R. Wermers	Mutual Fund Performance Evaluation with Active Peer Benchmarks
10-01	S. Artmann, P. Finter, A. Kempf	Determinants of Expected Stock Returns: Large Sample Evidence from the German Market

2009

No.	Author(s)	Title
09-17	E. Theissen	Price Discovery in Spot and Futures Markets: A Reconsideration
09-16	M. Trapp	Trading the Bond-CDS Basis – The Role of Credit Risk and Liquidity
09-15	A. Betzer, J. Gider, D.Metzger, E. Theissen	Strategic Trading and Trade Reporting by Corporate Insiders
09-14	A. Kempf, O. Korn, M. Uhrig-Homburg	The Term Structure of Illiquidity Premia
09-13	W. Bühler, M. Trapp	Time-Varying Credit Risk and Liquidity Premia in Bond and CDS Markets
09-12	W. Bühler, M. Trapp	Explaining the Bond-CDS Basis – The Role of Credit Risk and Liquidity
09-11	S. J. Taylor, P. K. Yadav, Y. Zhang	Cross-sectional analysis of risk-neutral skewness
09-10	A. Kempf, C. Merkle, A. Niessen-Ruenzi	Low Risk and High Return – Affective Attitudes and Stock Market Expectations
09-09	V. Fotak, V. Raman, P. K. Yadav	Naked Short Selling: The Emperor`s New Clothes?
09-08	F. Bardong, S.M. Bartram, P.K. Yadav	Informed Trading, Information Asymmetry and Pricing of Information Risk: Empirical Evidence from the NYSE
09-07	S. J. Taylor , P. K. Yadav, Y. Zhang	The information content of implied volatilities and model-free volatility expectations: Evidence from options written on individual stocks
09-06	S. Frey, P. Sandas	The Impact of Iceberg Orders in Limit Order Books
09-05	H. Beltran-Lopez, P. Giot, J. Grammig	Commonalities in the Order Book
09-04	J. Fang, S. Ruenzi	Rapid Trading bei deutschen Aktienfonds: Evidenz aus einer großen deutschen Fondsgesellschaft

09-03	A. Banegas, B. Gillen, A. Timmermann, R. Wermers	The Cross-Section of Conditional Mutual Fund Performance in European Stock Markets
09-02	J. Grammig, A. Schrimpf, M. Schuppli	Long-Horizon Consumption Risk and the Cross-Section of Returns: New Tests and International Evidence
09-01	O. Korn, P. Koziol	The Term Structure of Currency Hedge Ratios

2008

No.	Author(s)	Title
08-12	U. Bonenkamp, C. Homburg, A. Kempf	Fundamental Information in Technical Trading Strategies
08-11	O. Korn	Risk Management with Default-risky Forwards
08-10	J. Grammig, F.J. Peter	International Price Discovery in the Presence of Market Microstructure Effects
08-09	C. M. Kuhnen, A. Niessen	Public Opinion and Executive Compensation
08-08	A. Pütz, S. Ruenzi	Overconfidence among Professional Investors: Evidence from Mutual Fund Managers
08-07	P. Osthoff	What matters to SRI investors?
08-06	A. Betzer, E. Theissen	Sooner Or Later: Delays in Trade Reporting by Corporate Insiders
08-05	P. Linge, E. Theissen	Determinanten der Aktionärspräsenz auf Hauptversammlungen deutscher Aktiengesellschaften
08-04	N. Hautsch, D. Hess, C. Müller	Price Adjustment to News with Uncertain Precision
08-03	D. Hess, H. Huang, A. Niessen	How Do Commodity Futures Respond to Macroeconomic News?
08-02	R. Chakrabarti, W. Megginson, P. Yadav	Corporate Governance in India
08-01	C. Andres, E. Theissen	Setting a Fox to Keep the Geese - Does the Comply-or-Explain Principle Work?

2007

No.	Author(s)	Title
07-16	M. Bär, A. Niessen, S. Ruenzi	The Impact of Work Group Diversity on Performance: Large Sample Evidence from the Mutual Fund Industry
07-15	A. Niessen, S. Ruenzi	Political Connectedness and Firm Performance: Evidence From Germany
07-14	O. Korn	Hedging Price Risk when Payment Dates are Uncertain
07-13	A.Kempf, P. Osthoff	SRI Funds: Nomen est Omen
07-12	J. Grammig, E. Theissen, O. Wuensche	Time and Price Impact of a Trade: A Structural Approach
07-11	V. Agarwal, J. R. Kale	On the Relative Performance of Multi-Strategy and Funds of Hedge Funds
07-10	M. Kasch-Haroutounian, E. Theissen	Competition Between Exchanges: Euronext versus Xetra

07-09	V. Agarwal, N. D. Daniel, N. Y. Naik	Do hedge funds manage their reported returns?
07-08	N. C. Brown, K. D. Wei, R. Wermers	Analyst Recommendations, Mutual Fund Herding, and Overreaction in Stock Prices
07-07	A. Betzer, E. Theissen	Insider Trading and Corporate Governance: The Case of Germany
07-06	V. Agarwal, L. Wang	Transaction Costs and Value Premium
07-05	J. Grammig, A. Schrimpf	Asset Pricing with a Reference Level of Consumption: New Evidence from the Cross-Section of Stock Returns
07-04	V. Agarwal, N.M. Boyson, N.Y. Naik	Hedge Funds for retail investors? An examination of hedged mutual funds
07-03	D. Hess, A. Niessen	The Early News Catches the Attention: On the Relative Price Impact of Similar Economic Indicators
07-02	A. Kempf, S. Ruenzi, T. Thiele	Employment Risk, Compensation Incentives and Managerial Risk Taking - Evidence from the Mutual Fund Industry -
07-01	M. Hagemester, A. Kempf	CAPM und erwartete Renditen: Eine Untersuchung auf Basis der Erwartung von Marktteilnehmern

2006

No.	Author(s)	Title
06-13	S. Čeljo-Hörhager, A. Niessen	How do Self-fulfilling Prophecies affect Financial Ratings? - An experimental study
06-12	R. Wermers, Y. Wu, J. Zechner	Portfolio Performance, Discount Dynamics, and the Turnover of Closed-End Fund Managers
06-11	U. v. Lilienfeld-Toal, S. Ruenzi	Why Managers Hold Shares of Their Firm: An Empirical Analysis
06-10	A. Kempf, P. Osthoff	The Effect of Socially Responsible Investing on Portfolio Performance
06-09	R. Wermers, T. Yao, J. Zhao	Extracting Stock Selection Information from Mutual Fund holdings: An Efficient Aggregation Approach
06-08	M. Hoffmann, B. Kempa	The Poole Analysis in the New Open Economy Macroeconomic Framework
06-07	K. Drachter, A. Kempf, M. Wagner	Decision Processes in German Mutual Fund Companies: Evidence from a Telephone Survey
06-06	J.P. Krahnert, F.A. Schmid, E. Theissen	Investment Performance and Market Share: A Study of the German Mutual Fund Industry
06-05	S. Ber, S. Ruenzi	On the Usability of Synthetic Measures of Mutual Fund Net-Flows
06-04	A. Kempf, D. Mayston	Liquidity Commonality Beyond Best Prices
06-03	O. Korn, C. Koziol	Bond Portfolio Optimization: A Risk-Return Approach
06-02	O. Scaillet, L. Barras, R. Wermers	False Discoveries in Mutual Fund Performance: Measuring Luck in Estimated Alphas
06-01	A. Niessen, S. Ruenzi	Sex Matters: Gender Differences in a Professional Setting

2005

No.	Author(s)	Title
05-16	E. Theissen	An Analysis of Private Investors' Stock Market Return Forecasts
05-15	T. Foucault, S. Moinas, E. Theissen	Does Anonymity Matter in Electronic Limit Order Markets
05-14	R. Kosowski, A. Timmermann, R. Wermers, H. White	Can Mutual Fund „Stars“ Really Pick Stocks? New Evidence from a Bootstrap Analysis
05-13	D. Avramov, R. Wermers	Investing in Mutual Funds when Returns are Predictable
05-12	K. Giese, A. Kempf	Liquiditätsdynamik am deutschen Aktienmarkt
05-11	S. Ber, A. Kempf, S. Ruenzi	Determinanten der Mittelzuflüsse bei deutschen Aktienfonds
05-10	M. Bär, A. Kempf, S. Ruenzi	Is a Team Different From the Sum of Its Parts? Evidence from Mutual Fund Managers
05-09	M. Hoffmann	Saving, Investment and the Net Foreign Asset Position
05-08	S. Ruenzi	Mutual Fund Growth in Standard and Specialist Market Segments
05-07	A. Kempf, S. Ruenzi	Status Quo Bias and the Number of Alternatives - An Empirical Illustration from the Mutual Fund Industry
05-06	J. Grammig, E. Theissen	Is Best Really Better? Internalization of Orders in an Open Limit Order Book
05-05	H. Beltran-Lopez, J. Grammig, A.J. Menkveld	Limit order books and trade informativeness
05-04	M. Hoffmann	Compensating Wages under different Exchange rate Regimes
05-03	M. Hoffmann	Fixed versus Flexible Exchange Rates: Evidence from Developing Countries
05-02	A. Kempf, C. Memmel	Estimating the Global Minimum Variance Portfolio
05-01	S. Frey, J. Grammig	Liquidity supply and adverse selection in a pure limit order book market

2004

No.	Author(s)	Title
04-10	N. Hautsch, D. Hess	Bayesian Learning in Financial Markets – Testing for the Relevance of Information Precision in Price Discovery
04-09	A. Kempf, K. Kreuzberg	Portfolio Disclosure, Portfolio Selection and Mutual Fund Performance Evaluation
04-08	N.F. Carline, S.C. Linn, P.K. Yadav	Operating performance changes associated with corporate mergers and the role of corporate governance
04-07	J.J. Merrick, Jr., N.Y. Naik, P.K. Yadav	Strategic Trading Behaviour and Price Distortion in a Manipulated Market: Anatomy of a Squeeze
04-06	N.Y. Naik, P.K. Yadav	Trading Costs of Public Investors with Obligatory and Voluntary Market-Making: Evidence from Market Reforms
04-05	A. Kempf, S. Ruenzi	Family Matters: Rankings Within Fund Families and Fund Inflows
04-04	V. Agarwal, N.D. Daniel, N.Y. Naik	Role of Managerial Incentives and Discretion in Hedge Fund Performance

04-03	V. Agarwal, W.H. Fung, J.C. Loon, N.Y. Naik	Risk and Return in Convertible Arbitrage: Evidence from the Convertible Bond Market
04-02	A. Kempf, S. Ruenzi	Tournaments in Mutual Fund Families
04-01	I. Chowdhury, M. Hoffmann, A. Schabert	Inflation Dynamics and the Cost Channel of Monetary Transmission



centre for financial research
cfr/university of cologne
albertus-magnus-platz
D-50923 cologne
fon +49(0)221-470-6995
fax +49(0)221-470-3992
kempf@cfr-cologne.de
www.cfr-cologne.de