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CFR-working paper no. 06-07

**decision processes in German
mutual fund companies: evidence
from a telephone survey**

K. Drachter • A. Kempf • M. Wagner

centre for financial research
Look deeper

Decision Processes in German Mutual Fund Companies:

Evidence from a Telephone Survey

Abstract

The performance of actively managed mutual funds is largely dependent upon the investment decisions of the responsible fund managers. However, little is known about the behavior of these managers. This survey study sheds light on the decision processes of German fund managers. The design of the survey allows us to link fund manager data with information about mutual funds and fund management companies. This synthesis results in improved understanding of the mutual fund management decision process. The evidence shows that (i) it is possible to conduct a high quality survey study even though managers know that their answers will be linked to their performance and (ii) the behavior of managers depends heavily on the characteristics of the funds and the characteristics of the fund company.

Keywords: Mutual funds, fund managers, decision process, survey study

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1. Introduction

Most investors do not invest their money themselves, but instead delegate investment decisions to mutual fund managers. It comes as no surprise, therefore, that there is a wealth of literature on mutual fund performance.¹ However, much less is known about the mutual fund managers themselves.

Much of the existing body of knowledge on mutual fund managers can be summarized in a single paragraph. Baks (2003) finds that up to 50% of mutual fund performance can be attributed to the fund manager. Ding and Wermers (2005) show that experienced managers who are responsible for large funds outperform their less experienced peers. Fund managers follow herding strategies (e.g. Grinblatt *et al.*, 1995) and adjust the risk of the fund portfolio in response to the performance of their fund halfway through the year (e.g. Brown *et al.*, 1996). Young fund managers perform better than older managers (e.g. Chevalier and Ellison, 1999a) and invest in more conventional portfolios (e.g. Chevalier and Ellison, 1999b). Female fund managers follow less risky and more conventional investment strategies than their male counterparts (e.g. Niessen and Ruenzi, 2006). Finally, the performance of fund managers is positively related to the quality of the college they attended (e.g. Chevalier and Ellison, 1999a).

However, in all of these studies, the behavior and decisions of mutual fund managers are not assessed directly. Past studies are instead based on observation of the decision outcomes, i.e. the fund's performance or the actual portfolio changes. How fund managers actually reach their decisions and what information they use is largely unknown at present. As a result, the investment process remains a black box. The main purpose of this study is to shed some light on this issue. Analyzing the decision process of mutual fund managers is a highly relevant topic since fund investors, as well as rating agencies, are interested not

¹ See for example Ippolito (1989) and Elton *et al.* (1993) on the performance of mutual funds and Hendricks *et al.* (1993), Brown and Goetzmann (1995) and Carhart (1997) on performance persistence.

only in past performance, but also in the fund investment process (e.g. Mamaysky and Spiegel, 2002, Jewell and Livingston, 1999, Fitch, 2006, Moody's, 2006, and Standard and Poor's, 2005). Despite its obvious importance, little empirical evidence is available on the investment process in mutual funds. This study addresses this deficiency by means of a survey instrument.

Despite their shortcomings, such as possible selectivity biases (e.g. Maddala, 1983), surveys remain the only way to gain direct insight into the decision process. Previous authors use surveys in order to assess determinants of fund managers' decision making. For instance, Farnsworth and Taylor (2006) use a survey instrument to gather data on fund managers' compensation, while Strong and Xu (2003) document a home bias using survey data. Brozynski *et al.* (2006) use survey data to show that herding behavior of fund managers decreases with their job experience. None of these studies, however, link the collected data on the fund managers to information on the funds they manage. As a result, these studies can describe the behavior of fund managers, but are unable to analyze whether the characteristics of the funds they manage or the characteristics of the company they work for influence their behavior. This is the first survey study that attempts to link the information provided by fund managers to information about the funds and fund companies.

The contribution of this study is twofold. First, it demonstrates how to conduct a high quality survey study of fund managers even if the managers know that their performance will be assessed. Second, it uses the combined information to provide a detailed analysis of the decision process in mutual fund management. By investigating whether those characteristics of fund managers that have been shown in prior research to affect fund performance (e.g., age, education, and experience) are also related to elements of the decision making process (e.g., investment strategies, sources of information and externally imposed risk limits), this research goes beyond the simplistic relation between the

characteristics of fund managers and specific situations in which management decisions are made by studying instead the linkages between the managers' decisions, the funds managed, and the mutual fund company. Organizational factors, in particular, could have an important impact on individual investment decisions. The study also examines the importance of fund managers' characteristics relative to fund and fund company characteristics in decision making.

The paper is structured as follows: Section 2 describes how the survey was conducted and provides information about the quality of the data. The main results are presented in Sections 3 - 5. Section 3 describes the characteristics of mutual fund managers while Section 4 focuses on the decision making process of fund managers. Section 5 addresses the restrictions imposed on the managers by the investment companies. Section 6 concludes.

2. Survey

2.1 Sampling

The survey focuses on German mutual fund managers who are responsible for equity mutual funds.² A database that includes the names of relevant fund managers is not available so direct access to the target group is not feasible.

To generate the sample of mutual fund managers, the names of all equity mutual funds operated by the 44 investment companies that are members of the German Investment and Asset Management Association (BVI) were collected.³ The general managers of these companies were asked to provide the names and telephone numbers of the fund managers who were responsible for the investment decisions of each fund. To increase their willingness to participate in the survey, two letters of recommendation were attached: one

² For detailed information about the German mutual fund market see e.g. Ber, Kempf and Ruenzi (2006).

³ The BVI is the German equivalent of the Investment Company Institute (ICI) in the US.

from the German Central Bank (Deutsche Bundesbank), and the other from the BVI. This ensured a high response rate (75%) and generated a list of 215 equity fund managers.

The questionnaire that was used was designed and tested in early 2004. In October 2004, letters were sent out to the fund managers explaining the survey and describing its goals. Then telephone interviews based on the questionnaire were carried out by the Institut fuer angewandte Sozialwissenschaft GmbH (Infas).⁴ Of the 215 mutual fund managers, 153 managers (71%) participated in the telephone interviews between November 2004 and January 2005. Although the total number of fund managers in the target group is unknown and thus the total response rate cannot be calculated exactly, the response rate seems to be fairly high in comparison with surveys in the US market. For example, CFA Institute *et al.* (2005) report a response rate of 24% while Farnsworth and Taylor (2006) report a response rate of only 6%.

The average duration of the interviews was 40 minutes. No interviews were terminated prior to completion of the questionnaire. Of the 62 managers who did not participate in the survey: 37 refused to give an interview, 21 could not be reached by the interviewers, and 4 stated that they did not belong to the target group.

2.2 Questionnaire

The questionnaire used in this survey has several remarkable features. It allows for the reconstruction of the complete career path of a manager and provides information about the decision process in the mutual fund. Most importantly, it makes it possible to link information about the manager with information about the fund and the investment company. This allows us to analyze how the behavior of a manager depends on the characteristics of the fund she manages and the organizational structure of the fund company. The portion of the questionnaire used in this study is provided in the appendix.

⁴ The “Institute for applied social sciences” (Infas) is a private and independent market and social research institute in Germany.

2.3 Matching

The survey data set was matched with the BVI equity mutual fund database. This database includes monthly returns and total net assets for all open-end mutual funds offered by the members of the BVI. It also provides the investment objectives and various other fund characteristics as well as information about the fund company. At the end of 2004, there were 627 equity mutual funds in the BVI database. About half of these funds (307) are run by managers in the sample. There are 23 funds that are associated with two managers and one fund that is associated with three managers. Thus, the final sample consists of 332 combinations of fund and fund manager.

2.4 Sample Selectivity

Sample selectivity is tested at the level of the fund company and at the level of a single fund. At the fund company level, a logistic regression is estimated where the dependent variable takes a value of 1 if the general manager of the company delivered the listing of fund managers and 0 otherwise. The first test addresses whether the size of the company has an impact on their willingness to respond. Size is measured by (i) the number of equity mutual funds offered by the company and (ii) by the aggregated total net asset value of the respective funds. Neither variable is related to the likelihood of response.⁵ The second test examines whether the specialization of the investment company has an impact on the likelihood of response. Specialization is represented by the number of investment objectives followed by the equity mutual funds of the company. Specialization has no significant impact on the likelihood of response.⁶

At the individual fund level, it is reasonable to hypothesize that managers of better performing funds are more likely to participate in the survey. Performance is measured in

⁵ For case (i) the test statistics are $\exp(B) = 1.09$ and $p = 0.23$; for case (ii) the respective values are $\exp(B) = 1.00$ and $p = 0.29$.

⁶ The test statistics are $\exp(B) = 1.08$ and $p = 0.23$.

two different ways. The first measure is the return of the fund, r_i . This is the simplest and most widely used measure in the industry. The second performance measure, $r_i - \bar{r}$, is the excess return of fund i over the equally weighted average return, \bar{r} , of all funds in its peer group (defined according to the BVI investment objectives). Both performance measures are based on 2004 returns. In the logistic regression, the dependent variable takes a value of 1 if the manager of the fund participated in the survey and 0 otherwise. In addition to the performance variables, total net asset value and age of the fund are used as control variables. Both have been shown to have an impact on fund performance (e.g. Chen *et al.*, 2004, and Otten and Bams, 2002).

/insert Table 1 about here/

Table 1 shows that the probability of inclusion in the sample does not depend on fund performance. Funds in the sample are slightly older than funds that did not participate, but they do not differ in size.⁷ These results lead to the conclusion that the sample is representative of German equity mutual funds in general.

3. Decision Makers

This section provides information about the characteristics of the sample respondents. The main results are provided in Table 2. The vast majority (88%) of German mutual fund managers are male. Fund managers are significantly more likely to be male than are other full-time employees in Germany. This finding is similar to the results reported for US fund managers. Farnsworth and Taylor (2006) document that 90% of US portfolio managers are male and CFA Institute *et al.* (2005) find that 85% of US managers are male.

German fund managers are on average 38 years old. This result does not differ significantly from the average age of all full-time employees in Germany. Compared to their peers in the

⁷ The funds included in the sample have a mean (median) age of 10.01 (7) years, whereas the mean (median) age of the remaining funds is 8.43 (6) years.

US, however, German fund managers tend to be younger. Gottesman and Morey (2006) find that the mean age of US fund managers is 47 years and according to Farnsworth and Taylor (2006), the largest single age grouping of respondents (36% of their sample) is between 40 and 49 years old.

The educational level of German fund managers is much higher than that of other full-time employees with 78% of fund managers holding a university degree compared with 20% of all full-time employees. The educational level of German fund managers is similar to that of US fund managers. Farnsworth and Taylor (2006) report that more than 70% of the US fund managers hold an MBA. Similar findings are reported in CFA Institute *et al.* (2005) and Gottesman and Morey (2006). The Chartered Financial Analyst (CFA) certificate is less common in Germany than in the US. In the sample, 41% of German fund managers hold a CFA certificate or a similar designation. In the sample of Farnsworth and Taylor (2006), 68% of US managers hold a CFA or a Certified Public Accountant (CPA) designation. In addition, the percentages reported by the CFA Institute *et al.* (2005) and Gottesman and Morey (2006) are higher than those found in Germany. The difference between Germany and the US is consistent with the fact that CFA certification became popular in Germany only recently. In the sample, the managers with a CFA degree are significantly younger (mean age = 36.7 years) than those that do not have a CFA degree (mean age = 38.9 years).

/insert Table 2 about here/

German fund managers are generally less experienced than US fund managers. The average job experience of German fund managers is about 8 years. Only 4% of German managers have worked in the business for more than 20 years. Farnsworth and Taylor (2006) find that 30% of US managers have managed a fund for at least 20 years. Since US managers tend to be older and graduate from college earlier, it is not surprising that they have more management experience.

The status of a fund manager within her company is measured using three variables: job title, total net assets under management, and salary. Forty nine percent of the respondents label themselves as senior equity fund managers. There are almost no junior fund managers in the sample. This is consistent with the focus of the paper which studies fund managers who are responsible for investment decisions. Junior fund managers might assist in the investment process but are unlikely to have full responsibility for it.

The total net asset value managed by the manager is calculated by adding the total net asset value of all funds under the manager's control (independent of any other manager managing the same funds). The aggregate volume of assets under management ranges from 4 to 9,781 million €. ⁸ The distribution is highly skewed. The arithmetic mean of the aggregate assets under management (562 million €) differs strongly from the median (176 million €). The median value for the sample is much lower than the median of 369 million € reported in Farnsworth and Taylor (2006) for US fund managers. Given that German and US fund managers run about the same number of funds on average, the difference in net asset value per manager reflects the fact that the average mutual fund in the US is much larger than the average German fund (e.g. Investment Company Institute, 2005). ⁹

The fund managers reported their annual gross *fixed* salary which is measured in five categories and their average *variable* salary as a percentage of the fixed amount. ¹⁰ Both salary types are combined to calculate the average *total* salary. The total salary of managers ranges from 47,500 € to 352,500 €. Most managers (57.5%) earn more than 105,000 €, but only a small percentage (3.9%) earn more than 250,000 €. The average total salary of a fund manager is 121,706 € and the median value is 111,000 €. ¹¹ The median income is

⁸ The total net asset values of the funds are taken from the BVI fund database.

⁹ The managers in the sample run about two funds on average. Baks (2003) reports for 1999 that US fund managers run 1.36 funds on average.

¹⁰ The fixed salary was categorized as follows: ≤ 55,000 €, 55,001 € - 80,000 €, 80,001 - 105,000 €, 105,001 € - 130,000 € and > 130,000 €. We use the mean value of each category to calculate the gross fixed salary. For the lowest (highest) category, we assume 47,500 € (165,000 €) as the average salary.

¹¹ Junior fund managers earn 70,867 €, fund managers 89,415 €, senior fund managers 122,504 €, heads of fund management 165,563 € and members of the executive board 182,200 €, on average.

lower than the 188,215 € reported by CFA Institute *et al.* (2005) for the US market. The difference in total remuneration of the best paid managers in the US and Germany is even greater. The German managers in the top decile earn at least 187,600 €, whereas the US managers in the top decile earn at least 595,375 €. The lower salaries of German managers is consistent with other findings for the sample. For example, German fund managers are younger, have less job experience, and manage a smaller portfolio than their US counterparts.

4. Decision making process

In this section, the types of decisions managers are responsible for and the methods used by the managers to make those decisions are analyzed. To address the question of the managers' responsibility for different types of decisions, the managers were asked to assign ranks ranging from 0 (= not responsible) to 5 (= fully responsible) to six types of decisions. Table 3 shows that the managers are mainly responsible for the timing of trades and stock selection and to a somewhat lower extent for portfolio strategy, sector allocation, and the cash ratio. The lowest degree of responsibility is reported for decisions regarding the basic strategy of the fund. This is consistent with the fact that the basic fund strategy is dictated by the fund prospectus and hence is decided when the fund is initially set up. Thereafter, the manager is typically obliged to manage the fund in accordance with the basic strategy.

/insert Table 3 about here/

The majority of the interviewed managers consider the fund's rate of return relative to a fixed benchmark (typically an index) to be a very important criterion for their success.¹² Fund managers apply various strategies to increase fund returns. Table 4 provides information about the ranks that managers assign to different performance enhancement

¹² For funds' rates of return relative to a fixed benchmark, 90.8% of the managers assigned an importance ranking of 4 or 5.

strategies. A rank of 5 denotes a very promising strategy while a rank of 0 indicates that a strategy is not promising.

/insert Table 4 about here/

The active search for new information is clearly viewed by fund managers as the most promising approach for performance improvement. The average rank for this strategy is significantly (1% level) higher than the ranks for all other strategies. In-depth analysis of information already known is considered to be less important than the active search for new information but more important than the cost-efficiency factors. Fast reaction to new information releases and cost efficient implementation of trading strategies are considered to be significantly more important than cost-efficient indexing which is ranked as the least important factor in performance improvement. There are at least two interpretations of this result. It is possible that fund managers place little importance on fees. This is consistent with existing research showing that investors place relatively little importance on fees. Wilcox (2003) finds that fund investors pay little attention to management fees while Alexander *et al.* (1998) find that most investors do not know their funds' expense ratios. In addition, fund managers might be overconfident (e.g. Barber and Odean, 2001, and Christoffersen and Sarkissian, 2003) and this may lead to a perception that cost reduction is a less productive use of their time than searching out new investment opportunities.

Since managers are primarily interested in new information, it is of interest to determine where they obtain such information. To answer this question, sources of information were ranked by the managers on a scale from 0 (= not important) to 5 (= very important). These results are reported in Table 5.

/insert Table 5 about here/

Fund managers indicate that discussions with the executive boards of the companies in which they invest are the most important source of new information. Since such

conversations can generate new information, this answer is consistent with their view that the active search for new information is the best strategy for performance improvement. This is also consistent with the approach of the rating agencies that state they rely on discussions with management when evaluating a company (e.g. Jewell and Livingston, 1999, Fitch, 2006, Moody's, 2006 and Standard and Poor's, 2005). Conversations with other fund managers are also ranked very highly by the interviewed managers. It is interesting to note that fund managers deem personal conversation with other fund managers to be important, but do not believe that information about the investment decisions made by other managers is an important source of information. This suggests that the managers believe that they are capable of drawing better conclusions than their colleagues from the same information set. These findings are consistent with earlier studies based on US data. Shiller and Pound (1989) provide survey evidence of the importance of direct interpersonal communications in the investment decision making of institutional as well as individual investors while Hong *et al.* (2005) report similar results for mutual fund managers. Finally, public information and analyst evaluations are deemed to be more important than macroeconomic forecasts while macroeconomic forecasts are considered more important than the portfolio investments of other fund managers.

Not all fund managers have the same access to company management. It is likely that managers who control larger portfolios enjoy greater access to company managers and, as a result, assign greater importance to conversations with executive boards. This hypothesis is tested using an ordinal regression:

$$(1) \quad \textit{PROB}(\textit{rank}) = F(\textit{assets under management}, \textit{manager}, \textit{company}, \textit{fund}),$$

where *rank* denotes the value that a manager assigns to the importance of conversations with executive boards. The hypothesized explanatory variable is the amount of assets under management. Characteristics of the manager (age, gender, education, and job experience), the fund company (number of equity mutual funds), and the fund (fund investment

concentration) are included as control variables. Fund investment concentration is measured by seven geographical dummy variables.¹³ These variables are based on the official BVI fund classification, which is comparable to the Strategic Insight Fund Objective Codes.¹⁴

The results shown in Table 6 support the hypothesis above. The amount of assets under management is directly related to the perceived importance of conversations with company executives. This holds true even after controlling for the size of the investment company which is also positive and significant. Younger managers rely more on conversations with management than older managers do and managers who have a university degree place more importance on conversations with company executives. Managers of global funds view personal conversations as less important but there are no significant differences between the beliefs of managers of funds focused on other geographical areas.

/insert Table 6 about here/

It is possible that managers who think that conversations with executive boards are important are able to use information obtained in such conversations to outperform other managers. To test this hypothesis, two groups were formed. The first group consists of 17 managers who indicated that conversations with executive boards were not important (rank = 0) and the second group contains 62 managers who viewed conversations with executive boards as very important (rank = 5). The performance of a manager is calculated as the

¹³ Since nine fund categories are represented by only one manager per grouping, we combine similar fund categories together. The category “single European countries” contains only the funds invested in companies from a single European country other than the home country, Germany. Funds invested in companies from a number of European countries were grouped together under the heading of “Europe”. This group also comprises funds investing exclusively in European small- and mid-caps. Global small- and mid-cap funds and funds that invest worldwide without any company size limits were grouped under the category “Global”. “Asia” contains funds investing in companies from the Far East including Japan. The categories “Germany”, “North America” and “Latin America” are not aggregated.

¹⁴ Funds marked by the BVI as being specialized in a single industry sector do not carry any geographic mark. These funds are assigned to the respective regions with the help of the investment strategy specified in the fund prospectus. Most sector funds (91.5%) are categorized as global investment funds. The remaining funds invest in Europe or North America.

value weighted average of the excess returns of all funds managed by the manager.¹⁵ The first row in Table 7 shows that managers who place very high importance on conversations with executive boards significantly outperform managers for whom this information source is of no importance. The first group has an average excess return of 1.5% per year, while the second group underperforms its benchmark by 1.0%.¹⁶

/insert Table 7 about here/

To control for size effects, the sample is divided according to the value of assets under management (above or below the median). The 34 managers in the first group are classified as large managers and the remaining 45 managers are classified as small managers. Within each group, the managers are segregated according to their attitude towards conversation with executives (very important or unimportant). Almost all large managers (41 out of 45) deem conversation with executives to be very important. Small managers' attitudes are much more diffuse (21 out of 34 managers regard such conversations as very important). The performance of the different groups is presented in the second and third rows of Table 7. There is no significant difference in performance between the two groups of large managers. However, the results for the sample of small managers show that managers who place high importance on talking to executives outperform managers who do not view such conversations as important.¹⁷ Pollet and Wilson (2006) find that small managers invest more heavily in small companies while Bhushan (1989) finds that smaller companies have weaker analyst coverage. These findings suggest that the benefits of talking to the managers of small firms are greater than the benefits obtained from talking to the managers

¹⁵ Similar results are obtained when measuring performance based on raw returns.

¹⁶ The results remain qualitatively unchanged when comparing managers who place high importance (rank 4 or rank 5) on conversations with executive boards with managers who place low importance (rank 0 or rank 1) on conversations with executive boards. The first group consists of 96 managers, the second group of 22 managers. The performance difference between the groups is 2.1%. It is significantly different from zero at the 10% level.

¹⁷ Both results remain qualitatively unchanged when comparing managers who place high importance (rank 4 or rank 5) on conversations with executive boards with managers who place low importance (rank 0 or rank 1) on conversations with executive boards.

of large companies. This may be due to the fact that less information is publicly available for small companies and thus the benefits of seeking out such information are large.

The managers were also asked to indicate the relative importance of fundamental versus technical information in their decision making. Most managers (120 or 79.1%) consider fundamental information to be more important. As shown in Table 8, the managers' responses are consistent with their information preference. Those managers who prefer fundamental information assign a higher importance to the sources of fundamental information (conversations with company representatives, company analyses, and macroeconomic forecasts) while those managers who prefer technical information consider information on prices and trading volume to be more important. These differences between the two groups are significant at the 1% level. No significant difference between the two groups is found when evaluating the importance of media publications and portfolio decisions taken by managers of comparable funds. This result underlines the consistency of the answers given, since these information sources are likely to be relevant for both technical and fundamental analysis.

/insert Table 8 about here/

In Table 9, the performance of managers who rely on fundamental information is compared with that of managers who rely on technical information. To control for size effects, the managers are again divided into two groups. Within the group of large (small) managers, 60 (51) managers consider fundamental information to be more important than technical information and 5 (14) managers consider technical information to be more important than fundamental information. There are no significant differences in performance between managers who prefer fundamental information and managers who favor technical information.

/insert Table 9 about here/

5. Impact of the fund company

Fund managers are employees of fund companies and can only make decisions within the firm's organizational framework. The restrictions imposed by companies affect management behavior. In this section, the effects of these constraints are examined.

Setting risk limits is the most direct way to restrict fund managers. Most fund managers (63.4%) in the sample report that their portfolio decisions are subject to risk limits that exceed legal regulations.¹⁸ Almazan *et al.* (2004) and Kempf and Ruenzi (2005) report that in larger fund companies such restrictions are less common and managers have considerably more freedom to adjust their portfolios. The central hypothesis is, therefore, that in smaller companies, the managers' portfolio decisions are subject to enhanced risk limits more often than in larger companies.¹⁹ To test this hypothesis, a logistic regression is estimated. The explanatory variables are the same as in Equation (1). The dependent variable takes a value of 1 if a manager faces risk limits exceeding legal regulations, and 0 otherwise. The results are presented in the first column of Table 10.

/insert Table 10 about here/

The results support the hypothesis.²⁰ Small fund companies are more likely to restrict their fund managers than large ones.²¹ Characteristics of the fund managers have no effect on the implementation of enhanced risk limits while fund characteristics have only a minor impact.

¹⁸ Limiting the tracking error of the portfolio and defining maximum positions in single stocks or market segments are the most common risk limits. Tracking error limitations apply to 72.2% of the restricted managers and position limitations to 52.1% of the managers. To a smaller extent, fund managers are restricted with respect to the cash ratio (24.3%), fund volatility (21.6%) and the value at risk (19.8%) of the fund portfolio.

¹⁹ In Almazan *et al.* (2004), this is explained by “peer monitoring”. Fund managers benefit from the good reputation of the investment company they work for. Hence, they monitor their peers. Due to the higher number of employed managers in a large company, a manager is monitored by his peers more closely.

²⁰ In an alternative specification we used the total net asset value of the fund company as the explanatory variable. The results remain qualitatively unchanged.

²¹ The companies that do (not) restrict their managers have, on average, 35 (65) funds with a total net asset value of 7.7 (16.3) billion €.

Investment companies can also influence the managers' decisions by regular performance assessment. About half of the managers (47.7%) are evaluated more than once a year²² and a further 43.0% are evaluated annually.²³ Only 1.3% of the managers are evaluated less frequently. The remaining managers did not specify any fixed schedule for evaluations.

The frequency of performance evaluation may depend on characteristics of the fund manager, characteristics of the fund company, or characteristics of the fund. Like above, small fund companies are more likely to evaluate fund managers more frequently than large companies. The dependent variable is the number of performance evaluations per year and the explanatory variables are the same as in the test of enhanced risk limits. The results, shown in the second column of Table 10, do not support this hypothesis. The size of the investment company has no impact on the frequency of performance evaluation. This suggests that small fund companies restrict their managers by setting stricter risk limits rather than by evaluating their managers more frequently.

A final question is whether fund managers who are monitored more closely perform better. The managers are first divided into two groups depending on risk limits. Since company size has been shown to be an important determinant of these limits, subgroups were formed accordingly. The first group consists of managers who face enhanced risk limits; 33 of these managers work for large companies and 53 work for small companies. The second group consists of managers who do not face enhanced risk limits; 30 of these managers work for large fund companies and 20 work for small companies. Table 11 shows the excess returns of managers classified by whether they face enhanced risk limits. There is no significant difference in performance, even after controlling for the size of the fund company. These results confirm the findings of Almazan *et al.* (2004) who report that the

²² Evaluations are done weekly for 3.5% of managers, monthly for 22.5% of managers, quarterly for 14.0% of managers, semi-annually for 5.6%. Evaluation frequencies of 3, 6, and 24 times per year are each reported by 0.7% of managers.

²³ The majority of managers who are evaluated annually (90.8%) face a fixed evaluation date. For more than half of those managers (52.5%) this date is the end of December. Thirty four percent of the managers are evaluated at the end of September and the rest have evaluation dates spread across the year.

level of constraints has no impact on the risk-adjusted fund return. This is consistent with an optimal contracting equilibrium.

/insert Table 11 about here/

To test the effect of the frequency of evaluations on fund performance, the sample of managers is divided into those that are assessed at least twice a year and those that are evaluated less frequently. There is no significant difference in the performance of the two groups. This leads to the conclusion that the restrictions imposed by the fund companies can not be used by investors to select better performing managers.

6. Summary

Fund investors and rating agencies base their decisions not only on the past performance of mutual funds, but also on the investment management process employed by these funds. This study contributes important original insights into the investment management process. This is the first study that links information provided by fund managers to information about the funds they manage and about the fund company itself.

One of the main contributions of this study lies in showing that it is possible to conduct a high quality survey study even though managers know that their answers will be linked to their performance. Ex ante one might expect that the design of the survey leads to a positive performance bias in the sample but this is not the case. The participation rate in the survey was high and the fund managers' willingness to participate was not dependent on their past performance

The other main finding is that the behavior of managers depends heavily on the characteristics of the funds and the characteristics of the fund company. For example, the evidence shows that most managers of large funds believe that conversations with company executives are important in beating their benchmark. This strategy, however, does not

enable them to outperform their peers. The findings for managers of small funds are different. Managers at small funds are divided in their judgment of whether conversations with company management are important, but the managers that do gather this information perform better than those that don't rely on such information. These results underscore the importance of combining information on managers, funds and fund companies rather than focusing on a single set of characteristics. By combining this information, a deeper and more complete understanding of the fund management decision process is achieved.

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Tables

Table 1
Sample selectivity

	Exp (B)	Exp(B)
Fund return	3.03	-
Fund excess return	-	5.51
Fund net asset value	1.03	1.03
Fund age	1.04***	1.05***
Constant	0.34***	0.36***
R ^{2 a}	0.04	0.04

^a We report Nagelkerkes Pseudo-R² as a measure of the strength of association.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Table 2
Characteristics of fund managers

	Fund managers	Full-time employees ^a	Mean difference ^b
Personal Characteristics			
Male (%)	87.6	65.8	21.8***
Age (mean years)	38.0	40.4	-2.4
<i>Educational attainment (%)</i>			
University-entrance degree	88.2	21.3	66.9***
University degree	78.4	20.4	58.0***
Commercial apprenticeship	56.6	19.9	36.7***
CFA or similar degree	41.4		
Job-related Characteristics			
<i>Job experience (mean)</i>			
Job experience in fund management (mean years)	8.4		
<i>Job Title (%)</i>			
Junior equity fund manager	2.0		
Equity fund manager	24.2		
Senior equity fund manager	49.0		
Head equity fund management	13.7		
Executive board	7.8		
Other	3.3		
<i>Assets Under Management (Million €)</i>			
up to 20	14.9		
> 20 to 50	14.9		
> 50 to 100	8.8		
> 100 to 200	16.9		
> 200 to 500	20.9		
> 500 to 1000	8.1		
> 1000	15.5		
<i>(Mean = 561.5; Median = 175.9; Std. Dev. = 1,144.4)</i>			
<i>Total Salary (€)</i>			
up to 55,000	5.5		
> 55,000 to 80,000	11.8		
> 80,000 to 105,000	25.2		
> 105,000 to 130,000	26.8		
> 130,000 to 180,000	19.7		
> 180,000 to 250,000	7.1		
> 250,000	3.9		
<i>(Mean = 121,706; Median = 111,000; Std. Dev. = 56,719)</i>			

^a The information about the full-time employees is taken from German General Social Survey (2004).

^b The significance of the difference is tested using the t-test.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Table 3
Responsibility for different types of decisions

	Median	Mean	SD	Outranks ^a
1 Timing of trades	5.00	4.42	1.14	3**, 4***, 5***, 6***
2 Stock selection	5.00	4.34	1.05	4***, 5**, 6***
3 Portfolio strategy within given investment limits	5.00	4.25	1.05	6***
4 Sector allocation	5.00	4.12	1.34	6***
5 Cash ratio	5.00	4.07	1.42	6***
6 Basic strategy of the fund	4.00	3.35	1.71	-

^a The significance of the difference is tested using the Wilcoxon signed rank-sum test.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Table 4
Strategies for performance improvement

	Median	Mean	SD	Outranks ^a
1 Active search for new information	4.00	4.13	1.13	2***, 3***, 4***, 5***
2 In-depth analysis of already known information	3.00	3.11	1.30	4**, 5***
3 Fast reaction to new information	3.00	2.89	1.39	5***
4 Cost-efficient implementation of a trading strategy	3.00	2.82	1.26	5***
5 Cost-efficient replication of an index	1.00	1.55	1.53	-

^a The significance of the difference is tested using the Wilcoxon signed rank-sum test.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Table 5
Sources of information

	Median	Mean	SD	Outranks ^a
1 Conversations with the executive boards of companies	4.00	3.54	1.75	4*, 5***, 6***, 7***
2 Conversations with other equity fund managers	4.00	3.47	1.35	4**, 5***, 6***, 7***
3 Printed / electronic media	4.00	3.45	1.26	4**, 5**, 6***, 7***
4 Price and trading volume information	3.00	3.24	1.35	6**, 7***
5 Analyses of companies by analysts	3.00	3.09	1.45	6*, 7***
6 Macroeconomic forecasts	3.00	2.87	1.41	7***
7 Portfolio investments of other funds of the peer group	1.50	1.49	1.29	-

^a The significance of the difference is tested using the Wilcoxon signed rank-sum test.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Table 6
Determinants of importance assigned to conversations with company executives

	Ranking of conversation with company executives
<i>Assets under management (ln)</i>	0.19**
<i>Manager characteristics</i>	
Age	- 0.05**
Male	- 0.19
University degree	0.51*
Work experience	0.03
<i>Investment company characteristics</i>	
Number of funds	0.02***
<i>Fund characteristics</i>	
Germany	- 0.37
Single European countries/regions	- 0.58
Europe	- 0.03
Global	- 0.64**
North America	0.35
Latin America	- 0.10
Asia	- 0.16
R^2 ^a	0.30

^a We report Nagelkerkes Pseudo- R^2 as a measure of the strength of association.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Table 7
Performance differences in dependence on the importance assigned to
conversations with company executives

Rank	Mean Very important	Mean Not important	Mean difference ^a
All managers	0.015	- 0.010	0.025**
Large managers	0.015	0.011	0.004
Small managers	0.015	- 0.016	0.031*

^a The significance of the mean performance difference is tested using the t-test.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Table 8
Fundamental versus technical information and information sources

Preferred information source	Fundamental Median	Mean	Technical Median	Mean	More important ^a
Conversations with the executive boards of companies	5.00	3.88	1.50	1.68	F***
Conversations with other equity fund managers	4.00	3.71	2.50	2.32	F***
Printed / electronic media	4.00	3.45	4.00	3.36	-
Price and trading volume information	3.00	3.09	4.00	3.95	T***
Analyses of companies by analysts	3.00	3.32	2.00	1.91	F***
Macroeconomic forecasts	3.00	3.02	2.00	1.95	F***
Portfolio investments of other funds of the peer group	2.00	1.53	1.00	1.18	-

^a “F” denotes that the information source is significantly more important for managers preferring fundamental information. “T” denotes that the information source is significantly more important for managers preferring technical information. The significance is tested using the Wilcoxon rank sum test.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Table 9
Performance differences dependent on the use of fundamental and technical
information

Preferred information source	Mean Fundamental	Mean Technical	Mean difference ^a
All managers	0.013	0.002	0.011
Large managers	0.011	0.025	- 0.014
Small managers	0.016	- 0.007	0.023

^a The significance of the mean performance difference is tested using the t- test.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Table 10
Determinants of restrictions set by the fund company

	Enhanced risk limits [Exp(B)]	Evaluations per year [coeff]
<i>Assets under management (ln)</i>	1.27*	0.79
<i>Manager characteristics</i>		
Age	0.96	0.15
Male	0.68	0.01
University degree	2.26	- 2.24
Work experience	1.09	- 0.31
<i>Investment company characteristics</i>		
Number of funds	0.96***	- 0.04
<i>Fund characteristics</i>		
Germany	1.28	1.63
Single European countries/regions	7.63**	- 3.53
Europe	1.05	- 1.90
Global	2.65*	- 5.34**
North America	1.27	- 0.63
Latin America	1.68	- 6.01
Asia	3.61	- 4.12
Constant	3.69	6.29
R ^{2 a}	0.38	0.06

^a In the first column we report Nagelkerkes Pseudo-R², in the second column the adjusted R².

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Table 11
Performance differences dependent on the existence of enhanced risk limits

Enhanced risk limits	Mean Yes	Mean No	Mean difference ^a
All managers	0,008	0.017	- 0.009
Managers belonging to large companies	0.008	0.019	- 0.011
Managers belonging to small companies	0.009	0.017	- 0.008

^a The significance of the mean performance difference is tested using the t- test.

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Appendix

Decision makers (Survey questions)		
No.	Question / Condition	Answer possibilities
1	Gender	1 Male 2 Female
2	Please give the year and the month of birth.	Year Month
3	What is your highest school leaving certification / graduation?	1 School left without graduation 2 Volks-/ Hauptschulabschluss [lower secondary educational degree] 3 Mittlere Reife, Realschulabschluss (Fachschulreife) [intermediate secondary educational degree] 4 Polytechnische Oberschule (POS) mit Abschluss 8. Klasse [secondary education, 8 years, former GDR] 5 Polytechnische Oberschule (POS) mit Abschluss 10. Klasse [secondary education, 10 years, former GDR] 6 Fachhochschulreife (Fachoberschulabschluss,...) [entrance degree for university of applied sciences] 7 Abitur (Hochschulreife), Erweiterte Oberschule (EOS) mit Abschluss 12. Klasse [university entrance degree] 8 Other
4	Which of the following degrees have you obtained in educational and vocational training? A Commercial apprenticeship B Bankfachwirt [advanced vocational training, first level after bank apprenticeship] C Bankbetriebswirt or similar degree [advanced vocational training, second level after bank apprenticeship; business economist] D Degree from a University of Cooperative Education E Degree from a University of Applied Sciences or from a school of engineering F University degree G Ph.D. H Chartered Financial Analyst (CFA) or similar degree, e.g. DVF-Analyst J Other (advanced) vocational training degree, namely... (open)	<i>Scale in each case:</i> 1 Yes 2 No

No.	Question / Condition	Answer possibilities
5	What is your present position in your company?	<i>(Induce specification of highest position)</i> 1 Junior equity fund manager 2 Equity fund manager 3 Senior equity fund manager 4 Head equity fund management 5 Executive board 6 Other, namely... (open)
6	What is your fixed salary per year? Please tell me your salary level.	A 55,000 € or less. B More than 55,000 € but less than 80,000 €. C More than 80,000 € but less than 105,000 €. D More than 105,000 but less than 130,000 €. E More than 130,000 €.
7	What is the ratio of performance-related payments – your bonus – ... A in a "good" year in % of the fixed salary? B in a "normal" year in % of the fixed salary? C in a "bad" year in % of the fixed salary?	Nonnegative integer
8	How many years in total have you been working in fund management? Please count as well the years you may have been working as fund manager for other companies.	Years <i>(Allow one position after decimal point)</i>

Decision making process / Impact of the fund company (Survey questions)

No. Question / Condition	Answer possibilities
<p>1 How much responsibility do you have for the following investment decisions?</p> <p>A Basic strategy of the fund as specified in the fund prospectus</p> <p>B Investment strategy within the boundaries set by the fund prospectus</p> <p>C Cash ratio</p> <p>D Sector allocation</p> <p>E Stock selection</p> <p>F Timing of trades</p>	<p>Please estimate your responsibility by assigning values from 0 (= not responsible at all) to 5 (= solely responsible) to it, using the values between 0 and 5 to relativize your answer.</p>
<p>2 Following is a list of possibly relevant success criteria for equity mutual funds. How important is the criterion for the evaluation of the performance of your most important fund?</p> <p>1a Return of the fund relative to a fixed benchmark, for example an index</p> <p>1b Return of the fund relative to other funds of the peer group</p> <p>2a Risk adjusted return compared to other funds of the peer group</p> <p>2b Absolute risk adjusted return</p> <p>3 Inflows</p> <p>4 External ranking or rating of the fund</p>	<p>Please tell me how important each criterion is for your investment company using a scale between 0 (= irrelevant) and 5 (= criterion dominates the evaluation).</p>
<p>3 Here are some approaches that fund managers may use to achieve a better performance than other funds. How promising for improving performance do you regard the...?</p> <p>A active search for new information relevant for decisions</p> <p>B more in-depth analysis of already known information</p> <p>C fast reaction to new information</p> <p>D cost-efficient replication of an index</p> <p>E cost-efficient implementation of a trading strategy</p>	<p>Please assign a value between 0 (= not promising at all) and 5 (= very promising) to each approach, using the values between 0 and 5 to relativize your answer.</p>
<p>4 How important are the following information sources for your investment decisions? How important is/are....?</p> <p>A conversation with colleagues</p> <p>B information services (in print or online)</p> <p>C stock prices, trading volumes, stock exchange data</p> <p>D conversation with members of the executive boards of stock corporations</p> <p>E portfolio investments of comparable funds</p> <p>F analyses of companies by analysts</p> <p>G macro-economic forecasts</p>	<p>Please answer on a scale from 0 (= not important) to 5 (= very important to me) using the values between 0 and 5 to relativize your answer.</p>

No.Question / Condition	Answer possibilities
5 Which information is more important for your investment decisions: technical or fundamental information?	1 Technical information is more important. 2 Fundamental information is more important. <i>(not read out to the managers)</i> 3 Both kinds of information are equally important. 4 Depends on the nature of the decision. 5 Completely different information is important, namely...(open).
6 Apart from the statutory regulations for equity mutual funds, are there any explicit risk limits applying to investment decisions?	1 Yes 2 No
7 <i>If answer 6 = 1</i> Please tell me if the risk limits listed below apply to your equity mutual funds. A Limitation of the "value at risk" B Limitation of the volatility C Limitation of the tracking error relative to an index or a fixed benchmark D Maximum or minimum limits for single stocks or market segments which exceed legal regulations E Other risk limits, namely... (open)	1 Yes 2 No
8 At what intervals is your personal contribution to the success of your equity mutual funds evaluated?	1 Annually. 2 More than once a year. 3 Less than once a year. 4 Variable, at no fixed intervals.
9 How many evaluations are there in an average year?	Number of evaluations per year.

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