

Brozynski, Torsten; Menkhoff, Lukas; Schmidt, Ulrich

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# The Impact of Experience on Risk Taking, Overconfidence, and Herding of Fund Managers: Complementary Survey Evidence<sup>\*</sup>

Torsten Brozynski<sup>a, b</sup>, Lukas Menkhoff<sup>a</sup>, and Ulrich Schmidt<sup>† a</sup>

<sup>a</sup> University of Hannover, Germany

<sup>b</sup> HypoVereinsbank Frankfurt, Germany

University of Hannover

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## Abstract

Empirical research has shown that inexperienced fund managers yield significantly higher returns than their more experienced colleagues. If the portfolios of inexperienced are not more risky, this result would contradict the hypothesis of market efficiency. Therefore, it is an important question whether inexperienced fund managers tend to take higher risks. Higher risk taking may be explained by a higher degree of overconfidence, less herding behavior, or a lower degree of risk aversion. Since the results concerning the relationship between experience and risk taking in previous studies are rather contradictory we analyze whether complementary survey evidence can improve our understanding in this field. In line with the results of previous studies, we find that herding is decreasing with experience while the evidence concerning risk taking and overconfidence is mixed. We will argue that this mixed evidence may be likely due to the heterogeneity in the employed definitions of risk taking and overconfidence.

*JEL-Classification:* G 23, G 14

*Key words:* overconfidence, herding, funds manager

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<sup>†</sup> Corresponding author: Ulrich Schmidt, Lehrstuhl für Finanzmarkttheorie, Universität Hannover, Königsworther Platz 1, 30167 Hannover, Germany, Telefon: (+49) (511) 762-5117, Telefax: (+49) (511) 762-5240, e-mail: u.schmidt@mbox.vwl.uni-hannover.de

## **Zusammenfassung**

Empirische Untersuchungen haben gezeigt, dass unerfahrene Fondsmanager signifikant höhere Renditen erzielen als ihre erfahrenen Kollegen. Dieses Ergebnis würde der Hypothese der Markteffizienz widersprechen, falls die Portfolios der unerfahrenen Manager nicht ein höheres Risiko aufweisen. Insofern stellt sich die Frage, ob unerfahrene Fondsmanager tendenziell höhere Risiken eingehen als erfahrene Manager. Das Eingehen höherer Risiken kann durch einen höheren Grad an Overconfidence, geringeres Herdenverhalten oder durch geringere Risikoaversion erklärt werden. Da die Ergebnisse vorheriger Studien bezüglich des Zusammenhangs zwischen Erfahrung und dem Eingehen von Risiken ziemlich widersprüchlich sind, untersuchen wir in der vorliegenden Arbeit die Frage, ob sich durch eine direkte Befragung von Fondsmanagern weitergehende Ergebnisse erzielen lassen. Wie in vorherigen Studien zeigt auch unsere Befragung, dass Herdenverhalten mit zunehmender Erfahrung weniger ausgeprägt ist. Dagegen ist der Zusammenhang zwischen Erfahrung und Overconfidence sowie dem Eingehen von Risiken davon abhängig, in welcher Weise diese Konzepte operationalisiert werden. Insofern ist das Vorhandensein verschiedener Messkonzepte von Overconfidence und dem Risiko von Portfolios in der Literatur problematisch.

*JEL-Klassifikation:* G 23, G 14

*Schlüsselwörter:* Overconfidence, Herdenverhalten, Fondsmanager

## 1 Introduction

Recent empirical studies have shown that young and inexperienced fund managers earn significantly higher returns than their older and more experienced colleagues [see e.g. Chevalier and Ellison (1999a), Liang (1999), and Edwards and Caglayan (2001)]. This systematic difference challenges the hypothesis of market efficiency in two respects. First, consumers buying shares of older fund managers may not act rational. Second, young managers may be able to identify undervalued stocks which would contradict pricing efficiency. If the portfolios of young managers are, however, more risky, the difference in returns can be regarded as risk premium consistent with the hypothesis of market efficiency. Several empirical studies analyzed the question whether risk taking in the financial sector does indeed decrease with experience and/or age of managers. The evidence is, however, contradictory. Whereas some studies observe a negative relation between risk taking and experience [cf. Graham (1999), Li (2002), Boyson (2003)] other studies come to opposite results [cf. Chevalier and Ellison (1999b), Hong et al. (2000), and Lamont (2002)]. Also from a theoretical viewpoint it is not clear whether managers should increase [as suggested by the work of Avery and Chevalier (1999)] or decrease [see Prendergast and Stole (1996)] risk taking during the career.

This discussion has raised some general interest into the question how fund managers' behavior changes during the career. One finding in this context is that young managers tend to exhibit a higher degree of herding [cf. Chevalier and Ellison (1999b)]. The discussion of herding provides a link to the behavioral economics literature which is also concerned with the impact of experience. It has been observed that some behavioral irregularities disappear or at least weaken with sufficient experience of the subjects. A well-known example in this context is the fact that a substantial disparity between maximal buying prices and minimal selling prices contradicting standard utility theory can be observed in the first rounds of experiments. In later rounds this disparity, however, disappears [cf. Shogren et al. (2001), Loomes et al. (2003)]. Another example, somewhat more related to the present paper, is given by the study of Fox et al. (1996) which shows that experienced option traders do not exhibit probability distortions in the case of risk usually observed in experiments with student subjects. However, also here the evidence is somewhat mixed as some irregularities (such as overbidding in first-price auctions or probability distortions in the Fox et al. study if uncertainty instead of risk is considered) remain persistent even with experienced subjects. Behavioral irregularities particularly relevant for the investigation of fund managers are those

reported in the behavioral finance literature. Besides the above mentioned herding behavior, one main topic in this literature is the phenomenon of overconfidence. Odean (1998) has shown that investors with a higher degree of overconfidence choose in general more risky portfolios than those with a lower degree of overconfidence. Suppose that, analogously to the other behavioral irregularities, also overconfidence would decrease with experience. In this case young inexperienced funds managers would be more overconfident and would choose, therefore, riskier portfolios, what could explain their higher returns mentioned above. There is some empirical evidence that overconfidence of investors indeed decreases with experience [see Locke and Mann (2001), Christoffersen and Sarkissian (2002)]. However, some psychological studies show that experts are more likely to be overconfident than relatively inexperienced subjects [see e.g. Heath and Tversky (1991) and Frascara (1999)]. This result is confirmed by the analysis of experimental asset markets of Maciejovsky and Kirchler (2003) where the degree of overconfidence increases during the experiment. Also the study of Glaser et al. (2003) has somewhat similar results since in their experiments professional traders have a higher degree of overconfidence than students in the two tasks analyzed, namely trend recognition and forecasting of stock price movements.

In summary, the evidence concerning the impact of experience on the behavior of fund managers is not very clear-cut. One reason for these mixed results may be the fact that the concepts of risk taking, overconfidence, and herding are defined heterogeneously in the single studies. The motivating question of the present paper is whether complementary survey data can improve our understanding in this field. Therefore, we conducted a questionnaire survey concerning risk taking, overconfidence and herding with German fund managers. The next section gives some information on our survey. Section 3 presents the hypotheses and contains the results. Finally, some concluding observations appear in section 4.

## **2 Survey**

The survey encompassed all relevant fund management companies in Germany between August 15 and December 12, 2002. In total, 64 companies that were believed to manage equity and/or bond funds were approached. Of this total, five companies declared that they did not belong to our target group. Of the remaining 59 companies, 35 participated in the survey, with at least one appropriate questionnaire each. This resulted in a response rate of 59% concerning participating fund management companies. Altogether, we received 117

usable questionnaires which means that on average three to four managers participated from each company.

We conducted several intensive interviews with fund managers in advance of the survey. They served to formulate appropriate questions in the language of fund managers. Moreover, in later stages the questionnaire was used in a pretest with several fund managers as a final check of its acceptance and appropriateness, resulting in a total number of 32 questions. In summary, the feedback indicates that the response was useful for our research purposes.

More information on the fund managers can be drawn from the descriptive statistics in Table 1. The typical person is roughly about 35 years old, has 10 years of professional experience, is male, receives a bonus of 25%, holds a university degree, works in a junior position in active fund management and manages stocks rather than bonds. This data is largely consistent with the information from similar surveys in Germany such as Arnswald (2001) or Gehrig and Menkhoff (2002).

**Table 1:** Descriptive statistics on the survey respondents

Item asked	Reponses (in percentage)					
Age (in years)	< 35:	50.9%	35-45:	46.5%	> 45:	2.6%
Profess. experience	< 5:	22.3%	5-15:	59.8%	> 15:	17.9%
Gender	male:	92.1%			female:	7.9%
Share of variable compensation	mean:	25.8%			std. dev.:	14.5
University degree	yes:	84.8%			no:	15.2%
Superior position	yes:	36.9%			no:	63.1%
Kind of fund management (primarily)	active:	93.7%			passive:	6.3%
Kind of securities managed*	stocks:	66.5%			bonds:	33.5%

\* 4.2% of the respondents managed stocks and bonds to the same degree. These respondents were added with half weight to stocks as well as bonds, so that the sum adds up to 100%.

### 3 Results

At the beginning of the questionnaire we asked for tenure and professional experience in fund management with the possible response categories “less than 5 years”, “5-15 years”, and “over 15 years”. Consequently, we can split our respondents into three groups which will be referred to as “inexperienced”, “experienced”, and “very experienced” fund managers in the following. Our goal is to analyze differences between these groups with respect to risk taking, overconfidence, and herding behavior. Therefore, we will analyze 10 selected questions from our questionnaire which are presented in Table 2. The second column in Table 2 gives the precise wording of each question, whereas the response categories and our coding can be taken from the third column.

**Table 2:** The questions

no.	Question	Categories
1	How do you evaluate your own performance compared to other fund managers?	5 categories: from “much better” (coded as 1) to “much worse” (coded as 5)
2	The majority of economics news is not surprising for me.	6 categories: from “complete approval” (coded as 1) to “complete contradiction” (coded as 6)
3	Give an estimation of the DAX in one month. Determine a lower and an upper bound such that the quote of the DAX in one month from now will be inside the resulting interval with a probability of 90%.	lower and upper bound in points of the DAX
4	How important are colleagues (from your own company) for you as source of information?	6 categories: from “very important” (coded as 1) to “not important at all” (coded as 6)
5	How important are other market participants (not from your own company) for you as source of information?	see no. 4
6	How intensive do you use the momentum strategy?	amount in percent
7	How intensive do you use strategies different to the standard strategies (i.e. momentum, contrarian, buy-and-hold)?	amount in percent
8	Also fund managers exhibit herding behavior.	see no. 1
9	After profitable investments fund managers tend to take on additional positions.	see no. 1
10	Imagine someone offers you a bet and the odds are fifty-fifty. You will have to pay € 100, if you lose. What would be the minimum amount to win to lure you into accepting the bet?	Monetary amount in €

The results for each question are given in Table 3. The number and content of the single questions are recalled in the first two columns. The third column reports the overall mean of responses whereas columns 4-6 give the means among the inexperienced, experienced, and very experienced fund managers, respectively. For each question we ran a linear regression with professional experience as independent variable. The standardized coefficients of these

regressions are reported in the seventh column where the stars indicate the significance level (see note at the bottom of the table).

**Table 3: Results**

no.	content	mean	inexperienced	Experienced	very experienced	$\beta$
1	own performance	2.33	2.67	2.28	2.11	-0.257 ***
2	news not surprising	3.19	3.48	3.17	2.93	-0.171 *
3a	Relative size of DAX interval	0.29	0.25	0.29	0.32	0.084
3b	DAX interval too small	0.38	0.44	0.37	0.30	-0.091
4	colleagues	3.20	2.72	3.18	3.85	0.268 **
5	market participants	3.75	3.40	3.78	4.10	0.193 **
6	momentum strategy	26.38	31.66	24.50	26.20	-0.107
7	other strategies	13.26	4.57	13.34	24.07	0.263 ***
8	herding	2.04	2.36	1.99	1.85	-0.169 *
9	additional positions	2.95	3.56	2.88	2.40	-0.323 ***
10	minimal gain	275.00	183.67	169.29	772.82	0.174 *

Table note. \*\*\*: significance level of 1%, \*\*: 5%, \*: 10%, no star: insignificant.

Let us now comment on the results. Since risk taking is related to overconfidence and herding we will investigate risk taking at the end and start with overconfidence and herding.

*(i) overconfidence*

Overconfidence is a rather robust phenomenon in the psychology of judgment [see Odean (1998) for a broad overview over the relevant literature]. In general, overconfidence can be defined as a systematic overestimation of the precision of own knowledge. It has been observed in many professional fields and seems to be most pronounced for questions of moderate to extreme difficulty. In contrast, for rather easy questions underconfidence has often been observed. An additional manifestation of overconfidence is given by unrealistically positive self-evaluations [Greenwald (1980)]. A well-known example is the study of Svenson (1981) who asked a sample of students to assess their own driving safety: 82% of the students judged themselves to be in the top 30% of the group.

In the context of financial markets, overconfidence is one of the most prominent explanations for the excess trading volume [DeBondt and Thaler (1985)] since overconfident investors tend to trade too much [Odean (1999), Barber and Odean (2000)]. As mentioned in the introduction, the evidence concerning the impact of experience on overconfidence is rather ambiguous. Since there is no unique method to measure the degree of overconfidence, this issue was addressed in our questionnaire with different items, namely with questions no. 1, 2,



and 3. Let us first regard overconfidence as unrealistically positive self-evaluation analyzed with question 1. In the absence of overconfidence one would expect that the respondents judge their own performance compared to that of other fund managers on average as “equally good” which is coded as three. The overall mean of 2.33 (see Table 3) indicates that fund managers tend to evaluate themselves as above average and, hence, that overconfidence can be well observed within our sample. Moreover, Table 3 shows that the response to question 1 is significantly decreasing with experience which means that overconfidence is significantly increasing with experience. A similar picture arises from the analysis of question 2: more experienced fund managers find the majority of economic news significantly less surprising than their less experienced colleagues. Thus, we can confirm the results of Heath and Tversky (1991), Frascara (1999) and Maciejovsky and Kirchler (2003) if overconfidence is regarded as unrealistically positive self-evaluation.

Let us now analyze overconfidence with respect to the overestimation of the precision of knowledge. In question 3 respondents had to state a 90% confidence interval for the quote of the DAX (the major German stock index) one month later. We first analyzed the relative size of this interval given by  $(\text{upper bound} - \text{lower bound}) / \text{actual quote}$ . Table 3 (no. 3a) shows that the relative size is on average 29% of the actual quote. Although the relative size is monotonously increasing with experience the linear regression is not significant. However, a t-test confirms that the value for the very experienced fund managers is significantly higher than the value for the inexperienced fund managers at a significance level of 5%. Thus, the degree of overconfidence seems to decrease with experience. This impression is reinforced if we consider the relative frequency of fund managers who stated too small DAX intervals, i.e. the real quote of the DAX after one month was actually outside the stated interval. Table 3 (no. 3b) shows that 44% of the managers stated too small intervals which has to be regarded as a high degree of overconfidence since one would expect only a value of 10% for 90% confidence intervals. The relative frequency of too small intervals is monotonously decreasing with experience but the linear regression is not significant. However, according to a t-test, the relative frequency among the very experienced fund managers is significantly lower at the 10% level than the relative frequency among the inexperienced managers.

In summary, we get mixed results concerning the impact of experience on overconfidence: if overconfidence is interpreted as unrealistically positive self-evaluation, it is significantly

increasing with experience whereas overconfidence is decreasing with experience if it is interpreted as overestimated precision of knowledge.

*(ii) herding*

Herding behavior occurs if market participants base their trading decisions on observed aggregate market activity leading to a major shift into or out of a particular asset. From a theoretical perspective, fund managers, or more generally institutional investors, may have an incentive to herd due to the following reasons: (i) reputational risk of acting differently from other managers [Scharfstein and Stein (1990), Trueman (1994), Zwiebel (1995), Prendergast and Stole (1996), and Avery and Chevalier (1999)], (ii) receipt of correlated private information [Froot et al. (1992)], (iii) following the prior trade of better-informed investors [Bikhchandani et al. (1992)], and/or (iv) shared aversion to stocks with certain characteristics such as lower liquidity [Falkenstein (1996)]. In particular point (i) is related to experience since reputational risk usually changes during the career. For instance, the model of Avery and Chevalier (1999) shows that more experienced fund managers have a lower incentive to herd. This conclusion is empirically confirmed not only for fund managers [Chevalier and Ellison (1999b)] but also for security analysts [Hong et al (2001)] and macroeconomic forecasters [Lamont (2002)]. In contrast, the model of Prendergast and Stole (1996) implies that herding will increase with experience. Empirical evidence in favor of this implication has not yet been reported for fund managers but for security analysts [Li (2002)] and investment newsletters [Graham (1999)].

In our questionnaire we addressed herding with questions no. 4-8. Herding obviously implies that colleagues and other market participants are important sources of information. Table 3 (no. 4 and 5) shows that both sources become significantly less important with increasing experience at a significance level of 5%. Thus, herding seems to decrease with experience. One reason for observed herding of funds may be the joint use of momentum strategies [see e.g. Grinblatt et al. (1995)]. Table 3 (no. 6) does not show a linear relationship between experience and use of momentum strategy, although inexperienced rely clearly most on this strategy. Moreover, the use of non-standard strategies is significantly increasing with experience (see. no. 7) which also supports our conclusion that herding decreases with experience. Finally, our respondents had to evaluate in question no. 8 the statement that herding behavior is observable among fund managers. Approval of this statement is significantly increasing with experience. This result may be interpreted as follows:

experienced fund managers are more aware of and, therefore, tend to be less prone to herding. Altogether, our analysis provides relatively strong support for the conclusion of Avery and Chevalier (1999) and Chevalier and Ellison (1999b), namely that experienced fund managers herd less than their inexperienced colleagues.

### *(iii) risk taking*

In the empirical literature risk taking of funds is usually measured in two ways, either by the standard deviation of returns or by the degree of herding behavior. In this context a higher degree of herding is interpreted as lower risk taking behavior. Based on theoretical justifications of e.g. Diamond (1991) and Hirshleifer and Thakor (1992), this interpretation has been used in the empirical studies of Graham (1999) and Hong et al. (2000). For our results concerning herding, this interpretation would imply that – due to less herding – risk taking is increasing with experience. However, the identification of risk taking by the degree of herding should, in our view, be adopted only with some caution since the relation of herding and experience is relatively unambiguous whereas the relation between experience and risk taking seems to be more complicated. For instance, the results concerning question no. 3 (discussed in the subsection on overconfidence) show that experienced fund managers are more aware of risk which should result in portfolios with lower risk. This point is further supported by question no. 9: more experienced fund managers are at a significance level of 1% more aware of the danger of increased risk taking due to the well-known house money effect.

Additionally we tried to get an impression of the relation between experience and the degree of risk and/or loss aversion by the responses to question no. 10. The results show that the degree of risk aversion is significantly increasing with experience which is particularly due to the high risk aversion of very experienced managers.

Altogether, if risk taking is not identified with herding behavior, we tend to conclude from our results that the degree of risk taking is, in line with the studies of Graham (1999), Li (2002), Boyson (2003), decreasing with experience.

## **4 Conclusions**

Our study presents survey evidence concerning the impact of experience on risk taking, overconfidence, and herding of fund managers. Concerning herding, our evidence is rather

clear-cut and supports the result of other studies that herding is decreasing with experience. In contrast, our results with respect to overconfidence are, similarly to the preceding literature, somewhat contradictory as overconfidence is decreasing with experience for some tasks while it is decreasing for others. The same is true for risk taking: there is some evidence in our data that the degree of risk taking is decreasing with experience. However, the opposite result holds if risk taking is derived from herding behavior.

A speculative interpretation of these inconclusive findings might emphasize the importance of learning. Experience gained from a learning process helps to better estimate the true volatility in asset prices which may lead to a comparatively more risk averse behavior. In this sense, experienced fund managers are less overconfident and take lower risks. If individuals "learn" from this experience that their advantage is due to their personal competence, they may regard their own performance as superior and may feel competent to deviate from the herd.

Altogether, we tend to conclude from our study, that the contradictory results concerning the impact of experience on risk taking and overconfidence are mainly due to heterogeneity in the definition and measurement of these concepts. This seems to be especially the case for overconfidence: both, too narrow confidence intervals and unrealistically positive self-evaluations, remain undistinguished under the label of overconfidence although they tend to induce contrary responses. Therefore, the concept of overconfidence may be regarded as too broad for applied empirical work.

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