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Working Paper

What matters to SRI investors?

CFR working paper, No. 08-07

Provided in Cooperation with:

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Suggested Citation: Osthoff, Peer (2008) : What matters to SRI investors?, CFR working paper, No. 08-07, University of Cologne, Centre for Financial Research (CFR), Cologne

This Version is available at:

<https://hdl.handle.net/10419/41365>

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CFR-working paper no. 08-07

**what matters to
SRI investors?**

p. osthoff

centre for financial research
Look deeper

What matters to SRI investors?*

Peer Osthoff[†]

This Version: September 2008

Abstract

In this paper I investigate the investment behavior of SRI investors based on SRI mutual fund flows. Specifically, I analyze how SRI investors react to past performance and ethical standards. This empirical study shows that over the years along with the development of the SRI fund market, the performance sensitivity of SRI investors has increased. Today, SRI investors chase past top performing funds at least as much as conventional investors do. Besides performance, SRI investors care about the actual ethical standards of SRI funds. SRI funds with high ethical standards regarding the positive rating and especially regarding environment attract higher inflows. I also find that SRI investors are more likely to reinvest in the same fund. Overall, I conclude that, like conventional investors, nowadays SRI investors chase previously top performing funds, but additionally pay attention to the actual ethical standards of their investments.

JEL Classification: G11, G20, M14

Keywords: Socially Responsible Mutual Funds, Socially Responsible Investing, Ethical Investment

*I thank Knut Griese, Alexander Kempf, Christoph Memmel, Alexander Pütz, and Stefan Ruenzi for helpful comments on this paper.

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1 Introduction

Interest in socially responsible investments (SRI) is steadily increasing. The Social Investment Forum reports that about one out of nine dollars under professional management in the US is invested according to socially responsible investment criteria.¹ In accordance with the growth of the SRI market the number of SRI studies has also increased. Most SRI studies focus on the performance of SRI mutual funds. Generally, these studies indicate that the performance of SRI mutual funds is not worse than the performance of their conventional counterparts.² However, all these studies neglect the question of what extent SRI investors actually care about performance.

The large body of literature on the investment decisions of conventional mutual fund investors shows that conventional investors chase past top performing funds, but do not sell poor performing funds to the same extent.³ They document an asymmetric and convex performance flow relationship for conventional funds. While it is assumed in the traditional finance literature that conventional investors are risk-reward optimizers, SRI investors pursue by definition not only financial goals, but also non-financial goals.⁴ This raises the question of whether SRI investors behave differently from conventional investors.

¹See Social Investment Forum (2008).

²See, e.g., Hamilton et al. (1993), Mallin et al. (1995), Gregory et al. (1997), Sauer (1997), Statman (2000), Bauer et al. (2005), Bauer et al. (2006), Bello (2005), Kreander et al. (2005), Gregory and Whittaker (2007) and Kempf and Osthoff (2008). Schröder (2007) studies the performance of indices and finds no significant difference between SRI and conventional indices. Derwall et al. (2005) and Kempf and Osthoff (2007) study the performance of synthetic stock portfolios based on SRI ratings and even document an outperformance of these synthetic portfolios.

³See, e.g., Ippolito (1992), Chevalier and Ellison (1997), and Sirri and Tufano (1998).

⁴See, e.g., Beal et al. (2005).

In this paper I analyze the flows into SRI funds to address the following three main questions: (i) Do SRI investors care about performance? Especially, does their performance sensitivity differ from that of conventional investors and does that performance sensitivity depend on the degree of maturity of the SRI market? (ii) Do SRI investors care about the actual ethical standards of their investments or do they just care about the label "SRI"? (iii) Are SRI investors more likely to reinvest in the same fund than conventional investors because of higher search costs? To explore these issues, I study the inflows of SRI and conventional mutual funds in the US for the time period from 1993 to 2004.

I first analyze the performance sensitivity of SRI investors and then compare it to that of conventional investors. One might suspect that SRI investors care less about performance in their investment decisions, because they pay more attention to social and environmental issues. However, if SRI investors can identify substitutes among the funds in the SRI segment regarding their social and environmental aspects, they will choose the funds with the highest performance: thus their reaction is performance sensitive. Whether SRI investors are performance sensitive or not therefore depends on the number of alternatives available in the SRI fund segment. I document that over the sample period I investigate the number of SRI funds grew rapidly (see Section 2.1). I conjecture that with the increasing number of SRI funds, the performance sensitivity also increased, because SRI investors are more likely to find alternatives. A second argument which supports the assumption of an increasing performance sensitivity over time is that the SRI pioneers cared less about performance and later on the mainstream SRI investors cared more.

Second I analyze whether SRI investors care about the actual ethical standards of the SRI funds or whether they are simply satisfied with the funds being labeled as SRI funds. I am the first to examine this question. To measure the ethical standards of the funds, I combine the portfolio holdings information of the funds with ethical stock ratings data. By definition SRI investors are supposed to derive utility from the social and environmental aspects of their investments. I therefore expect that investors in the SRI fund market care about ethical standards. I further conjecture that their sensitivity to ethical standards increases over time, because in a growing market they can choose that fund which satisfies their needs best.

Third I analyze whether SRI investors are more likely to reinvest in the same fund than conventional investors. SRI investors face search costs if they want to identify a SRI fund fitting their personal values and their financial goals. Contrary to the SRI investors, conventional investors have only to align their funds with their financial goals and not with non-financial ones; their search costs are presumably lower than for SRI investors. Higher search costs induce SRI investors to reinvest in the same fund in the future. The search costs argument leads to a higher autocorrelation in fund flows for the SRI funds.

I find the following main results: (i) Over the whole sample period SRI investors seem to chase past top performing funds, but not to sell poor performing funds to the same extent. This behavior is similar to that of conventional investors and in line with the results of Bollen (2007) and Renneboog et al. (2006).⁵ However, along with the fast development of the SRI fund market,

⁵Bollen (2007) examines the performance flow relationship of SRI mutual funds in the US.

the performance sensitivity of the SRI investors has increased over time. SRI investors chase past top performing funds to a greater extent in the second half of the sample period than in the first one. This result is consistent with the assumption that with an increasing number of SRI funds, the number of alternatives grows and thus SRI investors are more performance sensitive. This finding is also consistent with the conjecture that the SRI pioneers in the early stages of the SRI market cared less about performance and that today they are outnumbered by mainstream SRI investors who value performance. The SRI investors nowadays chase past top performing funds at least as much as conventional investors do. (ii) Consistent with the conjecture I find that SRI investors care about the actual ethical standards of the mutual funds. They are not satisfied with the funds being labeled as SRI funds. They prefer funds with high ethical standards regarding the positive rating which consists of the criteria community, diversity, employee relations, environment, human rights, and product. The sensitivity to ethical standards regarding the positive rating increases over time. This finding is in line with the expectation that in the fast growing SRI market investors choose that fund which satisfies their needs best. Furthermore, I find that SRI investors especially prefer funds with high environmental standards. The interest in environmental standards is probably sparked by the frequent reports about environmental issues such as global warming or alternative energy solutions in the public press. (iii) I document a higher positive autocorrelation in flows for the SRI mutual funds than for the conventional funds. This is in line with the conjecture that SRI investors face higher search costs than conventional investors and thus are more likely to

Renneboog et al. (2006) investigate the determinants of SRI mutual fund flows around the world. Louche and Lydenberg (2006) and Scholtens and Dam (2007) point out that there exist cultural differences concerning social responsibility.

reinvest in the same fund they already own.

Overall, I conclude that nowadays SRI investors invest disproportionately more in funds with past top performance – similar to conventional investors – but additionally pay attention to the actual ethical standards of their investments.

The remainder of the paper proceeds as follows. The data and the design of the study are described in Section 2. In Section 3 the empirical results are reported. Section 4 concludes.

2 Methodology

2.1 Data

To study how SRI investors react to past performance and ethical standards when investing in SRI funds and to compare their investment behavior to that of conventional investors, I combine the information of five different databases: the CRSP Survivor-Bias Free US Mutual Fund database, the KLD Stats database, the Thomson Financial Mutual Fund Holdings database, the CRSP US Stock database, and the Morningstar Principia database. For my sample of US equity funds in the period from 1992 to 2004, I retrieve information about the fund characteristics such as size, loads, returns, turnover, age, and expense ratio from the CRSP Survivor-Bias Free US Mutual Fund database.

There exists no direct measure for the ethical standards of mutual funds. To obtain ethical rankings for mutual funds, I combine the portfolio holdings of the funds with ethical stock ratings data. The procedure I use is similar to

the one used by Kempf and Osthoff (2008). In a first step, I prepare the ethical stock ratings data retrieved from the KLD Stats Database. This database is free of survivorship bias and covers annual ratings for all S&P 500 and Domini 400 Social Index (DSI 400) stocks over the period from 1992 to 2004. KLD has extended their stock coverage through time. From 2001 onwards ethical ratings are provided for all stocks of the Russell 1000 and from 2003 onwards for all stocks of the Russell 3000. KLD evaluates the stocks using multiple criteria which can be classified into two broad categories: qualitative and exclusionary criteria.⁶ The qualitative criteria are community, diversity, employee relations, environment, human rights, and product.⁷ By following the positive screening approach investors use these criteria to evaluate the ethical standards of companies and then select the companies with the highest ethical standards. Each qualitative criterion consists of several sub-criteria for which KLD provides a binary score. To calculate a single rating for each qualitative criterion, I average all binary scores as done by Kempf and Osthoff (2007). Then I average all these qualitative ratings to obtain a positive overall rating (hereafter referred to as positive rating) between 0 and 1. The higher the rating, the higher the social responsibility of the company. The exclusionary criteria, which are used for the negative screening, are alcohol, tobacco, gambling, military, and nuclear power. Investors following a negative screening policy avoid companies involved in these controversial business areas. To obtain a negative overall rating (hereafter referred to as negative rating), I assign a one to a company if it is not involved in any of these controversial business areas and a zero if

⁶For more detailed information about the KLD Stats database and the criteria used see <http://www.kld.com/research/stats/indicators.html>.

⁷KLD also provides a criterion "Corporate Governance" which is not used in this study. This criterion differs in many respects from the corporate governance issues used by Gompers et al. (2003) for their corporate governance index.

the company is involved in at least one controversial business area. Since I use ethical ratings of US stocks to evaluate the ethical standards of the mutual funds, I exclude from my sample all international, bond, and money market funds.

In a second step, I prepare the mutual fund holdings data. The holdings data for the period from 1992 to 2003 is retrieved from the Thomson Financial Mutual Fund Holdings database, which is free of survivorship bias (see Wermers (2000)), and the holdings data for 2004 is retrieved from the CRSP Survivor-Bias Free US Mutual Fund database. To obtain a complete record of the stock holdings for each fund along with other fund characteristics such as size, loads, returns, turnover, age, and expense ratio over my sample period, I merge these two databases. The two databases are matched by fund ticker and fund name information.⁸ Although in the CRSP Survivor-Bias Free US Mutual Fund database multiple share classes are listed as different funds, they are based on the same set of holdings. I aggregate different share classes of the same fund by weighting the respective fund characteristic with the previous year's total net assets under management of that share class. For some fund characteristics a different aggregation method is used. The age of a fund is the age of the oldest share class; the total net assets of a fund are the sum of total net assets of all share classes. The procedure is similar to the one used by Wermers (2000). Finally, I retrieve the prices for the stocks held by the funds from the CRSP US Stock database. The database covers all stocks traded at the American Stock Exchange (AMEX), the New York Stock Exchange (NYSE), and NASDAQ.

In a third step, I now combine the mutual fund holdings with the stock

⁸For further details of the matching procedure please see Gaspar et al. (2006).

ratings data to obtain an ethical ranking of the funds. For each fund I calculate normalized portfolio weights for the rated stock positions at the end of the year. I include only fund observations in my sample where the percentage of all stocks is at least 50%. Then, I sum up these portfolio weights for the rated stocks multiplied by the ethical stock ratings. This weighted sum is the aggregated ethical rating for a mutual fund. Thereby, I implicitly assume that the rated stocks behave like the stocks not rated. The average percentage of the rated stocks for the SRI funds in my sample is 79%, and 70% for the conventional funds. Based on the aggregated ratings I assign fractional ranks in each year ranging from zero to one for both the group of SRI funds and the group of conventional funds. The higher the ranking of a fund, the higher the ethical standards of that fund. $Pos_{i,t}$ denotes the ethical rank based on the positive rating for fund i in year t ; $Neg_{i,t}$ denotes the ethical rank based on the negative rating. Kempf and Osthoff (2008) show that SRI funds indeed hold stocks with higher ethical ratings than their conventional counterparts.⁹

Since I have no direct measure on net-inflows for mutual funds, I have to calculate a synthetic measure. I employ the standard procedure in the literature (see, e.g., Chevalier and Ellison (1997) or Sirri and Tufano (1998)) to construct a measure on the net-inflows of fund i in year t :¹⁰

$$FLOW_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1}}{TNA_{i,t-1}} - R_{i,t}. \quad (1)$$

$TNA_{i,t}$ is defined as the total net assets under management of fund i in year

⁹In unreported results I confirm the finding of Kempf and Osthoff (2008).

¹⁰Ber and Ruenzi (2007) show that the synthetic measure is a good approximation for actual fund flows.

t . $R_{i,t}$ denotes the total return of fund i in year t . Consequently, $FLOW_{i,t}$ reflects the percentage growth of fund i minus the internal growth in year t . It is assumed that flows occur at the end of the year and that dividends and distributions are reinvested in the same fund. I exclude fund year observations from my sample where funds grew more than 1000%, because a higher growth rate is probably due to data errors.¹¹

To obtain a list of SRI mutual funds, I retrieve the SRI mutual funds from the Morningstar Principia database for the time period from 1996 to 2005 on an annual frequency. I backdate the list of SRI funds from 1996 till 1992, because no Morningstar data is available prior to 1996. In my sample I have 49 different SRI funds and 2643 different conventional funds which comply with this restriction. Table 1 reports descriptive statistics on the SRI funds (Panel A) and on the conventional funds (Panel B) in my sample.

- insert Table 1 about here -

The number of funds is increasing over time for both groups of funds. The number of funds in the young SRI market grew especially rapidly. While the number of conventional funds quintupled, the number of SRI funds increased tenfold. Figure 1(a) presents the development of the total assets under management for the SRI and conventional funds over time. Whereas the total assets of the conventional funds grew faster in the first part of my sample period, the total assets of the SRI funds grew constantly faster in the second part of my sample period. These results are confirmed by Figure 1(b) which shows the

¹¹Bergstresser and Poterba (2002) also exclude fund observations with a growth rate above 1000%.

percentage growth of the SRI and conventional fund market minus the internal growth over time. The average net-growth for the SRI funds with about 17% p.a. is slightly higher than for conventional funds with about 14% p.a. The average SRI fund is smaller in size and younger than the average conventional fund. Furthermore, the average SRI fund has higher expense ratios than the average conventional fund, although the loads are lower. The lower turnover rate for the SRI funds indicates that they trade less than their conventional counterparts.

- insert FIGURE 1 about here -

2.2 Model

To compare the performance sensitivity of SRI investors to the performance sensitivity of conventional investors, I investigate how past fund performance influences the net-inflows in SRI and conventional funds. In the literature ordinal performance measures (ranks) are often used instead of cardinal measures to analyze the impact of performance on net-inflows.¹² Studies comparing ordinal and cardinal measures have shown that ordinal measures explain fund flows much better than cardinal measures (see Patel et al. (1994) and Navone (2003)). The survey studies of Capon et al. (1994) and Capon et al. (1996) confirm this result. Therefore, I calculate performance ranks, $PerfRank_{i,t}$, within segments based on raw returns. The procedure to construct the performance ranks is similar to the one used by Sirri and Tufano (1998). I sort the funds in every segment according to their realized returns. The segments I use are

¹²Examples for studies using ordinal measures are: Patel et al. (1994), Sirri and Tufano (1998), Fant and O'Neal (2000), and Bergstresser et al. (2006). Studies using cardinal measures are, for example: Ippolito (1992) and Lynch and Musto (2003).

"Socially Responsible," "Small Company Growth," "Other Aggressive Growth," "Growth," "Income," "Growth and Income," "Balanced," and "Sector Funds."¹³ Then I assign fractional ranks to the funds in each segment which I normalize between zero and one. The fund with the highest return gets assigned rank one.

Previous studies document a convex relationship between the fund flows and performance.¹⁴ To study the convex relation, I adopt the approach of Sirri and Tufano (1998) and employ a piecewise linear regression. I estimate three slope coefficients based on the fractional performance ranks; one for the bottom quintile, one for the three middle quintiles, and one for the top quintile. I estimate the complete model using a pooled regression with White's (1980) correction for heteroscedasticity. It reads:¹⁵

$$\begin{aligned}
 FLOW_{i,t} = & \alpha_1 Low_{i,t-1} + \alpha_2 Mid_{i,t-1} + \alpha_3 Top_{i,t-1} & (2) \\
 & + \alpha_4 SR_{i,t-1} Low_{i,t-1} + \alpha_5 SR_{i,t-1} Mid_{i,t-1} + \alpha_6 SR_{i,t-1} Top_{i,t-1} \\
 & + \alpha_7 FLOW_{i,t-1} + \alpha_8 SR_{i,t-1} FLOW_{i,t-1} \\
 & + \sum_{j=1}^6 \beta_j v_{i,t-1}^j + \sum_{k=1}^{96} \zeta_k TS_k + \varepsilon_{i,t},
 \end{aligned}$$

where:

$$Low_{i,t-1} = \min(PerfRank_{i,t-1}, 0.2)$$

$$Mid_{i,t-1} = \min(PerfRank_{i,t-1} - Low_{i,t-1}, 0.6)$$

¹³CRSP does not provide general investment objectives for the whole time period. Therefore, I use the classifications by Wiesenberger (OBJ), ICDI (ICDI_OBJ), and Strategic Insight (SI_OBJ) to obtain uniform investment objectives. The procedure is similar to the one used by Pastor and Stambaugh (2002).

¹⁴See, e.g., Sirri and Tufano (1998), Chevalier and Ellison (1997), and Ippolito (1992).

¹⁵Del Guercio and Tkac (2002) also use a pooled regression with White's (1980) correction for heteroscedasticity.

$$Top_{i,t-1} = PerfRank_{i,t-1} - (Low_{i,t-1} + Mid_{i,t-1}).$$

The dependent variable, $FLOW_{i,t}$, reflects the net-growth of a fund i in year t as described in 1. I use an annual frequency to examine the determinants of fund flows. I include all independent variables as lagged variables, because investors can only base their investment decision on the information available at the beginning of the year.

The fractional performance ranks, $PerfRank_{i,t-1}$, are decomposed into three groupings: $Low_{i,t-1}$, $Mid_{i,t-1}$, and $Top_{i,t-1}$. The coefficients on these three groupings represent the slope of the performance flow relationship in the respective quintile(s). To study potential differences regarding performance between SRI and conventional funds, I interact the performance variables with the $SR_{i,t-1}$ dummy. $SR_{i,t-1}$ takes on the value one for a SRI fund and zero for a conventional fund. For example, the coefficient α_6 is the additional increase in fund flows for the top performing SRI funds, compared to the estimated slope coefficient α_3 for the conventional funds.

I also control for the net-inflows of the fund in the previous year, $FLOW_{i,t-1}$. Sirri and Tufano (1998) and Zeckhauser et al. (1991) find a positive impact of the previous fund flows on the subsequent fund flows. One reason for the positive autocorrelation in flows could be that I do not control for specific fund characteristics which have an influence on flows and are constant over time. Another reason might be that investors suffer from a status-quo bias. This bias predicts that investors repeatedly facing the same investment situation tend to decide in favor of the same alternative regardless of whether this decision

is optimal because of changed conditions. This behavior leads to positive autocorrelation in flows.¹⁶ For SRI funds one may expect an even higher positive autocorrelation in flows because of search costs. SRI investors have to put more time and effort into finding the SRI fund which suits to their personal values, and thus are likely to reinvest in this fund when facing future investment decisions. For this reason I interact the past net-inflows with the $SR_{i,t-1}$ dummy.

$v_{i,t-1}^j$ is a vector consisting of the following control variables: risk ($Risk_{i,t-1}$), size ($Size_{i,t-1}$), age ($Age_{i,t-1}$), total loads ($Loads_{i,t-1}$), expense ratio ($ExpRatio_{i,t-1}$), and turnover ratio ($Turnover_{i,t-1}$). Previous studies have shown an impact of these variables on fund flows. I control for the risk of a fund, $Risk_{i,t-1}$, measured by the annualized standard deviation of the monthly returns. Barber et al. (2005), Ippolito (1992), and Sirri and Tufano (1998) find a marginal negative impact of risk on fund flows.

Chevalier and Ellison (1997) and Sirri and Tufano (1998) find a negative impact of fund size, $Size_{i,t-1}$, on fund flows. I include the logarithm of the size of a fund, because large funds probably grow slower than small funds. This approach is in line with the literature.

Furthermore, I control for the age of a fund, $Age_{i,t-1}$. Consistent with the literature I consider the logarithm of age. Bergstresser and Poterba (2002) and Del Guercio and Tkac (2002) identify a negative impact of age on fund flows.

The fees of a fund are a further factor which influences the fund flows. Sirri

¹⁶For a detailed description of the status-quo bias see also Kempf and Ruenzi (2006).

and Tufano (1998) assume a holding period of seven years for a fund and take the sum of the expense ratio plus one seventh of the total loads. They find a negative influence for this constructed fee measure on fund flows. Bergstresser and Poterba (2002) and Ruenzi (2005) consider separately the expense ratio and the total loads of a fund. They report a negative impact for the expense ratio and a positive impact for the total loads. This could be due to the fact that loads are often used for marketing efforts, but expenses negatively affect performance. I follow their approach and control for the total loads, $Loads_{i,t-1}$, and the expense ratio, $ExpRatio_{i,t-1}$.

To investigate whether investors mind how much a fund trades, I include the turnover, $Turnover_{i,t-1}$. While Bergstresser and Poterba (2002) document no significant influence of the turnover on fund flow, Kempf and Ruenzi (2006) find a positive influence.

Finally, I include time-segment interaction dummies as done by Del Guercio and Tkac (2002) – one for each combination of year and segment. The time component captures differing average flows over the sample years. The segment component captures differing demands across the segments. Thus, the combination of these components adjusts for both potential effects – differing demand over segments and over time. Table 1 shows that the growth of SRI mutual funds differs from the growth of conventional mutual funds over time.

In addition to the piecewise linear regression as described in Model 2, I also implement an alternative model to consider the convex relationship between the fund flows and performance. I apply the approach of Barber et al. (2005) and

estimate a quadratic relationship between the performance ranks and fund flows by adding a linear term and a quadratic term for the performance ranks as explanatory variables. This alternative model reads:

$$\begin{aligned}
FLOW_{i,t} = & \alpha_1 PerfRank_{i,t-1} + \alpha_2 PerfRank_{i,t-1}^2 & (3) \\
& + \alpha_3 SR_{i,t-1} PerfRank_{i,t-1} + \alpha_4 SR_{i,t-1} PerfRank_{i,t-1}^2 \\
& + \alpha_5 FLOW_{i,t-1} + \alpha_6 SR_{i,t-1} FLOW_{i,t-1} \\
& + \sum_{j=1}^6 \beta_j v_{i,t-1}^j + \sum_{k=1}^{96} \zeta_k TS_k + \varepsilon_{i,t}.
\end{aligned}$$

The performance flow relationship is convex if the coefficient of the squared performance rank is positive.

3 Empirical Results

In a first step I study whether the performance sensitivity of SRI investors differs from conventional investors and whether it changes over time (Section 3.1). Then I investigate whether SRI investors care about the actual ethical standards of the SRI funds (Section 3.2).

3.1 Investor behavior regarding performance

To compare the reaction regarding past performance of SRI investors to that of conventional investors, I estimate Model 2 and 3 using a pooled regression with White's (1980) correction for heteroscedasticity. The results are reported in Table 2.

- insert Table 2 about here -

I find that all estimated slope coefficients are significantly positive in Column 2 for the conventional funds. The slope coefficient of the top performance quintile is about four times as large as the slope coefficient of the three middle quintiles and even larger in comparison to the slope coefficient of the low quintile. Thus, the conventional investors respond differently to high and low performance. They disproportionately invest in the last year's top performing funds, but they do not punish poor performing funds to the same extent. The results confirm the earlier finding in the literature (see, e.g., Chevalier and Ellison (1997) and Sirri and Tufano (1998)) that the performance flow relationship is asymmetric and convex. Goetzmann and Peles (1997) explain the absence of significant outflows of the poor performing funds by cognitive dissonance. Investors stick to the poor performing funds, because otherwise they would have to admit to themselves that they came to the wrong investment decision before.

I find a similar result for the SRI investors. They also disproportionately chase past top performing funds. All slope coefficients for the SRI funds do not significantly differ from the slope coefficients for the conventional funds.¹⁷ Each estimated slope coefficient for the SRI funds is composed of that for the conventional funds plus the estimated additional impact for the SRI funds. For example the estimated slope coefficient in the top performing quintile for the SRI funds is about 2.49. An increase of ten percentiles in the top performing quintile for the SRI funds, for example from 0.85 to 0.95, boosts asset growth by about 25% p.a., all else equal. The result that SRI investors chase past top performing funds is in line with the findings of Bollen (2007) and Renneboog

¹⁷I also investigated the performance flow relationship separately for the SRI funds. I find that the coefficients for the three middle quintiles and the top quintile are significantly positive; the coefficient on the low quintile is not significant.

et al. (2006). The estimated performance flow relationship of Model 2 can be seen graphically in Figure 2. Figure 2 presents the convexity of the performance flow relationship for the conventional and SRI funds.

- insert FIGURE 2 about here -

The results concerning the performance flow relationship in Column 3 support the finding that the relation is convex for the conventional funds. The relation for the SRI funds is also convex. The significantly lower coefficient of the linear SRI performance term in conjunction with the not significant higher quadratic term indicates that SRI investors invest slightly more in low performing funds, but still disproportionately invest more in top performing funds. Overall, the results of Columns 2 and 3 suggest that SRI investors chase past top performing funds the way conventional investors do.

For the further determinants of the net-inflows into mutual funds, I find similar results for both models. Therefore, I describe in the following only the results of Column 2. The estimated coefficient of the lagged flow, $FLOW_{i,t-1}$, is positive and significant. This finding is consistent with the status-quo bias behavior of mutual fund investors. Previous studies such as Gruber (1996), Patel et al. (1994), and Fant and O'Neal (2000) also document a strong positive impact of the lagged flow on the subsequent flow. The additional impact for the SRI funds is even significantly higher. The total impact for the conventional funds is only about 15% p.a., whereas that of the SRI funds is about 33% p.a., all else equal. The high positive significant coefficient on the lagged flows for SRI funds is in line with my conjecture that SRI investors face higher search costs than conventional investors. SRI investors have to put more time and

effort in identifying the SRI funds which fit their personal values and then are more likely to reinvest in those funds in the future.

The relation between the control variables and net-inflows of mutual funds is in line with previous findings in the literature. The fund risk, measured by the standard deviation of monthly returns, has no significant impact on net-inflows. Investors seem not to care about the risk of the funds. The coefficient of the size and age of a fund is significantly negative. This result indicates that large (old) mutual funds receive less inflow than smaller (younger) mutual funds. While the total loads have a significant and positive impact on subsequent net-inflows, the expense ratio has significant and negative impact on subsequent net-inflows. The estimated coefficient on the fund turnover indicates whether investors care about the trading activity of the funds. I find no significant impact for the funds. The adjusted R^2 for Model 2 is 13.30% and 13.16% for Model 3. The time-segment interaction dummies not reported in the table are mostly significant.

To examine whether the performance sensitivity of SRI investors depends on the development of the SRI fund market, I split the sample into a first sub-period from 1993 to 1998 and a second sub-period from 1999 to 2004. Table 3 summarizes the estimates of Model 2 and Model 3 sub-samples. The performance flow relationship of the conventional funds is positive and convex in both sub-periods. In contrast to this finding, the performance flow relationship for the SRI funds changes over time. While in the first sub-period the performance flow relationship for the SRI funds is not so pronounced, the relationship in the second sub-period is even more convex than for conventional funds. The additional impact in the first sub-period is significantly negative for the middle

and top quintiles. In the second sub-period the estimated SRI coefficient on the top quintile is significantly positive. The results for the quadratic specification of the performance rank are similar. Overall, SRI investors chase top performing funds to a larger extent in the sub-period from 1999 to 2004 than from 1993 to 1998. This result is consistent with the conjecture that along with the fast growing SRI market the performance sensitivity increased. This can be attributed to the fact that with an increasing number of SRI funds the number of alternatives grew and thus SRI investors became more performance sensitive over the years. Another explanation for this finding is that SRI early adopters cared less about performance than the mainstream SRI investors today. The SRI early adopters may have derived more utility from the social and environmental aspects of their funds. Since the SRI market has grown from a tiny niche to a respectable market segment, SRI investors nowadays seem to chase past top performing funds even more than conventional investors. This finding may result from mainstream SRI investors being more alert to an inferior performance due to ethical investment restrictions and thus trying to counteract it by the selection of top performers. SRI fund managers have to perform well to attract additional inflows.

- insert Table 3 about here -

The autocorrelation in fund flows remains significantly positive for the conventional funds in both sub-periods. As for the whole sample, the SRI funds exhibit a even stronger autocorrelation in flows in both sub-periods indicating that SRI investors have higher search costs and therefore reinvest more in the same funds. Only for the piecewise linear specification in the second sub-period (Column 4) is the estimate marginally not significant. The results regarding the control variables remain qualitatively unchanged. Only for the second sub-period

do I find that the influence of the expense ratios on flows is not significantly negative anymore. Today investors seem to care less about the expenses of their funds.

3.2 Investor behavior regarding ethical standards

To investigate whether SRI investors care about the actual ethical standards of the SRI funds, I augment Model 2 and 3 by including the positive rating, $Pos_{i,t-1}$, and the negative rating, $Neg_{i,t-1}$. The construction of these ratings is described in Section 2.1. Table 4 reports the results of the extended models.

- insert Table 4 about here -

I find neither any significant impact of the positive rating nor of the negative rating for the conventional funds in both models. As expected, conventional investors seem not to care about the ethical standards of their funds. However, I find evidence that, consistent with my conjecture, SRI investors care about the ethical standards, i.e., how the SRI funds actually invest. The coefficient of the positive rating is significantly positive. An increase from the lowest rank to the highest rank regarding the positive rating is associated with an increase in net-inflows from about 23% p.a., all else equal. In contrast to the positive rating, the negative rating has no significant effect on the inflows of SRI funds. The negative screening approach seems not to be popular among SRI investors. Overall, these findings suggest that SRI investors prefer funds with high ethical standards regarding the positive rating and that they do look behind the label "SRI fund".

The performance flow relationship is similar to the one reported in Table 2 earlier. For the quadratic performance term in Column 3 I now find a marginal significantly positive impact, suggesting that SRI investors react even more strongly to top performing funds. However, the result is not confirmed by the piecewise linear specification (Column 2). The estimates of the lagged flow and the control variables remain qualitatively unchanged.

To examine whether the investment behavior of SRI investors regarding the ethical standards has changed over time, I split the sample as before into a first sub-period from 1993 to 1998 and a second sub-period from 1999 to 2004. Table 5 summarizes the results.

- insert Table 5 about here -

I find no significant relation between fund flows and the positive and negative rating for the conventional funds in both sub-periods. In the first sub-period the estimates of the additional impact on SRI funds of the positive rating are marginally significant in Column 2, but not in Column 3. Therefore, I find only weak evidence that SRI investors care about the positive rating in the first sub-period. However, in second sub-period I find that SRI investors care about the positive rating – the estimates are significant and almost double compared to the first sub-period. For the negative rating I find no significant influence on the flows, as for the whole sample period. Overall, today's SRI investors seem to care more about the actual ethical standards of their funds. The performance flow relationship remains similar to that of Table 3. Only the estimate on the additional impact for the low performance quintile is now significantly negative, indicating that SRI funds with a low performance get inflows. This could be

because some SRI investors do not find any alternatives for these funds. The estimates of the lagged flows and the control variables remain qualitatively unchanged.

The positive and negative rating studied earlier consist of several criteria. To investigate whether the single criteria have an influence on fund net-inflows, I replace the positive rating with the ethical rankings of the criteria – community, diversity, employee relations, human rights, and product. The negative rating is replaced with ethical rankings of the criteria alcohol, gambling, military, nuclear, and tobacco. Table 6 reports the results.

- insert Table 6 about here -

There exists no significant influence of a single criterion on flows for the conventional funds. The flows of SRI funds are also not significantly influenced by most single criteria. However, the criterion environment has a significantly positive impact on flows in both models. SRI investors prefer to buy funds with high actual environmental standards. The interest in environmental issues such as global warming or efficient use of energy is probably aroused by the frequent reports in the public press. The performance flow relationship is similar to the one reported before. SRI investors chase past winners. The estimates for the lagged flow and control variables are not reported in Table 6. The results remain qualitatively unchanged.

4 Conclusion

By definition SRI investors pursue not only financial goals, but non-financial goals as well. In this paper I compare the performance sensitivity of SRI investors' investment decisions to that of conventional investors' investment decisions. In addition to the performance sensitivity I analyze whether SRI investors consider the actual ethical standards of their investments. To explore these issues, I investigate the flows into SRI and conventional mutual funds. My sample consists of US equity mutual funds in the period from 1993 to 2004.

I find that along with the fast development of the SRI fund market the performance sensitivity among SRI investors increased. While SRI investors in the early stages of the market cared less about performance, they today chase past top performing funds. This result is in line with the conjecture that SRI investors today have more alternatives in the segment of SRI funds because of the increasing number and thus choose the funds with a top performance among the alternatives. The finding is also consistent with the assumption that in the beginning SRI pioneers dominated the market and cared less about performance than the mainstream SRI investors today. Furthermore, I am the first to analyze whether SRI investors care about the actual ethical standards of their mutual funds. To measure the ethical standards of a fund, I combine the portfolio holdings information with ethical stock ratings data. I find that SRI investors, in contrast to conventional investors, care about the actual ethical standards regarding the positive rating and especially about the criterion environment; they do not just care about the label "SRI fund". The frequent reports about environmental issues in the public press may lead

to the consideration of environmental standards when facing an investment situation. Along with the development of the SRI market, the sensitivity to the ethical standards regarding the positive rating has increased over time. In addition to these findings I find evidence that SRI investors have higher search costs than conventional investors when selecting a fund and thus are more likely to reinvest in the same funds in the future. SRI investors have to identify not only a fund fitting their financial goals, but also their personal values.

Overall, my findings suggest that SRI investors are different from conventional investors. SRI investors today chase not only past top performing funds, but also care about the ethical standards of their investments. A line for future research may be to study how different characteristics and attitudes of SRI investors affect their investment decisions.

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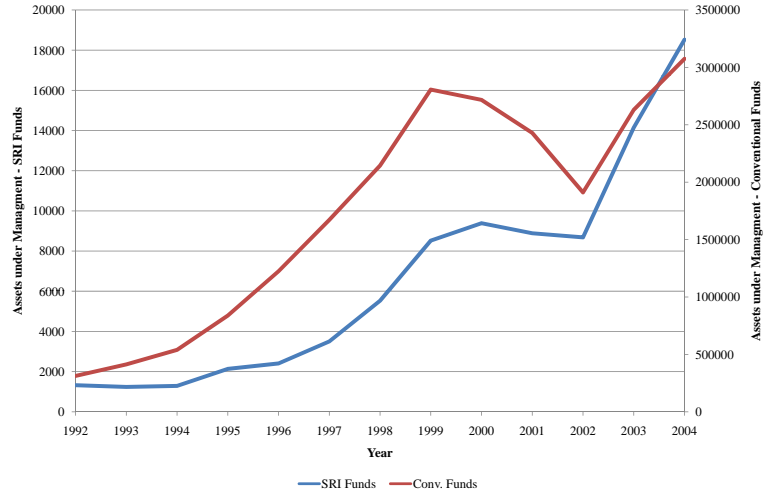
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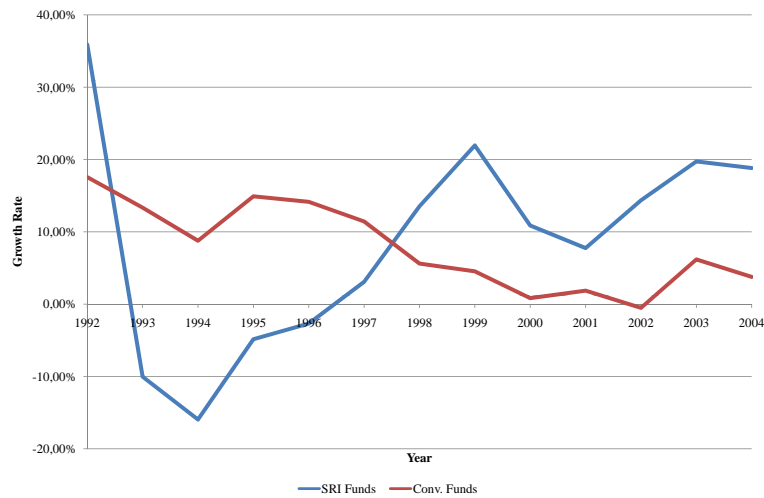
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Figure 1: Development of the SRI Mutual Fund Market



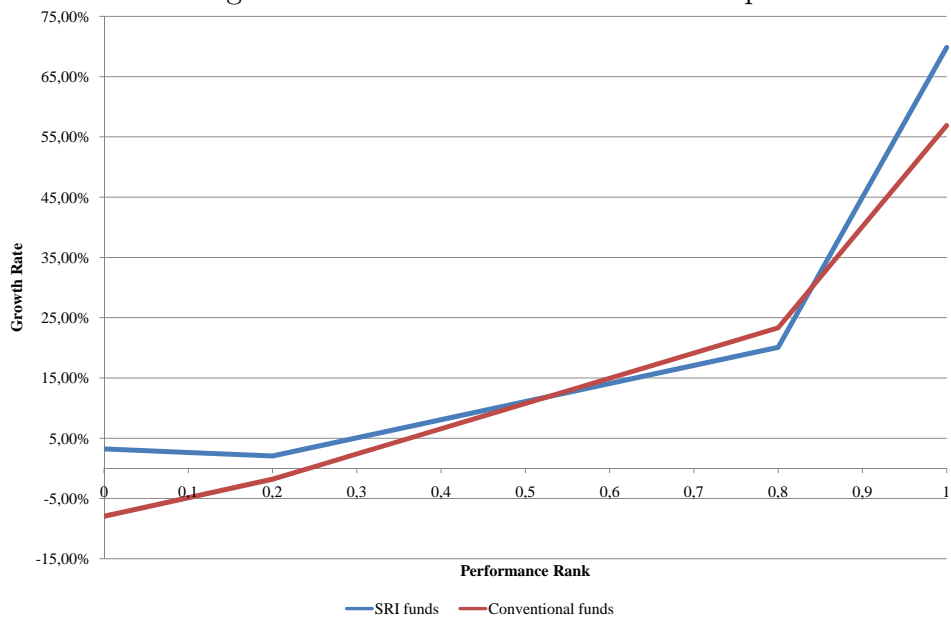
(a) Total Assets Under Management of SRI and Conventional Funds



(b) Growth Rates of SRI and Conventional Funds

Notes: Figure (a) shows the development of the total assets under management (in million US dollars) for SRI funds and conventional funds over time. Figure (b) shows the development of the growth rates of SRI funds and conventional funds over time.

Figure 2: Performance Flow Relationship



Notes: The figure presents the performance flow relationship for SRI funds and conventional funds. It is based on the estimated slope coefficients from Model 2 for the time period from 1993 to 2004.

Table 1: Summary Statistics

Panel A: SRI Funds

Year	No. of funds	Growth	Size	Age	Expense Ratio	Loads	Turnover
1992	4	35.02	331.70	13.50	1.09	2.38	0.27
1993	4	-5.78	310.02	14.50	1.11	1.19	0.43
1994	8	-1.86	161.45	11.13	1.20	1.03	0.44
1995	11	7.54	194.37	10.45	1.43	1.58	0.46
1996	12	2.03	200.66	10.92	1.43	1.47	0.60
1997	21	17.46	166.88	7.90	1.44	1.08	0.76
1998	24	21.19	230.42	8.38	1.39	0.94	0.72
1999	26	30.97	327.74	9.27	1.40	1.06	0.69
2000	31	21.14	302.82	9.13	1.43	1.27	0.64
2001	33	16.07	269.29	9.39	1.37	1.41	0.64
2002	35	11.06	248.05	10.09	1.49	1.52	0.67
2003	39	16.11	362.67	10.56	1.45	1.83	0.70
2004	42	22.76	440.99	11.02	1.44	2.11	0.71
Total	290	17.40	295.11	9.92	1.41	1.48	0.66

Panel B: Conventional Funds

Year	No. of funds	Growth	Size	Age	Expense Ratio	Loads	Turnover
1992	386	25.49	810.69	21.79	1.19	3.44	0.65
1993	404	21.55	1022.38	22.72	1.18	3.25	0.71
1994	736	11.16	733.43	17.08	1.26	2.51	0.76
1995	884	21.17	948.83	15.68	1.27	2.30	0.79
1996	1062	21.02	1153.37	14.82	1.25	2.15	0.82
1997	1180	24.84	1416.77	14.41	1.22	2.08	0.82
1998	1264	11.21	1697.14	14.48	1.22	2.02	0.87
1999	1376	9.11	2039.66	14.55	1.22	1.99	0.86
2000	1550	12.78	1752.69	13.89	1.24	1.98	0.91
2001	1659	13.72	1464.36	13.79	1.29	1.98	1.01
2002	1748	6.64	1093.29	14.15	1.33	1.95	0.95
2003	1789	13.90	1470.38	14.58	1.37	2.12	0.91
2004	1892	9.15	1625.11	14.73	1.38	2.36	0.88
Total	15930	13.82	1425.94	14.95	1.28	2.17	0.87

Notes: This table reports summary statistics for the SRI funds (Panel A) and for the conventional funds (Panel B) over the time period from 1992 to 2004. Year by year it presents the number of funds, average net-growth (in percentage), average size (in million US dollars), average age (in years), average expenses (percentage of assets invested), average loads (percentage total of all maximum front, deferred, and redemption fees), and average turnover (minimum of aggregate purchases of securities or aggregate sales of securities, divided by the average total net assets of the fund).

Table 2: Impact of the Performance on Net-Inflows

$Low_{i,t-1}$	0.3080***	
$Mid_{i,t-1}$	0.4186***	
$Top_{i,t-1}$	1.6786***	
$SR_{i,t-1}Low_{i,t-1}$	-0.3658	
$SR_{i,t-1}Mid_{i,t-1}$	-0.1180	
$SR_{i,t-1}Top_{i,t-1}$	0.8088	
$PerfRank_{i,t-1}$		0.0069
$PerfRank_{i,t-1}^2$		0.5314***
$SR_{i,t-1}PerfRank_{i,t-1}$		-0.5721**
$SR_{i,t-1}PerfRank_{i,t-1}^2$		0.5445
$FLOW_{i,t-1}$	0.1471***	0.1500***
$SR_{i,t-1}FLOW_{i,t-1}$	0.1834***	0.1955***
$Risk_{i,t-1}$	-0.0381	-0.0617
$Size_{i,t-1}$	-0.0435***	-0.0436***
$Age_{i,t-1}$	-0.0582***	-0.0578***
$Loads_{i,t-1}$	1.3776***	1.3777***
$ExpRatio_{i,t-1}$	-2.9725**	-2.9881**
$Turnover_{i,t-1}$	0.0168	0.0172
Adj. R^2	13.30%	13.16%

Notes: Estimation results are based on Model 2 (Column 1) and 3 (Column 2). The dependent variable, $FLOW_{i,t}$, reflects the percentage growth of fund i minus the internal growth in year t . The explanatory variables are contained in Column 1. The last line contains the adjusted R^2 . The total number of observations is 15732; 15447 observations apply to the conventional funds and 285 observations apply to the SRI funds. ***, **, and * indicate significance at the 1%, 5%, and 10% level.

Table 3: Impact of the Performance on Net-Inflows for Sub-Samples

	1993-1998		1999-2004	
$Low_{i,t-1}$	0.4234***		0.2110	
$Mid_{i,t-1}$	0.5182***		0.3620***	
$Top_{i,t-1}$	2.1187***		1.4303***	
$SR_{i,t-1}Low_{i,t-1}$	0.1719		-0.5250	
$SR_{i,t-1}Mid_{i,t-1}$	-0.3884***		-0.0222	
$SR_{i,t-1}Top_{i,t-1}$	-1.0453*		2.0008*	
$PerfRank_{i,t-1}$		0.0107		-0.0094
$PerfRank_{i,t-1}^2$		0.6667***		0.4661***
$SR_{i,t-1}PerfRank_{i,t-1}$		0.1686		-0.9383**
$SR_{i,t-1}PerfRank_{i,t-1}^2$		-0.5364*		1.0836**
$FLOW_{i,t-1}$	0.1429***	0.1457***	0.1494***	0.1521***
$SR_{i,t-1}FLOW_{i,t-1}$	0.1600**	0.1597**	0.1377	0.1611*
$Risk_{i,t-1}$	0.4120	0.4708	-0.3242	-0.3446
$Size_{i,t-1}$	-0.0484***	-0.0484***	-0.0415***	-0.0416***
$Age_{i,t-1}$	-0.0537***	-0.0525***	-0.0613***	-0.0612***
$Loads_{i,t-1}$	1.7748***	1.7778***	1.1142***	1.1107***
$ExpRatio_{i,t-1}$	-5.2642***	-5.0941***	-2.0001	-2.0379
$Turnover_{i,t-1}$	0.0045	0.0047	0.0240	0.0244
Adj. R^2	16.36%	16.14%	11.60%	11.50%

Notes: Estimation results are based on Model 2 and 3 for two sub-periods: 1993-1998 (Columns 2-3) and 1999-2004 (Columns 4-5). The dependent variable, $FLOW_{i,t}$, reflects the percentage growth of fund i minus the internal growth in year t . The explanatory variables are contained in Column 1. The last line contains the adjusted R^2 . The total number of observations is 5552 (10180) for the period 1993-1998 (1999-2004); 5473 (9974) observations apply to the conventional funds and 79 (206) observations apply to the SRI funds. ***, **, and * indicate significance at the 1%, 5%, and 10% level.

Table 4: Impact of the Positive and Negative Rating on Net-Inflows

$Low_{i,t-1}$	0.2993***	
$Mid_{i,t-1}$	0.4190***	
$Top_{i,t-1}$	1.6893***	
$SR_{i,t-1}Low_{i,t-1}$	-0.4637	
$SR_{i,t-1}Mid_{i,t-1}$	-0.1023	
$SR_{i,t-1}Top_{i,t-1}$	0.8471	
$PerfRank_{i,t-1}$		-0.0008
$PerfRank_{i,t-1}^2$		0.5396***
$SR_{i,t-1}PerfRank_{i,t-1}$		-0.6225**
$SR_{i,t-1}PerfRank_{i,t-1}^2$		0.6003*
$Pos_{i,t-1}$	0.0240	0.0248
$Neg_{i,t-1}$	-0.0208	-0.0188
$SR_{i,t-1}Pos_{i,t-1}$	0.1997**	0.2004**
$SR_{i,t-1}Neg_{i,t-1}$	-0.0752	-0.0859
$FLOW_{i,t-1}$	0.1469***	0.1498***
$SR_{i,t-1}FLOW_{i,t-1}$	0.1779***	0.1902***
$Risk_{i,t-1}$	-0.0412	-0.0692
$Size_{i,t-1}$	-0.0436***	-0.0437***
$Age_{i,t-1}$	-0.0583***	-0.0578***
$Loads_{i,t-1}$	1.3703***	1.3714***
$ExpRatio_{i,t-1}$	-2.9068**	-2.9258**
$Turnover_{i,t-1}$	0.0170	0.0175
Adj. R^2	13.31%	13.16%

Notes: Estimation results are based on Model 2 (Column 2) and 3 (Column 3) extended by the positive rating and the negative rating as additional explanatory variables. The dependent variable, $FLOW_{i,t}$, reflects the percentage growth of fund i minus the internal growth in year t . The explanatory variables are contained in Column 1. The last line contains the adjusted R^2 . The total number of observations is 15732; 15447 observations apply to the conventional funds and 285 observations apply to the SRI funds. ***, **, and * indicate significance at the 1%, 5%, and 10% level.

Table 5: Impact of the Positive and Negative Rating on Net-Inflows for Sub-Samples

	1993-1998		1999-2004	
$Low_{i,t-1}$	0.4167***		0.2055	
$Mid_{i,t-1}$	0.5167***		0.3633***	
$Top_{i,t-1}$	2.1259***		1.4395***	
$SR_{i,t-1}Low_{i,t-1}$	0.5419		-0.9916**	
$SR_{i,t-1}Mid_{i,t-1}$	-0.4205***		0.0273	
$SR_{i,t-1}Top_{i,t-1}$	-1.1474**		2.1072*	
$PerfRank_{i,t-1}$		0.0049		-0.0146
$PerfRank^2_{i,t-1}$		0.6714***		0.4728***
$SR_{i,t-1}PerfRank_{i,t-1}$		0.3593		-1.1626***
$SR_{i,t-1}PerfRank^2_{i,t-1}$		-0.7186**		1.3069***
$Pos_{i,t-1}$	0.0116	0.0122	0.0186	0.0192
$Neg_{i,t-1}$	-0.0198	-0.0164	-0.0129	-0.0117
$SR_{i,t-1}Pos_{i,t-1}$	0.1685*	0.1505	0.2971**	0.3014**
$SR_{i,t-1}Neg_{i,t-1}$	0.0047	0.0034	-0.1278	-0.1404
$FLOW_{i,t-1}$	0.1427***	0.1456***	0.1492***	0.1520***
$SR_{i,t-1}FLOW_{i,t-1}$	0.1413**	0.1402**	0.1388	0.1611*
$Risk_{i,t-1}$	0.4118	0.4631	-0.3273	-0.3502
$Size_{i,t-1}$	-0.0484***	-0.0485***	-0.0416***	-0.0417***
$Age_{i,t-1}$	-0.0539***	-0.0526***	-0.0614***	-0.0613***
$Loads_{i,t-1}$	1.7667***	1.7715***	1.1082***	1.1048***
$ExpRatio_{i,t-1}$	-5.1578***	-5.0012**	-1.9496	-1.9870
$Turnover_{i,t-1}$	0.0045	0.0048	0.0243	0.0247
Adj. R^2	16.31%	16.09%	11.61%	11.51%

Notes: Estimation results are based on Model 2 and 3 extended by the positive rating and the negative rating as additional explanatory variables for two sub-periods: 1993-1998 (Columns 2-3) and 1999-2004 (Columns 4-5). The dependent variable, $FLOW_{i,t}$, reflects the percentage growth of fund i minus the internal growth in year t . The explanatory variables are contained in Column 1. The last line contains the adjusted R^2 . The total number of observations is 5552 (10180) for the period 1993-1998 (1999-2004); 5473 (9974) observations apply to the conventional funds and 79 (206) observations apply to the SRI funds. ***, **, and * indicate significance at the 1%, 5%, and 10% level.

Table 6: Impact of Single Qualitative and Exclusionary Criteria on Net-Inflows

$Low_{i,t-1}$	0.2879**	
$Mid_{i,t-1}$	0.4179***	
$Top_{i,t-1}$	1.7065***	
$SR_{i,t-1}Low_{i,t-1}$	-0.3690	
$SR_{i,t-1}Mid_{i,t-1}$	-0.1354	
$SR_{i,t-1}Top_{i,t-1}$	0.6990	
$PerfRank_{i,t-1}$		-0.0124
$PerfRank_{i,t-1}^2$		0.5510***
$SR_{i,t-1}PerfRank_{i,t-1}$		-0.5944**
$SR_{i,t-1}PerfRank_{i,t-1}^2$		0.5383
$Community_{i,t-1}$	-0.0546	-0.0538
$Diversity_{i,t-1}$	0.0593	0.0582
$EmployeeRelations_{i,t-1}$	-0.0062	-0.0054
$Environment_{i,t-1}$	-0.0132	-0.0117
$HumanRights_{i,t-1}$	-0.0237	-0.0263
$Product_{i,t-1}$	-0.0315	-0.0308
$Alcohol_{i,t-1}$	-0.0037	-0.0056
$Gambling_{i,t-1}$	-0.0229	-0.0205
$Military_{i,t-1}$	-0.0077	-0.0049
$Nuclear_{i,t-1}$	0.0415	0.0411
$Tobacco_{i,t-1}$	-0.0420	-0.0412
$SR_{i,t-1}Community_{i,t-1}$	0.0453	0.0351
$SR_{i,t-1}Diversity_{i,t-1}$	0.1774	0.1745
$SR_{i,t-1}EmployeeRelations_{i,t-1}$	-0.0855	-0.0827
$SR_{i,t-1}Environment_{i,t-1}$	0.3201***	0.3256***
$SR_{i,t-1}HumanRights_{i,t-1}$	0.0854	0.0961
$SR_{i,t-1}Product_{i,t-1}$	0.0480	0.0311
$SR_{i,t-1}Alcohol_{i,t-1}$	0.1499	0.1422
$SR_{i,t-1}Gambling_{i,t-1}$	-0.1411	-0.1714
$SR_{i,t-1}Military_{i,t-1}$	-0.1175	-0.1271
$SR_{i,t-1}Nuclear_{i,t-1}$	-0.0563	-0.0601
$SR_{i,t-1}Tobacco_{i,t-1}$	0.0157	0.0542
Adj. R^2	13.32%	13.17%

Notes: Estimation results are based on Model 2 (Column 2) and 3 (Column 3) extended by single qualitative and exclusionary criteria as additional explanatory variables. The dependent variable, $FLOW_{i,t}$, reflects the percentage growth of fund i minus the internal growth in year t . The explanatory variables are contained in Column 1. The last line contains the adjusted R^2 . The total number of observations is 15732; 15447 observations apply to the conventional funds and 285 observations apply to the SRI funds. ***, **, and * indicate significance at the 1%, 5%, and 10% level.

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