STOCKHOLM SCHOOL OF ECONOMICS

Master Thesis in Finance

Mutual Fund Flows and Investor Behavior:

-A Study Comparing Ethical Funds and Conventional Funds in the Swedish Mutual Fund Industry

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Abstract

This thesis examines the relation between net flows of money in ethical mutual funds and past performance in the Swedish mutual fund industry. In particular, we study the flow-performance relationship for a sample of ethical funds, and compare this relation to a sample of conventional funds during the period 2000-2006. Our aim with such a comparison between ethical and conventional funds is to examine behavioral differences between ethical investors and investors in conventional funds. Ethical investors are of specific interest since they might derive utility from a non-financial attribute in their investment decision, as reflected by integrating their moral and ethical concerns with financial requirements when selecting funds. We extend the analysis to examine the determinants of money inflows in a multivariate setting, considering other factors besides past performance that might impact on the ethical investors' decision: management fees and volatility in returns. We find that: (1) investors in conventional funds are more sensitive to past poor performance than they are to past high performance; (2) ethical investors are more sensitive to past poor performance compared to investors in conventional funds; (3) ethical investors are more sensitive to management fees; (4) ethical investors are less sensitive to volatility in past returns compared to investors in conventional funds and; (5) we find that net flows to ethical funds are negatively related to past high performance.

Keywords: Flow-Performance Relationship, Mutual Fund Flows, Investor Behavior, Ethical Funds

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1. Introduction and Purpose

This thesis aims at examining the relation between net flows and past performance in the Swedish mutual fund market. The relation between money flows into mutual funds and past performance, commonly known as the flow-performance relationship (hereafter FPR), has been subject of interest for extensive academic research. The relationship has generally been found to be positive and convex, implying that funds with recent superior performance gain disproportionately more inflows than poorly performing funds suffer outflows. We add to this research by studying the relation between net flows and past performance for a sample of ethical funds, and compare this relation to a sample of conventional funds, for the period 2000-2006. We extend the analysis to examine the determinants of net flows in a multivariate setting, considering other factors besides past performance, in particular fees and volatility in past returns.

While much of the existing literature has been examining whether ethical funds underperforms relative their conventional peers, i.e. whether ethical funds earn lower risk-adjusted returns compared to conventional funds, little research has been conducted on whether the behavior of ethical investors differ from investors in conventional funds. Our purpose can thus be summarized as comprehensively study the behavior of ethical investors by examining the differences in the determinants of net flows to ethical funds and conventional funds. More specifically, we address the question whether ethical investors are less sensitive to past performance, both in terms of past high and poor performance. In addition, we examine how ethical investors preferences for management fees and volatility in past returns impact on net flows in ethical funds. Hence, by comparing the FPR, as well as the additional determinants of money inflows, between ethical funds and conventional funds we hope to shed further light on differences in behavior between investors in the two fund types.

1.1 Contribution

This thesis makes the following main contributions. Firstly, to the best of our knowledge this thesis is the first to address this field of research on ethical funds in the Swedish market, using a unique dataset during the period 2000-2006. Hence, this thesis will enrich the limited existing literature on the behavior of ethical investors. Secondly, from an academic point of view, the ethical component is unique in the sense that ethical investors might derive utility from a non-financial attribute by integrating social, environmental or moral concerns with investment allocation decisions. Thus, this thesis provides a unique situation to enhance the knowledge about the determinants of net flows to ethical funds, and therefore to better understand ethical investors' preferences for fund specific characteristics.

1.2 Background

Over the past decade, Social Responsible Investments funds (SRI), or ethical mutual funds[1] have experienced an explosive growth around the world. Assets in the socially screened portfolios reached $2.71 trillion in 2007 which is approximately 11% of the total universe of professionally managed assets in the US (Social Investment Forum). In 2007, there were 74 funds in Sweden with an ethical profile. During the same year, ethical investments in Sweden increased from 4% to 11%[2] and the assets in ethical funds amounted to SEK123 Billion[3].

What differentiates an ethical fund from a conventional fund is that the former incorporates financial goals in combination with social, environmental and ethical concerns. To meet these specific requirements, ethical funds usually apply a combination of negative and positive screening. *Negative screening* implies excluding companies engaging in specific industries, e.g. weapons, alcohol, tobacco and gambling. *Positive screening* on the other hand, implies actively selecting and including companies that meet superior standards on issues such as child labor, corporate governance and environmental protection. The use of positive screening is often combined with an approach where all companies meeting specified criteria are ranked within their respective industry, based on these criteria. In a next step, the selected companies are evaluated and only the ones that are above a certain minimum level are candidates for inclusion in the portfolio (Rennebog (2007)).

Despite the growing interest in ethical investing, the behavior of ethical investors has not been studied to any greater extent. The existing academic literature suggests that ethical investors seem to deviate from a rational wealth maximization behavior and that they potentially care more about ethical issues when forming their investment decisions, than they do about fund performance (Rennebog et al (2006, 2007)). In addition, other researchers suggest that ethical investors potentially derive part of their utility from a non-financial attribute when investing ethically (Bollen and Cohen (2005)). Hence, in terms of behavior, the ethical investor seems to differ from the investor in conventional funds. As a consequence, we might expect the flow-performance relationship to differ between the two types of investors as well.

1.3 Outline

The thesis proceeds as follows. Section 2 outlines a summary of the empirical findings in previous research on the flow performance relationship for both conventional and ethical funds, along with a presentation of relevant theoretical models. In section 3 we develop our hypotheses, along with a discussion and motivation for each hypothesis. In section 4 we present the quantitative dataset used to

[1]Even though the term ethical fund is strictly speaking a more narrow definition than SRI fund, the terms are frequently used interchangeable (Rennebog et al (2006)). Throughout this thesis we will use the term ethical funds, referring to funds that pursue either social, environmental and ethical goals.
[2] Mostly attributed to the fact that Premiesparfonden was included in the ethical index Etikfondindex
[3]www.morningstar.se

carry out the analysis, along with a description and assumptions about the data. In section 5 we develop our regression specification and general methodology, along with a presentation of the variables included. Empirical findings and analysis of hypotheses are presented in section 6. In section 7 we summarize our findings and concluding remarks. Finally, in section 8 we present suggestions for further research.

2. Previous Research

In the following section we present relevant results from previous studies on the flow-performance relationship for conventional funds and ethical funds respectively. In addition, we provide theoretical explanations for the FPR and why there might be behavioral differences between investors in ethical funds and investors in conventional funds. The section is structured as follows: In section 2.1, we summarize previous findings on the FPR for conventional funds. In section 2.2, we present theoretical explanations for the FRP in conventional funds. In section 2.3, we review previous findings on the FPR for ethical funds. Lastly, in section 2.4, we present theoretical explanations for the FPR in ethical funds.

2.1 Flow-Performance Relationship – Conventional Funds

Many previous studies have documented a convex relationship between mutual fund flows and past performance, implying that funds with superior past performance enjoy disproportionally larger inflows, while past poor performers suffer smaller outflows. In other words, investors buy funds with good past performance but fail to leave funds with poor past performance (see for example Ippolito (1992), Gruber (1996), Chevalier and Ellison (1997), Sirri and Tufano (1998), Engström and Westerberg (2004), Kempf and Ruenzi (2004), Huang, Wei and Yan (2007), Cashman, Deli, Nardari and Villupuram (2007)).

In addition, several studies have examined other determinants of mutual fund flows and found that (1) net flows are strongly negatively related to fees, i.e. investors in mutual funds are fee sensitive (Kempf and Ruenzi (2004, 2008), Sirri and Tufano (1997), Barber, Odean and Zheng (2004), Engström and Westerberg (2004)), and (2) net flows are negatively related to risk (i.e. volatility in fund returns) implying that investors have a preference for less risky funds (Ippolito(1992), Sirri and Tufano (1998), Kempf and Ruenzi (2004, 2008)).

Even though limited, studies performed on the Swedish mutual fund market have indicated a similar relationship. Engström and Westerberg (2004) confirm that Swedish investors chase past returns and have a strong preference for fund with lower fees. They also present evidence suggesting something slightly different compared to previous U.S. studies; when including fund characteristics related to information cost and controlling for the fund investment objective, past returns turn out to be less

important as a determinant of mutual fund flows. Instead, Swedish investors seem to have a strong preference for funds they are familiar with; funds with a past track record that are based in Sweden and belong to one of the four main banks receive higher inflows of capital.

The observed relationship between net flows and past performance, i.e. positive and convex, involves a number of interesting implications. Chevallier and Ellison (1997) examine the risk-taking behavior of mutual fund managers in light of a potential agency conflict between fund managers and their customers [4]. Since mutual fund managers usually receive a fixed percentage of assets under management as compensation, they will have an incentive to take whatever actions that increases the total assets of the fund. Hence, if investors react to year-end performance, and do so asymmetrically, fund managers will have an incentive to alter the volatility of the funds at the end of the year since they know that past good performance is rewarded with disproportionately more inflows than past poor performance suffer outflows. In this setting, the general compensation structure in the mutual fund industry, in combination with the positive and convex flow-performance relationship, makes the manager compensation similar to a call option. However, Sirri and Tufano (1998) investigate the relationship between net flow and volatility and find it to be negative. Hence, they conclude that the incentive for fund managers to alter the riskiness of their funds might come at a cost, since increasing risk have a negative impact on net flows.

In addition, Cashman, Deli, Nardari and Vilupuram (2004) find that investors evaluate and respond differently to past performance across fund types such as domestic equity funds, international equity funds and hybrid funds. Their finding is of particular interest for our objective; if investors evaluate and respond differently to past performance across fund types, consistent with that different categories of funds may attract investors with different risk return profiles, we might expect a different response to past performance between ethical investors and investors in conventional mutual funds.

2.2 Theoretical Explanations – Flow-Performance Relationship – Conventional Funds

Despite the various previous studies examining different aspects of the flow-performance relationship, fewer papers have proposed a theoretical explanation. However, some attempts have been made (see for example, Gruber (1996), Goetzmann and Peles (1997), Barber, Odean and Zheng (2000), Lynch and Mustro (2003), Berk and Green (2004)).

Gruber (1996) defines three disadvantaged investor clienteles to explain why investors stick to funds that perform poorly, or that are predicted to do poorly. The disadvantages, i.e. tax disadvantages, institutional disadvantages or simply lack of investors sophistication, prevent these investors from

[4] Customers would like the fund in which they invest to maximize risk-adjusted returns. Mutual fund companies on the other hand, armed with information that is not directly observable, are motivated by their own profits (Chevalier and Ellison (1997)).

leaving poor performers. On the other hand, there is a *sophisticated* clientele, directing its money to funds based on performance.

Other researchers have applied behavioral explanations; Goetzmann and Peles (1997) examine the differential response to past poor performance and conclude that investors' beliefs about past performance seem to be biased upwards. This implies that investors have overly optimistic perceptions of past poor performance. Hence, investors do not leave poor performing funds because they believe it performed better than it actually did. Goetzmann et al. argue that this can be explained by the psychological phenomenon *cognitive dissonance*, which implies that individual beliefs are altered to conform to their past actions. However, there is criticism against this explanation, pointing out that it is unlikely that investors' beliefs are biased upwards for only poor performing funds (Sigurdsson (2004)).

Nevertheless, additional support for the notion of investors inertia to sell recent poor performers is given by Lynch and Musto (2003), presenting a theoretical model where managers are more likely to change its strategy after a period of poor performance. They argue that investors anticipate this when forming their expectations about future returns, why their model offers the supporting interpretation that past poor performance is not representative of future performance while past good performance is. This would thus explain investors' inertia to leave poor performers, and the stronger reaction to past good performance, leading to a convex FPR .

Moreover, Barber, Odean and Zheng (2000) argue that the *representative heuristic* (investors forming too optimistic assumptions about a funds future performance based on recent performance, lead investors to buy past winners), whereas the *disposition effect* (the tendency among investors to keep losers and sell winners too soon) renders investors reluctant to sell their losers. In addition, Berk and Green (2002), construct a model where fund flows are investors' rational responses to past performance. Hence, investors chase past returns since they interpret past high performance as evidence of the managers' superior ability. Investors learn about managerial ability by observing past performance, and allocate their monies accordingly.

Theories have also been proposed to explain the relationship between other determinants of fund flows, i.e. besides past performance. Chevalier and Ellison (1997), builds on a documented negative relationship between net flows and the age of the fund, and argue that since consumers attempt to infer the quality of a fund from historical data on performance, flows from younger funds would be more sensitive to recent performance, given the lack of historical data. In addition, Sirri and Tufano (1998) find that search costs seem to be an important determinant of fund flows. Since flows are directly related to high marketing efforts (as measured by higher fees), size of the fund complex as well as the current media attention received by the fund, Sirri and Tufano conclude that investors flock to funds that limit their search costs. As a consequence, these funds receive a disproportionally large inflow.

2.3 Flow-performance Relationship – Ethical Funds

Many researchers have studied whether performance of ethical funds over or underperform a conventional benchmark, and the evidence is somewhat mixed. Some researchers document a significant under-performance (see for example Rennebog, Horst and Zhang (2007)) [5] whereas others find no significant differences in performance when compared to conventional equity funds (see for example Bauer, Koedjik and Otten (2002))[6]. Since examining this question is not the purpose of our thesis, we only use these findings as an indication that there might be ethical investors willing to sacrifice maximized risk-adjusted return in favor of an ethical investment and that consequently deviate from pure wealth-maximizing behavior. With this notion in mind, we move on to discuss previous findings on the FPR for ethical funds.

Even though very limited, and mainly on U.S. data, some researchers have examined the flow-performance relationship for ethical funds. Bollen and Cohen (2005) document an asymmetric response to past positive and past negative return for ethical funds and conclude that ethical investors chase past performance. What is interesting is that when comparing ethical funds and conventional funds, they find that outflows from ethical funds are less sensitive to past negative returns, whereas inflows to ethical funds are more sensitive to past positive returns. In other words, ethical funds enjoy larger inflows than conventional funds given past positive performance and conventional funds suffer larger outflows than ethical funds given past negative performance. Moreover, Rennebog, Horst and Zhang (2006) study the money flows into and out of ethical funds and suggest that investors in ethical funds care may more about social or ethical issues in their investment decisions than performance. In line with Bollen and Cohen (2005), they also find that ethical investors are less sensitive to past negative returns than they are to past positive returns. In addition, Rennebog et al find that (1) ethical investors are not sensitive to past risk, i.e. net flows in ethical funds are not reduced with higher volatility in past fund returns, and (2) ethical investors care less about the fund fees, i.e. net flows in ethical funds are not reduced by higher total fees.

2.4 Theoretical Explanations – Flow Performance Relationship – Ethical Funds

Neo-classical economic theory tells us that investor are rational and that their behavior is driven by wealth maximization and self-interest. However, as suggested by the somewhat mixed empirical evidence presented above, there seem to be investors that consider other factors as well when forming their investment decisions, i.e. social, moral and ethical concerns. This fact naturally raises the

[5] Rennebog, Horst and Zhang (2006) find that the average ethical fund in most European and Asia-Pacific countries strongly underperforms their benchmark portfolio. In particular, the risk-adjusted returns for ethical funds, for example in Sweden, are on average lower than -5% per annum.

[6] Bauer, Koedijk and Otten (2002) find little evidence of significant differences in risk-adjusted returns between ethical and conventional funds after controlling for investment style. Introducing time-variation in betas however leads to a significant under-performance of domestic U.S ethical funds relative to their conventional peers.

question: how can these deviations from rational investor behavior be explained, in other words, why do ethical investors potentially deviate in their sensitivity to past performance, riskiness and fees?

Recent experimental evidence indicates that human unselfishness is a powerful feature of human behavior and that an individual's utility partially depends on the utility of other members of a community. Thus, ethical and social considerations may be important determinants of economic behavior (Fehr and Fichbacher (2003)). In line with this explanation, the acceptance of the economic disadvantages from ethical investing, e.g. higher fees and lower returns would be an expression of unselfish behavior and concern for other individuals.

There are other theories of social norms that try to explain how social norms that are finically costly can persist in the economy. The answer proposed is that if individuals maximize their self interest by following social norms that are financially costly, they will still be better off by not going against the social norm which may lead to loss of reputation. Hence, even though following the social norm may be financially costly, the loss of reputation from going against it might cause individuals to be worse off. (Akerlof (1980), Romer (1984) and Elster (1989)). In line with this theory, the economic disadvantages associated with ethical investing would be compensated with sustained or increased reputation. Thus, the latter explanation is more in line with classical economic theory, that is, the driving force in the investor behavior is still wealth maximization and self interest, and not unselfish behavior per se.

While the above explanations are general behavioral theories applied to the setting we are trying to examine, other theories have been proposed as well. Especially, these models are applicable in explaining potential behavioral differences between investors in ethical fund and conventional funds, as reflected by differences in how net flows respond to past performance. The two models of particular interest are the *learning* model and the *luxury good* explanation. The relevance of those theories in explaining potential differences in funds flows between ethical and conventional funds will further be discussed in connection to our hypotheses in section 3.2.

To summarize, we present a condensed presentation of the relevant empirical findings in the Table 2.1 below.

Table 2.1: Summary of Previous Research on the Flow-performance Relationship- Conventional Funds

Authors	Year	Market	Period	Convex FPR	Impact of fees	Impact of risk	Additional findings
Engström et al	2004	Sweden	1994-2000	Yes	Negative	n/a	Swedish investors have a strong preference for funds they are familiar with which reduces the importance of past returns as a determinant of net flow
Chevalier and Ellison	1997	US	1982-1992	Yes	n/a	n/a	•The convex FPR affects the risk-taking behavior of mutual fund managers •Fund age is negatively related to net flows
Sirri and Tufano	1998	US	1971-1990	Yes	Negative	Negative	•The negative relationship between net flows and risk makes the risk-taking behavior of mutual fund managers costly • Increases search cost negatively affect net flows
Cashman et al	2004	US	1997-2003	Yes	n/a	n/a	The FPR differs across fund types e.g. domestic equity funds and international equity funds
Barber et al	2000	US	1990-1996	Yes	Negative	Negative	n/a
Ippolito	1992	US	1965-1984	Yes	n/a	Negative	n/a
Kempf and Ruenzi	2004	US	1993-2001	Yes	Negative	Negative	n/a

Table 2.2: Summary of Previous Research on the Flow-performance Relationship- Ethical Funds

Authors	Year	Market	Period	Convex FPR	Impact of fees	Impact of risk	Additional finding
Bollen and Cohen	2005	US	1980-2002	Yes	n/a	n/a	Ethical investors are less sensitive to past negative performance but more sensitive to past positive performance compared to investors in conventional funds
Rennebog et al	2006	World	1992-2003	Yes	Not sensitive	Not sensitive	Ethical investors are less sensitive to past negative performance but more sensitive to past positive performance compared to investors in conventional funds

3. Hypotheses Development

This thesis investigates the notion that the flow-performance relationship for Swedish mutual funds is convex, where recent top performance is rewarded with disproportionally larger inflows than poor performers are punished in terms of outflows. We do so by examining how net flows in funds respond to past returns at different levels of performance (i.e. if the funds have performed well or poorly in the past). In particular, we compare the FPR between a sample of Swedish conventional funds and ethical funds and examine whether net flows into ethical funds respond differently to past performance. Any differences in the FPR between conventional and ethical funds will hence reveal behavioral discrepancies between ethical investors and investors in conventional funds. We expand the analysis to simultaneously study other dimensions that might impact the ethical investors' decision to invest money: risk and fee structure. Based on the previous research on mutual fund flows, combined with

theoretical models and the few studies considering ethical funds, we formalize these assertions and form our hypotheses.

3.1 Hypotheses 1- Flow-Performance Relationship

Hypothesis 1 is more of confirmative character, i.e. we aim at testing whether the well documented convex FPR found on US data is apparent for a sample of Swedish mutual funds. We anticipate that net flows respond differently with respect to past good or poor relative performance. In particular, we expect the FPR to be stronger for recent good performers (i.e. recent good performance is strongly positively related to net flows), whereas we expect a weaker relationship for poor and mediocre funds. This hypothesis can thus be translated in terms that we expect that investors chase past top performers but fail to leave poor performing funds.

This hypothesis is supported by (1) the broad existing literature on the FPR relationship, found to be positive and convex (reviewed in section 2.1). It is also consistent with (2) the behavioral and psychology literature proposing a variety of theoretical models. For instance, a predicted strong FPR for high performers is given by Berk and Green (2004) who suggest that investors chasing past high returns are rational using information about past performance to learn about managerial ability, i.e. past high return is interpreted by investors as a manager having superior ability, and allocate their monies accordingly. On the other hand, investors' inertia to sell recent poor performers is supported e.g. by the theory of *cognitive dissonance* by Goetzmann and Peles (1997) and the *disadvantage investor clienteles* presented by Gruber (1996) (as discussed in detail in section 2.2).

To summarize, we combine empirical evidence on the FPR in mutual funds together with theory and form the following hypothesis:

Hypothesis 1: *The relationship between mutual fund performance and net flows is positive and convex – investors react stronger to past high performance but are less sensitive to past poor performance.*

3.1.1 Critical Discussion of Hypothesis 1

However, it is important to note that other empirical findings hint on finding the opposite results. There is extensive literature on performance persistency, i.e. if past performance has any predictive ability on future performance. This issue has been subject to much controversy and there is mixed evidence whether past performance tend to repeat. In a condensed presentation, the academic literature suggests the following: (1) The worst performing funds show persistence in future returns, i.e. poor performers continue to be poor in the future (Hendricks, Patel and Zeckhauser (1993), and (2) there is evidence suggesting that top performers also show persistence (Hendricks, Patel and Zeckhauser (1993), although this empirical evidence is mixed in the literature. Other argue that survivorship bias blur these results (Brown and Goetzman (1995)). Additional findings though support that winners tend to repeat (Grinblat and Titman (1992)). Hence, if investors would base their investment decisions in

accordance with the findings presented above we might actually expect (1) a possibly stronger FPR (as opposed to weak as we hypothesize) among the poor performing funds, since investors take into account that these funds are likely to continue to perform poorly, and (2) a possibly weaker FPR (as opposed to strong as we hypothesize) among the top performing funds, since investors *might* believe that those funds continue to perform well in the future.

3.2 Hypotheses 2a and 2b- Flow-performance Relationship- Conventional vs. Ethical Funds

In hypothesis 2a and 2b, the core hypotheses, we proceed in an effort to better understand the decision making process of ethical investors. In particular, we investigate the FPR on both a sample of conventional and ethical funds. This enables us to compare the FPR between these two fund types and infer potential differences in ethical investor behavior. If ethical funds attract an investor clientele with on average different risk-return profiles than investors in conventional funds, we are likely to expect observable behavioral differences.

Intuitively, investors seeking to invest in funds with ethical considerations might derive utility from purchasing and owning an ethical fund, since the objective of the fund coincides with the investors' core values or moral beliefs. Regarding ethical investments, it is argued that the utility function for an ethical investor differs from that of an investor in conventional funds; i.e. the utility function of an ethical investor incorporates a non-financial attribute (Bollen and Cohen (2005)). Hence, this reasoning underpins the essence for our further hypotheses: if ethical investors' utility functions differ from that of investors in conventional funds we expect to find behavioral differences between these types of investors, reflected by net flows responding differently to past performance. The question then remains, in what direction can we expect potential differences in responses to past good or poor performance, and in what magnitude? The hypothesis that there are differences in the FPR between ethical and conventional funds can thus be broken down in two parts: (1) What differences can we expect in net flows following poor performance and (2) what differences can we expect following high performance? In other words, are ethical investors less (more) sensitive to past high performance compared to investors in conventional funds and/or less (more) sensitive to past poor performance? Hypotheses 2a and 2b separately address this issue. Proceeding, we present the two hypotheses along with a discussion and motivation.

Hypothesis 2a*: Net flows in ethical mutual funds are less sensitive to past poor performance than conventional mutual funds.*

Hypothesis 2b*: Net flows in ethical mutual funds are less sensitive to past high performance than conventional mutual funds.*

The hypotheses are derived from the idea that ethical investors might feel committed to invest money in funds with ethical considerations. Hence, an investor might choose not to invest in a fund where the composition of the funds' portfolio includes companies deriving revenues from e.g. alcohol or weapons, even though such investments might be attractive comparing risk-return trade-offs. The non-financial attribute may lead to ethical investors having less incentive to chase past top performers or to leave poor performers, since their utility is derived from a mix of financial requirements *and* ethical concerns. In other words, the financial component in terms of expected returns have less weight in the decision making process for an investor in an ethical funds compared to a conventional fund. This is not to say that ethical investors disregard past performance when updating their expectations about future performance, rather implying that ethical investors respond *less* pronounced to past high performance compared to their counterparts in conventional funds, and are *more* static in holding on to poor performers. Hence, we still expect to find a convex FPR for ethical funds, though weaker. Both hypotheses also gains support from Bollen and Cohen (2005), who considers a multi-attribute utility function predicting that the FPR is weaker for ethical funds because ethical investors' utility is less affected by changes in expectations about future returns (where expectations are formed by observing past realized returns).

3.2.1 Critical Discussion of Hypothesis 2a and 2b- Luxury Goods and Learning Model

However, two theoretical models suggest the opposite to what we have hypothesized, i.e. that the FPR is stronger for ethical funds.

The first model is presented by Aït-Sahalia, Parker and Yogo (2004) which is a modified utility function of investor behavior including the component of luxury goods. They argue that comparing basic goods with luxury goods, the consumption of luxury goods is more sensitive to changes in wealth. Applying their reasoning on ethical investments, it can be interpreted as *if* ethical investors view their investment in ethical funds as a luxury good, the response to recent high performance may be more sensitive compared to conventional funds. In other words, demand of a luxury good is an increasing function of wealth, and if recent performance has been high, wealth increases which in turn increases demand of ethical funds. This can be interpreted as ethical investors would be more sensitive to past high performance compared to investors in conventional funds (reflected in higher net flows for ethical funds following high performance). Even though this explanation seems theoretically plausible, we raise some concerns since we argue that the underlying motivation of investing ethically is rather driven by personal values and moral beliefs and being able to integrate such beliefs in investment decisions. Hence, investors feeling committed by their personal value to their investment should take less notice on past performance. However, there are some empirical results supporting this model of luxury goods. Bollen and Cohen (2005) and Rennebog (2006), find that ethical investors indeed respond stronger to past high performance than their peers in conventional funds.

Regarding past poor performance, their model can be applied and interpreted as if an ethical fund performs poorly, hence reducing wealth, the ethical component (viewed as luxury in this setting), might have a mitigating effect on outflows. Thus, this explanation would be consistent with hypothesis 2a, proposing that ethical investors are less sensitive to past poor performance.

Secondly, another model suggesting that we might expect to find the opposite to what we hypothesize is a model of rational learning presented by Berk and Green (2004). In short, this model suggests that investors learn about managerial ability and revise their beliefs by observing past returns. The longer the track-record a fund has, the less weight will be given to new information when updating beliefs of future expectations. Applied to ethical funds, which is a relatively new group of funds, investors has less track-record to asses the funds' overall strategy and managerial ability (i.e. more diffuse prior beliefs). Hence, when revising expectations following new information, this information will be given more weight compared to conventional funds. Thus, the model of rational learning predicts that the FPR should be stronger for ethical funds, i.e. net flows are more sensitive to *both* past poor and high performance.

In order to disentangle what different models and theories are predicting with respect to how net flows to ethical funds respond to past performance, we present their implications in the Table below.

Table 3.1: Theories and Models – Implications on the FPR for Ethical Funds

Model/Theory	Author	Prediction
Luxury goods theory	Aït-Sahalia, Parker and Yogo (2004)	✓ Net flows in ethical funds are *more* sensitive to past high performance compared to conventional funds. ✓ Net flows in ethical funds are *less* sensitive to past poor performance compared to conventional funds.
Learning explanation	Berk and Green (2004)	✓ Net flows in ethical funds are *more* sensitive to both past high *and* poor performance compared to conventional funds.
Multi-attribute utility function	Bollen and Cohen (2005)	✓ Net flows in ethical funds are *less* sensitive to both past high *and* poor performance compared to conventional funds.

3.3 Hypotheses 3- Ethical Investors and Fees

This hypothesis is an extension to the analysis of potential differences in the FPR between ethical and conventional mutual funds and includes another dimension that might impact the decision of an ethical investor, namely the fee structure. In particular, we examine whether ethical investors are less sensitive to fees than investors in conventional funds.

As mentioned is section 2.1, previous research studying other determinants of net flows in conventional mutual funds have found that net flows are strongly negatively related to fees, i.e.

investors are fee sensitive (Kempf and Ruenzi (2004,2008), Sirri and Tufano (1998), Barber, Odean and Zheng (2004) and on Swedish data; Engström and Westerberg (2004)). We anticipate that ethical investors are *less* sensitive to fees, consistent with the idea that ethical investors are willing to pay a price for being ethical. The intuition behind this reasoning is that if an investor holds an asset consistent with his or her ethical concerns or moral beliefs, this investor is willing to pay for holding such an asset. This hypothesis is also in line with Rennebog, Horst and Zhang (2006), finding that ethical investors care less about fees. Their study is to the best of our knowledge, the only study made on the determinants of net flows to ethical funds in a multivariate framework[7]. Thus, following the above discussion and empirical support we form the following hypothesis:

Hypothesis 3*: Ethical investors are less sensitive to fees than investors in conventional mutual funds*

If we can support that ethical investors are less sensitive to fees compared to investors in conventional funds, this hypothesis has important implications. Firstly, to the extent that such a difference is economically significant, fund managers or families of funds, have incentives to enter the market for ethical funds. Secondly, Massa (2003) argues that price competition is a decreasing function of the degree of differentiation among funds. Hence, confirming that ethical investors care less about fees would incentivize managers to more aggressively market ethical funds in order to extract (higher) fee revenues from an investor clientele being less sensitive to fees (i.e. take advantage of ethical investors preference for the ethical components).

For the purpose of the hypothesis, we want to make clear that we specifically investigate if ethical investors are less sensitive to *management fees* (fees can involve several components), which can be viewed upon as the operating cost of holding a fund. Most studies on conventional funds assert to investigate if investors are sensitive to the *total fees* an investor bear (including e.g. up-front load fees and redemption fees). The reason for not choosing total fees as a measure is discussed in detail in section 5.3.

3.4 Hypotheses 4- Ethical Investors and Risk

Our fourth hypothesis concerns how ethical investors respond to volatility in past returns, and in particular, if ethical investors are less sensitive to risk than investors in conventional funds.

Previous findings suggest that the influence of risk is negatively related to net flows for conventional funds, i.e. investors have a preference for less risky funds (Ippolito (1992), Sirri and Tufano (1998) and Kempf and Ruenzi (2004,2008)). The only study up to date incorporating how ethical investors respond to past volatility in returns is Rennebog, Horst and Zhang (2006), finding that net flows to

[7] Bollen and Cohen (2005) focused on a univariate analysis of the relation between net flows and past performance in ethical funds, not considering other fund characteristic that might impact on the decision making process of ethical investors

ethical funds are not sensitive to past volatility in returns. However, to the best of our knowledge, this has never been examined on the Swedish market. Proceeding, we form the following hypothesis:

Hypothesis 4*: Ethical investors are less sensitive to past volatility in returns than investors in conventional funds – reflected in a weaker negative impact in net flows*

This hypothesis is also interesting to examine in combination with the potential differences in the FPR relationship between ethical and conventional funds. As previously discussed, Sirri and Tufano (1998) noted that the convex FPR found in the mutual fund industry give rise to a compensation structure that resembles a call option for mutual fund managers. The reason is that since management fees are a function of fund size, funds will gain larger fee revenues from disproportionate more inflows when returns are high, relative to losses of fee revenues when performance is poor (due to the convex shape of the FPR). Chevalier and Ellison (1997) found evidence that managers exploit this option like feature of the FPR, incentivized to increase the volatility of funds returns in the later part of the year to maximize the value of the call. There is however a cost associated with such a behavior, which relate to the hypothesis, since a negative relation has been found between net flows and volatility in fund returns for conventional funds.

Thus, this empirical evidence introduces and interesting implication of our hypothesis. If ethical investors are less sensitive to past volatility in returns as we hypothesize, it might impact on the risk taking incentives for a fund manager in an ethical fund, potentially more prone to engage in riskier strategies. Hence, such a behavior would potentially come at a lower "cost" if the negative relation between past volatility and net flows is weaker for ethical funds compared to conventional funds, or even at no cost if ethical investors are not sensitive to past risk

3.5 Summary of Hypotheses

We end this section by presenting and summarizing our hypotheses derived from the previous sections.

Table 3.2: Summary of hypotheses

Hypotheses	Empirical findings/theory suggesting the opposite
H1: *The relationship between mutual fund performance and net flows is positive and convex – investors react stronger to recent high performance but are less sensitive to past poor performance.*	✓ Performance persistency among the worst performing funds – implying possibly stronger FPR for poor performing funds ✓ Mixed evidence of performance persistency among high performing funds implying possibly weaker FPR for the high performing funds
H2a: *Net flows to ethical mutual funds are less sensitive to past poor performance than conventional mutual funds.*	✓ Learning model- when ethical investors revise beliefs by observing realized returns- this new information will be given more weight when forming future expectations given shorter track record of ethical funds. Predicts stronger FPR for ethical funds compared to conventional funds
H2b: *Net flows to ethical mutual funds are less sensitive to past high performance than conventional mutual funds.*	✓ Learning model (see above) ✓ Luxury goods theory- if ethical attribute is consumption of luxury good, demand is more sensitive to changes in wealth
H3: *Ethical investors are less sensitive to fees than investors in conventional mutual funds*	✓ n/a
H4: *Ethical investors are less sensitive to past volatility than investors in conventional mutual funds – reflected in a weaker negative impact in net flows*	✓ n/a

4. Data

In this section we describe the data that has been used in our thesis. The section proceeds as follows. In section 4.1 we give a description of our data and the various sources used, along with a discussion of survivorship bias. In section 4.2 we describe assumptions made regarding the data. Section 4.3 outlines the criteria used to decide whether a fund is ethical or not. Finally, in section 4.4 we present some adjustments of the data. We also present summary statistics on the sample of ethical funds and conventional funds, along with a more detailed description of the composition of the sample.

4.1 Data Description

In order to examine our hypotheses we construct a unique dataset of Swedish mutual funds containing also ethical funds covering the period 2000 through 2006. The first dataset used to extract information about total net asset value (TNA), management fee, inception date, classification (equity, bond, money-market or mixed fund), geographical orientation and ethically screened funds, is from a manually collected dataset with all information extracted from the funds *Fact Sheets.*

However, this dataset contains yearly data covering the period 1999-2004, while we aim to examine our hypotheses based on quarterly data, and up to 2006. The information needed on a quarterly basis is Total Net Asset Values (TNA, or the total SEK value of each funds' portfolio). Proceeding, information about quarterly Total Net Asset Values has been obtained from *Finansinspektionen*, which has been matched with our dataset for each fund. However, the quarterly data reported from *Finansinspektionen* starts from quarter three in 2000, hence reducing our dataset somewhat since our initial aim was to have a sample period ranging from 1999-2006.

To calculate quarterly returns we have used a dataset of monthly Net Asset Values (NAV)[8] obtained from *SIXTRUST* covering the sample period up to 2004. To complete the return data for 2005 and 2006 we have used the database *Morningstar Direct*. The returns have thereafter been matched to each respective fund for each quarter. In addition, data from *Morningstar Direct* has been used to gather data on the funds' investment objective for each year. This variable will be needed to carry out our chosen method presented in section 5.2.

In order to facilitate comparison to existing literature and consistent with prior research on the flow performance relationship, we exclude bond funds, money-market funds and hybrid funds (investing in both equities and bonds) (see e.g. Huang, Wei and Yan (2007), Rennebog, Horst and Zhang (2006)). Hence, the final sample consists of Swedish equity funds from the third quarter 2000 to quarter four 2006. Proceeding, we divided the full sample into one sample of conventional and one sample of ethical funds. Finally, after dropping funds for which total net asset value is not available, the final sample is obtained and described below.

From Table 1, panel A and B, in Appendix I we report that over time, our sample of ethical funds increases from 28 funds in 2000 to 53 funds in 2006, almost a doubling in number of funds. This also reflects the growth of ethical funds due to new introductions. The sample of conventional funds ranges between 174 funds up to 212 funds during the sample period We also report summary statistics on cross sectional characteristics for conventional funds and ethical funds for each quarter and year. Specifically, Table 1 in Appendix I report the number of funds in each quarter, median of total net asset value (MSEK), average age, average management fee, average standard deviation of monthly returns in the year prior to each quarter, and average quarterly flow. Summary statistics are reported for conventional and ethical funds in our sample starting in the fourth quarter 2000 ending in the fourth quarter 2006.

From Table 1 in Appendix I, it is reported that average net flows has varied between -5.12% and 9.35% for conventional funds, and between -1.31% and 8.98% for ethical funds during the sample period. The table also reports that ethical funds are on average younger and have on average lower

[8] The NAV is equivalent to the per share value of a funds portfolio

management fee during the whole sample period compared to conventional funds. Moreover, there are large differences in average size between ethical and conventional funds, conventional funds being on average larger in terms of total net asset values (MSEK). Finally, management fees have remained rather stable for both conventional and equity funds.

To summarize, from quarter three 2000 to quarter four in 2006 our final dataset contains:

1. Total Net Asset Values (TNAs) reported quarterly
2. Characteristics, such as inception date (starting date), investment objective (e.g. large-growth, medium-value, small-growth, large-blend etc) and management fee
3. Quarterly returns calculated from the monthly NAVs

Our empirical dataset begins in quarter three 2000, but since we used lagged information to calculate quarterly flows and using lagged variables as controls, the statistical analysis will begin in quarter four 2000, leaving us with 25 quarters of data.

4.1.1 Survivorship Bias

One area of concern with the data is if it suffers from survivorship bias. In other terms, if the data of funds that have ceased to exist are excluded and only contain funds that have survived, we may encounter problems in finding a flow-performance relationship among the worst performing funds. Our first data set, containing data up until 2004 does not suffer from this problem, since we have information about funds that cease to exist during this period, hence data of those funds are readily available up to the point they die. Our concern is about the period 2005-2006, from where we have extracted data from *Morningstar Direct*. Morningstar does not keep records of funds that have died, thus our data set it susceptible to be survivorship biased in the period 2005-2006. After inspecting our final dataset, we found that 14 funds have missing information for the years 2005-2006, constituting approximately 5% of the total data during these two years. Hence, given the low rate of fund attrition in our dataset in 2005-2006, we are not concerned with any survivorship biases affecting our results.

In addition, Chevalier and Ellison (1997) and Sirri and Tufano (1998) had periods in their samples suffering from survivorship bias and rerun their tests on an unbiased subsample to conclude that there were no material differences, i.e. the weak flow-performance relationship found for poor-performing funds were not attributable to any survivor biases.

4.2 Assumptions about the Data

Some assumptions have been made where there is data missing in intermediate years in order not to further reduce the sample. The assumptions made are as follows:

1. ***Investment objective***: If there is data available on a fund's investment objective in e.g. all years but one, we have assumed that the classification for all years where data is available is applicable in the year this data is missing. An example is if the investment objective is the same during 2002-2003 and 2005-2006, but missing data in 2004. In such a case, the investment objective in 2002-2003 and 2005-2006 is assumed for 2004. Moreover, the data on the investment objective obtained from Morningstar starts in 2002, whereas our sample starts in 2000. We have thus assumed that the investment objective reported in 2002 and onwards is applicable to the first two years where no info is reported. This assumption is not too bold since funds rarely change investment objective during the sample period. In the cases where funds have changed investment objective sometime during the sample period, e.g. if a fund is classified as *large-growth* in 2002-2004 and change classification to *mid-growth* in 2005-2006, we have assumed the classification *large-growth* for the period 2000-2001, which is most likely to be the case.

2. ***Management fee*:** When there is missing information about the management fee in intermediate years we have assumed that the management fee is the same as for the years where data is available. Hence this assumption corresponds to the assumption presented in the previous point. This assumption is also believed to have a negligible impact on the reliability of the data since the management fee is usually rather stable between years, it changes seldom. If the management fee changes sometime during the sample period, we use the same assumption as in the previous point, i.e. that the management fee when missing, is the same as for forthcoming year with available information[9].

4.3 Definition of Ethical Fund

In our dataset there is information on whether a fund uses negative screening, positive screening or a combination of both methods in selecting companies to invest in. As described in section 1.2 negative screening implies that a pool of assets has been screened from which companies that invest in certain industries are excluded. Those industries that the negative screening is applied are tobacco, weapon alcohol, gambling, pornography, oil, uranium and cars. In our data set we have chosen to classify ethical funds as funds that exclude three or more controversial industries or funds that explicitly market themselves as ethical funds. Some funds also screen and select companies based on whether they meet superior standards (positive screening) in e.g. environmental or social issues, for instance Robur MiljöFond. Such funds are also included as ethical funds.

4.4 Adjusting the Data

A visual inspection of our dataset reveals the existence of severe outliers regarding net flows, which might distort our results. These outliers generally occur in quarters where funds start late and can reach

[9] Since management fee data is not available on quarterly basis for funds, funds will have the same value in all four quarters in one specific year. This will also impose statistical issues for the choice of regression specification, and will be discussed in section 5.4.1.

values as high as 1100% [10].Those outliers are not representative for the sample of net flows why choose to remove all flows above 100%[11]. Furthermore based on a visual inspection, we remove flow observations below -60% since those appear to be outliers in the sample.

Since there might arise errors due to fund mergers, causing extreme values of net flows, we have chosen to exclude data on a merged fund after the merging date. Hence, any quarter containing data from a merged fund is removed from that point and onwards. Thus, data for a specific fund is available up to the date it is merged into, or acquired another fund.

5. Method

In this section we present our model and the variables used to test our stated hypotheses in section 3. Our purpose is to examine the flow-performance relationship and if there are differences across fund types, in particular, if net flows to ethical funds are less or more sensitive to past performance compared to conventional mutual funds. To examine this relationship we run cross-sectional regressions for each quarter to estimate the sensitivity of net flows to past performance. Since our hypotheses also aims at investigating how ethical investors respond to fees and volatility in funds returns, we develop a multivariate regression model, enabling us to examine those dimensions of the ethical investors' decision process as well.

We now turn to a more detailed description of our model and the variables used. The section proceeds as follows; section 5.1 describes the construction of the dependent variable net flow $FLOW_{i,t}$. In section 5.2 we describe how we construct the performance variables, used as independent variables. Section 5.3 describes the control variables and the empirical model is described in detail in section 5.4 along with a discussion which regression model that suits our data best.

5.1 Dependent Variable

To construct our dependent variable net flow, $FLOW_{i,t}$, we use data on quarterly total net asset values (TNA) and quarterly returns. Since net flows (e.g. inflows *minus* outflows) to a fund are not directly observable we use a standard procedure consistent with existing literature to construct the quarterly net flow variable (see for example Chevalier and Ellison (1997), Sirri and Tufano (1998), among others). To construct the quarterly net inflow of fund *i* in quarter *t*, net flow to a fund is defined as:

[10] Since Total Net Asset Value (TNA) for current and previous quarter are used to calculate net flows, and TNA for a fund starting late in a quarter is usually very small compared to if the fund has existed a full quarter- which distort the net flow calculation. The cutoff of flows larger than 100% is motivated after checking the magnitude of flows for funds starting late in a quarter.

[11] The literature suggests different approaches to deal with outliers. Kempf and Ruezi (2004) exclude net flows above 500%. Huang, Wei and Yan (2007) filter out the bottom and top 2.5% of the net flow data to remove effect from fund mergers. Rennebog et al. (2006) remove flows beyond the 99.5th percentile or below the 0.5 percentile. Our filter is best representative for the outliers found in the sample we use.

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

Where $TNA_{i,t}$ is the total net asset value of fund *i* at the end of quarter *t*, and $R_{i,t}$ is the quarterly return of fund *i* during quarter *t*. Following this definition, our dependent variable Net Flow, $FLOW_{i,t}$, reflects the growth of the fund that is only due to new investments (i.e. only external money), and disregards the rate of return earned on the assets under management (i.e. net of internal growth). This definition rests upon the implicit assumption that fund flows occur at the end of each quarter. Since we lack information about the timing of flows we are restricted to use the above definition[12]. From equation (1), one can see that Net Flow is measured in percentage growth, not the SEK amount of flows.

5.2 Independent Variables

5.2.1 Performance Variable and Performance Ranking

Fund performance can be measured in many ways to explain fund inflows, and the literature provides different suggestions[13].One can classify performance measures either as ordinal measures (ranks describing the position of a fund in a group) or cardinal measures (Kempf and Ruenzi, (2004)). In choosing between those two measures we proceed by using only ordinal measure, i.e. ranks based on a performance measure, to explain net flows to a fund. This measure is chosen in line with Kempf and Ruenzi (2004) who refers to previous studies comparing ordinal and cardinal measures, finding that ordinal measures is better suited in explaining fund growth (see e.g. Navone (2002)).

However, when reviewing the literature we note that it does not provide any obvious evidence on *what* performance measure our ranks should be based on. Two measures of performance are frequently used in the literature as risk adjusted performance measures, namely Fama and French (1993) methodology, estimating three-factor alphas and the Carhart (1997) four-factor alphas. Those models apply to US data and our sample consists of Swedish mutual funds. Hence we are restricted from using any of those methods.

We have chosen to proceed with a method used by Huang, Wei and Yan (2007). This measure is the ranking of funds based on the average of monthly returns the 12 month period prior to each quarter (i.e. for the months *t-1* to *t-12*) within their respective investment objective[14]. To categorize the funds within their investment objective we use a classification by *Morningstar Direct*, which provides a

[12] Sirri and Tufano (1998) recalculated this measure for flows occurring at the beginning, half-way through, or continuously throughout the year and found that none of their results were affected by the measure we have chosen to proceed with.

[13] Excess return over the risk free rate and raw return: see e.g. Ippolito (1992). As ordinal measures: see e.g. Sirri and Tufano (1998), Huang, Wei and Yan (2007). Risk adjusted performance measures: e.g. Jensen's alpha or multifactor alphas: see e.g. Ippolitio (1992), Lynch and Musto (2003) and DelGuercio and Tkac (2002)

[14] Similar approach by ranking of funds based on one to five year past raw return is used by Sirri & Tufano (1998). Rennebog, Horst and Zhang (2006) rank funds based on their average return in the previous 12 months. Rennebog categorize funds based on their domicile (i.e. country), and Sirri and Tufano (1998) categorize funds in three main categories: aggressive growth, growth and income, and long term growth funds.

style box categorizing funds based on investment objective. The style box used to categorize the funds can be seen in the figure below.

Figure 5.1: Morningstar Style Box

	Value	***Blend***	***Growth***
Large	*1*	*2*	*3*
Mid	*4*	*5*	*6*
Small	*7*	*8*	*9*

Hence, a fund assigned the number 1 is classified a *large-value* and so forth. Categorizing the funds within their investment objective controls for differences in risk exposure and fund characteristics, since funds with similar attributes and risk-return profiles are categorized within the same category. Moreover it has been found that there are differences in risk exposure between ethical and conventional funds (Rennebog, Horst and Zhang (2007)), why this method ensure that any differences in investor behavior we aim at examining are attributable to the ethical component, not to differences in risk exposure. Hence, the two step process involves: (1) assign each fund into a Morningstar category in each quarter and (2) rank the funds in each respective category by performance (measured as the average return from *t-1* to *t-12*). Once the ranking is done, the funds are segmented into three performance groups, the independent variables, which we can denote step (3).

In step (2) the ranking is done for each quarter *t* based on the funds' average return during the preceding 12 month period (i.e. from month *t-1* to month *t-12*). The rank number is normalized in line with Kempf and Ruenzi (2004) and Huang, Wei and Yan (2007) where each fund is assigned a rank number, *RANK*, which is evenly distributed between zero and one and relative to other funds in the same Morningstar category. More specifically, the worst performing fund within each category (e.g. the *large-growth* category) is assigned zero, the best performing fund is assigned one, and the intermediate funds a rank number between zero and one. The rank assigned to each fund corresponds to their performance percentiles. To clarify, a *RANK* of 0.5 implies that the fund is better than 50% of the funds within the same category in quarter *t*.

Proceeding with step (3), we classify the three performance groups used as independent variables. A bottom group $LOW_{i,t-1,}$ which represents the performance rank in the lowest quintile. The medium group $MID_{i,t-1}$, represents the performance rank in the quintiles 2-4 (combined into one group, *MID*). Lastly the top performing group $TOP_{i,t-1}$, represents the performance rank in the highest quintile. $RANK_{i,t-1}^{Perf}$ denote the rank assigned to fund *i* in quarter *t-1* within its Morningstar category based on the performance measure, *Perf.* In this setting, *Perf* represent the 12 month average return prior to each quarter. Specifically, the fractional rank for fund *i* in quarter *t-1* is defined as follows:

$$LOW_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf}, 0.2\right)$$

$$MID_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf} - LOW_{i,t-1}, 0.6\right) \quad (2)$$

$$TOP_{i,t-1} = RANK_{i,t-1}^{Perf} - (LOW_{i,t-1} + MID_{i,t-1})$$

This procedure, step (1) to (3) is conducted on the full sample of funds, a sample of conventional funds and on a sample of ethical funds. Since our purpose is to examine flow-performance relationship and perform an analysis on the differences between conventional funds and ethical funds, flows are estimated using a piecewise linear regression (see section 5.4 for complete description of the empirical model). This regression approach allows us to estimate different flow-performance sensitivities at different levels of performance, represented by the three performance groups as independent variables[15].

To clarify, "past poor and past high performance" is frequently used terminology in this paper. In our setting, past low and high performance is measured relative to other funds within their respective investment objective. For instance, fund "A" returned 15% last quarter, and whether this can be considered past high or low performance is defined by its rank within its investment objective. As mentioned, this is to control for differences in risk exposures across funds with different investment objective.

5.3 Control Variables

Previous literature examining the flow-performance relationship suggests that other non-performance related variables affect fund inflows. We include variables that have been documented to have an impact on fund inflows and variables that relate to our hypotheses.

One of our hypotheses examines whether ethical investors are less sensitive to past volatility in returns compared to investors in conventional funds, why this variable is included. Moreover, Sirri and Tufano (1998) and Ippolito (1992) suggest that one should control for funds' total risk measured by the standard deviation in past returns, since they find this variable to have marginal influence of fund flows (see also Cashman, Deli, Nardari and Villupuram (2007), Kempf and Ruenzi (2004) and Huang, Wei and Yan (2007)). Following their approach we include the variable $STD_{i,t-1}$, denoting the standard deviation of monthly returns for fund *i* the year prior to each quarter *t*. If the results would manifest a negative influence of the volatility on net flows it indicates that investors are risk averse and have preferences for funds showing low past volatility in returns. This measure of risk can also be

[15] The approach of ranking funds into three unequal groups is also used in Kempf and Ruenzi (2004), Huang, Wei, Yan (2007), and Sirri and Tufano (1998)

considered as one that is relevant to consumers, since this information is readily available to from the funds *Fact Sheets*.

The literature also suggests that fees should be included as a control variable (see e.g. Sirri and Tufano (1998)). In previous literature this variable is usually defined as the lagged total fee ratio, and 1/7 of the up front loads charged by the fund (under the assumption that the average holding period for a mutual fund investor is seven years). In our dataset we have data available on *Total Cost Share* (TKA), which is a complete measure of the total fee burden to an investor since it includes various types of fee components[16]. However, there is a non-trivial amount of missing data for this variable in our dataset[17]. This is troublesome since when running multiple regressions with several characteristics as control variables and one regressor has a missing value, all lines of data are thrown away. Since we have rather complete data on the fee component *management fee*, we will use this variable as a proxy for the fee burden in order not to loose too much data. Including this variable in the regression on the sample of ethical and conventional funds also allow us to either confirm or reject the hypothesis that ethical investors are less sensitive to fees.

Thus, the variable $FEES_{i,t-1}$ denotes the management fee in percent for fund *i* in quarter *t-1*. Investors have readily information about both the TKA and management fee from the funds' *Fact Sheets*, and we believe that the management fee is also representative as decision criteria when investors face an investment decision, since this reflect the operating costs due to investors by holding a fund. The empirical results on money flows in conventional fund show that investors are fee sensitive, i.e. that there is a negative impact of fees on fund growth (Kempf and Ruenzi (2004,2008), Sirri and Tufano (1998), Barber, Odean and Zheng (2004) and on Swedish data; Engström and Westerberg (2004)).

We follow Kempf and Ruenzi (2004) and include the net flow in a fund in the previous quarter, $FLOW_{i,t-1}$. The inclusion of the variable is motivated to control for possible autocorrelation in fund flows. This autocorrelation can be due for two reasons; (1) if current fund growth depends positively on previous quarter fund growth it indicates that investors are subject to status-quo bias, i.e. investors' investment decision from the past tend to repeat, even though this decision could be considered not optimal at the time being, and (2) it may arise due to other fund specific characteristics not controlled for which do not change over time and bear importance of investors' buying decision (Kempf and Ruenzi (2004, 2006) and Hendricks, Patel and Zeckhauser (1991)).

[16] TKA involves all the fees that a funds has, management, taxes, administration, accounting, courtage, other transaction costs and deposits etc. This fee is what the investor pays in the end and is calculated as a fraction of Total Net Asset Value (TNA). This measurement is unique to Sweden, constructed to make it easier for investors to compare costs between funds. Abroad the Total Expense Ration (TER) is the equivalent, but excludes courtage and other transaction costs.

[17] In our final data set 573 out of possible 2198 rows of data is missing for TKA, i.e. 26% of the total possible amount. The equivalent figure for management fee is 94 of possible 2198 rows, .i.e. 4.3% of the total possible amount.

Our model also includes fund size for fund *i* measured by the natural logarithm of fund size (TNA in MSEK) in the previous quarter *t-1*, $ln(TNA)_{i,t-1}$. Controlling for size reflects that for the case of smaller funds, an equal SEK amount of flow will result in an greater percentage impact on smaller funds compared to larger funds, i.e. larger funds may find it more difficult to grow than smaller funds, in relative terms (Kempf and Ruenzi (2004), Sirri and Tufano (1998), and Chevalier and Ellison (1997)).

Chevalier and Ellison (1997) present evidence that there are discrepancies between young and old fund with respect to the funds age, why we include the natural logarithm of the age for each fund *i* in quarter *t-1*, $ln(Age)_{i,t-1}$. We expect this variable to have a negative influence on net flows, i.e. the older the fund the less growth, consistent with the findings of DelGuercio and Tkac (2002) and Bergtesser and Poterba (2002).

Other studies have also chosen to include the turnover ratio of the fund to evaluate whether investors prefer actively managed funds (see e.g. Kempf and Ruenzi (2004, 2008). There are however mixed evidence whether this variable has any significant impact on fund growth. Taking this into account and the fact that we have many missing observations for this variable we have chosen to exclude it. We do not believe that there will be any significant impact by adding this variable, nor does it add any important dimension to the hypotheses we aim to examine.

To summarize, we present all the independent and control variables in the table below:

Table 5.1: Definitions of Independent and Control Variables

Variable name	Definition
$\boldsymbol{LOW_{i,t-1}}$	The bottom performance group, representing the lowest quintile of performance based on the ranks. And where the ranks are based on the funds' mean return of the 12 monthly returns prior to each quarter
$\boldsymbol{MID_{i,t-1}}$	The middle performance group, representing the three middle quintiles of performance based on the ranks. The three middle quintiles is thus combined in one group, *MID*. And where the ranks are based on the funds' mean return of the 12 monthly returns prior to each quarter
$\boldsymbol{TOP_{i,t-1}}$	The top performance group, representing the highest quintile of performance based on the ranks. And where the ranks are based on the funds' mean return of the12 monthly returns prior to each quarter
$\boldsymbol{STD_{i,t-1}}$	The total risk of the fund, measured as the standard deviation in % of monthly fund returns from month t-1 to t-12, i.e. the year prior to each quarter
$\boldsymbol{FEES_{i,t-}}$	The sum of total annual management fee in % paid by investors in quarter t-1
$\boldsymbol{ln(TNA)_{i,t-1}}$	Measures the size of the fund (the natural logarithm of Total Net Asset Value in MSEK) in quarter t-1
$\boldsymbol{ln(Age)_{i,t-1}}$	The number of years since the funds' inception (the natural logarithm of the age of the fund) in quarter t-1
$\boldsymbol{FLOW_{i,t-1}}$	The net flow of money to a fund measured in % (or external fund growth) in quarter t-1

5.4 Model Specification

Much of the literature reviewed in section 2.1 suggests that the flow-performance relationship is convex, i.e. that funds with recent superior performance enjoy disproportionally larger inflows, whereas poor and mediocre funds experience smaller outflows (as reflected by *net flows*). Derived from the hypotheses discussion in section 3, addressing the issue of behavioral differences between ethical investors and investors in conventional funds, we have hypothesized that net flows to ethical funds respond differently to past performance, fees and volatility in returns. In light of what we aim to examine, we follow the approach suggested by Sirri and Tufano (1998), who applies a piecewise linear regression specification, accounting for the non-linearity found in the FPR. As mentioned in section 5.2, this specification allows us to estimate different slope coefficients at different levels of performance separately, represented by the three performance groups. For instance, the estimate of the slope coefficient for the bottom quintile is represented by β_1. In proceeding with this technique the complete specification looks as follows:

$$FLOW_{i,t} = \alpha + \beta_1 * LOW_{i,t-1} + \beta_2 * MID_{i,t-1} + \beta_3 * TOP_{i,t-1} + \gamma_1 * STD_{i,t-1}$$
$$+\gamma_2 * FEES_{i,t-1} + \gamma_3 * FLOW_{i,t-1} + \gamma_4 * lnTNA_{i,t-1} + \gamma_5 * lnAGE_{i,t-1} \quad (3)$$

To examine hypothesis 1, we run this model on the full sample of funds and to deepen the knowledge of ethical investor behavior (hypotheses 2 through 4), we run the regression both on a sample of ethical funds and conventional funds, comparing the relationship between those two fund types. The regression is run on quarterly data starting quarter four in 2000 to quarter four 2006. To supplement the analysis in an effort to extend the knowledge about the decision making process of ethical investors we study other dimensions beside past performance, such as fee structure and total risk which might impact the decision of an ethical investor. This multivariate setting will hopefully enable us to get a more nuanced picture of the differences we expect to find between ethical and conventional equity funds, reflected by differences in the determinants of money inflows.

5.4.1 Choice of Regression Model

Various regression models have been used in previous research examining the FPR. However, the most frequently occurring are Fixed Effects regression model and Pooled OLS regression model. A negative property of the Fixed Effects regression model is that it may not be able to identify the effect of time-invariant variables (Gujarati (2003)). Since our variable $FEES_{i,t}$ is relatively time-invariant, the Fixed Effects model is not suitable to describe our data, given the properties of the fee variable. Hence, we find that a Pooled OLS regression model with quarterly fixed effects is most suitable to describe our data. We also run a Pooled OLS regression with yearly fixed effects in order to examine if there are any material differences between the two approaches. Furthermore, to ensure the

robustness of our results we apply the Woolridge (2002) approach, accounting both for heteroskedasticity and serial correlation[18].

6. Empirical Findings

In the following section we present our empirical findings. The section is structured as follows. In the section 6.1 we present and discuss our findings and its implication for our hypotheses. In section 6.2, we provide a brief presentation and discussion of the estimates for the control variables not explicitly included in our hypotheses.

6.1 Empirical Findings and Hypotheses Analysis

In the subsections 6.1.1-6.1.4, we present and discuss the results for our hypotheses based on the estimates from our regression specification presented in section 5.4. The relevant results will be displayed throughout the text. In addition, complete presentations of the results are presented in Tables 2 through 4 in Appendix I. For the remainder of this section, regression estimates from using Pooled OLS with quarterly Fixed Effects are reported (results from Pooled OLS with *yearly* Fixed Effects is reported in Appendix I). We start each section by presenting a correlation matrix between the dependent and independent variable(s) in question. Those results are presented to indicate whether the independent variables are positively or negatively to net flows, in what magnitude, and whether there are differences between ethical and conventional funds, without imposing the restriction of causality. Hence, these results should be interpreted with caution, since the correlation coefficients only measure the degree of linear association between the two variables (Gujarati (2003)). We also present figures in Appendix III, where we have ranked past return, fee and past volatility into ten deciles, and plotted the corresponding average net flow for each of the deciles. Those plots are only indicative relationships and are rather difficult to interpret since past return, risk and fees are not expected to be independent. An example, high fee funds can either be high performers with high managerial ability, or they can be poor performers. Hence, in order to examine the joint effect and infer statistically significant relationships between the explanatory variables and net flows, we proceed with an analysis of the coefficients from the multivariate regression using Pooled OLS with quarterly fixed effects.

6.1.1 Hypothesis 1: Flow Performance Relationship

Hypothesis 1: *The relationship between mutual fund performance and net flows is positive and convex – investors react stronger to recent high performance but are less sensitive to past poor performance.*

As mentioned in section 3.1, we expect to find investors chasing past top performers but fail to leave poor performing funds. In other words, we expect the FRP to be stronger for recent good performers

[18] Empirical Methods in Finance Course, Spring 2008, Frederik Lundtofte, Lecture 11

and weaker for recent poor and mediocre performing funds. To test hypothesis 1, we run our regression model on the full sample of equity funds (including both conventional and ethical funds).

We start by analyzing the correlation between the dependent variable net flow and the independent variables represented by the three performance groups for the full sample of funds. The correlations are displayed in Table 6.1.

Table 6.1: Correlations Net Flow, LOW, MID and TOP

Relative Performance	**Net Flows**
$LOW_{i,t-1}$	-0.047
$MID_{i,t-1}$	0.027
$TOP_{i,t-1}$	0.058

Both the top and the mid performance groups are positively correlated with net flows, with the *Top* group showing a stronger positive correlation than the *Mid* group, which is expected. The *Low* performance group is negatively correlated to net flows, as expected. The magnitude of the correlation comparing the *Low* group and *Top* group also show that the correlation is stronger in absolute terms for the *Top* group compared to the *Low* group. Hence, the correlations indicate that net flows respond stronger to recent high performance than poor performance, i.e. net flows following high performance are more sensitive than net flows following poor performance. Those results point in direction of what is expected according to hypothesis 1.

Proceeding, we present the results of the full sample of funds using the regression model. The coefficient estimates and p-values are displayed in Table 6.2, demonstrating the relationship between the dependent variable Net Flow and independent variables. The three coefficients allow us to estimate the FPR at different levels of performance, represented by the three performance groups *Low*, *Mid* and *Top*.

The coefficients should be interpreted as follows: if a fund belongs to the *Low* group among funds in the same investment objective, and improves its ranking from e.g. the 10th-percentile to the 20th-percentile (i.e. for a 10-percentile improvement in ranking within its group) [19], the funds' net flow is expected to decreases by on average 1.087% per quarter (coefficient significant at 1% level).

Table 6.2: Regression Coefficients (Full Sample) – Pooled OLS with Quarterly Fixed Effects

Relative Performance	Coefficient	p-value
$LOW_{i,t-1}$	-0.1087***	(0.008)
$MID_{i,t-1}$	0.0254***	(0.006)
$TOP_{i,t-1}$	0.0688	(0.108)
Observations	**4769**	

Dependent variable is Net Flow. *, ** and *** denote significance at the 10%, 5% and 1% level respectively. Coefficient estimates for all independent and control variables are found in Appendix I, Table 2.

The coefficient for the *Mid* group is positive and significant at the 1% level, and can be interpreted as for a 10 percentile improvement in performance ranking, from e.g. the 50th percentile to the 60th percentile the subsequent increase in net flows is 0.254% per quarter. Hence, the FPR is rather weak for the *Mid* group. This is in line with expectations and consistent with previous findings, i.e. net flows are weakly sensitive to past mediocre performance.

The coefficient for the *Top* performance group is positive, and can thus be interpreted as for an improvement in rank from the 80th to the 90th percentile (i.e. a 10 percentile improvement in ranking within its investment objective), a subsequent increase in net flow of on average 0.688% per quarter is expected (compared to a decrease of 1.087% for the *Low* group). Comparing the magnitude of the coefficients between the *Top* and *Low* group, it indicates that the FPR is weaker for top performing funds, i.e. investors seem to be more sensitive to past poor performance. However, the coefficient for the *Top* group is insignificant at the 10% level, preventing us from statistically support that investors are sensitive to past high performance. Hence, this result is surprising and opposite to what expected since it suggest that investors does not chase past performance, at least not to the same extent as they leave poor performers.

The results can thus be summarized as the *Low* performance group show the strongest response in terms of net flows (coefficient negative and significant at 1% level), while mediocre funds are less affected in terms of net flows (coefficient weakly positive and significant at 1% level) and that net flows are not sensitive to past top performance (insignificant coefficient). Hence, we find no support for the FPR being convex for our sample of equity mutual funds, since it contradicts that top performing funds attract larger inflows while poor performing funds hardly are affected by outflows.

[19] The improvement of ranking is relative to other funds with the same investment objective, e.g if the fund is classified as large-growth, mid-value etc.

Even though the results are inconsistent with the existing literature suggesting a positive a convex FPR, they are intriguing and striking. Our results suggests that investors seem to punish recent poor performing funds despite a relative improvement in rank within its investment objective[20], while funds with high return rankings in the *Top* group are not rewarded in terms of net flows, or at least the FPR is weaker for the *Top* group (insignificant coefficient).

As mentioned in the critical discussion of hypothesis 1 in section 3.1.1, empirical evidence of performance persistency in mutual funds suggested that we could expect a relationship as opposed to what we hypothesized. In particular, the empirical findings on performance persistency among poor performers seem to better explain at least the results regarding the *Low* group, i.e. that poor performers continue to do poor in the future. Hence, one possible explanation for the strong negative coefficient for the *Low* group would be that investors anticipate that poor performers will continue to perform poor in the future, implying a strong FPR for the worst performing funds. Even though the coefficient for the *Top* group was insignificant (p-value=0.108) it is positive but smaller in magnitude compared to the *Low* group. This could also be consistent with the mixed evidence found on performance persistency among high performing funds, predicting a possibly weaker FPR for the high performing funds compared to poor performing.

6.1.2 Hypothesis 2a-b: Flow-performance Relationship – Conventional vs. Ethical Funds

Hypothesis 2a*: Net flows in ethical mutual funds are less sensitive to past poor performance than conventional mutual funds.*

Hypothesis 2b*: Net flows in ethical mutual funds are less sensitive to past high performance than conventional mutual funds.*

As discussed in section 3.2, it is possible that ethical investors derive their utility from a mix of financial requirements and non-financial attributes (e.g. the ethical attribute). In line with this notion, we expect ethical investors to be less sensitive to past poor performance, as well as less sensitive to past high performance, compared to investors in conventional funds.

In the Table 6.3 below, correlations between the dependent variable net flow and the independent performance variables are presented. For conventional funds, the correlation is positive for the top performing group and a negative but weaker correlation for the poor performing. Thus indicating that investors in conventional funds are more sensitive to past high performance compared to poor, in accordance with expectations. For ethical funds the pattern is quite ambiguous. The correlation between Net Flows and past performance is negative for all three performance groups.

[20] I.e. even if a fund improves its ranking in the *Low* group within its Morningstar category- net flows decrease as shown by the negative coefficient and interpretation

Table 6.3: Correlations Net Flow, LOW, MID and TOP- Conventional Funds vs. Ethical Funds

	Conventional Funds	***Ethical Funds***
Relative Performance	**Net Flow**	**Net Flow**
$LOW_{i,t-1}$	-0.045	-0.069
$MID_{i,t-1}$	0.036	-0.016
$TOP_{i,t-1}$	0.066	-0.049

Comparing the correlation for the *Low* group between ethical and conventional funds it indicates that the negative correlation between past poor performance and net flows is weaker for conventional funds compared to ethical funds. Hence, contrasting what hypothesis 2a suggests; a weaker FPR for ethical funds compared to conventional funds among the worst performing funds. In addition, the negative correlation with net flows for the *Top* group in the ethical funds is intuitively contradictive. As mentioned earlier, the correlation coefficients are only indicative, and prevent us from inferring any statistically founded relationship

Proceeding, we analyze the estimated coefficients from the joint regression model. The coefficients estimates and p-values from the joint regression model are presented in Table 6.4 below. We start by comparing the coefficients for the *Low* group between conventional an ethical funds and move on in ascending order.

For conventional funds belonging to the *Low* group, a 10-percentile improvement in performance rank (e.g. from the 10^{th} to the 20^{th} percentile) is associated with a decrease in net flow by 1.19% per quarter (significant at the 10% level). The corresponding decrease in net flows for ethical funds following a similar change is 1.87% per quarter (significant at the 1% level).

Table 6.4: Regression Coefficients Ethical and Conventional Funds- Pooled OLS with quarterly Fixed Effects

	Conventional Funds		***Ethical Funds***	
Relative Performance	**Coefficient**	**p-value**	**Coefficient**	**p-value**
$LOW_{i,t-1}$	-0.1188*	(0.061)	-0.1844***	(0.005)
$MID_{i,t-1}$	0.0259**	(0.033)	0.0548**	(0.035)
$TOP_{i,t-1}$	0.0938*	(0.087)	-0.2129**	(0.040)
Observations	3894		905	

Dependent variable is Net Flow. *, ** and *** denote significance at the 10%, 5% and 1% level respectively. Coefficient estimates for all independent and control variables are found in Appendix I, Table 3.

The economic interpretation of this result is thus that ethical investors seem to be more sensitive to poor performance compared to conventional funds, in view of the fact that the coefficient is larger in magnitude for the ethical *Low* performance group. Hypothesis 2a is hence not supported, since we argued that ethical investors would be *less* sensitive to past poor performance. Our results are

inconsistent with the idea that investors derive utility from holding an asset coinciding with their ethical concerns, and consequently respond less to poor performance.

The strong negative relation between Net Flow and the *Low* group, displayed for both conventional and ethical funds, consequently implies that investors leave recent poor performing funds despite a relative improvement in performance ranking. The empirical evidence of the observed performance persistency among the worst performing funds, discussed in section 6.1.1, seem to be consistent with the strong FPR found for the *Low* group in both types of funds.

For mediocre funds in the *Mid* group, the response in terms of net flows is rather weak, though positive for both ethical and conventional funds (coefficients significant at the 5% level). Moreover, net flows to ethical funds following mediocre performance is much larger in magnitude compared to conventional funds, suggesting that ethical investors react stronger to mediocre performance than investors in conventional funds.

The stronger sensitivity for ethical funds to poor and mediocre performance seems to be consistent with the learning model discussed in section 3.2.1. Applied to our setting, the learning model suggests that rational investors in ethical funds could have more diffuse prior beliefs about managerial ability and the overall strategy of a fund given shorter track record of ethical funds. Hence, when ethical investors revise their beliefs by observing realized returns, this new information will be given more weight when forming future expectations compared to conventional funds, consequently leading to a stronger response as reflected by heightened sensitivity in net flows. However, as will be discussed below, this theory is not consistent with the observed differences between ethical and conventional funds we find for the *Top* group. Since the learning model predicts that net flows are more sensitive to both past high and low performance, we cannot solely use the learning model interpret the *Low* and *Mid* groups for ethical funds, without regarding the *Top* performance group.

The coefficient for the *Top* performing group for conventional funds is positive and significant at the 10% level, implying that investors are sensitive to high performance. More specifically the coefficient can be interpreted as for an improvement in rank from the 80^{th} to the 90^{th} percentile (i.e. a 10 percentile improvement in ranking within its investment objective), a subsequent increase in net flow of on average 0.94% per quarter is expected. This result is of similar economic magnitude as that of Rennebog, Horst and Zhang (2006). The overall result for conventional funds is that investors seem to chase past high performers, as reflected by subsequently large increases in net flows. However, investors punish past poor performers to a greater extent than they reward high performers, reflected in the subsequent larger decrease in net flow. The FPR being stronger for poor performing funds compared to high performers in conventional funds, as our results indicate, is consistent with the implications of the empirical findings on performance persistency among the worst performing funds, and the mixed evidence of performance persistency among the top performing funds. As discussed in

section 3.1.1, if investors would act accordingly to those empirical findings, we might actually arrive at a stronger FPR for poor performers compared to high performers

For ethical funds, the *Top* performance group display a strong and negative coefficient, significant at the 5% level, which is both inconsistent with previous findings (see e.g. Bollen & Cohen (2005) and Rennebog, Horst and Zhang (2006)) and counterintuitive. The *Top* group coefficient for ethical funds can thus be interpreted as for an improvement in rank from the 80th to the 90th percentile (i.e. a 10 percentile improvement in ranking within its investment objective), a subsequent decrease (!) in net flow of on average 2.13% per quarter is expected.

The result suggests that ethical investors leave past top performers for an improvement in relative performance, which is neither logical nor intuitive. We expected a strong positive significant coefficient for the *Top* group, both for ethical and conventional funds, but with an impact of less magnitude for ethical funds. In other words, we argued that ethical investors should be less sensitive to past high performance because their utility is a function of both financial and non-financial attributes. Thus, we find no support for hypothesis 2b, i.e. that net flows to ethical funds are less sensitive to past high performance compared to conventional funds. Moreover, neither is this result consistent with the learning hypothesis nor the luxury goods theory, predicting a stronger FPR for high performers in ethical funds compared to conventional funds.

6.1.2.1 Robustness tests for Ethical funds

This result is highly suspicious and raises concerns about the reliability. Thus, we have tried various approaches to see if this economically founded relationship can be attributable to another explanation, beside what theory or empirical findings suggest. First, we investigated the correlations between the top performance group and net flow for each and every quarter to examine whether there seem to be a strong negative correlation during a certain time period impacting on the results. From Table 7 in Appendix II, it is reported that in 14 out 25 quarters, the correlation is negative between the *Top* group and net flow. Our result does not seem to be attributable to any abnormalities in the data in certain time periods, since the negative correlation is not clustered around a certain point in time, rather distributed across the full sample period. Worth noticing is that the negative correlations are on average of larger magnitude than the positive correlations.

From Table 1, Panel B in Appendix I we observe that there is a trend of lower average net flows for ethical funds from 2005 and onwards compared to previous years. We proceeded by trying various filters to see if there is an effect occurring in the late period in the sample, as well as in the yearly stage (2000-2001), when there were bust times in the financial markets in Sweden. We run our joint regression model during the time period 2002-2005 (e.g. cutting of the first two years and the last year). We also filtered out ethical funds younger than 3 years in any quarter from the sample. Likewise, results from those two regressions produce similar results that are not materially different.

The *Top* coefficient is still negative and significant (results reported in Table 8, Appendix IV) although slightly smaller in magnitude compared to before. We also pursued by running a Pooled OLS regression with yearly dummies for the independent variables *Low*, *Mid* and *High*, allowing the intercept to depend on the three performance groups. Results are reported in Table 9 in Appendix IV, and shows that the coefficient for the *Top* group still is negative and significant. In addition, several other robustness tests have been conducted. For instance, we have tried to use stable Morningstar categories and also performed the tests without any risk adjustment. The robustness tests are explained in detail in Table 10 through 18 in Appendix IV, along with the coefficient estimates from the regressions. Overall, our results seem to be robust to various approaches and methods in testing our hypotheses.

There are several explanations that might cause the counterintuitive results that net flows following high performance decrease. First, our sample of ethical funds is rather small, ranging between 28 to 53 funds during the sample period. Secondly, the sample period starting in late 2000 to the end of 2006 barely captures one full business cycle. Rennebog et al. (2006) study fund flows in ethical funds during 1992-2003, with a sample of 410 ethical funds and Bollen and Cohen (2005) during the period 1980-2002 with as many as 185 ethical funds, hence considerably larger samples that spans over longer time periods. While the "too small sample issue" is usually the first thing to blame when reaching unsatisfactory results there might be other causes as well.

A possible explanation could be that there has been a structural change where money has been flowing out from ethical funds despite past high performance. The reason could either be due to decreased popularity or a re-allocation of money to funds in investing in emerging markets, enjoying increased popularity in recent years. However, this is not very likely since the median TNA of ethical funds has steadily increased as evident from Table 1 Panel B in Appendix.

6.1.3 Hypothesis 3: Ethical Investors and Fees

Hypothesis 3: *Ethical investors are less sensitive to fees than investors in conventional mutual funds.*

Previous studies examining differences in determinants of net flow between conventional and ethical funds have found that ethical investors care less about fees (see e.g. Rennebog, Horst and Zhang (2006)). We expect our findings on our sample of Swedish ethical funds to be in line with this notion. This would be reflected by net flows in ethical funds being less sensitive to fees.

In Table 6.5, the correlation between the dependent variable *Net Flow* and independent variable Fee_{t-1} display a negative correlation for ethical as well as for conventional funds. However, the correlation is much stronger for ethical funds, indicating the opposite to what is expected.

Table 6.5: Correlations Net Flow and Fee- Conventional vs. Ethical Funds

	Conventional Funds	*Ethical Funds*
Fund Characteristic	**Net Flow**	**Net Flow**
Fee_{t-1}	-0.121	-0.213

We proceed by analyzing the estimated coefficients from our multivariate regression model using Pooled OLS with quarterly fixed effects[21].

Table 6.6: Regression Coefficients Ethical and Conventional Funds- Pooled OLS with Quarterly Fixed Effects

	Conventional Funds		*Ethical Funds*	
Fund characteristic	**Coefficient**	**p-value**	**Coefficient**	**p-value**
Fee_{t-1}	-1.6073**	(0.023)	-6.1788***	(0.000)
Observations	3894		904	

Dependent variable is Net Flow. *, ** and *** denote significance at the 10%, 5% and 1% level respectively. Coefficient estimates for all independent and control variables are found in Appendix I, Table 3.

The regression estimates yield negative and statistically significant coefficients for conventional and ethical funds at the 5% and 1% level respectively. As evident, the magnitude of the fee coefficient for ethical funds is greater, suggesting that ethical investors are more sensitive to fees than investors in conventional funds, i.e. opposite to what we hypothesized.

The coefficients can be interpreted as for a 10 basis point increase[22] in fees, net flows decrease by 0.16% for conventional funds the subsequent quarter (or 0.64% per annum). Whereas an equivalent increase in fees for ethical funds implies a decrease by on average 0.62% the subsequent quarter (2.5% per annum). Hence, the results are in line with various previous studies finding that net flows are strongly negatively related to fees (Kempf and Ruenzi (2004, 2008), Sirri and Tufano (1998), Barber, Odean and Zheng (2004), Engström and Westerberg (2004)), i.e. investors are fee sensitive. However, with respect to ethical funds, the coefficient estimates are inconsistent with Rennebog, Horst and Zhang (2006), finding that increases in fees does not reduce net flows in ethical funds.

Our findings hence indicate that ethical investors (1) pay attention to fees, and (2) more so than investors in conventional funds. This is contradictory to our previous elaboration that ethical investors were willing to pay a price for holding an ethical fund with objectives coinciding with social, moral and/or ethical concern. Thus, we find no support for our third hypothesis proposing that ethical investors are more sensitive to fees than their counterparts in conventional funds.

[21] We also ran a Pooled OLS regression with Yearly Fixed Effects reaching similar results (see Table 4, Appendix I)

[22] It is more sensible to interpret the coefficients based on a 10 basis point increase rather than 100 basis point increase (1 percentage unit), since this corresponds better to reality. For a 100 basis point increase in fees, the corresponding decrease in net flows per quarter would be 1.77% and 6.24% for conventional and ethical funds respectively.

Even though our hypothesis is not supported, the finding is striking. If our result can be generalized to the universe of ethical funds in Sweden, the significant impact of costs on net flows may discourage mutual fund families to launch funds with ethical investment objectives. Moreover, it may also deter fund managers to aggressively market ethical funds. Since marketing of funds is associated with high costs, where a part is reflected in the management fee, such strategies will subsequently have a strong negative impact on net flows.

6.1.4 Hypothesis 4: Ethical Investors and Risk

Hypothesis 4: *Ethical investors are less sensitive to past volatility in returns than investors in conventional funds*

As discussed in section 3, we expect the influence of past volatility in return to be negatively related to net flows for conventional funds, i.e. net flows decrease following higher volatility in past returns. In particular, we expect ethical investors to be less sensitive to past volatility in returns compared to investors in conventional funds, reflected in a weaker negative impact in net flows.

An initial analysis of the correlation in Table 6.7 between net flow and past volatility in returns show a weak positive relationship with similar magnitude for both ethical and conventional funds, suggesting opposite to what we expected. However, the results are only indicative and we proceed by analyzing the hypothesis based on the regression estimates.

Table 6.7: Correlations Net Flow and Risk- Conventional vs. Ethical Funds

	Conventional Funds	***Ethical Funds***
Fund Characteristic	**Net Flow**	**Net Flow**
$STD_{i,t-1}$	0.078	0.073

The regression estimates displayed in Table 6.8 show a negative relationship between past volatility in returns and net flows for ethical funds, but the coefficient is highly insignificant. This is intriguing since it implies that ethical investors are not sensitive to past volatility in returns, i.e. net flows do not decrease following higher volatility in returns. This result is also consistent with the findings of Rennebog, Horst and Zhang (2005), finding an insignificant relationship between past volatility in funds returns and subsequent net flows in ethical funds.

For conventional funds, the coefficient is positive and significant at the 10% level, suggesting that higher return volatility induce an increase in subsequent net flows. This is contradictory to the existing literature, suggesting a negative impact of past volatility in returns on net flows (see e.g. Sirri and

Tufano (1998) and Ippolito (1992). The economic interpretation is thus that investors in conventional equity funds prefer higher volatility in returns[23].

Table 6.8: Regression Coefficients Ethical and Conventional funds- Pooled OLS with Quarterly Fixed Effects

	Conventional Funds		***Ethical Funds***	
Fund Characteristic	**Coefficient**	**p-value**	**Coefficient**	**p-value**
$STD_{i,t-1}$	0.0683*	(0.092)	-0.0665	(0.667)
Observations	3894		905	

Dependent variable is Net Flow. *, ** and *** denote significance at the 10%, 5% and 1% level respectively. Coefficient estimates for all independent and control variables are found in Appendix I, Table 3.

Our hypothesis is thus supported; we expected that ethical investors should be less sensitive to past volatility in returns, which they indeed are. However, we did not expect a positive a significant coefficient for conventional funds.

These results would have some important implications given that our results for the FPR would have indicated convexity. As discussed in section 3.4, the compensation structure in the mutual fund industry where fee revenues is a function of fund size, consequently leads to a compensation scheme resembling a call option given a convex FPR. Referring to our results, net flows are positively related to past volatility in returns for conventional funds, and not affected by past risk for ethical funds. Hence, if there would actually be a convex shape of the FPR for both conventional and ethical funds that our tests have failed to reveal, managers would have incentives to alter the risk of the fund in order to maximize the value of this call. Such a behavior would not even come at a "cost", since net flows following increased volatility do not decrease for either ethical or conventional funds. However, since we do not find a convex shape for either conventional or ethical funds, this reasoning is merely fictitious.

6.2 Other Findings

In the previous subsections we have presented our empirical findings relevant for our stated hypotheses. In our multivariate regression we also included a set of variables to control for other effects on net flows. Proceeding, we give a brief presentation of the results for the control variables age, size and the net flow in the previous quarter (see Table 5.1 under section 5.3 for complete definition of all variables). We present the estimated coefficients for the control variables both for the sample of conventional and ethical funds.

[23] The result is similar when running a Pooled OLS with Yearly Fixed Effects- but the coefficient is larger in magnitude and significant at the 1% level. See Table 4 in Appendix I.

In Table 6.9, the effect of fund size ($Size_{t-1}$) on net flow shows a negative coefficient for ethical and conventional funds. The relationship is significant at the 5% level for ethical funds, but insignificant for conventional funds. Hence, the economic implication for ethical funds is that larger funds grow slower than smaller funds. This is also in line with findings in the existing literature on money flows in conventional funds (see e.g. Chevalier and Ellison (1997) and Sirri and Tufano (1998)).

The relationship between fund age (*Age t-1*) and net flows is negative and significant at the 1% level for both conventional and ethical funds. The economic interpretation is that older funds grow slower than younger funds. This result is in line with other findings studying determinants of money flows in conventional funds (see e.g. Chevalier and Ellison (1997)).

Table 6.9: Regression Coefficients Ethical and Conventional funds- Pooled OLS with Quarterly Fixed Effects

	Conventional Funds		***Ethical Funds***	
Control variables	Coefficient	**p-value**	Coefficient	**p-value**
$Size_{t-1}$	-0.00046	(0.810)	-0.0136**	(0.036)
Age t-1	-0.0314***	(0.000)	-0.0226***	(0.010)
$Flow_{t-1}$	-0.0156*	(0.350)	-0.0354**	(0.022)
Observations	3894		905	

Dependent variable is Net Flow. *, ** and *** denote significance at the 10%, 5% and 1% level respectively. . The coefficient estimates for all independent variables are found in Table 3, Appendix I.

Lastly, there is a negative impact on previous quarter net flow on current net flow for both conventional and ethical funds. The relationship is significant at the 5% level for ethical funds, but insignificant for conventional funds. This suggests that higher net flows in the prior quarter is followed by a subsequent decrease in current net flows for ethical funds. The magnitude of the coefficient is however of small economic significance[24]. Nevertheless, a positive relationship between past net flows and current net flow point in the opposite direction compared to previous findings, suggesting a positive relationship. Hence, our results imply that for our sample, there is no support for a status-quo bias among ethical investors. To clarify, status-quo bias is equivalent to investors tending to repeat their investment decision, even though not optimal, leading to a positive relation between past and current net flows, i.e. not consistent with our findings.

7. Conclusion

This thesis contributes to the limited literature on investor behavior in Swedish mutual funds by examining the relations between flows into mutual funds, past performance and other fund specific characteristics. Firstly, we study ethical investor behavior by examining the flow-performance relationship on a sample of funds with an ethical profile, i.e. we analyze how ethical investors respond

[24] For ethical funds: a 1% increase in net flow prior quarter results in a subsequent decrease in net flow of on average 0.035% per quarter

to past performance. The same relation is analyzed for a sample of conventional funds, enabling us to infer behavioral differences between those two investor groups ethical investors is an interesting investor clientele, since those investors integrate their financial requirements with social and moral concerns, hence deriving part of their utility from a non-financial attribute. Secondly, in order to enhance the understanding of ethical investors' preferences for fund specific characteristics and its impact on fund flows, we explicitly add two other dimension; the financial cost of holding a fund as reflected by the management fee and past volatility in returns.

The overall results show that for conventional funds, poor performing funds suffer outflows despite relative improvements in performance ranking. Relative performance improvements for funds in the high performance category are rewarded by investors in terms of increases in net flows, although proportionally less than the corresponding decreases for poor performers. Thus, our results for conventional funds suggest that the flow-performance relationship is stronger for poor performing funds compared to high performing funds. Our results hence propose something different from that of most US studies on the flow-performance relationship in conventional funds, finding it to be positive and convex

We interpret these results by considering the empirical evidence on performance persistency among the worst performing funds, and the mixed evidence of performance persistency among top performing funds. The empirical findings on performance persistency are thus more consistent with our results, since it suggests a possibly stronger flow-performance relationship among poor performers, and a weaker relationship for high performers.

The implication of the relationship found in our thesis is that the call-option like feature of fund managers' payout scheme, implicitly embedded in the convex-flow performance relationship, is nonexistent. The stronger flow performance relationship found among poor performers would hence deter fund managers from alter the risk of the fund, since such activities would not be as beneficial when the option-like feature of their compensation is absent.

For ethical funds, decreases in net flows are greater in magnitude compared to conventional funds following relative performance improvements among the poor performing funds. This suggests that ethical investors are more sensitive to past poor performance compared to conventional investors. This is neither consistent with the empirical findings on fund flows in ethical funds, nor the luxury goods theory. Even though the learning hypothesis predicts a higher sensitivity to past poor performance for ethical funds, consistent with our findings, it simultaneously predicts a higher sensitivity to past high performance for ethical funds. Our results with respect to the latter is inconsistent, since we find a negative relation between net flows following relative performance improvements among top performing funds.

The decrease in net flows following relative performance improvements among the top performing funds is illogical and counterintuitive. We conducted several robustness checks, producing similar results for the top performing group indicating that our results are robust to various types of tests including different methods. Beside that this could be attributable to a small sample size and relatively short time period, we first thought that it possibly could be due to a structural change in the mutual fund industry, where money has been flowing out from ethical funds despite good returns. However, we did not find any support for this explanation after analyzing the TNA development for ethical funds during the sample period.

Similar to previous studies on fund flows in conventional funds, we find that net flows are strong and negatively related to fees. In particular, we find that ethical investors are more sensitive to management fees compared to conventional investors, as reflected by larger decreases in net flows for ethical funds following increases in fees. Hence, this is inconsistent with the idea that ethical investors are willing to pay a price for investing in a fund with a profile coinciding with the investors' social or ethical objectives. This stronger impact of costs on net flows in ethical funds may actually discourage fund families to launch ethical funds.

Lastly, an intriguing finding is the insignificant impact of past volatility on net flows in ethical funds. Ethical investors do not seem to be sensitive to higher volatility in past returns. This result is also consistent with that of Rennebog, Horst and Zhang (2006). The ambiguous results for the relation between net flows and past performance in ethical funds reduce the real world implication of this finding, even though interesting per se. Moreover, the positive and significant impact of volatility on net flows in conventional funds thus support that ethical investors are less sensitive to volatility in past returns. In addition, the positive relation found for conventional funds is surprising, since it suggests that net flows increase following higher return volatility. Again, in absence of a convex FPR for conventional funds, the implications of this result are rather few. Nevertheless, fund managers risk taking incentives in both ethical and conventional mutual funds might be affected if investors respond to past risk in accordance with our findings.

8. Further Research

Even though much of the existing literature on mutual fund flows is focused on the determinants of net flows, more current research, generally performed on U.S. data, has moved towards studying determinants of mutual fund gross in-and outflows respectively. Since there is no study considering the determinants of both gross inflows and outflows in ethical funds using Swedish data, such a study could enrich the understanding of the buying and selling decisions made by ethical fund investors. In addition, we would naturally encourage such a study to apply a comparative approach in order to shed

further light on the behavioral differences between ethical investors and investors in conventional funds.

We would also like to encourage further research on the flow-performance relationship in ethical funds, given our ambiguous result for the high performance group. Such a study, covering a larger sample and spanning over a longer time period compared to our sample, could thus deepen the understanding about the flow-performance relationship for ethical funds in Sweden.

We also welcome further research on money flows in ethical funds incorporating also the search costs faced by consumers when selecting funds. Previous research has shown that search costs for conventional funds have a significant impact on fund flows (see e.g. Sirri and Tufano (1998)), i.e. higher fund visibility generates larger flows. Hence it would be interesting to see whether search costs are of different importance for ethical investors, given their specific requirement for ethical attributes.

Moreover, a topic we have not addressed is relating flow volatility in ethical funds to various fund characteristics. There is some limited research on this topic, but no study has been performed on Swedish data. Relating flow volatility in ethical funds to past performance and other characteristics might shed further light on the behavior of ethical investors, and may help fund managers in ethical funds to identify what characteristics that attract stable investors. Since higher volatility in net flows is costly to fund managers and might therefore have a negative impact on returns, they would prefer less volatility in fund flows. Such a study would be an extension of what we have examined and add to the existing line of research on ethical investor behavior.

Finally, an issue that has been subject to very limited attention is whether net flows to ethical funds are affected by the screening intensity by funds. While higher screening intensity might limit the diversification benefits, it might on the other hand attract more investors that have stricter requirements on how "ethical" a fund should be. Overall, we believe that there is much left to explore with respect to ethical investor behavior, and that our results leave room for further investigation.

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10. Appendices

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Appendix I- Descriptive Statistics and Regression Estimates

Table 1: Summary Statistics

Panel (A) and (B) reports the summary statistics for our sample of conventional equity funds and ethical equity funds respectively from quarter three 2000 to quarter four 2006. Ethical funds refer to funds that meet superior standards in environmental or social issues, and/or exclude companies investing in controversial industries. For each quarter, the cross-sectional mean values are reported of the fund characteristics: flow, age, fee and age, and median value for total net asset value (MSEK). We also show the number of funds included in each quarter. Total net asset value is the closing market value (MSEK) at the end of each quarter of all securities owned, plus all assets, minus all liabilities. Net Flow (%) is the growth rate of new external money is defines as $(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, and where $R_{i,t}$ is the raw return in quarter t. Fees are the total annual management fee reported in %. Age is how old the fund is since its inception date at the end of each quarter.

Panel A: Summary Statistics Reported Quarterly- Conventional Equity Funds

Year	Quarter	# Funds	Median TNA (MSEK)	Net Flow (%)	Mean Volatility	Mean Fee (%)	Mean Age (Years)
2000	4	174	643.58	8.39%	23.57%	1.25%	6.46
2001	1	209	569.59	4.18%	18.29%	1.25%	6.36
2001	2	203	711.33	9.35%	18.28%	1.25%	6.60
2001	3	204	520.56	-0.07%	6.17%	1.25%	6.85
2001	4	209	638.01	4.12%	21.71%	1.25%	7.10
2002	1	187	689.77	9.33%	25.01%	1.28%	7.11
2002	2	195	515.59	3.07%	22.07%	1.29%	7.36
2002	3	211	389.65	1.23%	6.31%	1.29%	7.61
2002	4	208	397.74	2.55%	22.87%	1.29%	7.86
2003	1	212	395.44	6.01%	25.72%	1.29%	8.15
2003	2	204	462.16	4.24%	24.71%	1.29%	8.39
2003	3	201	520.83	5.55%	7.56%	1.29%	8.64
2003	4	210	560.86	4.85%	23.25%	1.29%	8.89
2004	1	198	707.91	9.28%	17.22%	1.28%	9.00
2004	2	199	723.41	2.70%	15.45%	1.28%	9.26
2004	3	200	705.67	1.95%	4.15%	1.28%	9.51
2004	4	203	686.6	2.51%	12.40%	1.28%	9.76
2005	1	191	755.21	3.97%	11.18%	1.32%	10.05
2005	2	188	818.36	1.99%	9.73%	1.33%	10.30
2005	3	189	1016.33	2.21%	3.34%	1.33%	10.55
2005	4	189	1141.26	1.96%	11.61%	1.33%	10.80
2006	1	168	1509.41	3.85%	12.09%	1.33%	11.03
2006	2	168	1316.06	-5.12%	12.16%	1.33%	11.27
2006	3	169	1432.87	1.12%	4.22%	1.33%	11.52
2006	4	168	1410.85	0.56%	13.74%	1.33%	11.78

Panel B: Summary Statistics Reported Quarterly- Ethical Equity Funds

Year	Quarter	# Funds	Median TNA (MSEK)	Mean Flow	Mean Volatility	Mean Fee (%)	Mean Age (Years)
2000	4	28	143.48	8.49%	21.42%	1.17%	3.94
2001	1	31	129.84	6.76%	14.67%	1.17%	4.05
2001	2	30	152.50	6.51%	14.49%	1.17%	4.29
2001	3	32	124.10	-0.59%	5.29%	1.17%	4.55
2001	4	32	149.31	0.93%	19.09%	1.17%	4.80
2002	1	38	227.64	6.47%	22.49%	1.04%	4.97
2002	2	35	233.60	7.33%	20.81%	1.04%	5.22
2002	3	40	206.82	4.19%	5.97%	1.04%	5.47
2002	4	41	181.06	1.05%	22.80%	1.04%	5.71
2003	1	46	181.67	8.98%	25.51%	1.03%	5.86
2003	2	45	189.63	3.33%	24.51%	1.03%	6.11
2003	3	40	176.05	3.85%	7.55%	1.03%	6.36
2003	4	41	224.40	2.58%	22.94%	1.03%	6.61
2004	1	55	272.91	6.41%	17.00%	1.11%	7.63
2004	2	54	244.25	4.39%	15.16%	1.11%	7.88
2004	3	55	249.69	0.83%	3.85%	1.11%	8.13
2004	4	54	290.49	1.26%	10.78%	1.11%	8.38
2005	1	56	311.82	2.48%	8.64%	1.09%	8.64
2005	2	56	336.43	-0.22%	7.51%	1.09%	8.88
2005	3	56	348.49	0.31%	2.72%	1.09%	9.13
2005	4	56	365.55	1.25%	9.54%	1.09%	9.38
2006	1	53	383.78	1.34%	10.04%	1.09%	9.63
2006	2	53	357.52	-1.31%	10.39%	1.08%	9.88
2006	3	53	392.51	0.35%	5.35%	1.08%	10.12
2006	4	53	442.93	4.19%	11.75%	1.08%	10.37

Table 2: Regression Results: Full Sample of Equity Funds– Pooled OLS with Yearly Fixed Effects and Quarterly Fixed Effects

The table reports the Pooled OLS coefficient estimates with Yearly Fixed Effects and Quarterly Fixed Effects for the full sample of equity mutual funds, using the net flow as the dependent variable, $FLOW_{i,t}$. Column (A) report coefficient estimates and p-values with Yearly Fixed Effects, and Column (B) with Quarterly Fixed Effects. The dependent variable net flow is defined as $(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t*. The regression includes the independent variables *LOW*, *MID* and *HIGH*. In each quarter *t* funds are divided into these three unequal groupings based on their fractional performance rank, $RANK_{i,t-1}^{Perf}$, within their respective investment objective. For example, the LOW group represent the lowest quintile of performance within each investment objective, defined as $LOW_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf}, 0.2\right)$, the three middle performance quintiles are combined into one group *MID* defined as $MID_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf} - LOW_{i,t-1}, 0.6\right)$, the group representing the performance in the highest quintile TOP is defined as $TOP_{i,t-1} = RANK_{i,t-1}^{Perf} - (LOW_{i,t-1} + MID_{i,t-1})$. The fractional ranks are based on the average of the monthly returns of the 12 month period prior to each quarter. The coefficients for the three performance groups represent the slope of the flow-performance relationship. The control variables include the lagged total risk of the fund, $Risk_{t-1}$, measured as the standard deviation of monthly fund returns from month t-1 to t-12, i.e. the year prior to each quarter. Fee_{t-1},is the lagged annual total management fee in %. Age_{t-1} is defined as the natural logarithm of the funds lagged age $ln(Age)_{I,t-1}$. Lagged flow, $Flow_{t-1}$, is net flow in the previous quarter. The lagged size, $Size_{t-1}$ is measured as the natural logarithm of fund *i's* total net asset value (MSEK) in prior to quarter *t* ($lnTNA_{i,t-1}$). The regressions are run quarter by quarter using Pooled OLS with yearly and quarterly fixed effects, clustered observations. P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

Full sample of Equity Funds					
		(A) Coefficient	(A) *p-value*	(B) Coefficient	(B) p-value
Relative Performance	LOW_{t-1}	-0.1076**	(0.011)	-0.1087***	(0.008)
	MID_{t-1}	0.0264***	(0.005)	0.0254***	(0.006)
	TOP_{t-1}	0.0625	(0.144)	0.0688	(0.108)
Fund Characteristics	$Size_{t-1}$	0.0021	(0.109)	0.00186	(0.162)
	$Risk_{t-1}$	0.0996***	(0.000)	0.0579	(0.117)
	Age_{t-1}	-0.0276***	(0.000)	-0.0267***	(0.000)
	Fee_{t-1}	-1.7454***	(0.000)	-1.6848***	(0.000)
	$Flow_{t-1}$	-0.0087	(0.265)	-0.0059	(0.467)
Time Effect	D_{2001}	0.0746***	(0.000)		
	D_{2002}	0.0683***	(0.000)		
	D_{2003}	0.0880***	(0.000)		
	D_{2004}	0.0921***	(0.000)		
	D_{2005}	0.0806***	(0.000)		
	D_{2006}	0.0696***	(0.000)		
	D quarter			Yes[a]	Yes[a]
	R^2	0.1125		0.1512	
	Observations	4769		4769	

[a:] For the sake of brevity we do not report the quarterly time dummies in Column (B) using Pooled OLS with quarterly fixed effects

Table 3: Regression Results: Ethical and Conventional funds– Pooled OLS with Quarterly Fixed Effects

The table reports the Pooled OLS coefficient estimates with Quarterly Fixed for two separate regressions, one on a sample of conventional equity funds and ethical equity funds, using the net flow as the dependent variable in both regressions, $FLOW_{i,t}$. The dependent variable net flow is defined as $(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t*. The regression includes the independent variables *LOW*, *MID* and *HIGH*. In each quarter *t* funds are divided into these three unequal groupings based on their fractional performance rank,$RANK_{i,t-1}^{Perf}$, within their respective investment objective. For example, the LOW group represent the lowest quintile of performance within each investment objective, defined as $LOW_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf}, 0.2\right)$, the three middle performance quintiles are combined into one group *MID* defined as $MID_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf} - LOW_{i,t-1}, 0.6\right)$, the group representing the performance in the highest quintile TOP is defined as $TOP_{i,t-1} = RANK_{i,t-1}^{Perf} - (LOW_{i,t-1} + MID_{i,t-1})$. The fractional ranks are based on the average of the monthly returns of the 12 month period prior to each quarter. The coefficients for the three performance groups represent the slope of the flow-performance relationship. The control variables include the lagged total risk of the fund, $Risk_{t-1}$, measured as the standard deviation of monthly fund returns from month t-1 to t-12, i.e. the year prior to each quarter. Fee_{t-1},is the lagged annual total management fee in %. Age_{t-1} is defined as the natural logarithm of the funds lagged age $ln(Age)_{I,t-1}$. Lagged flow,$Flow_{t-1}$, is net flow in the previous quarter. The lagged size, $Size_{t-1}$ is measured as the natural logarithm of fund *i's* total net asset value (MSEK) in prior to quarter *t*, $(\ln TNA_{i,t-1})$. The regressions are run quarter by quarter using Pooled OLS with quarterly fixed effects, clustered observations. P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

		Conventional Funds		**Ethical Funds**	
		Coefficient	*p-value*	Coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.1188*	(0.061)	-0.1844***	(0.005)
	MID_{t-1}	0.0259**	(0.033)	0.05484**	(0.035)
	TOP_{t-1}	0.0938*	(0.087)	-0.2129**	(0.040)
Fund Characteristics	$Size_{t-1}$	-0.00046	(0.810)	-0.0136**	(0.036)
	$Risk_{t-1}$	0.0683*	(0.092)	-0.0665	(0.667)
	Age_{t-1}	- 0.0314***	(0.000)	-0.0226***	(0.010)
	Fee_{t-1}	-1.6073**	(0.023)	-6.1788***	(0.000)
	$Flow_{t-1}$	0.0156	(0.350)	-0.0354**	(0.022)
Time Effect	*D quarter*	Yes[a]	Yes[a]	Yes[a]	Yes[a]
	R^2	0.1705		0,196	
	Observations	3894		905	

[a:] For the sake of brevity we do not report the quarterly time dummies in Column (B) using Pooled OLS with quarterly fixed effects

Table 4: Regression Results: Ethical and Conventional funds– Pooled OLS with Yearly Fixed Effects

The table reports the Pooled OLS coefficient estimates with Yearly Fixed for two separate regressions, one on a sample of conventional equity funds and ethical equity funds, using the net flow as the dependent variable in both regressions, $FLOW_{i,t}$. The dependent variable net flow is defined as $(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t*. The regression includes the independent variables *LOW*, *MID* and *HIGH*. In each quarter *t* funds are divided into these three unequal groupings based on their fractional performance rank,$RANK_{i,t-1}^{Perf}$, within their respective investment objective. For example, the LOW group represent the lowest quintile of performance within each investment objective, defined as $LOW_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf}, 0.2\right)$, the three middle performance quintiles are combined into one group *MID* defined as $MID_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf} - LOW_{i,t-1}, 0.6\right)$, the group representing the performance in the highest quintile TOP is defined as $TOP_{i,t-1} = RANK_{i,t-1}^{Perf} - (LOW_{i,t-1} + MID_{i,t-1})$. The fractional ranks are based on the average of the monthly returns of the 12 month period prior to each quarter. The coefficients for the three performance groups represent the slope of the flow-performance relationship. The control variables include the lagged total risk of the fund, $Risk_{t-1}$, measured as the standard deviation of monthly fund returns from month t-1 to t-12, i.e. the year prior to each quarter. Fee_{t-1},is the lagged annual total management fee in %. Age_{t-1} is defined as the natural logarithm of the funds lagged age $ln(Age)_{I,t-1}$. Lagged flow,$Flow_{t-1}$, is net flow in the previous quarter. The lagged size, $Size_{t-1}$ is measured as the natural logarithm of fund *i's* total net asset value (MSEK) in prior to quarter *t*,, $(\ln TNA_{i,t-1})$. The regressions are run quarter by quarter using Pooled OLS with yearly fixed effects, clustered observations. P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

		Conventional Funds		**Ethical Funds**	
		Coefficient	*p-value*	coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.1201*	(0.065)	-0.1742***	(0.010)
	MID_{t-1}	0.0276**	(0.025)	0.0545**	(0.033)
	TOP_{t-1}	0.0856	(0.125)	-0.2169	(0.033)
Fund Characteristics	$Size_{t-1}$	-0.0002	(0.910)	-0.0122*	(0.061)
	$Risk_{t-1}$	0.1046***	(0.000)	0.0763	(0.261)
	Age_{t-1}	-0.0324***	(0.000)	-0.028***	(0.002)
	$Flow_{t-1}$	0.0092	(0.564)	-0.0369**	(0.013)
	Fee_{t-1}	-1.6866**	(0.017)	-6.0304***	(0.000)
Time Effect	D_{2001}	0.0184***	(0.000)	0.2139	(0.000)
	D_{2002}	0.0186***	(0.000)	0.2101	(0.000)
	D_{2003}	0.0205***	(0.000)	0.2266	(0.000)
	D_{2004}	0.0198***	(0.000)	0.2375	(0.000)
	D_{2005}	0.0208***	(0.000)	0.2208	(0.000)
	D_{2006}	0.0196***	(0.000)	0.2324	(0.000)
	R^2	0.1286		0.168	
	Observations	3894		905	

Table 5: Yearly Number of Observations for *LOW, MID, HIGH* Performance Groups for Conventional and Ethical Funds

The table reports the yearly numbers of observations for the *Low*, *Mid*, *High* performance groups for our sample of conventional equity funds and ethical equity funds respectively from 2001-2006. Ethical funds refer to funds that meet superior standards in environmental or social issues, and/or excludes at companies investing in controversial industries.

	Conventional Funds			**Ethical Funds**		
Year	*LOW*	*MID*	*TOP*	*LOW*	*MID*	*TOP*
2001	159	594	171	24	88	28
2002	164	593	170	36	128	36
2003	156	612	160	32	124	36
2004	156	580	160	48	148	52
2005	145	538	156	40	144	40
2006	144	540	148	40	144	40

Appendix II Correlation Tables

Table 6: Correlation Table – Dependent Variable and Independent Variables

This table presents the correlation between the dependent variable net flow, $FLOW_{i,t}$, and the independent and control variables lagged fees, lagged volatility in returns (risk), lagged age and lagged flow. The independent and control variables are defined as in Table 2 through 4 in Appendix I. The correlations are presented for the full sample of funds, conventional and ethical funds.

		Full Sample	**Conventional Funds**	**Ethical Funds**
		Net Flow	Net Flow	Net Flow
Relative Performance	LOW_{t-1}	-0.047	-0.045	-0.069
	MID_{t-1}	0.027	0.036	-0.016
	TOP_{t-1}	0.058	0.066	-0.049
Fund Characteristics	$Size_{t-1}$	-0.159	-0.175	-0.113
	$Risk_{t-1}$	0.079	0.078	0.073
	Age_{t-1}	-0.297	-0.302	-0.276
	Fee_{t-1}	-0.132	-0.121	-0.213
	$Flow_{t-1}$	0.113	0.133	-0.0023

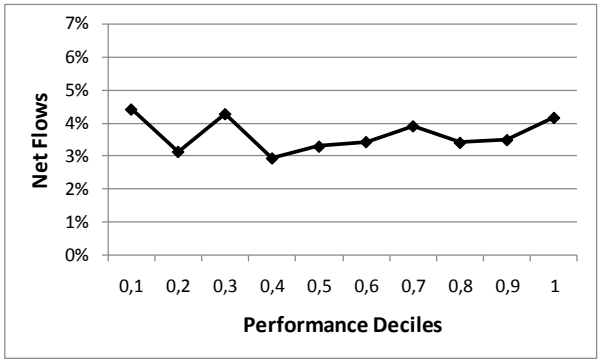
Table 7: Correlations Net Flows and *TOP* Performance Group- Ethical Funds

This table presents the correlation between the dependent variable net flow, $FLOW_{i,t}$, and the independent variable $TOP_{i,t}$ for ethical funds. The correlation between the variables is presented quarter by quarter during the full sample period, from the fourth quarter 2000 to the fourth quarter 2006.

Year	**Quarter**	**# Funds**	**Relative Performance**	**Net Flows**
2000	4	25	$TOP_{i,t}$	-0.0874
2001	1	26	$TOP_{i,t}$	0.0400
2001	2	26	$TOP_{i,t}$	-0.1770
2001	3	27	$TOP_{i,t}$	0.0352
2001	4	27	$TOP_{i,t}$	0.0081
2002	1	32	$TOP_{i,t}$	-0.1529
2002	2	29	$TOP_{i,t}$	0.6115
2002	3	34	$TOP_{i,t}$	-0.4324
2002	4	35	$TOP_{i,t}$	0.0953
2003	1	38	$TOP_{i,t}$	0.2089
2003	2	37	$TOP_{i,t}$	-0.0810
2003	3	34	$TOP_{i,t}$	-0.1017
2003	4	35	$TOP_{i,t}$	-0.1236
2004	1	47	$TOP_{i,t}$	-0.2715
2004	2	46	$TOP_{i,t}$	0.0177
2004	3	47	$TOP_{i,t}$	-0.1136
2004	4	46	$TOP_{i,t}$	-0.0441
2005	1	46	$TOP_{i,t}$	0.0868
2005	2	46	$TOP_{i,t}$	0.0755
2005	3	46	$TOP_{i,t}$	-0.0361
2005	4	46	$TOP_{i,t}$	0.0933
2006	1	44	$TOP_{i,t}$	-0.2115
2006	2	44	$TOP_{i,t}$	-0.3461
2006	3	44	$TOP_{i,t}$	0.0711
2006	4	44	$TOP_{i,t}$	-0.0843

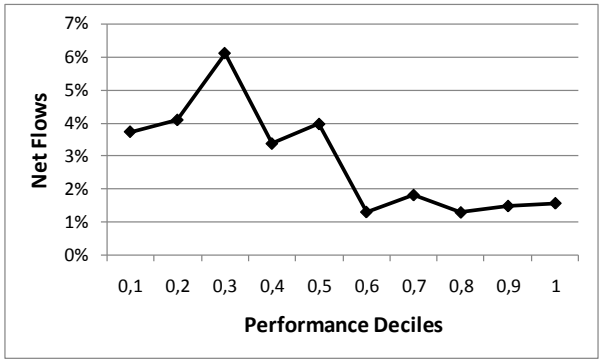
Appendix III Plots of Average Net Flow and Fund characteristics

Figure 1: Average Net Flow as a function of past performance for conventional funds



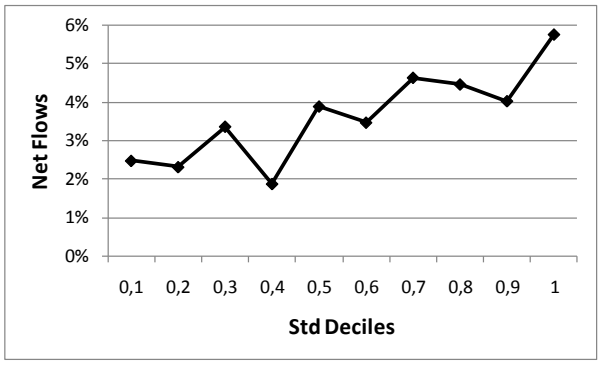
For the period fourth quarter 2004 to fourth quarter 2006, all conventional funds are ranked based on the average of the monthly returns of the 12 month period prior to each quarter. Subsequently, they are divided into 10 deciles based on this ranking. Decile 1 represents the funds with the highest average monthly returns of the 12 month period prior to each quarter and decile 0,1 represents the funds with the lowest average monthly return of the 12 month period prior to each quarter. For each of these 10 deciles, the average net flows are calculated. Net Flow is defined as:
$(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t*.

Figure 2: Average Net Flow as a function of past performance for ethical funds



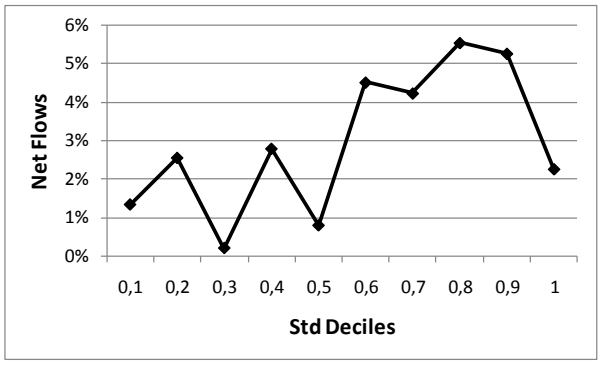
For the period fourth quarter 2004 to fourth quarter 2006, all ethical funds are ranked based on the average of the monthly returns of the 12 month period prior to each quarter. Subsequently, they are divided into 10 deciles based on this ranking. Decile 1 represents the funds with the highest average monthly returns of the 12 month period prior to each quarter and decile 0,1 represents the funds with the lowest average monthly return of the 12 month period prior to each quarter. For each of these 10 deciles, the average net flows are calculated. Net Flow is defined as:
$(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t*.

Figure 3: Average Net Flow as a function of volatility of fund return for Conventional Funds



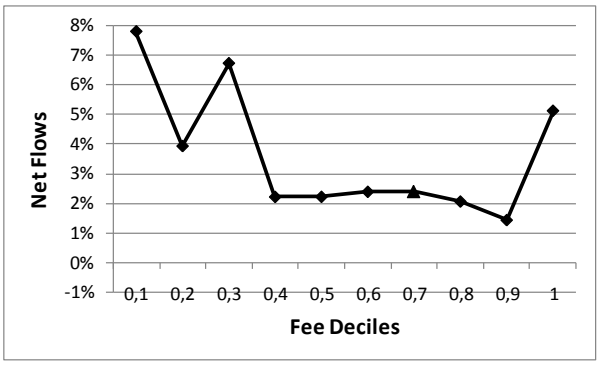
For the period fourth quarter 2004 to fourth quarter 2006, all conventional funds are ranked based on the lagged total risk of the fund, $Risk_{t-1}$, measured as the standard deviation of monthly fund returns from month t-1 to t-12, i.e. the year prior to each quarter. Subsequently, they are divided into 10 deciles based on this ranking. Decile 1 represents the funds with the highest lagged total risk and decile 0,1 represents the funds with the lowest lagged total risk. For each of these 10 deciles, the average net flows are calculated. Net Flow is defined as:
$(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t*.

Figure 4: Average Net Flow as a function of volatility of fund return for Ethical Funds



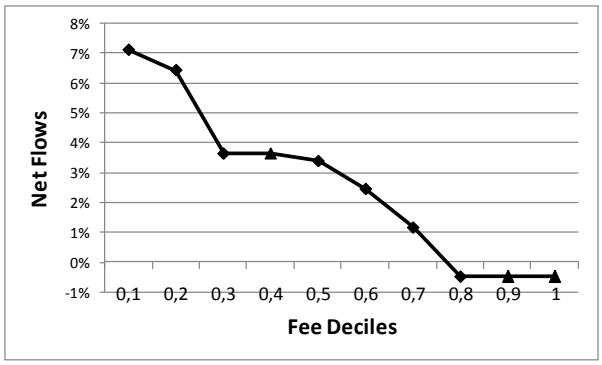
For the period fourth quarter 2004 to fourth quarter 2006, all ethical funds are ranked based on the lagged total risk of the fund, $Risk_{t-1}$, measured as the standard deviation of monthly fund returns from month t-1 to t-12, i.e. the year prior to each quarter. Subsequently, they are divided into 10 deciles based on this ranking. Decile 1 represents the funds with the highest lagged total risk and decile 0,1 represents the funds with the lowest lagged total risk. For each of these 10 deciles, the average net flows are calculated. Net Flow is defined as:
$(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t*.

Figure 5: Average Net Flow as a function of Management Fee for Conventional Funds



For the period fourth quarter 2004 to fourth quarter 2006, all conventional funds are ranked based on the variable Fee_{t-1}, which is the lagged annual total management fee. Subsequently, they are divided into 10 deciles based on this ranking. Decile 1 represents the funds with the highest lagged annual total management fee and decile 0.1 represents the funds with the lowest lagged annual total management fee. For each of these 10 deciles, the average net flows are calculated. The net flows is defined as $(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t*. For decile 0.7 (marked with a triangle in the figure), no average net flows could be calculated due to lack of flows observations. Hence, this average net flow is kept at the same level as for the first prior decile where average net flows could be calculated.

Figure 6: Average Net Flow as a function of Management Fee for Ethical Funds



For the period fourth quarter 2004 to fourth quarter 2006, all ethical funds are ranked based on the variable Fee_{t-1}, which is the lagged annual total management fee. Subsequently, they are divided into 10 deciles based on this ranking. Decile 1 represents the funds with the highest lagged annual total management fee and decile 0.1 represents the funds with the lowest lagged annual total management fee. For each of these 10 deciles, the average net flows are calculated. The net flows is defined as $(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t*. For decile 0.4, 0.9 and 1.0 (market with triangles in the figure), no average net flows could be calculated due to lack of net flows observations. Hence these averages are kept at the same level as the first prior decile where average net flows could be calculated.

Appendix IV- Robustness Checks on Ethical Sample

Table 8: Regression Results: Ethical Funds - Pooled OLS with Yearly Fixed Effects (Column A: Funds Younger than 3 Years Removed, Column B: Sample Period from 2002-2005)

The table reports the Pooled OLS coefficient estimates with Yearly Fixed for one regression on a sample ethical equity funds, using the net flow as the dependent variable in both regressions, $FLOW_{i,t}$. Column (A) report the coefficients estimates when excluding ethical funds younger than 3 years in any quarter. Panel (B) report coefficient estimates on a sample from quarter one 2002 to quarter four 2005. The dependent variable net flow is defined as $(TNA_{i,t} - TNA_{i,t-1})*(1+R_{i,t})/(TNA_{i,t-1})$, where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t*. The regression includes the independent variables *LOW*, *MID* and *HIGH*. In each quarter *t* funds are divided into these three unequal groupings based on their fractional performance rank, $RANK_{i,t-1}^{Perf}$, within their respective investment objective. For example, the LOW group represent the lowest quintile of performance within each investment objective, defined as $LOW_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf}, 0.2\right)$, the three middle performance quintiles are combined into one group *MID* defined as $MID_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf} - LOW_{i,t-1}, 0.6\right)$, the group representing the performance in the highest quintile TOP is defined as $TOP_{i,t-1} = RANK_{i,t-1}^{Perf} - (LOW_{i,t-1} + MID_{i,t-1})$. The fractional ranks are based on the average of the monthly returns of the 12 month period prior to each quarter. The coefficients for the three performance groups represent the slope of the flow-performance relationship. The control variables include the lagged total risk of the fund, $Risk_{t-1}$, measured as the standard deviation of monthly fund returns from month t-1 to t-12, i.e. the year prior to each quarter. Fee_{t-1},is the lagged annual total management fee in %. Age_{t-1} is defined as the natural logarithm of the funds lagged age $ln(Age)_{I,t-1}$. Lagged flow,$Flow_{t-1}$, is net flow in the previous quarter. The lagged size, $Size_{t-1}$ is measured as the natural logarithm of fund *i's* total net asset value (MSEK) in prior to quarter *t*, $(lnTNA_{i,t-1})$. The regressions are run quarter by quarter using Pooled OLS with yearly fixed effects, clustered observations. P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

		Ethical funds			
		(A)	(A)	(B)	(B)
		Coefficient	*p-values*	Coefficient	*p-values*
Relative Performance	LOW_{t-1}	-0.1396**	(0.046)	-0.1177	(0.150)
	MID_{t-1}	0.0488**	(0.043)	0.0579**	(0.012)
	TOP_{t-1}	-0.1484*	(0.066)	-0.1828**	(0.055)
Fund Characteristics	$Size_{t-1}$	-0.0126**	(0.060)	-0.0103	(0.114)
	$Risk_{t-1}$	0.060	(0.240)	0.0704	(0.277)
	Age_{t-1}	-0.0261**	(0.032)	0.0308***	(0.001)
	$Flow_{t-1}$	-0.0888*	(0.087)	-0.0356**	(0.049)
	Fee_{t-1}	-6.3308***	(0.000)	-6.4137***	(0.000)
	D_{2001}	0.2264***	(0.000)	n/a	n/a
	D_{2002}	0.2052***	(0.000)	0.1969	(0.001)
	D_{2003}	0.2290***	(0.000)	-0.2152	(0.000)
	D_{2004}	0.2371***	(0.000)	-0.2255	(0.000)
	D_{2005}	0.2158***	(0.001)	-0.2087	(0.001)
	D_{2006}	0.2302***	(0.000)	n/a	n/a
	R^2	0.1539		0.1826	
	Observations	791		626	

Table 9: Regression results: Ethical and Conventional Funds– Pooled OLS with Yearly Dummies Allowing for the Intercept to Depend on the *Low*, *Mid* and *Top* Performance Groups

The table reports the Pooled OLS coefficient estimates with dummies allowing for varying intercepts for LOW, MID, HIGH for two separate regressions, one on a sample of conventional equity funds and ethical equity funds, using the net flow as the dependent variable in both regressions, $FLOW_{i,t}$. The dependent variable net flow is defined as ($TNA_{i,t}$ – $TNA_{i,t-1}$)*(1+$R_{i,t}$)/($TNA_{i,t-1}$), where $TNA_{i,t}$ is the total net asset value of fund *i* at quarter *t* and $R_{i,t}$ is the return of fund *i* in quarter *t.* The regression includes the independent variables *LOW*, *MID* and *HIGH*. In each quarter *t* funds are divided into these three unequal groupings based on their fractional performance rank,$RANK_{i,t-1}^{Perf}$, within their respective investment objective. For example, the LOW group represent the lowest quintile of performance within each investment objective, defined as $LOW_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf}, 0.2\right)$, the three middle performance quintiles are combined into one group *MID* defined as $MID_{i,t-1} = \min\left(RANK_{i,t-1}^{Perf} - LOW_{i,t-1}, 0.6\right)$, the group representing the performance in the highest quintile TOP is defined as $TOP_{i,t-1} = RANK_{i,t-1}^{Perf} - (LOW_{i,t-1} + MID_{i,t-1})$. The fractional ranks are based on the average of the monthly returns of the 12 month period prior to each quarter. The coefficients for the three performance groups represent the slope of the flow-performance relationship. The control variables include the lagged total risk of the fund, $Risk_{t-1}$, measured as the standard deviation of monthly fund returns from month t-1 to t-12, i.e. the year prior to each quarter. Fee_{t-1},is the lagged annual total management fee in %. Age_{t-1} is defined as the natural logarithm of the funds lagged age $ln(Age)_{I,t-1}$. Lagged flow,$Flow_{t-1}$, is net flow in the previous quarter. The lagged size, $Size_{t-1}$ is measured as the natural logarithm of fund *i's* total net asset value (MSEK) in prior to quarter *t*,, ($lnTNA_{i,t-1}$). The regressions are run quarter by quarter using Pooled OLS with clustered observations. P-values are reported in parenthesis to the right of the coefficients. Dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

		Conventional Funds		Ethical Funds	
		Coefficient	*p-value*	coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.2207**	(0.017)	-0.0552	(0.607)
	MID_{t-1}	0.0081	(0.667)	0.0720**	(0.047)
	TOP_{t-1}	0.1036*	(0.072)	-0.2347**	(0.028)
Fund Characteristics	$Size_{t-1}$	-0.0003	(0.885)	-0.0121*	(0.058)
	$Risk_{t-1}$	0.1090***	(0.000)	0.0782	(0.249)
	Age_{t-1}	-0.0329***	(0.000)	-0.0276***	(0.002)
	$Flow_{t-1}$	0.0094	(0.554)	-0.0378***	(0.009)
	Fee_{t-1}	-1.6759**	(0.018)	-5.9138***	(0.000)
Time Effect	$DLOW_{2001}$	-0.0251*	(0.085)	0.0759*	(0.066)
	$DLOW_{2002}$	-0.0441***	(0.006)	0.0139	(0.655)
	$DLOW_{2003}$	-0.0419**	(0.015)	-0.0145	(0.732)
	$DLOW_{2004}$	-0.0058	(0.730)	-0.0041	(0.874)
	$DLOW_{2005}$	0.0245	(0.266)	0.0381	(0.304)
	$DLOW_{2006}$	-0.0232	(0.226)	0.0525	(0.221)
	$DMID_{2001}$	-0.0023	(0.849)	-0.012	(0.572)
	$DMID_{2002}$	0.0028	(0.823)	-0.0185	(0.504)
	$DMID_{2003}$	0.0146	(0.251)	0.0245	(0.272)
	$DMID_{2004}$	-0.0155	(0.255)	0.0230	(0.401)
	$DMID_{2005}$	-0.0107	(0.485)	-0.0224	(0.357)
	$DMID_{2006}$	-0.0189	(0.119))	0.0083	(0.592)
	$DTOP_{2001}$	0.1363***	(0.000)	0.1744***	(0.000)
	$DTOP_{2002}$	0.1270***	(0.000)	0.1878***	(0.000)
	$DTOP_{2003}$	0.1435***	(0.000)	0.1919***	(0.000)
	$DTOP_{2004}$	0.1550***	(0.000)	0.2021***	(0.000)
	$DTOP_{2005}$	0.1422***	(0.000)	0.1934***	(0.000)
	$DTOP_{2006}$	0.1345***	(0.000)	0.1892***	(0.000)
	R^2	0.134		0.174	
	Observations	3894		905	

Table 10: Ethical funds– Pooled OLS with Quarterly Fixed Effects (With stable MS categories)

This table shows the coefficient estimates after investigating if migrations among risk categories affect the results and re-coding fund with missing ranks. The imputation rule used is that for each fund, the MS box that appears most frequently has been identified. Next, we have assumed that each fund is in the most frequent MS box throughout the sample period, i.e. as if it would be constant over time. This is done because investors are perhaps not likely to recognize yearly temporarily changes in risk categories. Hence, changes in Morningstar objective that occur for shorter periods of time are adjusted/recoded to the most frequently occurring Morningstar objective for each fund during the sample period. As evident from the table below, when using a more stable Morningstar objective for ethical funds, the coefficient for the *TOP* performing group is reduced to -0.1759, compared to the corresponding -0.2129 without the stable Morningstar objective. However, the negative sign on the coefficient is persistent and still statistically insignificant. Also for the *LOW* group the coefficient is reduced somewhat from -0.1844 to -0.1400 and the results are still significant at the 5% level.

P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

		Ethical Funds	
		Coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.1401**	(0.048)
	MID_{t-1}	0.0406	(0.143)
	TOP_{t-1}	-0.1759	(0.143)
Fund Characteristics	$Size_{t-1}$	-0.0140**	(0.034)
	$Risk_{t-1}$	-0.1348	(0.507)
	Age_{t-1}	-0.0206**	(0.024)
	Fee_{t-1}	-6.1754***	(0.000)
	$Flow_{t-1}$	-0.0338**	(0.028)
Time Effect	*D quarter*	Yes	
	R^2	0.1901	
	Observations	905	

Table 11: Ethical funds– Pooled OLS with Quarterly Fixed Effects (With stable MS categories and re-coding of funds with missing rank in a quarter due to few observations in a Morningstar Category)

This table shows the coefficient estimates after investigating if migrations among risk categories affect the results and re-coding fund with missing ranks. The imputation rule used is that for each fund, the MS box that appears most frequently has been identified. Next, we have assumed that each fund is in the most frequent MS box throughout the sample period, i.e. as if it would be constant over time. This is done because investors are perhaps not likely to recognize yearly temporarily changes in risk categories. After doing so, we identified the MS categories with less than three funds and re-coded those to the category that most closely resemble the original risk category. By doing so, we have no funds left with missing rank, and at the same time using stable MS categories. (The number of funds without a rank in a specific quarter before re-coding was 21). The funds that were not assigned a rank had not systematically higher average return compared to the rest of the sample of ethical funds (those results are reported in another table, showing both the MS category that funds with missing rank are in, and the average return compared to the rest of the sample of ethical funds).

The results indicate that the TOP group displays a less negative coefficient compared to the original results (-0.158 compared to -0.213). Noteworthy is that the significant levels are much lower than before, the MID and TOP group are highly insignificant, whereas the LOW group is barely significant at the 10% level.

P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

Ethical Funds			
		Coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.1168	(0.102)
	MID_{t-1}	0.0299	(0.267)
	TOP_{t-1}	-0.1579	(0.172)
Fund Characteristics	$Size_{t-1}$	-0.0138**	(0.037)
	$Risk_{t-1}$	-0.0388	(0.802)
	Age_{t-1}	-0.0220**	(0.013)
	Fee_{t-1}	-6.1049***	(0.000)
	$Flow_{t-1}$	-0.0340**	(0.027)
Time Effect	*D quarter*	Yes[a]	Yes[a]
	R^2	0.1941	
	Observations	925	

Table 12: Ethical Funds- Pooled OLS Quarterly Fixed Effects (No Risk Adjustment-and LOW, MID and HIGH performance groups)

This table shows the results from the pooled OLS regression for the sample of ethical funds without risk adjustment for the performance groups (i.e. the funds have not been categorized based on investment objective to control for differences in risk). The sample is still divided into the three groups *LOW*, *MID* and *HIGH* based on past twelve month mean return. Compared to the risk adjusted regression results, the coefficient for the *TOP* performing group becomes less negative, from -0.2129 to -0.1969. However, the non risk adjusted results still exhibit the counterintuitive negative sign for the *TOP* performing group and is statistically insignificant. The pattern for the *LOW* performance group is also the same as in the original results but somewhat more negative in the below regression.

P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

		Ethical Funds	
		Coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.2127**	(0.047)
	MID_{t-1}	0.0425*	(0.076)
	TOP_{t-1}	-0.1969	(0.167)
Fund Characteristics	$Size_{t-1}$	-0.0137**	(0.036)
	$Risk_{t-1}$	-0.0619	(0.665)
	Age_{t-1}	-0.0213**	(0.015)
	Fee_{t-1}	-6.1248***	(0.000)
	$Flow_{t-1}$	-0.0333**	(0.027)
Time Effect	*D quarter*	Yes	
	R^2	0.1975	
	Observations	925	

Table 13: Ethical funds- Pooled OLS with Quarterly Fixed Effects (No risk adjustment and five equal performance groups)

This table shows the coefficient estimates using the 12 month past average return to rank the funds without risk adjustment into Morningstar categories. Funds have been divided into five equal performance groups without risk adjustment (Low, Group2-4 and Top). The results show that the LOW group coefficient is larger negative compared to the original results. The TOP group is less negative compared to the original results (-0.156 compared to -0.2129 before), however not significant. The segmentation into more performance groups does not improve the results.

P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

		Ethical Funds	
		Coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.2426**	(0.021)
	Group 2	0.0759	(0.355)
	Group 3	0.0586	(0.363)
	Group 4	-0.0152	(0.841)
	TOP_{t-1}	-0.1560	(0.294)
Fund Characteristics	$Size_{t-1}$	-0.0137**	(0.040)
	$Risk_{t-1}$	-0.0623	(0.662)
	Age_{t-1}	-0.0221***	(0.008)
	Fee_{t-1}	-6.0906***	(0.000)
	$Flow_{t-1}$	-0.0338**	(0.027)
Time Effect	*D quarter*	Yes[a]	Yes[a]
	R^2	0.1981	
	Observations	925	

Table 14: Ethical Funds- No Risk Adjustment- Pooled OLS Quarterly Fixed Effects excluding 2002Q3, 2004Q1, 2006Q1-Q2 (i.e. the quarters with the highest negative correlations between *TOP* group and net Flow)

This table shows the regression results from the pooled OLS regression with quarterly fixed effects, excluding quarters where the *TOP* performing group show the highest sign of negative correlation with the variable *FLOW*. These quarters are identified by analyzing the correlation coefficient in Table 7 in Appendix. This is done to control for abnormalities in the data during specific time periods. As evident from the table, excluding these quarters reduces the magnitude of the negative coefficient for the *TOP* performing group to -0.1237 compared to -0.213 before. However, the coefficient is still negative and statistically insignificant.

P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

		Ethical Funds	
		Coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.2999**	(0.013)
	MID_{t-1}	0.0609**	(0.026)
	TOP_{t-1}	-0.1237	(0.417)
Fund Characteristics	$Size_{t-1}$	-0.0136**	(0.026)
	$Risk_{t-1}$	-0.1039	(0.490)
	Age_{t-1}	-0.0189**	(0.033)
	Fee_{t-1}	-6.2988***	(0.000)
	$Flow_{t-1}$	-0.0487***	(0.002)
Time Effect	*D quarter*	Yes	
	R^2	0.2154	
	Observations	763	

Table 15: Regression results: Ethical funds– Pooled OLS with Quarterly Fixed Effects (Permanent Morningstar Category changes)

This table shows the coefficient estimates when trying to capture permanent changes in risk categories. We have used an imputation rule that we change the Morningstar category only if a fund (after 2002) has a new Morningstar box for 2 consecutive years. Very few changes were made when using this imputation rule. If a fund changes risk category, the change is often permanent (i.e. if a fund change risk category in 2003 or 2004, in the majority of the cases it stays the same until 2006). There are times when a fund has three (or more) different objectives during the sample period, and then we have chosen the MS category which is most populated to reduce the effect of funds switching risk categories. As the results show, there are only small changes in the coefficients, the TOP group being less negative compared to the original results (-0.199 compared to -0.213). The LOW and MID group are of similar magnitude as before, as well as significance levels.

P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

		Ethical Funds	
		Coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.1804***	(0.005)
	MID_{t-1}	0.0515**	(0.046)
	TOP_{t-1}	-0.1986*	(0.054)
Fund Characteristics	$Size_{t-1}$	-0.0137**	(0.037)
	$Risk_{t-1}$	-0.0669	(0.667)
	Age_{t-1}	-0.0223**	(0.011)
	Fee_{t-1}	-6.2042***	(0.000)
	$Flow_{t-1}$	-0.0352**	(0.023)
Time Effect	*D quarter*	Yes[a]	Yes[a]
	R^2	0.1950	
	Observations	905	

Table 16: Ethical Funds Pooled OLS Quarterly Fixed Effects with Fee squared included

This table shows the results from the pooled OLS regression when including both the variable *FEE* and the variable *FEE squared*. The reason for including *FEE squared* is to investigate any non-linearity in the variable *FEE* given the relatively high values for the coefficient obtained in previous regression analyses presented in the thesis. As evident from the table below, including FEE squared does not indicate any exponential tendency in the variable *FEE*.

P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

		Ethical Funds	
		Coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.1840***	(0.005)
	MID_{t-1}	0.0550**	(0.034)
	TOP_{t-1}	-0.2137**	(0.040)
Fund Characteristics	$Size_{t-1}$	-0.0136**	(0.034)
	$Risk_{t-1}$	-0.0652	(0.675)
	Age_{t-1}	-0.0227***	(0.008)
	Fee_{t-1}	-5.2547	(0.254)
	Fee^2_{t-1}	-42.4967	(0.844)
	$Flow_{t-1}$	-0.0353**	(0.022)
Time Effect	*D quarter*	Yes	
	R^2	0.1960	
	Observations	905	

Table 17: Conventional funds– Pooled OLS with Quarterly Fixed Effects (re-coding of funds with missing ranks due to few observations in a Morningstar Category)

This table shows the coefficient estimates after changing Morningstar category for funds in categories with less than 3 funds since those funds are not assigned any rank. The number of conventional funds without any rank due to few observations in a Morningstar category was 13. The new category assigned was the one that most closely resemble the original category. All three performance groups, LOW; MID and TOP have coefficients of similar magnitude compared to the original results, the TOP group having a marginally larger positive coefficient compared to before.

P-values are reported in parenthesis to the right of the coefficients. Time dummies are denoted with a prefix "*D"*. Coefficients denoted *, **, *** are significance at the 10%, 5% and 1% level respectively. Coefficients are estimated from the fourth quarter 2000 to the fourth quarter 2006.

Conventional Funds			
		Coefficient	*p-value*
Relative Performance	LOW_{t-1}	-0.1206*	(0.057)
	MID_{t-1}	0.0253**	(0.036)
	TOP_{t-1}	0.0999*	(0.068)
Fund Characteristics	$Size_{t-1}$	-0.00045	(0.815)
	$Risk_{t-1}$	0.0690*	(0.089)
	Age_{t-1}	-0.0313***	(0.000)
	Fee_{t-1}	-1.6246**	(0.022)
	$Flow_{t-1}$	0.0147	(0.376)
Time Effect	*D quarter*	Yes[a]	Yes[a]
	R^2	0.1690	
	Observations	3902	

Table 18: Ethical Funds- Average Mean Return and Corresponding Average Net Flow–Funds with Missing Rank Compared to Funds assigned a Rank

This table shows the average monthly returns during the 12 month period preceding each quarter for funds that have missing ranks due to few observations in a Morningstar category and the corresponding average net flow. The results are reported for each quarter, along with the Morningstar category for funds with missing rank. The same results are reported for the rest of the sample of ethical funds that are assigned a rank. The difference between the average return for funds with missing rank compared to funds with rank are reported, along with the difference of average net flow. The bolded numbers in column "Diff Mean Return" indicate that the average mean return for funds with missing rank is higher than the average mean return for ranked funds. In 6 out of 13 quarters, this is the case, indicating that the average mean return for funds with missing rank in a specific quarter is not systematically higher compared to the rest of the sample. This indicate that the negative coefficient for the *TOP* performance group is not biased from that funds with missing rank has systematically higher average mean return compared to the rest of the sample.

Missing Rank					Ranked				Difference missing Rank vs. Rank	
Year	Quarter	Mean return	Morningstar Category	Net Flow	Year	Quarter	Mean return	Net Flow	Diff Mean return	Diff Net Flow
2000	4	4,19%	3	1,43%	2000	4	2,29%	8,93%	**1,903%**	-7,507%
2001	1	0,46%	3	1,07%	2001	1	-0,65%	8,11%	**1,112%**	-7,046%
2001	2	-2,53%	3	3,60%	2001	2	-2,12%	5,10%	-0,405%	-1,498%
2001	3	-1,55%	3	-4,74%	2001	3	-1,12%	-0,72%	-0,430%	-4,016%
2001	4	-3,56%	3	-0,85%	2001	4	-2,80%	0,85%	-0,764%	-1,699%
2002	1	n/a	n/a	n/a	2002	1	-1,01%	6,49%	n/a	n/a
2002	2	n/a	n/a	n/a	2002	2	-0,38%	7,59%	n/a	n/a
2002	3	n/a	n/a	n/a	2002	3	-2,67%	4,80%	n/a	n/a
2002	4	n/a	n/a	n/a	2002	4	-2,91%	-1,50%	n/a	n/a
2003	1	-4,18%	1&6	22,41%	2003	1	-3,69%	10,07%	-0,495%	12,338%
2003	2	-4,86%	1&6	2,51%	2003	2	-3,95%	2,92%	-0,917%	-0,403%
2003	3	-1,28%	1&6	3,97%	2003	3	-1,10%	4,10%	-0,182%	-0,128%
2003	4	1,08%	1&6	0,89%	2003	4	1,11%	2,97%	-0,034%	-2,082%
2004	1	n/a	n/a	n/a	2004	1	1,35%	7,07%	n/a	n/a
2004	2	n/a	n/a	n/a	2004	2	2,65%	4,16%	n/a	n/a
2004	3	n/a	n/a	n/a	2004	3	1,60%	1,06%	n/a	n/a
2004	4	n/a	n/a	n/a	2004	4	1,12%	1,53%	n/a	n/a
2005	1	0,21%	6	14,93%	2005	1	0,69%	2,23%	-0,483%	12,701%
2005	2	-0,05%	6	-1,29%	2005	2	0,55%	-0,83%	-0,601%	-0,461%
2005	3	1,20%	6	-1,99%	2005	3	1,41%	1,00%	-0,205%	-2,995%
2005	4	2,64%	6	-0,09%	2005	4	2,22%	1,19%	**0,421%**	-1,274%
2006	1	2,99%	6	5,78%	2006	1	2,52%	1,58%	**0,472%**	4,197%
2006	2	3,19%	6	-2,71%	2006	2	2,74%	-1,28%	**0,449%**	-1,429%
2006	3	1,44%	6	-0,97%	2006	3	1,31%	0,52%	**0,138%**	-1,492%
2006	4	0,73%	6	4,38%	2006	4	1,24%	4,53%	-0,509%	-0,154%