Chasing performance of mutual funds: Does trust matter?

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Abstract

I analyze the role of trust in the chasing behavior for performance in the market for mutual funds, using the data for 2208 mutual funds for an extended period of time: 1981 q1 - 2009 q3. The measure of trust that I am using is the scaled volatility of flows and it is correlated with the reputation, age of the mutual fund and with the shocks affecting the stock market. Using the methodology of Pooled OLS, I show that trust matters in the market for mutual funds, since trustworthy funds are less prone to lose flows when they report negative returns and more prone to receive flows when they perform well. I also bring evidence that trustworthy mutual funds are less sensitive to risk adjusted returns in the form of Fama-French alpha. This behavior is consistent with the expectation that investors who trust do not pay attention to superior performance, lacking the knowledge for that.

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Contents

1 Introduction

In the context of active management, an overwhelming research has been done that highlight the sensitivity of flows to performance. However, less is known about the exact reason why investors choose this kind of investment for their funds given the well-known fact that active management does not bring alpha. This paper takes as starting point the same idea as Gruber(2014) and Gennaioli et all(2013) analyzing the importance of trust in active management. Using an empirical analysis I try to unravel the effect of trust on the sensitivity of flows to performance in the market for mutual funds.

This paper brings a new way of accounting for trust in mutual funds in the form of scaled volatility of past flows using a rolling window of a year. With the help of this proxy for trust, I went on to analyze the differences in terms of flows between a Trustworthy versus a non-trustworthy mutual fund by employing a Pooled OlS regression where returns were interacted with the trust variable. The results show (see Figure 1) that the flows for a trustworthy mutual fund display a different path as response to performance. They are less sensitive to negative performance and more sensitive to a positive one, compared to the flows assigned to non-trustworthy mutual funds.

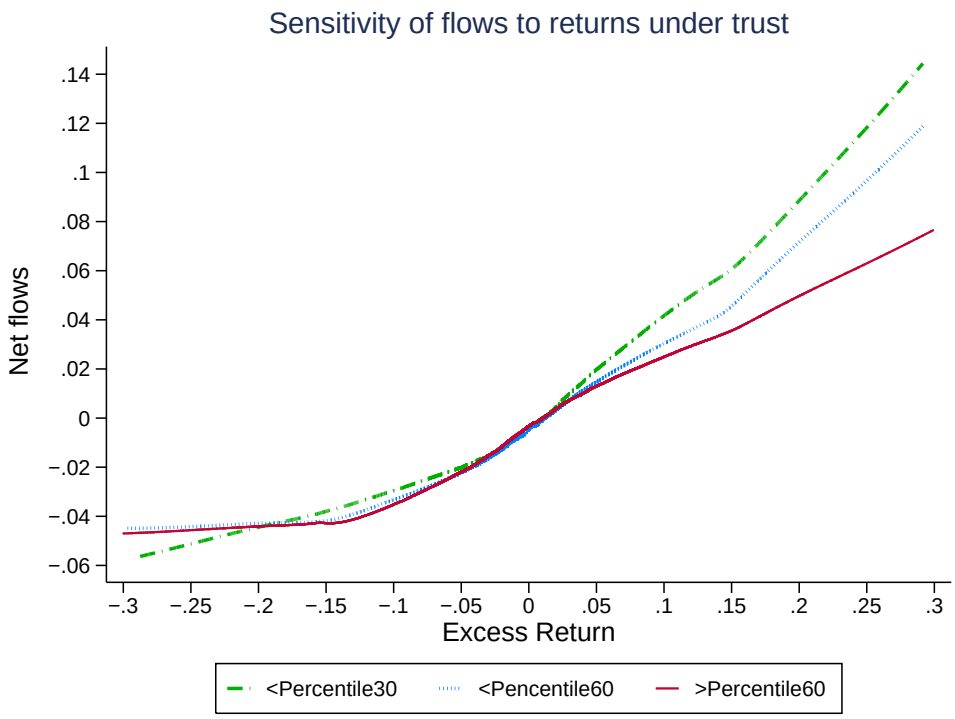

Figure 1: Comparison Trusthworthly funds vs Non-trustworthly ones

The question remains how do you trust a manager or in this case a mutual fund. One answer to this issue was provided by Kahneman who said that "We can believe an expert who admits uncertainty but cannot take expressions of high confidence at face value" [1]. However there is a strong divergence from this kind of judgment present in the financial markets since investors tend to trust managers that seem to be confident in their predictions. This judgment suggest that investors manifest stickiness to their manager, waiting for the delivery of the promised positive return even if it is in the uncertain future. The last statement suggests that a small volatility of flows will signal the most trustworthy mutual funds in the market. When designing the regression equation for trust, I considered the definition for trust given by Da and Teng (2004) (2004) in that trust is the accumulation of both trust in the performance of the adviser and also in his reliability in keeping the promise made. For this reason I considered of controlling for

[1] http://www.nytimes.com/2011/10/23/magazine/dont-blink-the-hazards-of-confidence.html?pagewanted=all

reputation and age of the mutual fund.

The results of the Fixed effects model estimation entail that the scaled volatility of flows decreases whenever the reputation and age of the mutual fund are higher and whenever the market faces a boom. This is consistent with the theoretical views stated earlier. As proxy for reputation I build an indicator that consists of the position in rank overtime based on returns and it seems that the proxy for trust decreases whenever there is a worsening in the rank of a performing mutual fund, increasing whenever there is a decrease with a position in the ranking for an under-performer. On the sensitivity of flows to excess returns I discover that trust influences the sensitivity of flows to returns. Trustworthy funds will have higher flows in general than non-trustworthy funds. This can be seen also in Figure 1 where the green line represents the most trustworthy mutual funds, while the red one the less trustworthy ones. Last but not least, flows directed towards trustworthy mutual funds are less sensitive to alpha compared to a non-trustworthy mutual fund. This suggests that investors placing their funds based on trust are less experienced since they are unable to distinguish superior performance, a result which is consistent with the layers of trust in theory.

1.1 Literature review

In the literature there were many who stated the relevance of trust in delegated management but those closer to this paper are the authors Guiso and Zingales (2008), Gennaioli, Shleifer and Vishny (2014) and Guercio and Reuter (2014).

While the authors Gennaioli, Shleifer and Vishny (2014) take a similar stance as I did, focusing on the bilateral relationship between trading partners, they provide the theoretical tool for how trust impacts investors' risk taking having as end result a distortion in the managers' incentives. They provide a theoretical model where they assume from the start that people are not fully knowledgeable about finance and prefer to hire managers they trust to invest for them since this will decrease their anxiety. Their main assumption is that trust originates from personal connections such as friendship, excluding the scenario where investors monitor the past performance of the managers. The authors conclude that investors end up taking on more risk because of diminished risk aversion coming from trust and that managers pander on the biased expectations of their clients, gaining fees even if their performance might be worse than the passive management. While this is a theoretical framework my paper provides an empirical analysis on the actual data in the mutual funds' market. While my results are similar to the ones given by the theoretical model, my starting point was different since I did not have data available for the separate bilateral flows between each mutual fund with all its investors. While the authors assumed that trust is equivalent with a decrease in risk aversion, I defined trust as a display of a certain stickiness of the trustor to the trustee that manifests in a small variance of the flows of the mutual fund.

On the other hand authors Guiso and Zingales (2008) provide an empirical estimation but take a different stance for trust such that it is targeted towards the stock market institution as a whole, assuming that when trust is high the probability assigned by the agent for the cheating

event is low. They show that indeed diminished trust is a critical factor for limited stock market participation. Hence their model is different in the way that they fail to treat the scenario of the lack of trust between participants and managers which might be the primordial cause that leads the investors to mistrust the financial market.

On the path of testing whether trust diminishes the managers' incentives to generate superior returns such as alpha, Guercio and Reuter (2014) established that actively managed funds sold to investors through brokers do under-perform index funds compared to direct sold funds. Moreover the authors provide evidence that indeed some actively managed funds under-perform but only a part of them in the form of broker sold funds. However this behavior is given by the fact that for these funds the agency problem is magnified since the investors choose to invest in these fund families because of trust and do not pay attention to superior performance. This paper resembles my analysis since it bring into question the relevance of trust in active management and its consequences in the performance of mutual funds. Compared to this paper, my paper takes another approach on how to detect trust in the mutual funds market and similarly it proves that indeed trust is strongly related to the disregard for alpha. Moreover both papers provide the answer that trust is the reason for investors' preference for active management instead of passive management.

One relevant concern that comes to mind when arguing for investors trusting their managers is whether the managers will care about the good performance of the funds they are managing. Fama(1980) stated that one should not be concerned about this since managers actions are driven by career concerns and hence markets will take care of this issues. However, Holmstrom (1999) proved that indeed the behavior of managers is driven by implicit career concerns, but it varies with time. Hence young managers tend to have a higher regard for performance in

absence of additional explicit incentives, but this diminishes with time. The argument for this happening was that with the accumulation of more observations about the ability of the agent, the principal is able to accurately assess his talent and hence award the appropriate wage for his effort. Gibbons and Murphy (1991) bring empirical evidence that indeed compensation contracts are stronger for managers that are close to retirement using data for CEO-shareholders agency-relationship. Following these concerns, I am taking the implicit and explicit incentives into account, by allowing the sensitivity of flows to returns to change depending on the age of the mutual fund.

Authors He and Xiong (2013) were also interested in the consequences coming from delegated asset management that became prevalent nowadays. They brought into question that since fund managers are usually rewarded based on performance, they might be tempted into delving into negative skewed risk, that entails low steady gains with high probability, but big negative returns with low probability. Since this kind of assets brings the manager positive compensation in the majority of cases and since the manager has limited liability, even in the case of a big loss the problem will be transferred to the principal which in this case is the fund families, the manager is highly tempted to invest in this kind of asset. In order to prevent managers targeting these strategies, the Bank of International Settlements initiated investment contracts that narrow investment mandates.

Guerrieri and Kondor (2012) on the other hand analyze what are the possible consequences of the fact that managers have career concerns. Their idea was that managers demand a premium when investing in risky assets. Uninformed managers try to replicate the decision of informed agents and know that their reputation will be hurt in two cases when they either invest in the risky asset that eventually defaults or they do choose to invest in the risk-free asset, when the

risky asset does not default. Hence managers will demand for a premium when investing and this leads to increased volatility of asset prices. This theoretical model gives a hint on why the asset prices volatility might decrease in some periods since when trust prevails, managers are less concerned about being perceived as high-ability experts. Although the current paper takes a different stance, investors do not necessarily punish bad performance right-away, it provides a similar evidence to what Guerrieri and Kondor (2012) proved that uninformed managers can still receive premium. The only difference in my approach is that this happends whenever the uninformed mutual fund is perceived as trustworthy.

Closely related to the moral hazard problem implied by the delegated management is the paper by Prendergast and Stole (1996). The authors put the emphases on the learning process of the manager, stating that young people tend to overreact on their private information to prove that they have ability while older managers tend to be conservative, preferring to stick to their previous decisions since they consider that a change of decision means that previously they received wrong signals and this can only mean that they have low ability. In terms of this framework, I will state that trust comes from a perceived good ability of the manager and because of this any bad performance will not be followed by immediate outflows since the trustor has confidence in future better performance preferring to stay with his manager.

The main objective of the current paper is to provide an empirical evidence that trust is relevant for the market of mutual funds since it influences the sensitivity of flows to past performance. One gap that this paper fills in the existing literature is the exact behavior of flows to returns under trust. The results entail that indeed trust makes a difference since trustworthy mutual funds have larger inflows under positive excess returns and smaller outflows under negative excess returns compared to non-trustworthy ones, but at the same time they will display lower

incentives to generate alpha. In section 2, I proceed to describe the dataset and the variables I used for the empirical exercise. In section 3, I document the methodology used to quantify bilateral trust and its effect on the flow-performance relationship. In section 4 and, I describe the estimation procedures and results. Finally in section 6, I conclude with the summary of my main conclusions.

2 Data

For the empirical analysis, I will make use of a quarterly dataset provided by Wharton Financial Institution Center that includes information of around 2209 mutual funds over the time-span:1981 q1 - 2009 q3. The dataset entails an unbalanced panel data on total net assets(TNA), monthly returns, monthly expenses and age of the mutual funds.

I will also make use of the information for the Fama French factors smb (Small minus big), hml(High minus Low) and market portfolio returns for the same timeframe[2] to estimate the four-factor alpha.

One issue that might come to mind at the beginning of the analysis is the fact that the data is made of an unbalanced panel and at each point in time certain funds will disappear and new ones will enter the market. Hence the data has survival bias and one can claim that funds that die tend to display a high variation in flows before disappearing. I will control for the survival bias in two ways. One approach will be replicate the results using a balanced panel which will be represented by all mutual funds that have survived each period between 2005q1 - 2008q3. Hence I will test also if the results still hold when eliminating survival bias. The second approach for testing whether the survival bias has skewed effect on the variance of flows will be to compute the correlation between status of survival of the mutual fund and the Trust variable of the mutual fund at the last period it appeared on the market. The correlation was of 0.0007 showing that the survival bias does not have an effect on Trust variable.

In the table from below, I detail the main variables that I will be using in this empirical exercise.

[2]The data for the factors was taken from here: http://mba.tuck.dartmouth.edu/pages/ faculty/ken.french/

2.1 Description of variables

Description of variables

Variable:	Description	Formula
$ExRet_{it}$	Excess return of fund i from quarter t	$= log(1 + return_{it} + \frac{1}{4}Expenses_{it}) - log(1 + MarketRet_t)$
$NetFlow_{it}$	Quarterly net percentage flow of fund i from quarter t	$= log(1 + \frac{TNA_{it} - TNA_{i,t-1}}{TNA_{i,t-1}} - capitalAppreciation_{it})$
Age_{it}	Age of fund i from quarter t	$= t - t_{(Fund_i\ first\ offer)}$
$PercPozRet_t$	Quarterly percentage of surviving funds with positive excess returns	
$StickyFlows_{(i,t)}$	The level of stickiness of flows coming in or out of the mutual fund i at quarter t	
$StickyReturns_{(i,t)}$	The level of stickiness of excess returns of mutual fund i at quarter t	
$StickyFlows^{norm}_{(i,t)}$	Stickiness of flows normalized with the average stickiness from quarter t	
$StickyReturns^{norm}_{(i,t)}$	Stickiness of excess returns normalized with the average stickiness from quarter t	
$Trust_{(i,t)}$	Variance of flows	
$Trust^{norm}_{(i,t)}$	Variance of flows netted out by the variance of returns	
$DummyTrust_{(i,t)}$	Dummy that equals 1 whenever the Variance of flows is less than the 25 Percentile from time t	
$PozRet_{(i,t)}$	Dummy that equals 1 whenever the $ExRet_{i,(t)}$ is greater than 0	

3 Methodology

Since the main purpose is to distinguish between trustworthy and non-trustworthy funds in terms of the flow-performance relationship, I will firstly begin by defining what I perceive to be a trustworthy mutual fund.

3.1 Definitions and Hypothesis

Definition: Trustworthy funds

I classify a fund as being trustworthy, at a certain point in time, if the variance of its previous four quarters of flows (equation (1)) is small enough (e.g. less than a certain threshold). The main intuition for considering this indicator as a proxy for trust is the fact that a trustworthy mutual fund will end up having a small variance of flows. This is because such a mutual fund manages to balance its assets across time for different reasons that are directly or indirectly related to trust (e.g. whenever the fund loses clients or some investments of existing clients are withdrawn, he manages to cover the gaps very fast within a quarter and this fast adjustment of liquidity can only mean that the mutual fund has high reputation and hence very likely of being trusted). When reputation is achieved, the mutual fund will always find new investors or make existing investors to increase their stake no matter the current performance. Hence the net flows of a trustworthy mutual fund will display a stable trend and this can only mean small standard deviation of flows over time.

The main consequence coming from this definition is that certain mutual funds will tend to either lose or gain trust across time, being classified as trustworthy or non-trustworthy, and trying to catch if this proxy for trust is influencing the sensitivity of the change in the flow of

funds to performance will be one of the main targets of this paper.

$$StickyFlows_{(i,t)} = E[\prod_{j=3}^{6}(Flow_{i,(t-j)} - E[Flow_{i,(t-j)}])] \tag{1}$$

However one must acknowledge the difference between a mutual fund that has a small standard deviation of funds but also small flows and one that has similar small standard deviation but high flows. I will control for this by normalizing the variance of flows for fund i at time t with the mean of the variance of flows of the whole surviving funds at period t (equation (2) and (3)).

$$StickyFlows^{norm}_{(i,t)} = \frac{StickyFlows_{(i,t)}}{\frac{\sum_{i=1}^{I_t} StickyFlows_{(i,t)}}{I_t}} \tag{2}$$

$$Trust_{(i,t)} = StickyFlows^{norm}_{(i,t)} \tag{3}$$

Moreover one can think that the variance of returns influences the variance of flows. For instance one can notice a small variance of flows but one can claim that this is not the result of the trustworthiness of the fund but rather the result of a small variance in returns. For this reason, I will provide robustness to my results by netting out the variance of flows with the variance of returns and hence obtain $Trust^{norm}$.

$$StickyReturns_{(i,t)} = E[\prod_{j=3}^{6}(ExRet_{i,(t-j)} - E[ExRet_{i,(t-j)}])] \tag{4}$$

$$StickyReturns^{norm}_{(i,t)} = \frac{StickyReturns_{(i,t)}}{\frac{\sum_{i=1}^{I_t} StickyReturns_{(i,t)}}{I_t}} \tag{5}$$

$$Trust^{norm}_{(i,t)} = \frac{StickyFlows^{norm}_{(i,t)}}{StickyReturns^{norm}_{(i,t)}} \tag{6}$$

Next I report my assumptions about the chasing after performance behavior specific to trustworthy mutual funds:

Hypothesis 1.

Net Flows react less sensitive to negative past performance for those funds that are perceived as trustworthy.

Motivation: Once investors trust their manager they will not rush and part ways once own manager under-performs. This is because these investors have as reference point future returns and they not necessarily pay attention to the present, but rather have confidence that in the future their manager will deliver the promised returns.

Hypothesis 2.

Trustworthy mutual funds have higher net flows as response to positive past returns compared to non-trustworthy mutual funds.

Motivation: Once the trustee, in this case the manager, delivers his promised positive return, his trustors, in this case the investors, overreact on the good news and invest more than they would have invested in another mutual fund that they did not trust. The accomplishment of positive returns is a signal to the trustors that the manager is on the path of achieving the promised return and hence they want to earn more and that is why they overreact.

Hypothesis 3.

Diminished trust leads to less investment in mutual funds, defined as flow of funds, even when returns are high.

Motivation: This conjecture comes as an outcome of the above hypothesis. Once investors lose trust in their manager, they will react more to negative returns and invest less under positive returns compared to a market where most mutual funds are trustworthy.

3.2 Model for flow-performance relationship

In order to test each of the hypothesis previously stated, I designed the following regression equations in order to check if the variable Trust has a positive or negative impact on the sensitivity of flows to performance. In all specifications I allowed for trust to have both a level effect and a squared effect on the sensitivity of flows to returns. Since the authors bring evidence that Chevalier and Ellison (1997) the age of the mutual funds affects the sensitivity of flows to performance I chose to include age in the regressions as well.

Specification 1. Unbalanced panel using Trust as Variance of flows

$$\begin{aligned} NetFlow_{it} =& \alpha + \beta_1 \cdot ExRet_{i,(t-1)} + \beta_2 \cdot Trust_{i,t} + \beta_3 \cdot Trust_{i,t} \cdot ExRet_{i,(t-1)} \\ &+ \beta_4 \cdot ExRet^2_{i,(t-1)} + \beta_5 \cdot Trust_{i,t} \cdot ExRet^2_{i,(t-1)} + \gamma_1 \cdot Age_{it} \\ &+ \gamma_2 \cdot Age_{it} \cdot ExRet_{i,(t-1)} + \tau_t + \epsilon_{it} \end{aligned} \tag{7}$$

Specification 2. Unbalanced panel using $Trust^{Norm}$

$$\begin{aligned} NetFlow_{it} =& \alpha + \beta_1 \cdot ExRet_{i,(t-1)} + \beta_2 \cdot Trust^{Norm}_{i,t} + \beta_3 \cdot Trust^{Norm}_{i,t} \cdot ExRet_{i,(t-1)} \\ &+ \beta_4 \cdot ExRet^2_{i,(t-1)} + \beta_5 \cdot Trust^{Norm}_{i,t} \cdot ExRet^2_{i,(t-1)} + \gamma_1 \cdot Age_{it} \\ &+ \gamma_2 \cdot Age_{it} \cdot ExRet_{i,(t-1)} + \tau_t + \epsilon_{it} \end{aligned} \tag{8}$$

Specification 3. Balanced panel using $Trust$

$$\begin{aligned} NetFlow_{it} =& \alpha + \beta_1 \cdot ExRet_{i,(t-1)} + \beta_2 \cdot Trust_{i,t} + \beta_3 \cdot Trust_{i,t} \cdot ExRet_{i,(t-1)} \\ &+ \beta_4 \cdot ExRet^2_{i,(t-1)} + \beta_5 \cdot Trust_{i,t} \cdot ExRet^2_{i,(t-1)} + \gamma_1 \cdot Age_{it} \\ &+ \gamma_2 \cdot Age_{it} \cdot ExRet_{i,(t-1)} + \tau_t + \epsilon_{it} \end{aligned} \tag{9}$$

Specification 4. Balanced panel using $Trust^{Norm}$

$$\begin{aligned} NetFlow_{it} =& \alpha + \beta_1 \cdot ExRet_{i,(t-1)} + \beta_2 \cdot Trust^{Norm}_{i,t} + \beta_3 \cdot Trust^{Norm}_{i,t} \cdot ExRet_{i,(t-1)} \\ &+ \beta_4 \cdot ExRet^2_{i,(t-1)} + \beta_5 \cdot Trust^{Norm}_{i,t} \cdot ExRet^2_{i,(t-1)} + \gamma_1 \cdot Age_{it} \\ &+ \gamma_2 \cdot Age_{it} \cdot ExRet_{i,(t-1)} + \tau_t + \epsilon_{it} \end{aligned} \tag{10}$$

Where: τ_t represent time effects for quarter 1981-q2 to 2009-q3 [3].

The main variables of interest are the interaction terms of the past excess return $ExRet_{i,(t-1)}$ with the variable $Trust_{i,t}$.

Moreover in order to test the sensitivity of flows to superior risk-adjusted performance, mainly alpha, I employ the following specification for both unbalanced and balanced dataset.

$$\begin{aligned} NetFlow_{it} =& \alpha + \beta_1 \cdot ExRet_{i,(t-1)} + \beta_2 \cdot Trust_{i,t}^{Norm} + \beta_3 \cdot Trust_{i,t}^{Norm} \cdot ExRet_{i,(t-1)} \\ &+ \beta_4 \cdot Alpha_{i,(t-1)} + \beta_5 \cdot Trust_{i,t}^{Norm} \cdot Alpha_{i,(t-1)} + \gamma_1 \cdot Age_{it} \\ &+ \gamma_2 \cdot Age_{it} \cdot ExRet_{i,(t-1)} + \tau_t + \epsilon_{it} \end{aligned} \tag{11}$$

3.3 Model of Trust

In this chapter, the main focus will be on the variable Trust and whether this is a good proxy for describing the trust relationship between investors and the mutual funds. One important step will be to check which are the main predictors of this variable and also to see where is the persistence in this variable coming from.

As previously described in the definition of trust given earlier, trust is given by a low level of the standard deviation of flows over a rolling window of 4 quarters. Because of data restrictions, I was unable to obtain the specific flows coming from separate individual investors to a certain fund manager, having only the amount of the whole investments managed by a certain fund.

Hence a small standard deviation of the flows assigned to a specific mutual fund can result from different scenarios:

- Can happen that at certain point in time some investors decide to withdraw their investments from a certain mutual fund, but the amount of flows lost is compensated by the

[3] The first quarter of 1981 is reserved for the intercept and it will be the base year NetFlow

new inflow of funds coming either from existing investors or from new investors so that the end of quarter overall flows are unchanged. The reasons for which certain investors withdraw their funds from the mutual fund cannot be related to a substantial evidence of inability of the mutual fund coming from a record of noteworthy bad performance, because if it was this case a herding type of behavior coming from media will prevent other investors from either increasing their share or choosing this mutual fund as their provider of investment advice. Hence the inter-quarter compensation of lost funds with new ones signals that the mutual fund is highly capable of managing its assets, suggesting that investors that withdraw their funds are simply doing this for personal reasons not related necessarily to the reputation of the fund, since one can find other investors with which to cover the losses.

- There is a majority of investors that decide to keep their funds unchanged (I will name the flows coming from this type of investors "sticky flows"), while there are some noise investors for which their change in flows assigned to the specific manager cancels each other out. The "sticky flows" phenomenon can have different explanations: either investors trust their managers and hence they are not interested necessarily about the current performance, having a rather long-term interest in the promise of the manager to obtain a certain return. The trust phenomenon can be perceived also as a manifestation of a irrational behavior of the investors betting on the manager no matter if they see bad performance, refusing to move their investments.

Of course there can be other scenarios that can lead to small standard deviation of flows, but given the lack of data I will try to control for the first scenario by investigating the behavior of the Trust variable to certain variables. The first scenario entails the fact that the proxy for Trust explains the fact that somehow certain mutual funds keep their assets under management

unchanged, signaling a good management of shifts in the assets, which is desirable since fast and recurrent swings in the assets induce loss of confidence of investors. Meanwhile the second scenario entails the phenomena of trust. This reminds of the concept of trust where the trustor pays upfront something taking into account the promise of the trustee that he will return the asset later. This might determine the trustor to freeze his actions until the stated delivery date and ignore small either positive or negative evolution of returns. In the upcoming paragraph, I will try to check if a small standard deviation of flows provides a good proxy for Trust.

Specification 1. Unbalanced Panel. Explanatory variables for Trust.

$$\begin{aligned} Trust_{it} =& \alpha + \sum_{t=1}^{4}(\beta_t^1 \cdot Rank_{i,t} + \beta_t^2 \cdot Rank_{i,t}^2 + \lambda_t \cdot Age_{i,t} + \gamma_t \cdot Crisis_{i,t} + \phi_t \cdot Boom_{i,t} \\ &+ \xi_t \cdot SmallShock_{i,t} + \rho_t^1 \cdot ExRet_{i,t} + \rho_t^2 \cdot ExRet_{i,t}^2 + \varsigma_t^1 \cdot MarketRet_{i,t} \\ &+ \varsigma_t^2 \cdot MarketRet_{i,t}^2) + \tau_t + \epsilon_{it}) \end{aligned} \tag{12}$$

Specification 2. Unbalanced panel. Explanatory variables for $Trust^{Norm}$.

$$\begin{aligned} Trust_{it}^{Norm} =& \alpha + \sum_{t=1}^{4}(\beta_t^1 \cdot Rank_{i,t} + \beta_t^2 \cdot Rank_{i,t}^2 + \lambda_t \cdot Age_{i,t} + \gamma_t \cdot Crisis_{i,t} + \phi_t \cdot Boom_{i,t} \\ &+ \xi_t \cdot SmallShock_{i,t} + \tau_t + \epsilon_{it}) \end{aligned} \tag{13}$$

In theory, trust should be related to the fund's reputation in the market. Hence, one first predictor that comes to mind is the age of the fund since a long-lived fund, having survived for more years, is more likely to inspire trust to investors because of the status gained on the market through time and because of the size of the assets under management. People tend to herd by investing their funds towards mutual funds that are well known and have high endowments.

As specified in both specifications in the form of equation (12) and (13), I chose to include several potential predictors in order to verify if the variable I designed to be a proxy for Trust

has the expected behavior given certain events. The main interest will be to check whether this variable is able to catch more than short-term high performing funds.

One can notice that there is a difference between the two specifications for trust in the way that specification 1 given by equation (12) includes also the past excess returns and the past market return. I did not include these predictors in the second specification because it would cause endogeneity since $Trust^{Norm}$ has the excess returns in the denominator.

Another predictor meant to control for the mutual funds' reputation is the variable Rank. I constructed this variable so that it classifies all surviving mutual funds for each quarter in descending order and makes an average of the ranking held across time. In short, the variable Rank represents a status on performance from the first observation until the last. From the regression (12) one can notice that I set the variable Rank to have a quadratic impact on the variable Trust. One targeted effect by using this variable will be to actually test if the variance of flows stays constant or it decreases when a slight downgrade of position happens for mutual funds that have had a sustained good performance. Despite this, the reverse should happen , the variance of flows should increase, if a downgrade incurs for a mutual fund that was a consistent under-performer.

One interpretation for this effect is that for highly performing mutual funds, that have a low value for Rank, investors do not shift their position by withdrawing their funds right-away, suggesting that these investors direct own investments depending on other reasons beside short-term profit. However the situation is different compared to the mutual funds positioned in the lower positions in ranking, that display sustained under-performance over time compared with their competitors, since flows are very sensitive to downgrading for this kind of mutual funds. One interpretation for this reaction might be that these mutual funds are having noisy investors as clients, clients that are targeting only short-term performance willing to risk investing with

an non-performer in hope of getting short-term positive excess return.

$$Rank_{i,T} = \frac{\sum_{t=1}^{T} \frac{position_(i,t)}{I_t}}{T} \tag{14}$$

where: $position_{(i,t)}$ is the position in ranking of mutual fund i at time t where all surviving funds at time t were ranked in descending order based on their Excess Return from time t

Hence, the variable Rank entails the evolution overtime of mutual funds in contrast to their competitors. For instance, this variable will be able to discriminate between a mutual fund that was always placed first in terms of performance and another fund that was sometimes first but other times was in the bottom of the ranking. Moreover this variable accounts for the fact that each period there can be different mutual funds on the market since the position is divided by the number of mutual funds at time t I_t and at the same time it discriminated between being first from a pool of 100 funds and being first from a pool of 1000 funds for the same reason stated earlier. For instance, being first from a pool of 1000 mutual funds is considered to be better than being first from a pool of only 100 mutual funds, hence Rank will have a lower value for the first scenario. The variable should be interpreted in the following way: the smaller the value of Rank, the better performing was the fund overtime compared to his rivals and an increase in this variable by one unit will mean that the Mutual fund went lower in the ranking.

Lower values of the Rank variable can be thought as a display of both superior ability and reliability of the fund. Highly ranked mutual funds, with lower value for Rank variable, are those funds that in time manage to accomplish returns that are superior to other funds offering evidence for ability, but also reliability because of the consistency.

In addition, going even deeper this variable can be a good proxy for reputation of a certain fund. The usage of this variable for this purpose was also sustained by Daniel Kahneman who said that "if individual differences in any one year are due entirely to luck, the ranking of in-

vestors and funds will vary erratically and the year-to-year correlation will be zero. Where there is skill, however, the rankings will be more stable. The persistence of individual differences is the measure by which we confirm the existence of skill among golfers, orthodontists or speedy toll collectors on the turnpike." [4].

Other variables of interests are three dummies that control for the fact that the market is hit by a negative or positive shock, represented by Crisis, Small Shock and Boom dummies. Checking whether Trust variable is impacted by these events that are affecting the overall market not just one mutual fund is important since between overall mistrust and bilateral mistrust is a tight relationship. From theoretical grounds, Trust should increase when a boom hits the market and decrease under Recession.

$$\%PozRet_t = \frac{\sum_{i=1}^{I_t} \mathbb{1}_{(Exret_{it}>0)}}{I_t} \quad (15)$$

[5]

$$Crisis_t = \begin{cases} 1, & \text{if} \quad \%PozRet_t < 0.4 \\ 0, & \text{otherwise} \end{cases} \quad (16)$$

$$Boom_t = \begin{cases} 1, & \text{if} \quad \%PozRet_t >= 0.55 \\ 0, & \text{otherwise} \end{cases} \quad (17)$$

$$SmallShock_t = \begin{cases} 1, & \text{if} \quad \%PozRet_t \in [0.4, 0.5) \\ 0, & \text{otherwise} \end{cases} \quad (18)$$

[4] http://www.nytimes.com/2011/10/23/magazine/dont-blink-the-hazards-of-confidence.html?pagewanted=all

4 Estimation Methodology

Beforehand, there are a number of issues related to the data in hand. Since the observations are representing a panel, one might think to eliminate the individual time-unvarying effects if they prove to be correlated with the unobserved error term. However even if this is the case, that individual effects are not random, one cannot use Fixed Effects nor Random Effects to estimate the model for the flow-performance relationship (7), since the explanatory variable Trust is made of past values of the dependent variable NetFlows and the demeaned operation required by the two methods, Fixed Effects and Random Effects, will introduce endogeneity to the estimation. This is because the demeaned explanatory variables is correlated to the demeaned unobserved errors.

I employed a Hausman Test to check whether these individual effects are random for the regression model of market participation. The test methodology is the one of simply comparing the estimations for Fixed Effects and Random Effects and the results show that these estimations prove not to differ systematically. Hence one can safely use Pooled OLS with clustered standard errors for the model of market participation, which is what I did.

Nevertheless, the aforementioned issues of using Fixed Effects do not apply for the model of trust set in the regression equations (12) and (13), since the demean of the variables will not introduce endogeneity, because all the RHL variables chosen are not correlated with Trust variable. Hence I will employ fixed effects when estimating the model for trust.

In the next section, I will focus mainly on the interpretation of only one of the specifications for the two models since the other specifications give similar results.

5 Results and Interpretation

The estimation results for all the specifications for the sensitivity of flows to returns can be found in Table 1. As previously stated, I estimated this model using a pooled OLS, since the individual effects prove to be random after computing the Hausman Test. The standard errors were clustered on the id of the flow, a common practice when dealing with panel data allowing for the possibility that flows are correlated within the mutual fund. Moreover even though I do not report the time dummies one should keep in mind that they were included in the regressions.

First thing one can notice from Table 1 is that the change in flows is responsive to the change in excess return at least in level and for some specifications even in squared value. This result is confirming a well-known fact that flows are driven by performance in the market for mutual funds.

As previously stated, in order to provide a consistent analysis, I also report the results for the model of sensitivity of flows to returns using a sample free from survival bias which correspond to the last two specifications(column 3 and 4). Given the fact that because of the transformation into a balanced panel, I lose most of the data, the results have only a role of providing robustness, so that one cannot bring into question the effect of survival bias.

The main results I was looking for, the impact of trust on the sensitivity of flow of funds to net returns, are given in the 4th and 5th rows. The interpretation is the following: for an increase in the variance of flows (row 4) or netted variance of flows (row 5), the percent of flows coming into the mutual fund decreases, holding constant the excess return. In other words, an increase in excess returns brings a lower increase in flows for a non-trustworthy mutual fund. This result is consistent with hypothesis 2.

In Table 2[6] one can notice the effect trust has on the sensitivity of flows to superior per-

[6]The regression includes also time dummies but they are not displayed

Table 1: Model for flow-performance sensitivity relationship. Pooled OLS - clustered standard errors

Sensitivity of flows to excess returns under trust				
Specification:	(1)	(2)	(3)	(4)
Dependent variable:	$NetFlow_{(it)}$	$NetFlow_{(it)}$	$NetFlow_{(it)}$	$NetFlow_{(it)}$
Sample:	Unbalanced Panel		Balanced Panel	
$ExRet_{(i,t-1)}$	0.334^{***}	0.323^{***}	0.603^{***}	0.591^{***}
	(0.014)	(0.014)	(0.091)	(0.088)
$Trust_{(i,t)}$	0.0005^{**}	0.0002^{***}	-0.0006	0.0001
	(0.0002)	(0.00005)	(0.0008)	(0.)
$ExRet^2_{(i,t-1)}$	0.455^{***}	0.439^{***}	1.11^{*}	0.949
	(0.075)	(0.070)	(0.66)	(0.624)
$Trust_{(i,t)} \cdot ExRet_{(i,t-1)}$	-0.014^{***}	-0.003^{**}	-0.01	-0.006
	(0.003)	(0.001)	(0.011)	(0.008)
$Trust_{(it)} \cdot ExRet^2_{(i,t-1)}$	-0.040^{**}	-0.029^{**}	-0.377^{**}	-0.473^{**}
	(0.018)	(0.013)	(0.186)	(0.242)
$Age_{(i,t-1)}$	-0.0003^{***}	-0.0003^{***}	-0.0001	-0.0001
	(0.00004)	(0.00004)		
$Age_{(i,t-1)} \cdot ExRet_{(i,t-1)}$	0.007^{***}	0.007^{***}	-0.007^{*}	-0.007^{*}
	(0.0005)	(0.0005)	(0.002)	(0.002)
Sample size	68,269		5,389	
R^2	0.0516		0.0263	0.0260

formance (row 5), in other words to mutual funds that obtain alpha. Since both estimates are positive this means mutual funds with higher level of mistrust gain more flows compared to trustworthy mutual funds, for the same increase in returns. It seems that trustworthy mutual funds have a comparative advantage in terms of flows whenever they provide good Excess Return, but not so much when they provide good superior performance alpha. This result is consistent with the belief that investors are irrational and lack knowledge in financial market and do not exactly follow if the Mutual fund brings superior performance gaining alpha or not. I obtained the four-factor alpha using the approach of Fama and Macbeth (1973) where in order to get the observation at time t for each find i I used the quarterly returns over the previous five quarters.

In order to test hypothesis 1, I designed a regression that tests whether there is a difference in the sensitivity of flows to positive returns and negative returns. The main target is to check if trust has an effect in this context. In Table 3[7] one can notice that indeed trust induces a difference between a positive return and a negative one in terms of flows. Whenever the return is positive trust adds a positive term of 0.128 (row 6, column 2) in the sensitivity of flows, while it subtracts 0.068 whenever there is a negative return (row 4, column 2). All in all the increase in flows is higher for positive excess returns, while the decrease in flows under a negative return is lower when returns are lower. This satisfies the hypothesis 1 stated in the methodology.

In Table 4[8] are displayed the results for the Model of Trust for both specifications using the unbalanced panel data. Details about the model specifications were given in the Methodology section. In the following, I will interpret the results for the first specification only, hence when trust is equal with the variance of flows, since the results for the second specification are very

[7] the regression includes the time dummies as well, but in order to save space, I have left them out

[8] in the table are displayed only the estimates that are significant. Moreover the regression includes the time dummies as well but in order to save space I have left them out

Table 2: Model for flows' sensitivity under superior performance. Pooled OLS - clustered standard errors

Sensitivity of Flows to alpha given trust		
Specification:	(1)	(2)
Dependent variable:	$NetFlow_{(it)}$	$NetFlow_{(it)}$
Sample:	Unbalanced Panel	Balanced Panel
$ExRet_{(i,t-1)}$	0.172^{***}	0.349^{***}
	(0.013)	(0.087)
$Trust_{(i,t)}$	0.0002^{***}	-0.0001
	(0.00005)	(0.0003)
$Trust_{(i,t)} \cdot ExRet_{(i,t-1)}$	-0.004^{***}	0.001
	(0.001)	(0.011)
$Alpha_{(i,t-1)}$	0.518^{***}	1.38^{***}
	(0.036)	(0.347)
$Trust_{(i,t)} \cdot Alpha_{(i,t-1)}$	0.005^{**}	0.076^{*}
	(0.002)	(0.044)
$Age_{(i,t-1)}$	-0.0003^{***}	-0.00005
	(0.0004)	(0.0001)
$Age_{((i,t-1))} \cdot ExRet_{(i,t-1)}$	0.001^{***}	-0.006^{**}
	(0.0005)	(0.003)
Sample size	68,268	3,850
R^2	0.0643	0.0450

similar.

At one first glance one can notice that the variable of interest Trust is negatively correlated with variable Rank in level (row 1-4) and it is positively correlated with the squared term of Rank(row 5-9), no matter the specification. This means that a diminished position for a fund that is situated in the upper part of the ranking, given by an increase with one unit of lagged variable Rank, increases the stickiness of flows with -5.378 units, which means that the trust-worthiness assigned to the mutual fund increases. This circumstance translates to the following causality: for trustworthy funds a diminished position does not cause the investor to withdraw his investments from the mutual fund. Meanwhile the squared term of Rank variable brings a different effect. An increase with one unit for an already high level of Rank which indicates a long-lasting under-performer will increase the variance of flows by 5.05 units (row 5) which is a proxy for an increase in the mistrust of the investor in the mutual fund.

Going further in row 9 there is the effect of age over Trust and the results are consistent with the expectation that trust is increasing by 0.065 units when the fund's age increases by one year. Moreover the presence of a strong positive shock which is indicating a Boom in the market, increases the level of trust by 0.178 units, while a strong negative shock, which is indicating a Recession, decreases the level of trust by 0.081, which again is the expected result.

Moreover in order to better notice the results concerning the three assumed Hypothesis, I designed a graph (see Figure 1) using the Lowess local regression method, which is a semi-parametric approach, where the sensitivity of the flow-return relationship was compared for three degrees of trust. The most trustworthy mutual funds will be the ones represented by the green line, which takes into account all mutual funds that have the variance of flows lower than the 30th percentile for a certain moment in time, while the less-trustworthy mutual funds, that have the variance of flows bigger than the 60th percentile, will be represented by the red line.

Table 3: Hypothesis 1. Pooled OLS estimation - clustered standard errors

Specification Hypothesis 1		
Dependent variable:	NetFlow(i,t)	Netflow(i,t)
Specification:	(1)	(2)
Sample:	Unbalanced panel	
$DummyTrust_{i,t}$	-0.004^{**}	-0.005^{***}
	(0.001)	(0.001)
$PozRet_{i,t-1}$	0.009^{***}	0.009^{***}
	(0.001)	(0.001)
$ExRet_{i,t-1}$	0.206^{***}	0.201^{***}
	(0.024)	(0.024)
$ExRet_{i,t-1} \cdot DummyTrust_{i,t}$	-0.046	-0.068^{*}
	(0.041)	(0.038)
$ExRet_{i,t-1} \cdot PozRet_{i,t-1}$	0.156^{***}	0.223^{***}
	(0.036)	(0.039)
$ExRet_{i,t-1} \cdot PozRet_{i,t-1} \cdot DummyTrust_{i,t}$	0.138^{*}	0.128^{*}
	(0.081)	(0.076)
Sample size	78,670	78,670
R^2	0.0548	0.0548

Table 4: Model of trust. Fixed Effects Estimation - clustered standard errors

Specification Model for Trust		
Dependent variable:	Trust(i,t)	Trust(i,t)
Specification:	(1)	(2)
Sample:	Unbalanced panel	
rank(i,t-6)	-5.378^{***}	-4.902^{**}
	(1.28)	(2.13)
rank(i,t-5)	-3.122^{*}	-0.663
	(1.61)	(2.13)
rank(i,t-4)	-4.372^{***}	1.263
	(1.84)	(3.18)
rank(i,t-3)	-20.216^{***}	-1.45
	(7.26)	(3.16)
ranksq(i,t-6)	5.050^{***}	2.90
	(1.71)	(2.12)
ranksq(i,t-5)	2.945^{**}	-0.367
	(1.38)	(2.08)
ranksq(i,t-4)	4.218^{**}	-3.10
	(7.41)	(3.12)
ranksq(i,t-3)	-0.681	19.365^{***}
	(2.94)	(7.41)
age(i,t-6)	-0.065^{*}	-0.116
	(0.083)	(0.093)
age(i,t-4)	-0.056^{***}	-0.167^{**}
	(0.019)	(0.083)
boom(t-6)	-0.178^{***}	-0.22^{*}
	(0.043)	(0.121)
boom(t-4)	-0.071	-0.353^{**}
	(0.050)	(0.143)
crisis(t-6)	-0.081^{*}	0.215^{**}
	(0.043)	(0.099)
smallShock(t-6)	-0.033	0.378^{***}
	(0.036)	(0.087)
smallShock(t-5)	0.016	0.282^{**}
	(0.048)	(0.120)
Sample size	60,798	60,798
R^2	0.0355	0.0122

All mutual funds in between are given by the blue line. In other words, some mutual funds can be classified in different categories of trust based on the variance of their funds. Hence the mutual fund i at time t will be treated different from the same mutual fund i from time T if the variance of flows falls in different percentiles.

The picture is very useful since one can notice the fact that for positive past excess returns the net flows are positive and increasing. Hypothesis 1 is satisfied since under negative returns the net flows decrease less for the most trustworthy mutual funds. Moreover, Hypothesis 2 is also verified since whenever under positive returns the net flows are largest when the mutual funds are most trustworthy (green line). Last but not least, one can easily see that there even under high returns there is diminished market participation when trust decreases by simply comparing the three lines and checking that based on the level of trust the net flows have a different slope and intercept.

Hence the results entail that investors are reluctant in switching managers even if they might observe bad performance of their managers. For this reason managers that know this about their investors might be less incentivized to outperform the market and flow being less responsive to performance. Hence the results provide an explanation for why active management does not generate alpha and why investors continue to choose it instead of passive management. The second observation will be that this paper was able to identify whether a decrease in the market participation can occur. Particularly this phenomenon is attributed to bilateral lack of trust rather than generalized lack of trust in the institutions as a whole.

Despite these outcomes, one has to be aware of the fact that the available dataset entails only the overall level of funds of a certain hedge fund in a certain period of time.

6 Conclusions

Based on my results, I can conclude that trust matters in the market of mutual funds, trustworthy mutual funds gathering more flows than their competitors. Making use of a proxy for trust in the place of scaled volatility of flows, I show that Trustworthy mutual funds are more prone to gain new flows, whenever they obtain positive returns, and to lose less flows when they generate negative returns. This has interesting consequences on the market since any disturbing news about a mutual fund can have significant effect on its trustworthiness and hence on its future flows. Moreover this paper provides evidence that the trust awarded by investors is not necessarily the result of a proper acknowledgement of the ability of his manager. This is because flows assigned to trustworthy mutual funds are less sensitive to alpha. This brings into question the theory that investors that choose active management do it because of other reasons besides superior performance of the manager.

For future research it would be an interesting exercise to perform the same analysis if the dataset was richer and contained information for the flows coming from each individual investor of the mutual fund. Richer results could be obtained if the dataset was not restricted, since it will enable a more comprehensive analysis of the effect in flows caused by changes in the attitude of individual investors. Moreover one can think of analyzing the network structure of the flows in the market for mutual funds. This will enable the researcher to check the resilience of the market to mistrust shocks.

References

Chevalier, J. and Ellison, G. (1997). Risk taking by mutual funds as a response to incentives. *Journal of Political Economy, vol. 105, no. 6*.

Das, T. and Teng, B.-S. (Fall, 2004). The risk-based view of trust: A conceptual framework. *Journal of Business and Psychology, Vol. 19, No. 1, pp. 85-116*.

Fama, E. F. and MacBeth, J. D. (1973). Risk, return, and equilibrium: Empirical tests. *Journal of Political Economy 81, 607–636*.

Gennaioli, Nicola, A. S. and Vishny, R. (2014). Money doctors. *Games and Economic Behavior 10, 122–142*.

Gibbons, R. and Murphy, K. J. (1991). Optimal incentive contracts in the presence of career concerns: Theory and evidence. *NBER*.

Guercio, D. d. and Reuter, J. (Aug 2014). Mutual fund performance and the incentive to generate alpha. *Journal of Finance Vol LXIX, no 4*.

Guerrieri, Veronica, K. P. (August 2012). Fund managers, career concerns, and asset price volatility. *American Economic Review 10, 122–142 , 102(5)*.

Guiso, L., S. P. and Zingales, L. (2008). Trusting the stock market. *Journal of Finance, 63, 2557-2600*.

He, Z. and Xiong, W. (2013). Delegated asset management, investment mandates and capital immobility. *Journal of Financial Economics 107 239-258*.

Holmstrom, B. (1999). Managerial incentive problems a dynamic perspective. *Review of Economic Studies Volume 66, Issue 1, Pp. 169-182*.

Prendergast, C. and Stole, L. (Dec., 1996). Impetuous youngsters and jaded old-timers acquiring a reputation for learning. *The Journal of Political Economy, Vol. 104, No. 6 , pp. 1105-1134*.