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Flow-Performance Relationship: Can Fund Share Classes Explain Investor Behavior?

TIØ4900 - Financial Engineering, Master's Thesis

Master's thesis in Industrial Economics and Technology
Management
Supervisor: Peter Molnàr
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Preface

This master thesis concludes our Master of Science in Industrial Economics and Technology Management within Financial Engineering at the Norwegian University of Science and Technology (NTNU) in the fall of 2022. This study explores whether investor behavior regarding net flows into mutual funds as a response to past performance can be differentiated between investor groups aggregated based on share classes.

The motivation behind this thesis is rooted in our genuine interests in financial markets and investor behavior. We recognize the preceding work in this field of study and hope to contribute insights to the existing body of research.

We want to extend our sincere gratitude towards our supervisor, Peter Molnàr, Associate Professor at the Norwegian University of Science and Technology and the University of Stavanger, for his invaluable guidance and feedback throughout this process.

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Abstract

This study examines the flow-performance relationship in actively managed US equity mutual funds, investigating whether there are differences in investor behavior between institutional, load retail, and no-load retail share classes. For this purpose, panel regressions are performed with net fund flows relative to fund size as the response variable and past performance as the explanatory variable. Our findings show that the flow-performance relationship of both unadjusted and risk-adjusted performance is stronger for institutional investors than for retail investors. In addition, we detect differing behavior between the three investor groups when considering unadjusted past performance, finding that no-load retail investors respond stronger to past performance than load retail investors. The results also indicate that the most significant time horizons for investors when evaluating past performance are three months, six months, and one year. Additionally, we demonstrate that flows follow funds-specific performance rather than the performance of the overall market.

Keywords: mutual funds, fund performance, fund flows, investor behavior, share classes

Sammendrag

Denne masteroppgaven analyserer forholdet mellom fondsflyt og avkastning i aktivt forvaltede amerikanske aksjefond med hensikt om å undersøke om det er forskjeller i investoradferd mellom institusjonelle investorer og private investorer med og uten profesjonell bistand (load og no-load retail-investorer). Vi utfører paneldata-regresjoner med netto fondsflyt relativ til fondsstørrelse som responsvariabel og avkastning som beskrivende variabel. Resultatene viser at forholdet mellom fondsflyt og avkastning for både ujustert avkastning og risikojustert avkastning er sterkere for institusjonelle investorer enn for private investorer. Videre avdekker analysen forskjeller i adferd mellom de tre investorgruppene når vi betrakter ujustert avkastning som viser at private investorer uten profesjonell bistand responderer på tidligere avkastning i større grad enn private investorer med profesjonell bistand. Resultatene tilsier at de siste tre måneder, seks måneder og ett år er de viktigste tidshorizontene for tidligere avkastning når investorer vurderer fond. Vi viser også at fondsflyt følger respektive fonds avkastning og ikke avkastningen til markedet som helhet.

Nøkkelord: aksjefond, fondsavkastning, fondsflyt, investoradferd, fondsklasser

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1 Introduction

In the universe of mutual funds, individual retail investors are typically perceived as naïve, while institutional investors are believed to be far more sophisticated (Adler, 2008). Institutional investors arguably have more financial expertise than the average retail investor, and the significant differences in research capabilities and resources available amplify this disparity even more. The difference between the flow-performance relationship in institutional and retail funds has been widely studied. Many point out that retail investors are surprisingly unsophisticated, having little knowledge of their investment strategies or financial details while responding to weak signals like past total return (e.g., Capon, Fitzsimons, and Prince 1996; Evans and Fahlenbrach 2012). However, retail investors are usually considered as a whole, despite numerous different share classes, investment strategies, and levels of sophistication. If retail investors are more differentiated, may a different story be revealed? This study investigates the relationship between past performance and net flows in mutual funds and how this relationship differs across investor types.

Most mutual fund sponsors offer multiple share classes in order to serve investors of different needs. The share classes represent the same pool of assets, and are distinguished merely by the fees and expenses, and potentially also the minimum investment requirements. The mutual funds are categorized as either load or no-load classes, depending on whether or not they charge a load fee. Brokers and financial advisors usually distribute load classes, as the loads are paid to compensate for time and expertise in selecting an appropriate fund. In contrast, no-load classes typically serve investors who purchase shares without the aid of financial advisors or who choose to compensate their financial advisor separately (Investment Company Institute, 2021).

Load share classes include a sales load, a 12b-1 fee, or both. The sales charge can occur either at purchase, called a front-end load, or at the time of sale, called a contingent deferred sales load or back-end load. Both sales charges usually fall within the range of 3 to 6 percent. The 12b-1 is an asset-based distribution fee, ranging between 0.25 and 1 percent, depending on the specific fund and the share class. Class A shares, which impose a front load, are the most prevalent of the load share classes, but other classes exist, such as B, C, and R.

On the other hand, no-load funds have neither a front-end load nor a contingent deferred sales load. Their 12b-1 fees are 0.25 percent or less, as this is a requirement to be classified as no-load (Reid & Rea, 2003). Consequently, if a load and a no-load fund have the same before-fee performance, the load investor is losing to the no-load investor when adjusting for loads. Several studies show that there is no reward in paying a load fee when investing in mutual funds (Droms & Walker, 1994).

Institutional funds are available exclusively to institutional investors such as pension funds, hedge funds, or even high net-worth individuals, and are created to meet the demands and requirements of large investors. By definition, they have larger investment capital than retail investors, as well as longer investment time horizons, which provide a more extensive scope to invest in illiquid assets with potentially higher profits. As load fees are usually tied to investment advice, it naturally follows that institutional funds do not carry loads. Nonetheless, operational expenses comparable to those of no-load retail funds are usually present. The overall expense ratio of institutional funds is generally the lowest of all share classes. However, institutional funds often have high minimum investment requirements, usually around \$100k, with decreasing fees as investments increase.

Investors of load funds tend to be less experienced investors who seek professional help to allocate

their assets (Guercio & Reuter, 2014). If we suppose flows into load funds represent the financial advisors' professional judgment, then they should be more sophisticated than flows from the average mutual fund investors (Huang, Wei, & Yan, 2022). However, some studies find that fund flows positively correlate to distribution fees, suggesting that sales in the broker section might reflect broker compensation and incentives rather than the most rational investment advice (Bergstresser, Chalmers, & Tufano, 2009).

The standard view is that investors in no-load funds are more informed than load fund investors (Zheng, 1999). As experienced and knowledgeable investors are likely to self-select into direct-sold funds, it is reasonable to believe that flows in this segment are more discerning and respond to more sophisticated benchmark-adjusted performance (Barber, Huang, and Odean 2016; Guercio and Reuter 2014). On the other hand, no-load investors are believed to spend more time on research than load investors. In marketing, fund recommendations are typically based on performance measures incorporating some form of risk adjustment, which may implicitly induce a relation between flow- and risk-adjusted performance measures (Guercio & Tkac, 2002).

Institutional and retail investors often have differing approaches, which might be why we observe different behavioral patterns regarding net flow as a response to the performance. Retail investors seek to maximize their final wealth, while institutional investors will compare their results to an index of domestic securities (Gomez & Zapatero, 2003). An illustration of the differing behavior was seen in the year 2000 when institutions proved to have the lowest total net flow of any year, and retail investors exhibited one of the higher annual net flows recorded (Keswani & Stolin, 2008). One explanation for such an event could be retail investors' use of financial advisors, who may provide a steady influence during market downturns (Investment Company Institute, 2022).

The "smart money" effect postulates that money is "smart enough" to flow towards funds that will outperform others in the future. Gruber (1996), which was the first to study whether investors can identify superior mutual funds, find that funds that receive greater net money flows subsequently outperform their less popular peers. If the flow-performance relation is driven by smart money, we expect the relationship to be stronger among funds with more sophisticated investors. The flow-persistence relationship is diametrically opposed to this hypothesis, which implies that investors tend to reward funds that perform well by investing more, as described by, e.g., Wermers (2003). The opposite will likely be demonstrated if the flow-performance relation is driven by persistence.

This paper investigates the flow-performance relationship of mutual funds to understand whether fund classes can explain investor behavior. We divide investors into three groups: institutional, load retail, and no-load retail investors. The classification differentiates investors on investment sophistication and contribute to understanding the investment decisions of institutional, load retail, and no-load investors. Information on the performance and flows into mutual funds provides the opportunity to compare the investment decisions of the three classes to identify whether anything is separating their behaviors, and enables the understanding of the performance measures on which investors base their investments. Our findings point to several differences in the flow-performance relationship between three groups of investors, especially when studying unadjusted past performance. The results indicate that no-load investors behave more sophisticated than load investors but less than institutional investors.

The rest of the paper is organized as follows: In section 2, the related literature is summarized, followed by a presentation of the data and variable definitions in section 3. Section 4 elaborates on the chosen methods, and then the results are presented and discussed in section 5. Lastly, section 6 concludes by highlighting the main findings and discussing future research.

2 Literature Review

The following section provides an overview of relevant literature. We contextualize the study and discuss its contribution to the field.

The positive relationship between fund flows and performance is well-documented in mutual fund literature (e.g., Berk and Green 2004; Chevalier and Ellison 1997; Ippolito 1992). Many studies also show that this response is non-linear and convex; investors reward high performance and invest disproportionately more in funds that performed particularly well in the prior period, but fail to punish low-performance (Sirri & Tufano, 1998). Even though the relative performance of mutual fund managers appears to be largely unpredictable from past relative performance, flows follow the previous performance of funds (Berk & Green, 2004).

Past returns-chasing is a characteristic of institutional and retail investors (Adler, 2008). Nevertheless, institutional investors are known to use more sophisticated fund selection criteria and are found to be more sensitive to high fees and poor risk-adjusted performance (Evans and Fahlenbrach 2012; James and Karceski 2006; Salganik-Shoshan 2016). Guercio and Tkac (2002) find that institutional investors are more likely to pull their money from pension funds after observing poor performance than retail investors in mutual funds. The research of Guercio and Tkac (2002) also shows that, unlike typical retail mutual fund investors, institutional investors do not disproportionately flock to past winner funds. Jiang and Yuksel (2017) and Keswani and Stolin (2012) support this by demonstrating a less pronounced convexity in the flow-performance relationship for the institutional funds than for retail funds.

While institutional investors rely heavily on sophisticated performance criteria, retail investors focus more on past returns and fund rankings, according to James and Karceski (2006). Sirri and Tufano (1998) investigate whether the performance-flow relationship differs between load and no-load funds. They argue that brokers have the incentive to promote funds with high loads to encourage large fund inflows. High back-end loads might persuade investors to stay in the funds long enough to justify the loads, creating less responsiveness to performance. At the same time, no-load investors may be sensitive to poor investment performance and pull their money out of inadequate funds. Despite this, they find no significant difference between the flow-performance relationship in load and no-load funds. Nanda, Wang, and Zheng (2003), on the other hand, find that investors in classes other than the traditional front-load class tend to have greater sensitivity to performance.

Investor rationality is typically a baseline assumption of theorists when constructing models of mutual fund flows and sensitivity to performance. Huang et al. (2022) study the relation between mutual fund flows, performance and investor learning, and validate the assumption of investor rationality. They show that the flow response to past performance is consistent with the existence of sophisticated investors who are capable of rational learning. On the contrary, Capon et al. (1996) document that most mutual fund shareholders are unexpectedly unsophisticated. By studying how retail investors make investment decisions for mutual funds, they find that nearly 40 percent of the consumers do not know whether their investments are in load or no-load funds. The narrative of unsophisticated investors is supported by Harless and Peterson (1998), which find that when choosing among funds, investors respond to the performance by ignoring differences in systematic risk and expenses.

Research on mutual funds suggests that fund expenses is the best predictor of future returns, as

lower expenses are correlated with higher returns. Haslem, Baker, and Smith (2008) investigate the relationship between performance and expense ratios of actively managed retail equity funds, and find that superior performance, on average, occurs among large funds with low expense ratios, low trading activity, and low or no front-end loads. Despite this, some retail investors seem to believe that higher fees are associated with better performance, per the adage "you get what you pay for" (Fisch & Wilkinson-Ryan, 2014). This is supported by Alexander (1998), which examines 2000 randomly selected mutual fund investors who purchased shares using the services of various financial advisors. The study finds that about 84 percent of the survey respondents believe that mutual funds with higher expenses produced average or above-average results. This belief is, however, largely inaccurate, as studies consistently show that load funds under-perform no-load funds after adjusting for loads (e.g., Carhart 1997; Elton, Gruber, and Busse 2004; Gallefoss, Hansen, Haukaas, and Molnár 2015; Gruber 1996).

Barber, Odean, and Zheng (2005) state that if brokers and financial advisors always act in the best interest of the investors, we would expect that fund loads have a negative impact on flows. This is because, all else being equal, rational investors should stay away from funds with higher expenses. Their empirical analysis on the impact of front-end loads and expense ratios on individual investors' mutual fund investment decisions documents consistently negative relations between fund flows and front-end-load fees. In addition, they find that net flows are insensitive to ongoing and more subtle costs, such as expense ratios. Ivković and Weisbenner (2009) also study the relationship between fund flows and fund characteristics, and find that mutual fund investors are sensitive to both front-end loads and expense ratios.

On the contrary, Zhao (2008) finds that load funds with higher loads tend to receive higher net flows. Given that fund loads are primarily an expense component used for compensating brokers and financial advisors, Zhao (2008) argues that flows and fund loads are positively correlated because the fund loads motivate brokers and financial advisors to sell more aggressively. This argument is supported by the work of Gil-Bazo and Ruiz-Verdú (2009), who find that funds with worse before-fee performance charge higher fees. They propose that this could indicate a strategic fee-setting by mutual funds in the presence of investors with varying levels of performance sensitivity.

On the comparison between the flow-performance relationships of institutional, load retail, and no-load retail funds, James and Karceski (2006) investigate whether investors of the three investor groups use the same fund selection criteria and whether retail fund cash flows are more sensitive to performance than flows into institutional funds. Their findings show that the sensitivity of the flow-performance relationship for institutional funds is statistically lower than that for retail funds, suggesting that investors in institutional funds do not chase returns the same way as their retail counterparts. Furthermore, they find a positive and statistically significant flow performance relationship only for retail funds, and propose that an explanation for this could be institutional investors' use of more sophisticated performance measures.

Moreover, Huang et al. (2022) investigate how performance volatility affects the sensitivity of flows to past performance in various types of mutual funds. They find that investors of no-load, low-expense and institutional funds are more sophisticated in incorporating additional information like performance volatility in their flow response. Finally, Jiang and Yuksel (2017) investigate both the "smart money" and the "persistent-flow" hypotheses for explaining the positive relationship between mutual fund flow and future fund performance. They find substantial variations in flow-performance relationship not only between institutional and retail funds but also among different classes of retail funds, where retail funds show a stronger flow-performance relation, mainly driven

by the no-load class. Throughout, their results present challenges to the smart-money hypothesis and support the persistent-flow hypothesis as an explanation for the positive flow-performance relationship.

There is consistent evidence that past return predicts flows in institutional and retail mutual funds. However, only a few papers, such as those of Jiang and Yuksel (2017) and James and Karceski (2006), examine the differences in how the three groups of investors respond to unadjusted and risk-adjusted returns in comparison to each other. Neither of these two papers examines these relations as their primary objective, and their results are somehow contradicting, inducing uncertainty about the real relationships. Our study is motivated by the fact that actively managed mutual funds serve different investor clientele and the likeliness of differing levels of sophistication and behavior between these. With support in more recent mutual fund data than preceding studies, our findings contribute to understanding the differences between the flow-performance relationship in institutional, load retail, and no-load retail mutual funds by comparing net flows and past performance over various time horizons and performance measures in the three groups of share classes.

3 Data and Variable Definitions

This section explains the data and variable definitions used in the analysis. The mutual fund data covers eight years, from 1st January 2014 to 1st January 2022. Other financial data is collected from January 2011 to January 2022 to accurately calculate performance over longer time horizons, e.g., performance over the past three years for a fund in January 2014. First, the mutual fund flow data is presented. Secondly, other financial data used in regressions are presented: the risk-free rate, the market benchmark, and the three factors of the Fama-French 3-factor model. Thirdly, the definitions and calculations of various measures of performance are defined. Then, outlier detection and data preparation are presented. Lastly, the summary statistics are discussed.

3.1 Mutual Fund Data

The funds are selected by collecting a list of actively managed US domestic open-end equity funds by the classification of the Lipper Global Classification (LGC) scheme from Refinitiv Eikon (formerly Thomson Reuters Eikon). This includes the categories Equity US, Equity US Income, Equity US Sm&Mid Cap, and Alternative Long/Short Equity US. Equity funds are defined as mutual funds investing principally in stocks. Funds must hold a prevalent exposure of equities with a threshold set at 75% of their portfolios to meet the LGC requirement (Lipper Alpha Insight, 2019). Mutual funds that fall out of this classification are, for instance, funds that have an objective of investing in technology-related stocks. Such funds will be placed in an Equity Technology sector rather than the Equity US classification. Moreover, the funds must maintain at least 50% of their exposure to the US to be classified as a US equity fund (Lipper Alpha Insight, 2019).

We obtain a list of 1740 mutual funds with the given specification. However, some funds do not have reported flow data available, some have an overweight of zero's in their dataset, and some have been launched too recently to have adequate time series data for the analysis. These are therefore excluded. The final list contains 1082 mutual funds, where 453 are institutional funds, 289 are load retail funds, and 340 are no-load retail funds. Complete lists of the institutional funds can be found in Appendix B, load retail funds in Appendix C, and no-load retail funds in Appendix D.

From Refinitiv Eikon, we retrieve information about whether the funds designate themselves as institutional or not, as well as their category. All funds that are not institutional are considered retail funds. Within the retail funds, there are four sub-categories: back-end load, front-end load, level load, and no-load. We consider funds in two categories: load funds and no-load funds. Institutional funds have no further sub-classification. Information about whether the fund belongs to an institutional or a retail class is kept by using a dummy variable to code the retail funds, denoted *isRetail*. Moreover, whether a retail fund has a load or not is kept by using a dummy variable to code the no-load funds, denoted *isNoLoad*.

Absolute net flows and total net asset (TNA) values for each fund are obtained from Refinitiv Eikon and reported in million USD. Some of the funds in the dataset report net flows on a monthly basis, while others report net flows on a daily basis. Net flows are aggregated to monthly granularity for the funds reporting on a daily level. We adjust the net flows to account for the significant variations in fund size by dividing the absolute net flow by the previously reported TNA value. Furthermore, we multiply net flows $NF_{i,t}$ with 100 to get percentage values while keeping the

performance measures in decimal values. Net flows relative to fund size are denoted $NF_{i,t}$.

3.2 Other Financial Data

To calculate the returns, we collect historical net asset value (NAV) prices for each fund from Wall Street Journal Markets (WSJ Markets, 2022). In addition, risk-free rates, r_f , and market performance, r_m , are collected on a monthly level from Kenneth French’s data library (French, 2022) to calculate performance adjusted to risk and market. Finally, we obtain the size premium, SMB (small minus big), and the value premium, HML (high minus low), from Kenneth French’s data library to calculate the Fama-French 3-factor Model.

3.3 Performance Measures

3.3.1 Unadjusted Performance

Using daily closing prices (NAV) for each fund i for each day t , we obtain daily returns r from equation (1), which are then aggregated to a monthly level.

$$r_{i,\{t-1,t\}} = \frac{NAV_{i,t}}{NAV_{i,t-1}} \quad (1)$$

Time index $t - 1$ is indexing monthly observations. Return for other time intervals, such as quarterly, semi-annually, yearly, biennially, and triennially are calculated by aggregation of return of the last 3, 6, 12, 24, and 36 months respectively, and are denoted $r_{i,\{t-3,\dots,t\}}$, $r_{i,\{t-6,\dots,t\}}$, $r_{i,\{t-12,\dots,t\}}$, $r_{i,\{t-24,\dots,t\}}$, and $r_{i,\{t-36,\dots,t\}}$.

Due to the nature of the NAV prices, the calculated returns are net of expenses, meaning that expenses are accounted for. In our dataset, the total expense ratio (TER) for institutional funds averages 0.88%, load retail funds 1.18%, and no-load funds 1.02%. Collectively, the funds have an average TER of 0.98%. These are management fees and additional expenses, such as trading fees, legal fees, auditor fees, and other operational expenses associated with actively managed funds. The loads, however, are not accounted for.

3.3.2 Risk-Adjusted Performance

It is a well-known finding that both unadjusted and risk-adjusted performance help explain cross-sectional variation in fund flows (e.g., Gruber 1996, Sirri and Tufano 1998, Guercio and Tkac 2002). The analysis includes three risk-adjusted performance measures: the Sharpe Ratio (SR), the Capital Asset Pricing Model (CAPM), and the Fama-French 3-factor Model (FFM). If we can assume that the asset managers we examine have roughly similar levels of risk aversion, comparisons using the standard measures below are reasonable (Wermers, 2011).

The Sharpe Ratio measures the performance of an investment with a reward-to-variability ratio. It represents an additional amount of return that an investor receives per unit of increased risk, and is given in equation (2), where σ_p is the standard deviation of the excess returns.

$$SR_{i,\{t-1,t\}} = \frac{r_{i,\{t-1,t\}} - r_{f,\{t-1,t\}}}{\sigma_p} \quad (2)$$

The Capital Asset Pricing Model describes the relationship between systematic risk and expected return, and the market beta coefficient measures the compensated risk of an asset. Barber et al. (2016) find that investors attend mostly to market risk (beta) when evaluating funds and argue that the best model to explain variations in flows across mutual funds is the CAPM. Berk and Binsbergen (2016) claim that among several widely used asset pricing models, the CAPM best represents the revealed preferences of any investor who can invest in mutual funds.

The CAPM beta can be estimated by ordinary least square regression (OLS) of the stock's excess return against the excess return on a broad market index. Using the CAPM model given in equation (3), the betas are calculated for each fund by using risk-free rates, returns, and market returns for the past year in a rolling window of 12 months in the regressions.

$$r_{i,\{t-1,t\}} - r_{f,\{t-1,t\}} = \alpha_i + \beta_i(r_{m,\{t-1,t\}} - r_{f,\{t-1,t\}}) + \epsilon_{i,t} \quad (3)$$

With the betas from the CAPM regression, the abnormal return, $r_{i,\{t-1,t\}}^{abn,CAPM}$, is calculated as shown in equation (4).

$$r_{i,\{t-1,t\}}^{abn,CAPM} = r_{i,\{t-1,t\}} - r_{f,\{t-1,t\}} - \beta_i(r_{m,\{t-1,t\}} - r_{f,\{t-1,t\}}) \quad (4)$$

The abnormal returns over the various time periods (three months, six months, one year, two years, three years) derived from CAPM are then obtained analogously by using the risk-free rate and market return for the corresponding periods as independent variables and return over the corresponding periods as dependent variables in the CAPM regression.

The Fama-French 3-Factor Model is an extension of the CAPM, which adds size risk and value risk factors to the market risk. The SMB component accounts for publicly traded companies with small market capitalizations that generate high returns. In contrast, the HML component accounts for value stocks with high book-to-market ratios that generate high returns compared to the market (Fama & French, 1993). It is considered a more nuanced measure of performance, as it considers that value stocks and small-cap stocks regularly outperform the market (French, 2022). Fund-specific factor coefficients (α , β_1 , β_2 , and β_3) are obtained by using OLS regression on equation (5).

$$r_{i,\{t-1,t\}} - r_{f,\{t-1,t\}} = \alpha_i + \beta_{1,i}(r_{m,\{t-1,t\}} - r_{f,\{t-1,t\}}) + \beta_{2,i}(SMB_{\{t-1,t\}}) + \beta_{3,i}(HML_{\{t-1,t\}}) + \epsilon_{i,t} \quad (5)$$

With the factor coefficients from the FFM, the abnormal return, $r_{i,\{t-1,t\}}^{abn,FFM}$, can be calculated as shown in equation 6. Therefore, the abnormal return from this model can be interpreted as the difference between the actual and expected returns based on the investment's composition compared to the market's overall risk, size, and value.

$$r_{i,\{t-1,t\}}^{abn,FFM} = r_{i,\{t-1,t\}} - r_{f,\{t-1,t\}} - \beta_{1,i}(r_{m,\{t-1,t\}} - r_{f,\{t-1,t\}}) - \beta_{2,i}(SMB_{\{t-1,t\}}) - \beta_{3,i}(HML_{\{t-1,t\}}) \quad (6)$$

The abnormal returns over the various time periods derived from the FFM are obtained analogously by using the risk-free rate, market return, size premium, and value premium for the corresponding periods as independent variables and return over the corresponding periods as dependent variables in the FFM regression.

3.4 Data Preparation and Outlier Detection

It is widely known that improper identification of outliers can lead to distorted results. For mutual fund flows, it is especially factors like mergers and splits that result in data points with significant deviations from the rest of the dataset. Inspired by Huang, Wei, and Yan (2007), we filter out the funds in the top and bottom 1% tails of the daily net flow data to tackle anomalies of the most extreme values.

The dataset consists of mutual funds with significant variations in fund size. All funds are given equal importance in the analysis, regardless of funds size. Small funds tend to obtain more extreme performance, both in a positive and negative sense, than larger funds. In order to avoid biased results, we also filter out the funds in the top and bottom 1% tails of the daily return data.

3.5 Summary Statistics

Descriptive statistics for all funds in the sample can be found in Table 1. The values presented are unadjusted performance over various time periods and various performance measures over the past one year. The mean value of the return is positive for all time horizons, and the risk-adjusted performances are close to zero.

Class-specific descriptive statistics for the institutional and retail funds, collectively and separated into load and no-load groups, can be found in Appendix A. The performance of load retail and no-load retail funds are almost identical, with only 0.8% separating the two groups on average over the three-year time perspective, favoring load retail funds. Note that this is a before-fee performance. This is consistent with previous literature, which finds that there is no reward for paying a load fee when investing in mutual funds (e.g., Droms and Walker 1994; Morey 2003).

Table 1: Descriptive table for the variables used in the analysis.

	N	Mean	Std	Min	Max
$NF_{i,t}$	102,078	-0.351	3.626	-84.001	215.657
$r_{i,\{t-1,t\}}$	102,078	0.010	0.042	-0.239	0.279
$r_{i,\{t-3,\dots,t\}}$	102,078	0.030	0.071	-0.314	0.677
$r_{i,\{t-6,\dots,t\}}$	102,078	0.062	0.105	-0.370	0.982
$r_{i,\{t-12,\dots,t\}}$	102,078	0.131	0.166	-0.388	2.162
$r_{i,\{t-24,\dots,t\}}$	102,078	0.256	0.223	-0.516	2.800
$r_{i,\{t-36,\dots,t\}}$	102,078	0.371	0.233	-0.433	3.238
$SR_{i,\{t-12,\dots,t\}}$	102,078	0.739	1.000	-2.337	12.829
$r_{i,\{t-12,\dots,t\}}^{abn,CAPM}$	102,078	0.013	0.106	-0.525	1.722
$r_{i,\{t-12,\dots,t\}}^{abn,FFM}$	102,078	0.004	0.070	-0.540	0.657

Notes: Net flows, $NF_{i,t}$, are given in percentage values. Performance measures, $r_{i,t}$, are given in decimal values.

The mutual fund's data is checked for multicollinearity by computing the Pearson correlation coefficient between variables. Table 2 provides the correlation matrix for all variables across funds. With partially overlapping time horizons, the unadjusted performance parameters are moderate to strongly correlated within the same period. Unsurprisingly, the risk-adjusted returns are also correlated. As the Sharpe Ratio shows to be perfectly correlated with the return, it will not be considered further in the results. The correlation coefficients for net flows are close to zero for all parameters and can therefore be considered uncorrelated.

Table 2: Correlation matrix for the variables used in the analysis using Pearson correlation coefficient.

$NF_{i,t}$	$r_{i,\{t-1,t\}}$	$r_{i,\{t-3,\dots,t\}}$	$r_{i,\{t-6,\dots,t\}}$	$r_{i,\{t-12,\dots,t\}}$	$r_{i,\{t-24,\dots,t\}}$	$r_{i,\{t-36,\dots,t\}}$	$SR_{i,\{t-12,\dots,t\}}$	$r_{i,\{t-12,\dots,t\}}^{abn,CAPM}$	$r_{i,\{t-12,\dots,t\}}^{abn,FFM}$
$NF_{i,t}$	1.000	0.013	0.013	0.015	0.017	0.015	0.016	0.024	0.020
$r_{i,\{t-1,t\}}$		1.000	0.418	0.260	0.161	0.163	0.259	0.169	0.031
$r_{i,\{t-3,\dots,t\}}$			1.000	0.483	0.301	0.248	0.481	0.360	0.129
$r_{i,\{t-6,\dots,t\}}$				1.000	0.472	0.311	0.705	0.586	0.254
$r_{i,\{t-12,\dots,t\}}$					1.000	0.491	0.999	0.826	0.345
$r_{i,\{t-24,\dots,t\}}$						1.000	0.725	0.608	0.251
$r_{i,\{t-36,\dots,t\}}$							1.000	0.516	0.205
$SR_{i,\{t-12,\dots,t\}}$								1.000	0.343
$r_{i,\{t-12,\dots,t\}}^{abn,CAPM}$									1.000
$r_{i,\{t-12,\dots,t\}}^{abn,FFM}$									
$r_{i,\{t-12,\dots,t\}}$									

Notes: Net flows, $NF_{i,t}$, are given in percentage values. Performance measures, $r_{i,t}$, are given in decimal values.

4 Methodology

This section presents the models used in the analysis. We apply panel data regressions to study the predictive relationship between mutual fund flows and performance and whether there is any difference between investor behavior in institutional, load retail, and no-load retail mutual fund classes. First, we present the statistical tests and the reasoning behind the choice of model. Then, we present the panel regression models.

4.1 Statistical Tests and Choice of Model

The dataset is composed of multiple funds observed over multiple time periods, or in other words, cross-sections across time. This allows us to model individual and common behaviors of groups, as it contains more information, variability, and efficiency than pure cross-sectional and time-series data. The three primary methods for panel data analysis are pooled OLS, fixed effects, and random effects models. We perform several tests to identify the most suitable model for explaining behavior of the data. The tests investigate whether any of the assumptions of basic regressions are violated. Identifying the violated assumptions helps choose a model which accounts for these violations.

First and foremost, the Augmented Dickey-Fuller test is used to verify that the data is stationary (Mackinnon, 1990). Then, homoscedasticity is examined using White's test and the Breusch-Pagan test. Both tests strongly indicate that the data is heteroscedastic, meaning that the error variance is inconsistent across the data (White, 1980). The Durbin-Watson test checks for non-auto-correlation and shows a slight positive auto-correlation (Durbin & Watson, 1950). As these assumptions are violated, either a fixed effects (FE) or a random effects (RE) model is appropriate for the data, as these models can handle heteroscedasticity and auto-correlated errors.

We perform the Hausman test to decide between a random or fixed effects model. The test's null hypothesis is that the preferred model is random effects. The alternative hypothesis is that the fixed effects model is at least as consistent and thus a preferred specification. The Hausman test shows that we have endogeneity in the model and can reject the null hypothesis. In other words, a fixed effects model is the more suitable specification for the dataset.

With a fixed effects model, it is possible to control for the observable and unobservable variables that may vary over time, across funds, or both. Time-fixed effects allow intercepts to vary across time but are the same across funds, whereas fund-fixed effects can control for the time-invariant characteristics of funds. The F-test for individual effects is used to determine if time-fixed effects should be included in the model, and the test shows that time-fixed effects are preferred (Oscar Torres-Reyna, 2007). Consequently, we produce two panel regression models: one with time-fixed effects and one with two-way fixed effects, where both entity- and time-fixed effects are included.

Cross-sectional correlation is not supported by fixed effect models, and cross-sectional dependence can cause severely biased statistical results. If the panel's time dimension is greater than the cross-sectional dimension, the Lagrange multiplier (LM) test, created by Breusch and Pagan (1980), can be used to test for cross-sectional dependence (De Hoyos & Sarafidis, 2006). This holds for the dataset under consideration, which contains 102 078 time observations and 1082 entities. The LM test on the regression model residuals indicates a cross-sectional dependency concern with the panel data.

The statistical bias in panel data regressions can be eliminated by formulating a correctly specified robust standard error. Clustered standard errors account for the residual dependence which arises from the effect of residuals of a given entity correlated across time for the given entity, and thus, are unbiased (Petersen, 2009). The clustered standard errors, known as Rogers standard errors, are White standard errors modified to consider potential cluster correlation (Rogers, 1994). Panel cluster standard errors are desirable in panel models where cross-sectional individuals are followed over time, as they are robust to cross-sectional heteroscedasticity and general forms of serial correlation over time, including some non-stationary cases (Vogelsang, 2012). In order to counteract cross-sectional dependence, the standard errors are clustered on the individual dimension (Wooldridge, 2003).

4.2 Panel Data Regression Models

We perform panel data regressions with two-way fixed and time-fixed effects to evaluate the effect performance has on fund flows.

First, we investigate whether unadjusted performance over various time horizons can predict fund flows. The time horizons considered are one month, three months, six months, one year, two years, and three years. We also study which time horizons are the most significant for investors when evaluating past performance. Moreover, we examine if there is any differing behavior between the groups of investors regarding performance over various time horizons. Secondly, we investigate how various performance measures relate to fund flows. The performance measures considered are unadjusted return, abnormal return derived from CAPM, and abnormal return derived from FFM. We study whether various performance measures can predict fund flows before evaluating whether there are any differences between the groups of investors. Lastly, we examine whether fund flows are determined mainly by the fund-specific performance or the overall market's performance by examining risk-adjusted performance measures and their coherent risk measure(s).

The exact formulations of the regressions are presented together with the results and discussion in Section 5.

5 Results and Discussion

In this chapter, the panel data regressions and their results are presented and discussed. The aim is to investigate whether returns over various time horizons and various performance measures can predict fund flows and whether there is any difference in investor behavior between the three groups of investors. We also investigate whether fund flows are determined mainly by fund-specific performance or market performance. Panel data regressions are performed with time-fixed effects and two-way fixed effects based on the results of the statistical tests presented and explained in Section 4. First, the panel regression models and results regarding performance over various time horizons are presented. Then, we present the models and results regarding various performance measures. Lastly, we present the models and results regarding fund-specific performance and market performance.

5.1 Time Horizon

5.1.1 Performance and Fund Flows

To evaluate the effect performance has on fund flows, we first investigate whether unadjusted performance over various time intervals can predict net fund flows. To achieve this, we perform panel regression models with a return over the considered time horizon as the explanatory variable, given in equation (7). The considered time horizons are one month, three months, six months, one year, two years, and three years.

$$NF_{i,t} = c_{0,i} + \gamma_t + c_1 r_{i,\{t-T,\dots,t\}} + \epsilon_{i,t} \quad (7)$$

where NF denotes the net fund flows, r denotes return for the given time horizon, T denotes the time horizon, c_0 denotes fixed entity effects, γ_t denotes time-fixed effects, c_1 is the regression coefficient, and ϵ is the error term. i is the fund index, and t is the time index. By varying the parameters, c_0 and γ , the equation for both the time-fixed effects and the two-way fixed effects model is obtained.

Table 3 shows the concatenated results of the panel regressions in equation (7). The results show that unadjusted performance over the past month, three months, six months, one year, two years, and three years can be used for predicting fund flows and is consistent with the well-documented flow-performance relationship (e.g., Chevalier and Ellison 1997; Ippolito 1992; Sirri and Tufano 1998). The panels show a robust positive relationship between performance and mutual fund net flows for the time-fixed effects model and the two-way fixed effects model significant on the 1% level. The time-fixed effects models display a more substantial relationship than the two-way fixed effects models for the short-term perspective, while the opposite is true for the long-term perspective.

Table 3: Predictive panel regressions with net flows as the dependent variable, and unadjusted performance over various past time horizons as independent variables.

Dependent variable: Net Flows (NF _{<i>i,t</i>})												
Time horizon:												
	(1) 1 month		(2) 3 months		(3) 6 months		(4) 1 year		(5) 2 years		(6) 3 years	
	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed
$r_{i,\{t-T_1,\dots,t\}}$	7.125*** (1.650)	6.340*** (1.490)	9.186*** (1.440)	8.814*** (1.428)	6.273*** (0.845)	6.124*** (0.610)	3.889*** (0.683)	4.091*** (0.441)	1.828*** (0.509)	2.103*** (0.452)	1.460*** (0.442)	1.772*** (0.584)
<i>Constant</i>	-0.288*** (0.049)	-0.280*** (0.015)	-0.491*** (0.053)	-0.480*** (0.043)	-0.605*** (0.064)	-0.596*** (0.038)	-0.726*** (0.099)	-0.752*** (0.058)	-0.682*** (0.144)	-0.752*** (0.115)	-0.756*** (0.179)	-0.872*** (0.217)
R-squared	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.001	0.000
Total Obs	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078

Notes: Period: Jan 2014 - Jan 2022. Values in parentheses represent standard errors. Standard errors are clustered at the fund level. */**/** denote statistical significance at the 10/5/1 percent levels.

To identify the most significant time horizon for investors when evaluating performance, we perform panel regression models with aggregated return over the various time horizons and aggregated return over the time horizon which seems most significant from the results of the regression in equation (7) as explanatory variables. This panel regression model is given in equation (8).

$$NF_{i,t} = c_{0,i} + \gamma_t + c_1 r_{i,\{t-T_1,\dots,t\}} + c_2 r_{i,\{t-T_2,\dots,t\}} + \epsilon_{i,t} \quad (8)$$

where $T_1 \neq T_2$, and c_n are the regression coefficients.

Table 4 shows the concatenated results of the panel regressions of equation (8). The results from Columns 1, 4, and 5 indicate that the performance over one month, two years, and three years become insignificant in the presence of the one-year performance. Columns 2 and 3 show that performance over the past three and six months are significant in the presence of the one-year performance, suggesting that also these time horizons are relevant to investors. As the one-year time horizon seems reasonably representative of the time period investors consider, we proceed with a one-year time horizon in Section 5.2 when evaluating various performance measures.

Table 4: Predictive panel regressions with net flows as the dependent variable, and unadjusted performance over the past one year and various other past time horizons as independent variables.

Dependent variable: Net Flows (NF _{<i>i,t</i>})										
Time horizon:										
	(1) 1 month		(2) 3 months		(3) 6 months		(4) 2 years		(5) 3 years	
	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed
$r_{i,\{t-12,\dots,t\}}$	3.729*** (0.723)	3.939*** (0.459)	2.718*** (0.778)	2.963*** (0.582)	2.193** (0.968)	2.484*** (0.695)	4.021*** (0.961)	3.888*** (0.688)	3.579*** (1.304)	3.564*** (1.006)
$r_{i,\{t-T_1,\dots,t\}}$	2.630 (1.998)	2.512* (1.542)	5.961*** (1.833)	5.845*** (1.731)	3.819*** (1.274)	3.625*** (0.969)	-0.117 (0.725)	0.219 (0.654)	0.237 (0.766)	0.532 (0.878)
<i>Constant</i>	-0.731*** (0.096)	-0.758*** (0.058)	-0.751*** (0.091)	-0.780*** (0.058)	-0.740*** (0.095)	-0.767*** (0.057)	-0.713*** (0.143)	-0.781*** (0.112)	-0.773*** (0.178)	-0.880*** (0.214)
R-squared	0.000	0.000	0.010	0.010	0.001	0.001	0.000	0.000	0.000	0.000
Total Obs	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078

Notes: Period: Jan 2014 - Jan 2022. Values in parentheses represent standard errors. Standard errors are clustered at the fund level. */**/** denote statistical significance at the 10/5/1 percent levels.

5.1.2 Investor Differences

To observe any differences in behavior between the three investor groups, we perform panel regression models for each time horizon, including the dummy variables. This yields equation (9).

$$NF_{i,t} = c_{0,i} + \gamma_t + c_1 r_{i,\{t-T,\dots,t\}} + c_2 r_{i,\{t-T,\dots,t\}} * isRetail + c_3 r_{i,\{t-T,\dots,t\}} * isNoLoad + \epsilon_{i,t} \quad (9)$$

where *isRetail* is the dummy variable coding if a fund is a retail fund, and *isNoLoad* is the dummy variable coding if the fund is a no-load fund (which applies only to retail funds).

Table 5 shows the concatenated results of panel regressions of equation (9). For the one year, two year, and three year time horizons, we find a negative relationship for retail funds significant on the 1% level, meaning that retail investor does not chase past returns as much as institutional investors. These results contradicts the findings of e.g., Jiang and Yuksel (2017) and Keswani and Stolin (2012), who find that the flow-performance relationship is stronger for retail funds than for institutional funds. One possible explanation for this could be that many retail investors consult financial brokers and advisors about their investment decisions, and sales in the broker sector might reflect broker compensation and incentives (Bergstresser et al., 2009).

We are also able to detect a difference between investor behavior of institutional, load retail, and no-load retail classes significant in on the 1% level for the time-fixed effects models in Columns 4, 5, and 6, showing unadjusted performance over the previous one year, two years, and three years as explanatory variables respectively. The panels show a positive relationship for no-load investors, which is smaller than the negative relationship for load retail investors. This suggests that no-load retail investors chase past performance more significantly than load retail investors, but not as much as institutional investors.

Table 5: Predictive panel regressions for all funds, with relative flows as the dependent variable, and unadjusted performance over various past time horizons as independent variables, including dummy variables.

	Dependent variable: Net Flows ($NF_{i,t}$)											
	Time horizon:											
	(1) 1 month		(2) 3 months		(3) 6 months		(4) 1 year		(5) 2 years		(6) 3 years	
	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed	Fixed Time	Two-Way Fixed
$r_{i,\{t-T,\dots,t\}}$	8.076*** (2.294)	5.179*** (1.903)	11.711*** (2.723)	9.483*** (2.344)	7.404*** (1.146)	5.430*** (1.085)	4.865*** (0.800)	3.823*** (0.647)	2.630*** (0.531)	2.048*** (0.776)	2.093*** (0.465)	1.363 (1.178)
$r_{i,\{t-T,\dots,t\}} * isRetail$	-2.089 (2.838)	2.702 (2.402)	-5.122* (2.881)	-1.075 (2.175)	-2.298* (1.298)	1.677 (1.690)	-2.101*** (0.549)	0.582 (0.844)	-1.686*** (0.359)	0.222 (0.803)	-1.333*** (0.266)	1.013 (1.167)
$r_{i,\{t-T,\dots,t\}} * isNoLoad$	0.672 (2.168)	-0.891 (2.159)	1.159 (1.167)	-0.237 (1.118)	0.545 (1.083)	-0.807 (1.287)	0.681*** (0.126)	-0.186 (0.344)	0.501*** (0.210)	-0.214 (0.252)	0.392*** (0.161)	-0.488 (0.367)
Constant	-0.287*** (0.049)	-0.281*** (0.015)	-0.489*** (0.052)	-0.489*** (0.042)	-0.604*** (0.064)	-0.597*** (0.038)	-0.723*** (0.099)	-0.753*** (0.058)	-0.678*** (0.143)	-0.754*** (0.114)	-0.751*** (0.178)	-0.880*** (0.207)
R-squared	0.000	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000
Total Obs	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078	102,078

Notes: Period: Jan 2014 - Jan 2022. Values in parentheses represent standard errors. Standard errors are clustered at the fund level. */**/** denote statistical significance at the 10/5/1 percent levels.

5.2 Various Performance Measures

5.2.1 Performance Measures and Fund Flows

To identify whether various performance measures can predict fund flows, we perform panel regression models with various performance measures as explanatory variables, given in equation (10). The performance measures considered are unadjusted performance, abnormal return derived from CAPM, and abnormal return derived from FFM. Based on the results from the time-horizon regressions in equation (7-9), performance over the most significant time-horizon is used as explanatory variable.

$$NF_{i,t} = c_{0,i} + \gamma_t + c_1 Performance_{i,\{t-T,\dots,t\}} + \epsilon_{i,t} \quad (10)$$

where NF denotes the net fund flows, $Performance$ denotes various performance measures, T denotes the time horizon, c_0 denotes fixed entity effects, γ_t denotes time-fixed effects, c_1 is the regression coefficient, and ϵ is the error term. i is the fund index, and t is the time index. By varying the parameters, c_0 and γ , the equation for both the time-fixed effects and the two-way fixed effects models are obtained.

Table 6 displays the concatenated results of the panel regression of equation (10) and shows that all performance measures for the previous one year can be used for predicting fund flows. The relationships are positive and significant on the 1% level for all performance measures, showing that fund flows follow performance, which is consistent with previous literature on the flow-performance relationship.

Table 6: Predictive panel regressions with net flows as the dependent variable, and various performance measures as independent variables.

	Dependent variable: Net flows ($NF_{i,t}$)					
	Performance:					
	(1)		(2)		(3)	
	Unadjusted return		Abn. ret., CAPM		Abn. ret., FFM	
	Fixed	Two-way	Fixed	Two-way	Fixed	Two-way
	Time	Fixed	Time	Fixed	Time	Fixed
$Performance_{i,\{t-12,\dots,t\}}$	3.889*** (0.683)	4.091*** (0.441)	5.056*** (0.734)	4.325*** (0.447)	6.653*** (0.838)	4.218*** (0.904)
Constant	-0.726*** (0.099)	-0.752*** (0.058)	-0.280*** (0.051)	-0.271*** (0.006)	-0.241*** (0.051)	-0.231*** (0.004)
R-squared	0.000	0.000	0.001	0.000	0.001	0.000
Total Obs	102,078	102,078	102,078	102,078	102,078	102,078

Notes: Period: Jan 2014 - Jan 2022. Values in parentheses represent standard errors. Standard errors are clustered at the fund level. */**/** denote statistical significance at the 10/5/1 percent levels.

5.2.2 Investor Differences

To determine whether there is any difference in investor behavior between the three investor groups regarding risk-adjusted measures, we include the dummy variables in the regression given from

equation (10), which yields equation (11).

$$NF_{i,t} = c_{0,i} + \gamma_t + c_1 Performance_{i,\{t-T,\dots,t\}} + c_2 Performance_{i,\{t-T,\dots,t\}} * isRetail + c_3 Performance_{i,\{t-T,\dots,t\}} * isNoLoad + \epsilon_{i,t} \quad (11)$$

where *isRetail* and *isNoLoad* are the dummy variables coding retail funds and no-load funds respectively.

Table 7 shows the concatenated results of the panel regressions of equation (11). The results show that we can differentiate between the investor behavior of the three types of investors when considering unadjusted returns, where all explanatory variables are significant on the 1% level, which was also seen in Table 5. Regarding the risk-adjusted performance measures, the results indicate a difference between institutional and retail investors (load and no-load considered as a whole), significant on the 5% and 1% level for the abnormal return derived from CAPM and FFM, respectively. Both flow-performance relations are negative, where the risk-adjusted performance obtained from CAPM shows a weaker relationship than the risk-adjusted performance obtained from FFM.

The results show that institutional and retail investors chase risk-adjusted performance measures, but to varying degrees. Institutional investors chase risk-adjusted performance more than retail investors, which suggests differing levels of sophistication, consistent with previous literature. The relationship is stronger for unadjusted returns than for the risk-adjusted measures, meaning that investors of all three groups chase unadjusted past returns to a larger degree. We cannot detect any differences between retail investors regarding risk-adjusted measures of performance. This might suggest that even though no-load is viewed as more knowledgeable, the aid of financial expertise might level out the perceived level of sophistication in the results.

Table 7: Predictive panel regressions with net flows as the dependent variable, and various measures of performance as independent variables, including dummy variables.

	Dependent variable: Net flows ($NF_{i,t}$)					
	Performance:					
	(1)		(2)		(3)	
	Unadjusted return		Abn. ret., CAPM		Abn. ret., FFM	
	Fixed	Two-way	Fixed	Two-way	Fixed	Two-way
	Time	Fixed	Time	Fixed	Time	Fixed
$Performance_{i,\{t-12,\dots,t\}}$	4.865*** (0.800)	3.823*** (0.647)	6.061*** (0.968)	4.514*** (0.819)	8.262*** (1.350)	3.550* (1.952)
$Performance_{i,\{t-12,\dots,t\}} * isRetail$	-2.101*** (0.549)	0.582 (0.844)	-1.870** (0.840)	-0.383 (0.995)	-3.104*** (1.300)	1.021 (2.029)
$Performance_{i,\{t-12,\dots,t\}} * isNoLoad$	0.681*** (0.126)	-0.186 (0.344)	0.142 (0.620)	0.078 (0.595)	0.655 (0.943)	0.156 (0.992)
<i>Constant</i>	-0.723*** (0.099)	-0.753*** (0.058)	-0.279*** (0.051)	-0.271*** (0.006)	-0.245*** (0.050)	-0.229*** (0.007)
R-squared	0.001	0.000	0.001	0.000	0.001	0.000
Total Obs	102,078	102,078	102,078	102,078	102,078	102,078

Notes: Period: Jan 2014 - Jan 2022. Values in parentheses represent standard errors. Standard errors are clustered at the fund level. */**/** denote statistical significance at the 10/5/1 percent levels.

5.3 Market Performance

5.3.1 Market Performance and Fund Flows

To examine whether the fund flows are determined mainly by fund-specific performance or the performance of the overall market, we perform regressions with the market-adjusted returns together with their coherent risk component(s) as explanatory variables, given in equations (12) and (13). As the market performance is the same for all funds, the regression models are performed with entity-fixed effects instead of time-fixed effects.

$$NF_{i,t} = c_{0,i} + c_1 r_{i,\{t-T,\dots,t\}}^{abn,CAPM} + c_2 (r_{m,\{t-T,\dots,t\}} - r_{f,\{t-T,\dots,t\}}) + \epsilon_{i,t} \quad (12)$$

$$NF_{i,t} = c_{0,i} + c_1 r_{i,\{t-T,\dots,t\}}^{abn,FFM} + c_2 (r_{m,\{t-T,\dots,t\}} - r_{f,\{t-T,\dots,t\}}) + c_3 SMB_{\{t-T,\dots,t\}} + c_4 HML_{\{t-T,\dots,t\}} + \epsilon_{i,t} \quad (13)$$

where NF denotes the net fund flows, r denotes the risk-adjusted measures of performance, T denotes the time horizon, c_0 denotes fixed entity effects, c_n are the regression coefficient, r_m is the market return, SMB is the size risk, HML is the value risk, and ϵ is the error term. i is the fund index, and t is the time index.

Table 8 shows the concatenated results of the panel regressions of equation (12) and (13), displaying the risk-adjusted performance measures and their coherent risk component(s) as explanatory variables. The results show that flows follow the fund-specific performance rather than the market performance in general. Thus, investors do not direct flows into funds when the overall market is performing well if the fund itself is not performing well.

Table 8: Predictive panel regressions with net flows as the dependent variable, and past risk-adjusted performance and coherent risk component(s) as independent variables.

	Dependent variable: Net flows ($NF_{i,t}$)	
	Performance:	
	(1)	(2)
	Abn. ret., CAPM	Abn. ret., FFM
	Entity Fixed	Entity Fixed
$Performance_{i,\{t-12,\dots,t\}}$	3.701*** (0.397)	2.967*** (0.852)
$r_{m,\{t-12,\dots,t\}} - r_{f,\{t-12,\dots,t\}}$	-0.242 (0.076)	0.418 (0.821)
$SMB_{\{t-12,\dots,t\}}$		-0.805 (0.660)
$HML_{\{t-12,\dots,t\}}$		1.544*** (0.562)
<i>Constant</i>	-0.226*** (0.076)	-0.213 (0.147)
R-squared	0.000	0.000
Total Obs	102,078	102,078

Notes: Period: Jan 2014 - Jan 2022. Values in parentheses represent standard errors. Standard errors are clustered at the fund level. */**/** denote statistical significance at the 10/5/1 percent levels.

6 Conclusions and Future Work

This paper investigates the relationship between past performance and net flows in mutual funds and how this relationship differs across investors in three types of share classes: institutional, load retail, and no-load retail. Our sample consists of 1082 actively managed US open-end equity funds. We investigate whether past performance over various time horizons and performance measured in various ways can predict fund flows in the three investor groups. We also investigate whether fund flows are determined mainly by fund-specific performance or market performance.

Our results show that past performance over all the considered time horizons and performance measures can be used to predict fund flows, and that all three types of investors chase past performance, whether it is unadjusted or risk-adjusted. The findings indicate that performance over the past three months, six months, and one year are the most significant for investors when evaluating past performance. We find that the relationship between flows and performance is stronger for institutional investors than retail investors. Moreover, the relationship between fund flows and past performance is found to be weaker for load retail investors than for their no-load counterparts. These results indicate that the investment behavior of retail investors in no-load funds is more closely related to the behavior of institutional investors than that of load retail investors. Lastly, the results show that flows follow fund-specific performance rather than the overall market performance.

As the net flows are influenced by both the inflows and outflows, future work should incorporate the analysis of sales (inflows) and redemptions (outflows), as this might reveal a more detailed and novel view of investor behaviors. However, limitations on data availability could impede such analysis. Further research could also include analysis on the share class level instead of aggregation of investor groups, supposing one can obtain a larger dataset.

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Appendix

A Class Specific Descriptive Statistics

A.1 Institutional Funds

Table 9: Class-specific descriptive table for the institutional funds.

	N	Mean	Std	Min	Max
$NF_{i,t}$	43,541	-0.071	4.024	-49.531	215.657
$r_{i,\{t-1,t\}}$	43,541	0.010	0.042	-0.239	0.277
$r_{i,\{t-3,\dots,t\}}$	43,541	0.030	0.072	-0.314	0.677
$r_{i,\{t-6,\dots,t\}}$	43,541	0.062	0.106	-0.370	0.923
$r_{i,\{t-12,\dots,t\}}$	43,541	0.130	0.167	-0.331	2.162
$r_{i,\{t-24,\dots,t\}}$	43,541	0.253	0.224	-0.485	2.800
$r_{i,\{t-36,\dots,t\}}$	43,541	0.369	0.236	-0.382	3.238
$SR_{i,\{t-12,\dots,t\}}$	43,541	0.733	1.005	-2.085	12.829
$r_{i,\{t-12,\dots,t\}}^{abn,CAPM}$	43,541	0.012	0.107	-0.421	1.722
$r_{i,\{t-12,\dots,t\}}^{abn,FFM}$	43,541	0.008	0.069	-0.512	0.406

Notes: Net flows, $NF_{i,t}$, are given in percentage values. Performance measures, $r_{i,t}$, are given in decimal values.

A.2 All Retail Funds

Table 10: Class-specific descriptive table for the retail funds.

	N	Mean	Std	Min	Max
$NF_{i,t}$	58,537	-0.558	3.284	-84.007	138.624
$r_{i,\{t-1,t\}}$	58,537	0.010	0.041	-0.230	0.279
$r_{i,\{t-3,\dots,t\}}$	58,537	0.030	0.071	-0.311	0.610
$r_{i,\{t-6,\dots,t\}}$	58,537	0.063	0.105	-0.349	0.982
$r_{i,\{t-12,\dots,t\}}$	58,537	0.132	0.165	-0.388	1.976
$r_{i,\{t-24,\dots,t\}}$	58,537	0.257	0.223	-0.516	2.442
$r_{i,\{t-36,\dots,t\}}$	58,537	0.373	0.230	-0.433	2.638
$SR_{i,\{t-12,\dots,t\}}$	58,537	0.744	0.996	-2.337	11.723
$r_{i,\{t-12,\dots,t\}}^{abn,CAPM}$	58,537	0.014	0.105	-0.525	1.589
$r_{i,\{t-12,\dots,t\}}^{abn,FFM}$	58,537	0.001	0.071	-0.540	0.657

Notes: Net flows, $NF_{i,t}$, are given in percentage values. Performance measures, $r_{i,t}$, are given in decimal values.

A.3 Load Retail Funds

Table 11: Class-specific descriptive table for the load retail funds.

	N	Mean	Std	Min	Max
$NF_{i,t}$	26,687	-0.685	2.704	-52.221	138.624
$r_{i,\{t-1,t\}}$	26,687	0.010	0.042	-0.230	0.261
$r_{i,\{t-3,\dots,t\}}$	26,687	0.030	0.071	-0.300	0.610
$r_{i,\{t-6,\dots,t\}}$	26,687	0.063	0.105	-0.349	0.942
$r_{i,\{t-12,\dots,t\}}$	26,687	0.132	0.163	-0.388	1.658
$r_{i,\{t-24,\dots,t\}}$	26,687	0.259	0.218	-0.423	2.214
$r_{i,\{t-36,\dots,t\}}$	26,687	0.377	0.228	-0.328	2.257
$SR_{i,\{t-12,\dots,t\}}$	26,687	0.743	0.983	-2.337	9.834
$r_{i,\{t-12,\dots,t\}}^{abn,CAPM}$	26,687	0.012	0.103	-0.525	1.300
$r_{i,\{t-12,\dots,t\}}^{abn,FFM}$	26,687	0.002	0.069	-0.374	0.657

Notes: Net flows, $NF_{i,t}$, are given in percentage values. Performance measures, $r_{i,t}$, are given in decimal values.

A.4 No-Load Retail Funds

Table 12: Class-specific descriptive table for the no-load retail funds.

	N	Mean	Std	Min	Max
$NF_{i,t}$	31,850	-0.452	3.697	-84.007	137.295
$r_{i,\{t-1,t\}}$	31,850	0.010	0.041	-0.188	0.279
$r_{i,\{t-3,\dots,t\}}$	31,850	0.030	0.071	-0.311	0.529
$r_{i,\{t-6,\dots,t\}}$	31,850	0.063	0.105	-0.327	0.982
$r_{i,\{t-12,\dots,t\}}$	31,850	0.132	0.167	-0.364	1.976
$r_{i,\{t-24,\dots,t\}}$	31,850	0.256	0.227	-0.516	2.442
$r_{i,\{t-36,\dots,t\}}$	31,850	0.369	0.232	-0.433	2.638
$SR_{i,\{t-12,\dots,t\}}$	31,850	0.746	1.007	-2.278	11.723
$r_{i,\{t-12,\dots,t\}}^{abn,CAPM}$	31,850	0.016	0.106	-0.447	1.589
$r_{i,\{t-12,\dots,t\}}^{abn,FFM}$	31,850	0.000	0.073	-0.540	0.555

Notes: Net flows, $NF_{i,t}$, are given in percentage values. Performance measures, $r_{i,t}$, are given in decimal values.

B List of Institutional Funds

Name	NASDAQ Ticker	TNA (\$1M)
13D Activist Fund;I	DDDIX	183.835
AB Concentrated Growth Fund;Advisor	WPSGX	1044.014
AB Discovery Value Fund;Advisor	ABYSX	2530.116
AB Select US Equity Portfolio;Advisor	AUUYX	191.930
AB Select US Long/Short Portfolio;Advisor	ASYLX	1662.359
AB Value Fund;Advisor	ABVYX	352.243
Aegis Value Fund;I	AVALX	236.882
Al Frank Fund;Advisor	VALAX	59.838
Alger Capital Appreciation Institutional Fund;I	ALARX	2157.546

Alger Focus Equity Fund;I	ALGRX	1007.790
Alger Mid Cap Growth Institutional Fund;I	ALMRX	55.224
Alger Small Cap Growth Institutional Fund;I	ALSRX	158.026
Allspring C&B Large Cap Value Fd;Inst	CBLSX	208.086
Allspring C&B Mid Cap Value Fund;Inst	CBMSX	422.449
Allspring Disciplined Small Cap Fd;Adm	NVSOX	15.858
Allspring Discovery Mid Cap Growth;Inst	WFEIX	582.960
Allspring Discovery Small Cap Growth Fund;Inst	EGRYX	105.720
Allspring Discovery SMID Cap Growth Fund;Inst	WFDSX	1359.917
Allspring Emerging Growth Fund;Adm	WFGDX	305.445
Allspring Growth Fund;Institutional	SGRNX	3030.608
Allspring Index Fund;Adm	WFIOX	978.474
Allspring Large Company Value Fd;Inst	WLCIX	199.763
Allspring Premier Large Co Gr Fd;Inst	EKJYX	1929.667
Allspring Small Cap Fund;Institutional	WFSSX	37.570
Allspring Small Company Growth Fd;Adm	NVSCX	653.452
Allspring Special Large Cap Value Fund;Inst	EIVIX	694.457
Allspring Special Mid Cap Val Fd;Inst	WFMIX	10270.421
American Beacon Bridgeway Large Cap Growth Fd;R5	BRLGX	145.312
American Beacon Bridgeway Large Cap Val;R5	BRLVX	531.711
American Beacon Large Cap Value Fund;R5	AADEX	2997.926
American Beacon Mid-Cap Value Fund;R5	AACIX	106.053
American Beacon Small Cap Value Fund;R5	AVFIX	3995.252
American Beacon The London Company Inc Eqty;Y	ABCYX	1615.138
American Beacon Zebra Small Cap Equity Fund;Y	AZSYX	39.291
AMG Frontier Small Cap Growth Fund;I	MSSCX	21.216
AMG GW&K International Small Cap Fund;I	MECIX	28.088
AMG Renaissance Large Cap Growth Fund;Z	MRLIX	91.022
AMG River Road Large Cap Value Select Fund;I	MEQFX	31.861
AMG TimesSquare Mid Cap Growth Fund;Z	TMDIX	1261.201
AMG TimesSquare Small Cap Growth Fund;Z	TSCIX	247.906
AMG Veritas Global Focus Fund;I	MFQTX	28.653
AMG Yacktman Fund;I	YACKX	7408.102
Ancora MicroCap Fund;I	ANCIX	12.814
Ancora/Thelen Small-Mid Cap Fund;I	AATIX	121.110
AQR Large Cap Defensive Style Fund;I	AUEIX	3946.493
AQR Large Cap Momentum Style Fund;I	AMOMX	692.530
AQR Large Cap Multi-Style Fund;I	QCELX	932.407
AQR Long-Short Equity Fund;I	QLEIX	471.422
AQR Small Cap Momentum Style Fund;I	ASMOX	200.707
AQR Small Cap Multi-Style Fund;I	QSMLX	102.009
Arin Large Cap Theta Fund;Institutional	AVOLX	165.428
Aspiriant Risk-Managed Equity Allocation Fund;Adv	RMEAX	1314.756
AXS Alternative Growth Fund;I	EEHIX	1.747
Baird Equity Opportunity Fund;Institutional	BSVIX	53.436
Baird Mid Cap Growth Fund;Institutional	BMDIX	1873.061
Baywood SociallyResponsible Fund;Institutional	BVSIX	6.534
Baywood ValuePlus Fund;Institutional	BVPIX	3.232
BlackRock Advantage Small Cap Core;Inst	BDSIX	3439.610
BlackRock Advantage Small Cap Growth Fund;Inst	PSGIX	490.992
BlackRock Advantage SMID Cap Fund;Inst	MASPX	303.838
BlackRock Equity Dividend Fund;Institutional	MADVX	17596.761
BlackRock Global Equity Market Neutral Fund;Inst	BDMIX	656.643
BlackRock High Equity Income Fund;Institutional	BMCIX	1505.225
BlackRock Large Cap Focus Value Fund;Institutional	MABAX	1696.289
BlackRock Mid-Cap Growth Equity Portfolio;Inst	CMGIX	11776.644
BlackRock Mid-Cap Value Fund;Inst	MARFX	886.348
BNY Mellon Equity Income Fund;I	DQIRX	830.628
BNY Mellon Focused Equity Opportunities Fund;M	MFOMX	270.823
BNY Mellon Income Stock Fund;M	MPISX	433.508

BNY Mellon Mid Cap Multi-Strategy Fund;M	MPMCX	1743.725
BNY Mellon Select Managers Small Cap Growth Fund;I	DSGIX	307.742
BNY Mellon Select Managers Small Cap Value Fund;I	DMVIX	323.100
BNY Mellon Small Cap Growth Fund;I	SSETX	17.659
BNY Mellon Small Cap Multi-Strategy Fund;M	MPSSX	555.107
BNY Mellon Small Cap Value Fund;I	STSVX	162.807
BNY Mellon Small/Mid Cap Growth Fund;I	SDSCX	2474.035
BNY Mellon Tax Sensitive Large Cap Multi-Str;M	MTSMX	66.948
BNY Mellon US Equity Fund;I	DPUIX	452.530
Boston Common ESG Impact US Equity Fund	BCAMX	46.670
Boston Partners All-Cap Value Fund;Institutional	BPAIX	1320.286
Boston Partners Global Long/Short Fund;Inst	BGLSX	130.250
Boston Partners Long/Short Equity Fund;Inst	BPLSX	62.559
Boston Partners Long/Short Research Fund;Inst	BPIRX	777.314
Boston Partners Small Cap Value II Fund;Inst	BPSIX	691.922
Boston Trust Equity Fund	BTEFX	175.522
Boston Trust Midcap Fund	BTMFX	142.364
Boston Trust SMID Cap Fund	BTSMX	440.414
Boston Trust Walden Equity Fund	WSEFX	218.668
Boston Trust Walden Midcap Fund	WAMFX	86.576
Boston Trust Walden SMID Cap Fund	WASMX	102.367
Boston Walden Trust Small Cap Fund	BOSOX	890.844
BrandywineGLOBAL - Diversified US Large Cp Val;IS	LBISX	158.621
Bridgeway Omni Small-Cap Value Fund	BOSVX	1120.515
Bridgeway Omni Tax-Managed Small-Cap Value Fund	BOTSX	768.018
Bright Rock Mid Cap Growth Fund;Inst	BQMGX	81.706
Bright Rock Quality Large Cap Fund;Inst	BQLCX	279.458
Capital Group US Equity Fund	CUSEX	264.688
Carillon Scout Mid Cap Fund;I	UMBMX	3627.093
Carillon Scout Small Cap Fund;I	UMBHX	249.629
CIBC Atlas All Cap Growth Fund;Institutional	AWGIX	194.431
CIBC Atlas Disciplined Equity Fund;Institutional	AWEIX	1358.882
CIBC Atlas Equity Income Fund;Institutional	AWYIX	284.202
ClearBridge Large Cap Value Fund;I	SAIFX	2504.516
ClearBridge Mid Cap Growth Fund;I	LBGIX	157.949
ClearBridge Select Fund;I	LBFIX	2214.719
Clifford Capital Partners Fund;Institutional	CLIFX	91.712
Columbia Acorn Fund;I	ACRNX	2534.844
Columbia Acorn USA Fund;I	AUSAX	156.257
Columbia Contrarian Core Fund;I	SMGIX	9655.662
Columbia Dividend Income Fund;I	GSFTX	32965.168
Columbia Integrated Large Cap Growth Fund;Adv	ILGFX	227.547
Columbia Integrated Large Cap Value Fund;Adv	ILVEX	300.079
Columbia Integrated Small Cap Growth Fund;Adv	ISGLX	54.818
Columbia Large Cap Enhanced Core Fund;I	NMIMX	357.384
Columbia Large Cap Growth Fund;I	GEGTX	3686.291
Columbia Large Cap Growth Opportunity Fund;I	NFEPX	1103.670
Columbia Large Cap Index Fund;I	NINDX	2771.571
Columbia Select Large Cap Equity Fund;I	NSEPX	1124.154
Columbia Select Large Cap Growth Fund;I	UMLGX	1082.546
Columbia Select Mid Cap Growth Fund;I	CLSPX	1335.010
Columbia Select Mid Cap Value Fund;I	NAMAX	2338.375
Columbia Small Cap Growth Fund;I	CMSCX	1454.942
Columbia Small Cap Value Fund II;Ins	NSVAX	1157.422
Congress Large Cap Growth Fund;Institutional	CMLIX	352.941
Congress Mid Cap Growth;Inst	IMIDX	1186.156
Cove Street Capital Small Cap Value Fund;Inst	CSCAX	34.039
Covered Bridge Fund;I	TCBIX	105.752
Crawford Large Cap Dividend Fund;I	CDGIX	50.348
CRM All Cap Value Fund;Institutional	CRIEX	22.038

CRM Mid Cap Value Fund;Institutional	CRIMX	374.845
CRM Small/Mid Cap Value Fund;Institutional	CRIAX	138.390
Cromwell Tran Sustainable Focus Fund;Inst	LIMIX	37.820
Cullen Small Cap Value Fund;I	CUSIX	10.851
Delaware Small Cap Core Fund;Institutional	DCCIX	6354.229
Delaware Value Fund;Institutional	DDVIX	6529.983
DFA Enhanced US Large Company Portfolio;Inst	DFELX	246.493
DFA US Core Equity 1 Portfolio;Institutional	DFEOX	25758.760
DFA US Core Equity 2 Portfolio;Institutional	DFQTX	26698.790
DFA US Large Cap Equity Portfolio;Inst	DUSQX	1518.111
DFA US Large Cap Growth Portfolio;Inst	DUSLX	2172.726
DFA US Large Cap Value Portfolio III;Institutional	DFUVX	3154.348
DFA US Large Cap Value Portfolio;Institutional	DFLVX	20637.552
DFA US Large Company Portfolio;Inst	DFUSX	9103.393
DFA US Micro Cap Portfolio;Institutional	DFSCX	5783.349
DFA US Small Cap Growth Portfolio;Inst	DSCGX	744.509
DFA US Small Cap Portfolio;Institutional	DFSTX	12632.974
DFA US Small Cap Value Portfolio;Institutional	DFSVX	12623.445
DFA US Social Core Equity 2 Portfolio;Inst	DFUEX	1310.623
DFA US Sustainability Core 1 Portfolio;Inst	DFSIX	4454.520
DFA US Targeted Value Portfolio;Institutional	DFVFX	10488.031
DFA US Vector Equity Portfolio;Institutional	DFVEX	3978.217
Dunham Focused Large Cap Growth;N	DNFGX	144.785
Dunham Small Cap Growth Fund;N	DNDGX	73.094
Easterly Snow Small Cap Value Fund;I	SNWIX	17.922
Edgewood Growth Fund;Institutional	EGFIX	15979.880
EIC Value Fund;Inst	EICIX	221.083
Empower Ariel Mid Cap Value Fund;Investor	MXMCX	108.117
Empower Large Cap Growth Fund;Investor	MXLGX	662.940
Empower Large Cap Value Fund;Investor	MXEQX	1333.479
Empower Mid Cap Value Fund;Investor	MXMVX	615.146
Empower S&P 500 Index Fund;Investor	MXVIX	3403.220
Empower Small Cap Value Fund;Inv	MXLSX	349.527
Empower T Rowe Price Mid Cap Growth Fund;Inv	MXMGX	1459.297
ERShares US Small Cp Fund; Institutional	IMPAX	79.936
Federated Hermes Kaufmann Fund;R	KAUFX	4837.246
Federated Hermes Kaufmann Large Cap Fund;Inst	KLCIX	2208.870
Federated Hermes MDT All Cap Core Fund;Inst	QIACX	390.936
Federated Hermes MDT Large Cap Growth Fund;Inst	QILGX	192.199
Federated Hermes MDT Large Cap Value Fund;Svc	FSTKX	1003.970
Federated Hermes MDT Market Neutral Fund;Inst	QQMNX	115.538
Federated Hermes MDT Small Cap Core Fund;Inst	QISCX	1057.944
Federated Hermes MDT Small Cap Growth Fund;Inst	QISGX	581.514
Federated Hermes Strategic Value Dividend Fund;IS	SVAIX	9130.477
Fiera Capital Small/Mid-Cap Growth Fund;Inst	APSGX	76.130
First Eagle US Value Fund;I	FEVIX	1053.446
First Trust/Confluence Small Cap Value Fund;I	FOVIX	27.095
Franklin US Large Cap Equity Fund;IS	LMISX	174.753
Franklin US Small Cap Equity Fund;I	LMSIX	93.920
Free Market US Equity Fund;Inst	FMUEX	2993.871
Fuller & Thaler Behavioral Sml-Cp Equity Fund;Inst	FTHSX	5057.125
GMO Quality Fund;III	GQETX	6443.566
GMO US Equity Fund;III	GMUEX	348.071
Goldman Sachs Concentrated Growth Fund;Inst	GCRIX	129.350
Goldman Sachs Flexible Cap Fund;Inst	GILLX	38.139
Goldman Sachs Large Cap Growth Insights Fund;Inst	GCGIX	941.905
Goldman Sachs Large Cap Value Fund;Institutional	GSLIX	414.803
Goldman Sachs Large Cap Value Insights Fund;Inst	GCVIX	339.076
Goldman Sachs Mid Cap Growth Fund;Institutional	GGOIX	871.853
Goldman Sachs Mid Cap Value Fund;Institutional	GSMCX	1048.540

Goldman Sachs Small Cap Equity Insights Fund;Inst	GCSIX	379.409
Goldman Sachs Small Cap Growth Insights Fund;Inst	GSIOX	119.835
Goldman Sachs Small Cap Value Insights Fund;Inst	GSITX	1002.323
Goldman Sachs Small/Mid Cap Growth Fund;Inst	GSMYX	1928.567
Goldman Sachs Strategic Growth Fund;Institutional	GSTIX	127.139
Goldman Sachs US Equity Dividend & Premium Fd;Inst	GSPKX	2506.563
Goldman Sachs US Tax-Managed Equity Fund;Inst	GCTIX	2176.755
Gotham Enhanced Return Fund;Institutional	GENIX	206.667
Great Lakes Disciplined Equity Fund;Inst	GLDNX	22.194
Great Lakes Large Cap Value Fund;Institutional	GLLIX	34.307
Great Lakes Small Cap Opportunity Fund;Inst	GLSIX	26.011
Guggenheim Directional Allocation Fund;Inst	TVRIX	255.158
Guggenheim RBP Large-Cap Value Fund;Inst	TVVIX	3.855
GuideStone Growth Equity Fund;Inst	GGEYX	1130.571
Hamlin High Dividend Equity Fund;Inst	HHDFX	879.318
Harbor Capital Appreciation Fund;Institutional	HACAX	21153.121
Harbor Disruptive Innovation Fund;Institutional	HAMGX	106.456
Harbor Large Cap Value Fund;Institutional	HAVLX	1949.225
Harbor Mid Cap Value Fund;Institutional	HAMVX	287.277
Harbor Small Cap Growth Fund;Institutional	HASGX	855.196
Harbor Small Cap Value Fund;Institutional	HASCX	1869.926
Hartford Schroders US MidCap Opps Fd;I	SMDIX	667.085
Hartford Schroders US Sm Cap Opportunities Fd;I	SCUIX	271.258
Hartford Small Cap Growth Fund;Y	HSLYX	465.303
Hood River Small-Cap Growth Fund;Institutional	HRSMX	1146.389
Hotchkis & Wiley Diversified Value Fund;I	HWCIX	76.992
Hotchkis & Wiley Large Cap Value Fund;I	HWLIX	355.582
Hotchkis & Wiley Mid-Cap Value Fund;I	HWMIX	405.876
Hotchkis & Wiley Small Cap Diversified Value Fd;I	HWVIX	486.142
Hotchkis & Wiley Small Cap Value Fund;I	HWSIX	560.499
Hotchkis & Wiley Value Opportunities Fund;I	HWAIX	425.503
HSBC RadiantESG US Smaller Companies Fund;I	RESCX	34.187
Huber Large Cap Value Fd;Inst	HUDEX	9.038
iMGP Equity Fund;Inst	MSEFX	150.652
IMS Capital Value Fund;Institutional	IMSCX	32.443
Independent Franchise Partners US Equity Fund	IFPUX	1490.213
Invesco Main Street Small Cap Fund;R6	OSSIX	1346.463
iShares Russell 1000 LC Idx Fund;K	BRGKX	794.050
Jackson Square SMID-Cap Growth Fund;IS	DCGTX	876.855
Jacob Discovery Fund;Institutional	JMIGX	30.557
JAG Large Cap Growth Fund;I	JLGIX	39.845
Jensen Quality Value Fund;I	JNVIX	168.398
John Hancock Blue Chip Growth Fund;1	JIBCX	3183.763
John Hancock Capital Appreciation Fund;NAV	JHCPX	1242.290
John Hancock Disciplined Value Fund;I	JVLIX	11271.605
John Hancock Disciplined Value Mid Cap Fund;Inst	JVMIX	17454.625
John Hancock New Opportunities Fund;1	JISOX	267.810
John Hancock Seaport Long/Short Fund;I	JSFDX	993.350
John Hancock US Growth Fund;NAV	JSGBX	932.420
JPMorgan Equity Focus Fund;I	JPFSX	179.764
JPMorgan Equity Income Fund;I	HLIEX	43791.828
JPMorgan Large Cap Growth Fund;I	SEEGX	32406.936
JPMorgan Large Cap Value Fund;I	HLQVX	2954.882
JPMorgan Mid Cap Equity Fund;I	VSNGX	2713.149
JPMorgan Mid Cap Growth Fund;I	HLGEX	6990.477
JPMorgan Mid Cap Value Fund;L	FLMVX	13151.133
JPMorgan Small Cap Sustainable Leaders Fund;R5	VSSCX	96.471
JPMorgan Small Cap Value Fund;I	PSOPX	1210.746
JPMorgan SMID Cap Equity Fund;I	WOOPX	285.711
JPMorgan Tax Aware Equity Fund;I	JPDEX	985.374

JPMorgan US Applied Data Science Value Fund;I	JPIVX	179.650
JPMorgan US Equity Fund;L	JMUEX	17909.511
JPMorgan US GARP Equity Fund;I	JPGSX	932.291
JPMorgan US Large Cap Core Plus Fund;I	JLPSX	1516.764
JPMorgan US Research Enhanced Equity Fund;I	JDESX	6408.794
JPMorgan US Small Company Fund;L	JUSSX	850.853
JPMorgan US Sustainable Leaders Fund;I	JIISX	166.279
JPMorgan Value Advantage Fund;L	JVAIX	8800.910
KEELEY Mid Cap Dividend Value Fund;I	KMDIX	109.533
KEELEY Small Cap Dividend Value Fund;I	KSDIX	287.255
KEELEY Small-Mid Cap Value Fund;I	KSMIX	29.702
Kempner Multi-Cap Deep Value Fund;Institutional	FIKDX	67.315
LKCM Equity Fund;Institutional	LKEQX	426.370
LKCM Small Cap Equity Fund;Institutional	LKSCX	162.621
LKCM Small-Mid Equity Funds;Inst	LKSMX	14.770
LoCorr Dynamic Equity Fund;I	LEQIX	61.659
Loomis Sayles Small Cap Growth Fund;Inst	LSSIX	1976.447
Loomis Sayles Small Cap Value Fund;Inst	LSSCX	421.454
Lord Abbett Focused Small Cap Value Fund;I	LMVYX	122.533
Lord Abbett Growth Leaders Fund;F	LGLFX	5525.892
Lord Abbett Micro Cap Growth Fund;I	LMIYX	219.557
LSV Conservative Value Equity Fund;Institutional	LSVYX	130.244
LSV Small Cap Value Fund;Institutional	LSVQX	339.232
LSV Value Equity Fund;Institutional	LSVEX	1497.595
Lyrical US Value Equity Fund;Institutional	LYRIX	574.846
Madison Covered Call & Equity Income Fund;Y	MENYX	117.535
MAI Managed Volatility Fund;Institutional	MAIPX	194.010
MainStay Epoch US Equity Yield Fund;I	EPLCX	971.250
MainStay WMC Small Companies Fund;I	MOPIX	284.484
MainStay WMC Value Fund;I	MUBFX	915.876
Manning & Napier Disciplined Value Series;I	MNDFX	346.464
Mar Vista Strategic Growth Fund;Institutional	MVSIX	62.695
MassMutual 60/40 Allocation Fund;Adm	MRSIX	156.964
MassMutual Blue Chip Growth Fund;R5	MBCSX	2535.753
MassMutual Disciplined Growth Fund;Service	DEIGX	154.740
MassMutual Disciplined Value Fund;Service	DENVX	67.271
MassMutual Diversified Value Fund;R5	MDVSX	277.962
MassMutual Equity Opportunities Fund;R5	MFVSX	556.747
MassMutual Fundamental Growth Fund;R5	MOTCX	25.982
MassMutual Fundamental Value Fund;R5	MVUSX	426.109
MassMutual Growth Opportunities Fund;R5	MGRSX	234.470
MassMutual Main Street Fund;R5	MMSSX	66.908
MassMutual Mid Cap Growth Fund;R5	MGRFX	5123.504
MassMutual Mid Cap Value Fund;R5	MLUSX	101.055
MassMutual Small Cap Growth Equity Fund;R5	MSGSX	525.136
MassMutual Small Cap Value Equity Fund;R5	MMQX	49.079
MassMutual Small Company Value Fund;R5	MSVSX	195.857
Monteagle Select Value Fund;Inst	MVEIX	13.977
Morgan Stanley Inception Portfolio;I	MSSGX	447.407
Morgan Stanley Inst Discovery Portfolio;I	MPEGX	1160.198
Morgan Stanley Inst Portfolio;I	MSEQX	5924.847
Morgan Stanley Institutional Advantage Port;I	MPAIX	264.180
Nationwide American Century Small Cap Income Fd;IS	NWUSX	32.979
Nationwide BNY Mellon Dynamic US Core Fund;R6	MUIGX	1048.995
Nationwide Diamond Hill Large Cap Con Fd;IS	NWGKX	20.596
Nationwide Fund;Institutional Service	MUIFX	974.602
Nationwide Geneva Small Cap Growth Fund;IS	NWKDX	1194.897
Nationwide Small Company Growth Fund;Inst Svc	NWSIX	139.040
Nationwide WCM Focused Small Cap Fund;IS	NWGSX	173.672
Natixis Loomis Sayles Growth Fund;Y	LSGRX	9510.056

Natixis Vaughan Nelson Mid Cap Fund;Y	VNVYX	265.465
Natixis Vaughan Nelson Select Fund;Y	VNSYX	263.565
Neuberger Berman Equity Income Fund;Institutional	NBHIX	1017.886
Neuberger Berman Intrinsic Value Fund;Inst	NINLX	1234.799
Neuberger Berman Long Short Fund;Institutional	NLSIX	5251.177
Neuberger Berman Multi-Cap Opportunities Fund;Inst	NMULX	296.122
NexPoint Event Driven Fund;Z	HHCZX	22.987
Nicholas II Inc;I	NCTWX	869.061
Nicholas Limited Edition;I	NCLEX	416.708
North Star Dividend;I	NSDVX	75.295
North Star Micro Cap;I	NSMVX	81.352
Nuance Concentrated Value Fund;Institutional	NCVLX	292.889
Nuance Mid Cap Value Fund;Institutional	NMVLX	3004.412
Nuveen Dividend Growth Fund;I	NSBRX	5185.272
Nuveen Equity Long/Short Fund;I	NELIX	100.550
Nuveen Large Cap Value Fund;Class I	NQCRX	17.667
Nuveen Mid Cap Growth Opportunities Fund;I	FISGX	224.928
Nuveen Multi Cap Value Fund;I	NQVRX	72.641
Nuveen Small Cap Growth Opportunities Fund;I	FIMPX	160.711
Nuveen Small Cap Select Fund;I	ARSTX	102.839
Nuveen Small Cap Value Fund;I	FSCCX	491.414
Nuveen Small Cap Value Opportunities Fund;I	NSCRX	167.274
Nuveen Small/Mid Cap Value Fund;I	NSMRX	34.209
Nuveen Winslow Large-Cap Growth ESG Fund;I	NVLIX	566.995
Optimum Large Cap Growth Fund;Institutional	OILGX	1445.015
Optimum Large Cap Value Fund;Institutional	OILVX	1686.191
Optimum Small-Mid Cap Growth Fund;Institutional	OISGX	603.489
Optimum Small-Mid Cap Value Fund;Institutional	OISVX	605.849
Otter Creek Long/Short Opportunity Fund;Inst	OTTRX	190.637
PACE Large Co Growth Equity Investments;P	PCLCX	783.157
PACE Large Co Value Equity Investments;P	PCLVX	826.667
PACE Small/Medium Co Growth Equity Inv;P	PCSGX	297.738
PACE Small/Medium Co Value Equity Inv;P	PCSVX	339.887
Pax Small Cap Fund;Institutional	PXSIX	572.731
Persimmon Long/Short Fund;I	LSEIX	38.324
PGIM Jennison Focused Growth Fund;Z	SPFZX	1186.260
PGIM Quant Solutions Large-Cap Value Fund;Z	SUVZX	272.308
PGIM Quant Solutions Small-Cap Value Fund;Z	TASVX	403.620
PGIM Quant Solutions Stock Index Fund;Z	PSIFX	634.787
Polen Growth Fund;Institutional	POLIX	7676.176
Poplar Forest Partners Fund;Inst	IPFPX	299.931
Praxis Growth Index Fund;I	MMDEX	436.098
Principal Blue Chip Fund;Inst	PBCKX	7714.132
Principal LargeCap Growth Fund I;Inst	PLGIX	8992.330
Principal LargeCap Value Fund III;Inst	PLVIX	2565.203
Principal MidCap Fund;R-5	PMBPX	17578.785
Principal MidCap Growth Fund III;R-5	PPQPX	1028.092
Principal MidCap Growth Fund;R-5	PHPPX	219.511
Principal MidCap Value Fund I;Inst	PVMIX	3331.563
Principal Small-MidCap Dividend Income Fund;Inst	PMDIX	910.394
Principal SmallCap Fund;R-4	PSBSX	1092.066
Principal SmallCap Growth Fund I;Inst	PGRTX	2099.057
Principal SmallCap Value Fund II;Inst	PPVIX	1009.503
Private Capital Management Value Fund;I	VFPIX	36.731
Ranger Small Cap Fund;Inst	RFISX	33.395
Rational Dynamic Brands Fund;Institutional	HSUTX	47.572
RBC Microcap Value Fund;I	RMVIX	99.442
RBC Small Cap Core Fund;I	RCSIX	37.951
RBC SMID Cap Growth Fund;I	TMCIX	78.315
Rice Hall James MicroCap Portfolio;Institutional	RHJSX	40.668

Rice Hall James Small Cap Portfolio;Institutional	RHJMX	13.919
Riverbridge Growth Fund;Institutional	RIVBX	193.238
RiverPark Long/Short Opportunity Fund;Instl	RLSIX	91.961
RMB Small Cap Fund;I	RMBBX	100.258
RMB SMID Cap Fund;I	RMBMX	175.034
Russell Investments Sustainable Equity Fund;Y	REUYX	202.109
Russell Investments Tax-Managed US Large Cap;S	RETSX	5311.822
Russell Investments Tax-Managed US Mid & Sm Cp;S	RTSSX	1184.710
Russell Investments US Small Cap Equity Fund;Y	REBYX	1003.174
Russell Investments US Strategic Equity Fund;S	RSESX	2880.184
Scharf Fund;Institutional	LOGIX	361.997
Segall Bryant & Hamill All Cap Fund;Inst	SBHAX	127.985
Segall Bryant & Hamill Small Cap Growth Fd;Inst	WISGX	164.267
Segall Bryant & Hamill Small Cap Value Fund;Inst	SBHVX	542.436
SEI Inst Mgd Large Cap Fund;F	SLGAX	1570.673
SEI Inst Mgd Large Cap Growth Fund;F	SELCX	1298.774
SEI Inst Mgd Large Cap Value Fund;F	TRMVX	1243.176
SEI Inst Mgd Mid-Cap Fund;F	SEMCX	68.985
SEI Inst Mgd Small Cap Fund;F	SLLAX	514.539
SEI Inst Mgd Small Cap Growth Fund;F	SSCGX	310.006
SEI Inst Mgd Small Cap Value Fund;F	SESVX	347.873
SEI Inst Mgd Tax-Managed Large Cap Fund;F	TMLCX	3611.512
SEI Inst Mgd Tax-Managed Managed Volatility;F	TMMAX	866.657
SEI Inst Mgd Tax-Managed Small/Mid Cap Fund;F	STMSX	781.146
SEI Inst Mgd US Managed Volatility Fund;F	SVOAX	797.821
SGI Small Cap Core Fund;I	BOGIX	81.699
SGI US Large Cap Equity Fund;I	SILVX	386.060
Sit Dividend Growth Fund;I	SDVGX	203.522
SouthernSun US Equity Fund;I	SSEIX	40.021
State Street Institutional Premier Growth Eqty;Inv	SSPGX	25.754
State Street Institutional Small-Cap Equity;Inv	SIVIX	948.736
State Street Institutional US Equity Fund;Inv	SUSIX	176.366
State Street US Core Equity Fund	SSAQX	5200.296
Sterling Capital Behavioral Large Cap Val Eq;Inst	BBISX	27.882
Sterling Capital Behavioral Small Cap Val Eq;Inst	SPSCX	35.792
Sterling Capital Equity Income Fund;Institutional	BEGIX	2014.682
Sterling Capital Mid Cap Relative Value Fund;Inst	STRGX	45.438
Sterling Capital Mid Value Fund;Institutional	OVEIX	46.974
Sterling Capital Small Cap Value Fund;Inst	STSCX	356.864
Texas Fund;I	BIGTX	12.935
Third Avenue Small-Cap Value Fund;Institutional	TASCX	147.728
TIAA-CREF Growth & Income Fund;Institutional	TIGRX	4712.678
TIAA-CREF Large-Cap Growth Fund;Institutional	TILGX	4445.872
TIAA-CREF Large-Cap Value Fund;Institutional	TRLIX	4408.434
TIAA-CREF Mid-Cap Growth Fund;Institutional	TRPWX	1029.971
TIAA-CREF Mid-Cap Value Fund;Institutional	TIMVX	1645.008
TIAA-CREF Quant Small-Cap Equity Fund;Inst	TISEX	2438.641
TIAA-CREF Social Choice Equity Fund;Institutional	TISCX	5611.636
Touchstone Focused Fund;Y	TFFYX	933.528
Touchstone Mid Cap Fund;Y	TMCPX	4010.040
Touchstone Mid Cap Value Fund;Y	TCVYX	762.530
Touchstone Sands Capital Select Growth Fund;Z	PTSGX	2262.070
Touchstone Small Cap Fund;Y	TSFYX	90.554
Touchstone Value Fund;Y	TVLYX	484.294
Transamerica Large Cap Value;I2	TWQZX	1736.204
Transamerica Large Core;R4	TLAFX	151.245
Transamerica Large Growth;R4	TGWFX	427.564
Transamerica Large Value Opportunities;R4	TLOFX	298.552
Transamerica Mid Cap Growth;R4	TMIFX	269.102
Transamerica Small Cap Growth;I2	TSPIX	144.842

Transamerica Small Cap Value;R4	TSLFX	377.338
Transamerica Stock Index;R4	TSTFX	266.771
Transamerica Sustainable Equity Income Fund;I2	TRDIX	259.673
TSW Large Cap Value Fund;Institutional	TSWEX	35.215
UBS US Small Cap Growth Fund;P	BISCX	124.853
Undiscovered Managers Behavioral Value Fund;L	UBVLX	6528.222
Vericimetry US Small Cap Value Fund	VYSVX	154.995
Victory Integrity Mid-Cap Value Fund;Y	MYIMX	264.414
Victory Integrity Small/Mid-Cap Value Fund;Y	MYISX	202.634
Victory Munder Mid-Cap Core Growth Fund;Y	MGOYX	344.148
Victory Sycamore Established Value Fund;R	GETGX	14652.699
Victory Sycamore Small Company Opportunity Fund;R	GOGFX	5653.852
Victory THB US Small Opportunities Fund;I	THBIX	70.639
Villere Equity Fund;Investor	VLEQX	35.308
Virtus Ceredex Large-Cap Value Equity Fund;I	STVTX	736.871
Virtus Ceredex Mid-Cap Value Equity Fund;I	SMVTX	2444.094
Virtus Ceredex Small-Cap Value Equity Fund;I	SCETX	249.150
Virtus KAR Mid-Cap Core Fund;I	VIMCX	1215.894
Virtus KAR Small-Cap Core Fund;I	PKSFX	1504.969
Virtus KAR Small-Cap Growth Fund;I	PXSGX	3518.274
Virtus KAR Small-Cap Value Fund;I	PXQSX	894.501
Virtus NFJ Dividend Value Fund;Inst	NFJEX	654.147
Virtus NFJ Large-Cap Value Fund;Inst	ANVIX	257.159
Virtus NFJ Sm-Cp Val Fund;I	PSVIX	348.789
Virtus Silvant Mid-Cap Growth Fund;Inst	DRMCX	275.770
Virtus Silvant Small-Cap Growth Stock Fund;I	SSCTX	18.266
Virtus Zevenbergen Innovative Growth Stock Fund;I	SCATX	387.609
Voya Large Cap Value Fund;I	IEDIX	607.589
Voya MidCap Opportunities Fund;Institutional	NMCIX	643.073
Voya Multi-Manager Mid Cap Value Fund;I	IMCVX	161.209
Voya Small Cap Growth Fund;I	TCMSX	426.896
Voya Small Company Fund;I	VYSAX	225.167
Walhausen Focused Small Cap Value Fund;Inst	WSVIX	6.396
Wedgewood Fund;Institutional	RWGIX	26.734
Weitz Partners III Opportunity Fund;Institutional	WPOPX	417.022
Wellington Shields All-Cap Fund;Institutional	WSACX	48.290
Westwood Quality SmallCap Fund;Institutional	WHGSX	891.443
Westwood Quality SMidCap Fund;Institutional	WHGMX	261.384
Westwood Quality Value Fund;Institutional	WHGLX	228.725
Westwood Total Return Fund;Institutional	WLVIK	117.927
William Blair Large Cap Growth Fund;I	LCGFX	1016.960
William Blair Mid Cap Growth Fund;I	WCGIX	30.450
William Blair Small Cap Growth Fund;I	WBSIX	498.284
William Blair Small Cap Value Fund;I	ICSCX	1142.484
William Blair Small-Mid Cap Growth Fund;I	WSMDX	1999.941
WP Large Cap Income Plus Fund;Institutional	WPLCX	19.598
WPG Partners Small/Micro Cap Value Fund;Inst	WPGTX	26.965
AAM/Bahl & Gaynor Income Growth Fund;I	AFNIX	1811.818

Note: The TNA data is collected from Eikon and is dated 26/12/21. The list contains 453 funds.

C List of Load Retail Funds

Name	NASDAQ Ticker	TNA (\$1M)
AB Core Opportunities Fund;A	ADGAX	155.175
AB Equity Income Fund;A	AUIAX	435.706

AB Growth Fund;A	AGRFX	1037.901
AB Large Cap Growth Fund;A	APGAX	14746.629
AB Relative Value Fund;A	CABDX	1701.217
abrdrn US Small Cap Equity Fund;A	GSXAX	693.030
abrdrn US Sustainable Leaders Fund;A	GXXAX	318.675
abrdrn US Sustainable Leaders Smaller Companies;A	MLSAX	15.422
Akre Focus Fund;Retail	AKREX	12008.734
Alger Capital Appreciation Fund;A	ACAAX	1776.544
Alger Dynamic Opportunities Fund;A	SPEDX	473.986
Alger Growth & Income Fund;A	ALBAX	221.035
Alger Mid Cap Growth Fund;B	AMCGX	183.891
Alger Responsible Investing Fund;A	SPEGX	63.069
Alger Small Cap Focus Fund;A	AOFAX	2794.845
Alger Small Cap Growth Fund;B	ALSCX	365.306
Alger Spectra Fund;A	SPECX	3489.495
Alger Weatherbie Specialized Gro Fund;A	ALMAX	741.198
Allspring Common Stock Fund;A	SCSAX	789.570
Allspring Discovery All Cap Growth Fund;A	EKOAX	654.571
Allspring Discovery Large Cap Growth Fund;A	STAEX	184.458
Allspring Large Cap Core Fund;A	EGOAX	395.462
Allspring Large Cap Growth Fund;A	STAFX	698.644
Allspring Opportunity Fund;A	SOPVX	1543.952
Allspring Small Company Value Fund;A	SCVAX	461.509
Allspring Special Small Cap Val Fd;A	ESPAX	4593.729
American Beacon Stephens Mid-Cap Growth Fund;Inv	STMGX	471.657
American Beacon Stephens Small Cap Growth Fd;Inv	STSGX	286.437
American Century Sustainable Equity Fund;A	AFDAX	2792.525
American Funds AMCAP Fund;A	AMCPX	62421.414
American Funds American Mutual Fund;A	AMRMX	77769.604
American Growth Fund Series One;D	AMRGX	14.609
AMG GW&K Small Cap Core Fund;N	GWETX	613.579
AMG GW&K Small/Mid Cap Growth Fund;N	ACWDX	29.161
AMG Montrusco Bolton Large Cap Growth Fund;N	MCGFX	197.126
AMG River Road Dividend All Cap Value Fund;N	ARDEX	301.506
AMG River Road Mid Cap Value Fund;N	CHTTX	280.291
AMG River Road Small Cap Value Fund;N	ARSVX	776.437
AMG River Road Small-Mid Cap Value Fund;N	ARSMX	214.554
Applied Finance Dividend Fund;Investor	AFALX	28.464
Aquila Opportunity Growth Fund;A	ATGAX	136.237
BlackRock Advantage Large Cap Core Fund;Investor A	MDLRX	1568.681
BlackRock Advantage Large Cap Growth Fund;Inv A	BMCAX	780.832
BlackRock Advantage Large Cap Value Fund;Inv A	MDLVX	513.412
BlackRock Capital Appreciation Fund;Inv A	MDFGX	2904.435
BlackRock Large Cap Focus Growth Fund;A	MDFOX	1184.941
BNY Mellon Active MidCap Fund;A	DNLDX	368.672
BNY Mellon Dynamic Value Fund;A	DAGVX	1886.373
BNY Mellon Large Cap Equity Fund;A	DLQAX	587.446
BNY Mellon Opportunistic Midcap Value Fund;A	DMCVX	381.765
BNY Mellon Tax Managed Growth Fund;A	DTMGX	115.198
Boyar Value Fund;A	BOYAX	23.098
Brown Advisory Sustainable Growth Fund;Adv	BAWAX	5474.092
Cantor Growth Equity Fund;A	FIGGX	258.596
Carillon ClariVest Capital Appreciation Fund;A	HRCPX	357.340
Carillon Eagle Growth & Income Fund;A	HRCVX	782.891
Carillon Eagle Mid Cap Growth Fund;A	HAGAX	5700.077
Carillon Eagle Small Cap Growth Fund;A	HRSCX	957.823
Catalyst Dynamic Alpha Fund;A	CPEAX	120.900
Catalyst Insider Buying Fund;A	INSAX	14.526
Catalyst Nasdaq-100 Hedged Equity Fund;C	CLPCX	13.175
Catalyst Pivotal Growth Fund;A	BUYAX	3.630

CCM Core Impact Equity Fund;Advisor	QUAGX	51.996
CCM Small/Mid-Cap Impact Value Fund;Advisor	QUSVX	16.077
ClearBridge All Cap Value Fund;A	SHFVX	1310.254
ClearBridge Appreciation Fund;A	SHAPX	6200.221
ClearBridge Dividend Strategy Fund;A	SOPAX	6275.206
ClearBridge Large Cap Growth Fund;A	SBLGX	9694.065
ClearBridge Mid Cap Fund;A	SBMAX	1836.386
ClearBridge Small Cap Fund;C	LMAXX	769.179
ClearBridge Small Cap Growth Fund;A	SASMX	3948.143
ClearBridge Small Cap Value Fund;A	SBVAX	105.175
ClearBridge Tactical Dividend Income Fund;A	CFLGX	286.343
ClearBridge Value Trust;C	LMVTX	1685.424
CNR US Core Equity Fund;N	CNRWX	328.514
Columbia Disciplined Core Fund;A	AQEAX	3656.139
Columbia Disciplined Growth Fund;A	RDLAX	182.045
Columbia Disciplined Value Fund;A	RLCAX	161.044
Columbia Dividend Opportunity Fund;A	INUTX	2176.784
Columbia Large Cap Value Fund;A	INDZX	2160.548
Columbia Select Large Cap Value Fund;A	SLVAX	1996.525
Columbia Select Small Cap Value Fund;A	SSCVX	444.375
Columbia Small Cap Value Fund I;A	CSMIX	1149.990
Conestoga Small Cap Fund;Investor	CCASX	3003.160
Conestoga SMid Cap Fund;Investor	CCSMX	317.180
Copeland Dividend Growth Fund;A	CDGRX	45.941
Cullen Value Fund;C	CVLFX	21.457
Davidson Multi-Cap Equity Fund;A	DFMAX	99.157
Davis New York Venture Fund;A	NYVTX	5340.037
Davis Opportunity Fund;A	RPEAX	433.985
Davis Research Fund;A	DRFAX	42.202
Dearborn Partners Rising Dividend Fund;A	DRDAX	421.616
Delaware Equity Income Fund;A	FIUTX	237.207
Delaware Growth & Income Fund;A	FGINX	862.758
Delaware Mid Cap Value;A	DLMAX	50.147
Delaware Opportunity Fund;A	FIUSX	512.601
Delaware Select Growth Fund;A	DVEAX	173.508
Delaware Small Cap Value Fund;A	DEVLX	5415.226
Delaware Smid Cap Growth Fund;A	DFCIX	1776.406
DSS AmericaFirst Defensive Growth Fund;A	DGQAX	1.849
Dunham Large Cap Value Fund;C	DCLVX	144.165
Dunham Monthly Distribution Fund;A	DAMDX	231.088
Dunham Small Cap Value Fund;C	DCSVX	71.343
DWS CROCI Equity Dividend Fund;A	KDHAX	834.692
DWS Small Cap Growth Fund;A	SSDAX	261.733
Easterly Snow Long/Short Opportunity Fund;A	SNOAX	86.793
Emerald Growth Fund;A	HSPGX	787.120
Empiric Fund;A	EMCAX	22.108
Federated Hermes Clover Small Value Fund;A	VSFAX	170.171
Federated Hermes Equity Income Fund;A	LEIFX	710.989
Federated Hermes Kaufmann Small Cap Fund;A	FKASX	4475.320
Federated Hermes MDT Mid Cap Growth Fund;A	FGSAX	429.530
First Eagle Fund of America;C	FEAMX	346.964
Goldman Sachs Equity Income Fund;A	GSGRX	381.546
Goldman Sachs Large Cap Core Fund;A	GSCGX	994.709
Goldman Sachs Rising Dividend Growth;A	GSRAX	432.943
Goldman Sachs Small Cap Value Fund;A	GSSMX	2977.179
Goldman Sachs US Equity ESG Fund;A	GAGVX	17.319
Goldman Sachs US Equity Insights Fund;A	GSSQX	901.364
Guggenheim Alpha Opportunity Fund;A	SAOAX	30.087
Guggenheim Large Cap Value Fund;A	SECIX	37.728
Guggenheim RBP Large-Cap Defensive Fund;A	TVDAX	8.474

Guggenheim RBP Large-Cap Market Fund;A	TVMAX	10.449
Guggenheim Small Cap Value Fund;A	SSUAX	6.528
Guggenheim SMid Cap Value Fund;A	SEVAX	355.643
Guggenheim StylePlus - Large Core Fund;A	SECEX	193.146
Guggenheim StylePlus - Mid Growth Fund;A	SECUX	68.721
Hartford Capital Appreciation Fund;A	ITHAX	5311.191
Hartford Core Equity Fund;A	HAIAX	9134.439
Hartford Dividend & Growth Fund;A	IHGIX	14054.277
Hartford Equity Income Fund;A	HQIAX	4576.826
Hartford Growth Opportunities Fund;A	HGOAX	4057.935
Hartford MidCap Fund;A	HFM CX	7261.797
Hartford MidCap Value Fund;A	HMVAX	798.371
Hartford Quality Value Fund;A	HVOAX	220.286
Hartford Small Cap Value Fund;A	HSMAX	113.079
Hartford Small Company Fund;A	IHSAX	617.415
Hennessy Cornerstone Growth Fund;Investor	HFCGX	147.391
Hennessy Cornerstone Large Growth Fund;Investor	HFLGX	116.751
Hennessy Cornerstone Mid Cap 30 Fund;Investor	HFMDX	338.127
Hennessy Cornerstone Value Fund;Investor	HFCVX	259.538
Hennessy Focus Fund;Investor	HFC SX	713.162
Hennessy Total Return Fund;Investor	HDOGX	48.489
Huber Select Large Cap Value Fund;Investor	HULIX	56.612
Huber Small Cap Value Fund;Investor	HUSIX	51.635
Hundredfold Select Alternative Fund;Service	SFH YX	280.973
Integrity Dividend Harvest Fund;A	IDIVX	235.814
Integrity ESG Growth & Income Fund;A	IGIAX	63.072
Invesco American Franchise Fund;A	VAFAX	10184.951
Invesco American Value Fund;A	MSAVX	1537.527
Invesco Capital Appreciation Fund;A	OPTFX	3780.302
Invesco Charter Fund;A	CHTRX	2667.621
Invesco Comstock Fund;A	ACSTX	8719.270
Invesco Comstock Select Fund;A	CGRWX	581.722
Invesco Discovery Fund;A	OPOCX	3350.515
Invesco Discovery Mid Cap Growth Fund;A	OEGAX	5326.880
Invesco Diversified Dividend Fund;A	LCEAX	10799.633
Invesco Growth & Income Fund;A	ACGIX	3933.119
Invesco Income Advantage US Fund;A	SCAUX	163.537
Invesco Main Street All Cap Fund;A	OMSOX	1017.879
Invesco Main Street Fund;A	MSIGX	8101.855
Invesco Main Street Mid Cap Fund;A	OPMSX	2216.227
Invesco Rising Dividends Fund;A	OARDX	2440.854
Invesco Small Cap Equity Fund;A	SMEAX	807.803
Invesco Small Cap Growth Fund;A	GTSAX	2271.051
Invesco Small Cap Value Fund;A	VSCAX	2014.357
Invesco Value Opportunities Fund;A	VVOAX	1005.887
Jackson Square Large-Cap Growth Fund;Investor	JSPJX	214.217
Jacob Small Cap Growth Fund;Investor	JSCGX	8.170
John Hancock Classic Value Fund;A	PZFBX	1859.989
John Hancock Fundamental All Cap Core Fund;A	JFCAX	253.194
John Hancock Fundamental Large Cap Core Fund;A	TAGRX	4444.111
John Hancock US Global Leaders Growth Fund;A	USGLX	2068.354
JPMorgan Growth Advantage Fund;A	VHIAX	11944.682
JPMorgan Small Cap Blend Fund;A	VSCOX	1084.656
JPMorgan Small Cap Equity Fund;A	VSEAX	5281.059
JPMorgan Small Cap Growth Fund;A	PGSGX	3805.869
JPMorgan US Value Fund;A	VGRIX	2989.727
LKCM Aquinas Catholic Equity Fund	AQEIX	46.736
Lord Abbett Affiliated Fund;A	LAFFX	5129.954
Lord Abbett Alpha Strategy Fund;A	ALFAX	604.319
Lord Abbett Developing Growth Fund;A	LAGWX	2525.454

Lord Abbett Dividend Growth Fund;A	LAMAX	2926.340
Lord Abbett Fundamental Equity Fund;C	GILAX	1698.508
Lord Abbett Growth Opportunities Fund;A	LMGAX	439.711
Lord Abbett Mid Cap Stock Fund;A	LAVLX	985.550
Lord Abbett Small Cap Value Fund;A	LRSCX	363.281
Lord Abbett Value Opportunities Fund;A	LVOAX	1212.904
MainStay Winslow Large Cap Growth Fund;A	MLAAX	10571.587
MainStay WMC Enduring Capital Fund;A	MSOAX	488.029
MainStay WMC Growth Fund;A	KLGAX	629.443
Manning & Napier Pro-Blend Maximum Term Series;S	EXHAX	410.633
MassMutual Small Cap Opportunities Fund;A	DLBMX	289.679
Meeder Quantex Fund;Retail	FLCGX	29.589
MFS Equity Income Fund;A	EQNAX	312.771
MFS Mid Cap Value Fund;A	MVCAX	13753.217
MFS Research Fund;A	MFRFX	6790.659
MFS Value Fund;A	MEIAX	53371.959
Miller Opportunity Trust;C	LMOPX	1207.114
Morgan Stanley Insight Fund;A	CPOAX	1866.725
Nationwide Geneva Mid Cap Growth Fund;A	NWHVX	228.857
Natixis Oakmark Fund;A	NEFOX	370.600
Natixis US Equity Opporunties Fund;A	NEFSX	730.730
Natixis Vaughan Nelson Small Cap Value Fund;A	NEFJX	154.481
NexPoint Climate Tech Fund;A	HSZAX	13.868
North Square Multi Strategy Fund;A	ORILX	42.190
North Square Spectrum Alpha Fund;A	ORIGX	79.751
Nuveen Dividend Value Fund;A	FFEIX	3008.892
Nuveen Large Cap Select Fund;A	FLRAX	33.042
Nuveen Mid Cap Value Fund;A	FASEX	422.796
Olstein All Cap Value Fund;C	OFALX	535.401
Olstein Strategic Opportunities Fund;A	OFSAX	77.078
Pacific Funds Portfolio Optimization Growth;A	PODAX	630.310
Perkins Discovery Fund	PDFDX	7.755
PGIM Jennison Blend Fund;A	PBQAX	831.534
PGIM Jennison Diversified Growth Fund;A	TBDAX	219.927
PGIM Jennison Focused Value Fund;A	PJIAX	172.268
PGIM Jennison Growth Fund;A	PJFAX	5101.680
PGIM Jennison Mid-Cap Growth Fund;A	PEEAX	1857.096
PGIM Jennison Small Company Fund;A	PGOAX	2590.254
PGIM Jennison Value Fund;A	PBEAX	429.542
PGIM Quant Solutions Large-Cap Core Fund;A	PTMAX	630.226
PGIM Quant Solutions Mid-Cap Value Fund;C	NCBVX	191.100
Pioneer Core Equity Fund;A	PIOTX	1553.875
Pioneer Disciplined Growth Fund;A	PINDX	1440.610
Pioneer Disciplined Value Fund;A	CVFCX	385.838
Pioneer Equity Income Fund;A	PEQIX	1653.147
Pioneer Fund;A	PIODX	6234.501
Pioneer Fundamental Growth Fund;A	PIGFX	4853.483
Pioneer Mid Cap Value Fund;A	PCGRX	640.646
Pioneer Select Mid Cap Growth Fund;A	PGOFX	1625.168
Principal Capital Appreciation Fund;A	CMNWX	2916.735
Principal Equity Income Fund;A	PQIAX	8601.656
Rational Equity Armor Fund;A	HDCAX	65.827
RBC Enterprise Fund;A	TETAX	57.652
RMB Fund;A	RMBHX	98.200
Rydex S&P 500 Fund;H	RYSPX	110.790
Rydex S&P 500 Pure Growth Fund;H	RYAWX	26.912
Rydex S&P 500 Pure Value Fund;H	RYZAX	29.458
Saratoga Mid Capitalization Portfolio;A	SPMAX	9.938
Smead Value Fund;Investor	SMVLX	3580.313
Sparrow Growth Fund;A	SGFFX	33.808

Spirit of America Large Cap Value Fund;A	SOAVX	114.966
Sterling Capital Special Opportunities Fund;A	BOPAX	495.015
Thrivent Mid Cap Stock Fund;A	AASCX	3174.273
Thrivent Small Cap Stock Fund;A	AASMX	1548.192
Timothy Plan Aggressive Growth Fund;A	TAAGX	34.685
Timothy Plan Large/Mid-Cap Growth Fund;A	TLGAX	113.628
Timothy Plan Large/Mid-Cap Value Fund;A	TLVAX	242.005
Timothy Plan Small Cap Value Fund;A	TPLNX	140.194
Timothy Plan Strategic Growth Fund;A	TSGAX	32.621
Touchstone Dividend Equity Fund;A	TQCAX	2646.763
Touchstone Growth Opportunities Fund;A	TGVFX	119.164
Touchstone Large Cap Focused Fund;A	SENCX	2339.616
Touchstone Mid Cap Growth Fund;A	TEGAX	1043.390
Touchstone Small Cap Value Fund;A	TVOAX	62.843
Touchstone Small Company Fund;A	SAGWX	746.159
Transamerica Capital Growth;A	IALAX	1592.978
Transamerica Small/Mid Cap Value;A	IIVAX	703.542
Transamerica US Growth;A	TADAX	1530.024
Union Street Partners Value Fund;A	USPVX	52.502
Victory Diversified Stock Fund;A	SRVEX	245.696
Victory Integrity Discovery Fund;A	MMEAX	61.260
Victory Integrity Small-Cap Value Fund;A	VSCVX	1345.691
Victory Munder Multi-Cap Fund;A	MNNAX	362.237
Victory Newbridge Large Cap Growth Fund;A	VFGAX	7.780
Victory RS Growth Fund;A	RSGRX	217.832
Victory RS Investors Fund;A	RSINX	33.341
Victory RS Large Cap Alpha Fund;A	GPAFX	434.346
Victory RS Mid Cap Growth Fund;A	RSMOX	182.128
Victory RS Partners Fund;A	RSPFX	318.804
Victory RS Select Growth Fund;A	RSDGX	115.096
Victory RS Small Cap Equity Fund;A	GPSCX	40.508
Victory RS Small Cap Growth Fund;A	RSEGX	925.070
Victory RS Value Fund;A	RSVAX	265.571
Victory Special Value Fund;A	SSVSX	37.049
Virtus FORT Trend Fund;A	VAPAX	127.205
Virtus KAR Capital Growth Fund;A	PSTAX	470.890
Virtus KAR Equity Income Fund;A	PDIAX	132.497
Virtus KAR Mid-Cap Growth Fund;A	PHSKX	1586.606
Virtus NFJ Mid-Cap Value Fund;C	PQNCX	917.378
Virtus Silvant Focused Growth Fund;C	PGWCX	831.886
Virtus Silvant Large-Cap Growth Stock Fund;A	STCIX	88.183
Virtus Small-Cap Fund;A	AZBAX	104.748
Voya Large-Cap Growth Fund;A	NLCAX	741.108
Wilshire Large Company Growth Portfolio;Investment	DTLGX	203.434
Wilshire Large Company Value Portfolio;Investment	DTLVX	159.442
Wilshire Small Company Growth Portfolio;Investment	DTSGX	23.593
Wilshire Small Company Value Portfolio;Investment	DTSVX	23.581

Note: The TNA data is collected from Eikon and is dated 26/12/21. The list contains 289 funds.

D List of No-Load Retail Funds

Name	NASDAQ Ticker	TNA (\$1M)
Adirondack Small Cap Fund	ADKSX	29.609
Allied Asset Advisors Iman Fund	IMANX	178.634

AlphaMark Fund	AMLCX	23.301
Amana Growth Fund;Investor	AMAGX	2046.487
Amana Income Fund;Investor	AMANX	1373.439
American Century Disciplined Core Val Fd;Investor	BIGRX	2082.313
American Century Disciplined Growth Fund;Inv	ADSIX	281.329
American Century Equity Growth Fund;Investor	BEQGX	2014.907
American Century Equity Income Fund;Investor	TWEIX	9647.268
American Century Focused Dynamic Growth Fd;Inv	ACFOX	2014.907
American Century Focused Large Cap Value Fund;Inv	ALVIX	588.017
American Century Growth Fund;Investor	TWCGX	10209.882
American Century Heritage Fund;Investor	TWHIX	4951.805
American Century Mid Cap Value Fund;Investor	ACMVX	8370.845
American Century Select Fund;Investor	TWCIX	4582.732
American Century Small Cap Growth Fund;Inv	ANOIX	1866.437
American Century Small Cap Value Fund;Investor	ASVIX	4912.927
American Century Small Company Fund;Investor	ASQIX	143.658
American Century Ultra Fund;Investor	TWCUX	19635.978
American Century Value Fund;Investor	TWVLX	1276.862
American Trust Allegiance Fund	ATAFX	29.113
AMG Boston Common Global Impact Fund;I	BRWIX	894.393
AMG GW&K Small Cap Value Fund;N	SKSEX	239.699
AMG Veritas Asia Pacific Fund;N	MGSEX	112.159
AMG Veritas Global Real Return Fund;I	BLUEX	155.168
AMG Yacktman Focused Fund;N	YAFFX	2146.421
Archer Stock Fund	ARSKX	26.741
Ariel Appreciation Fund;Investor	CAAPX	1014.894
Ariel Focus Fund;Investor	ARFFX	51.469
Ariel Fund;Investor	ARGFX	2313.026
Auer Growth Fund	AUERX	31.226
Auxier Focus Fund;Investor	AUXFX	145.626
Ave Maria Growth Fund	AVEGX	1052.305
Ave Maria Rising Dividend Fund	AVEDX	804.716
Ave Maria Value Fund	AVEMX	301.730
Azzad Ethical Fund	ADJEX	107.173
Barrett Growth Fund	BGRWX	34.812
Barrett Opportunity Fund	SAOPX	63.482
Beck Mack & Oliver Partners Fund	BMPEX	65.922
Becker Value Equity Fund;Retail	BVEFX	33.228
BeeHive Fund	BEEHX	168.977
Berkshire Focus Fund	BFOCX	771.985
Bernzott US Small Cap Value Fund	BSCVX	85.764
Bertolet Pinnacle Value Fund	PVFIX	26.310
BFS Equity Fund	BFSAX	42.383
Biondo Focus Fund;Investor	BFONX	72.160
BlackRock Exchange Portfolio;BlackRock	STSEX	213.756
Blue Chip Investor Fund	BCIFX	46.201
BNY Mellon Appreciation Fund;Investor	DGAGX	2009.833
BNY Mellon Large Cap Securities Fund	DREVX	1813.472

BNY Mellon Opportunistic Small Cap Fund;Investor	DSCVX	337.308
BNY Mellon Research Growth Fund;Z	DREQX	757.260
BNY Mellon S&P 500 Index Fund	PEOPX	1826.370
BNY Mellon Sustainable US Equity Fund;Z	DRTHX	394.930
Bretton Fund	BRTNX	64.919
Bridges Investment Fund	BRGIX	269.848
Bridgeway Aggressive Investors 1 Fund	BRAGX	187.869
Bridgeway Blue Chip Fund	BRLIX	427.163
Bridgeway Small-Cap Value Fund	BRSVX	444.669
Bridgeway Ultra-Small Company Fund	BRUSX	73.964
Brown Advisory Equity Income Fund;Investor	BIADX	69.808
Brown Advisory Flexible Equity Fund;Investor	BIAFX	512.535
Brown Advisory Growth Equity Fund;Investor	BIAGX	1115.910
Brown Advisory Small-Cap Fundamental Value Fd;Inv	BIAUX	1092.670
Brown Advisory Small-Cap Growth Fund;Investor	BIASX	1906.653
Brown Capital Management Mid Company Fund;Investor	BCMSX	34.379
Brown Capital Management Small Company Fund;Inv	BCSIX	3708.577
Buffalo Discovery Fund;Invest	BUFTX	934.466
Buffalo Dividend Focus Fund;Invest	BUFDX	105.068
Buffalo Early Stage Growth Fund;Invest	BUFOX	83.188
Buffalo Growth Fund;Investor	BUFGX	117.104
Buffalo Large Cap Fund;Invest	BUFEX	40.773
Buffalo Mid Cap Fund;Invest	BUFMX	128.060
Buffalo Small Cap Fund;Invest	BUFSX	807.789
Caldwell & Orkin - Gator Capital Long/Short Fund	COAGX	17.611
Cambiar Opportunity Fund;Investor	CAMOX	150.125
Cambiar Small Cap Fund;Investor	CAMSX	64.605
Cambiar SMID Fund;Investor	CAMMX	114.014
Cantor FBP Equity & Dividend Plus Fund	FBPEX	30.321
Capital Advisors Growth Fund	CIAOX	109.038
Carillon Chartwell Mid Cap Value Fund	BERCX	37.280
Carillon Chartwell Small Cap Value Fund	CWSIX	139.130
Centre American Select Equity Fund;Investor	DHAMX	150.492
CGM Focus Fund	CGMFX	363.366
Champlain Mid Cap Fund;Advisor	CIPMX	5031.705
Champlain Small Company Fund;Advisor	CIPSX	2422.571
Chase Growth Fund;N	CHASX	41.356
Chesapeake Growth Fund	CHCGX	47.733
Chestnut Street Exchange Fund	CHNTX	225.948
Christopher Weil & Company Core Investment Fund	CWCFX	77.086
ClearBridge Aggressive Growth Fund;A	SHRAX	5320.341
Clearwater Core Equity Fund	QWVPX	862.614
Clearwater Select Equity Fund	QWVOX	325.673
Clipper Fund	CFIMX	1188.684
Coho Relative Value Equity Fund;Advisor	COHOX	862.041
Commerce MidCap Growth Fund	CFAGX	199.988
Commerce Value Fund	CFVLX	345.169
Concorde Wealth Management Fund	CONWX	34.654

Copley Fund	COPLX	96.114
CornerCap Small Cap Value Fund;Investor	CSCVX	120.330
Crawford Small Cap Dividend Fund	CDOFX	270.362
CRM Small Cap Value Fund;Investor	CRMSX	104.089
Cullen High Dividend Equity Fund;Retail	CHDEX	126.975
Cutler Equity Fund;II	DIVHX	166.719
Dana Large Cap Equity Fund;Investor	DLCEX	95.103
Davenport Core Fund	DAVPX	887.910
Davenport Equity Opportunities Fund	DEOPX	770.605
Davenport Value and Income Fund	DVIPX	742.480
DCM/INNOVA High Equity Income Innovation Fund	TILDX	9.186
Dean Mid Cap Value Fund	DALCX	69.071
Dean Small Cap Value Fund	DASCX	170.705
DF Dent MidCap Growth Fund;Investor	DFDMX	568.896
DF Dent Premier Growth Fund	DFDPX	436.571
DF Dent Small Cap Growth Fund;Investor	DFDSX	76.921
Domini Impact Equity Fund;Investor	DSEFX	956.882
Driehaus Micro Cap Growth Fund	DMCRX	182.926
DWS Capital Growth Fund;S	SCGSX	1251.077
DWS Core Equity Fund;S	SCDGX	3836.052
DWS Equity 500 Index Fund;S	BTIEX	441.728
DWS Equity Sector Strategy Fund;S	SPGRX	53.105
DWS ESG Core Equity Fund;S	DESSX	167.601
DWS Large Cap Focus Growth Fund;S	SCQGX	325.946
DWS S&P 500 Index Fund;S	SCPIX	975.860
DWS Small Cap Core Fund;S	SSLCX	418.773
Edgar Lomax Value Fund	LOMAX	101.939
Elfun Trusts	ELFNX	4025.772
Eventide Gilead Fund;N	ETGLX	3461.350
Evercore Equity Fund	EWMCX	287.263
FMI Common Stock Fund;Investor	FMIMX	947.182
FMI Large Cap Fund;Investor	FMIHX	1415.975
Forester Value Fund;N	FVALX	16.051
Fort Pitt Capital Total Return Fund	FPCGX	87.659
Foundry Partners Fundamental Small Cap Val Fd;Inv	DRSVX	217.401
FPA Queens Road Small Cap Value Fd;Inv	QRSVX	436.748
FPA Queens Road Value Fund	QRVLX	39.171
FPA US Core Equity Fund	FPPFX	79.670
Frank Value Fund;Investor	FRNKX	4.544
Franklin S&P 500 Index Fund;A	SBSPX	285.739
Genter Dividend Income Fund	GDIIX	26.999
Glenmede Quantitative US Lg Cap Core Eq Port;Adv	GTLOX	1232.479
Glenmede Quantitative US Lg Cap Gro Eq Pft;Adv	GTLLX	1743.132
Glenmede Quantitative US Long/Short Equity Pf;Adv	GTAPX	54.944
Glenmede Quantitative US Total Market Equity Port	GTTMX	35.948
Glenmede Small Cap Equity Portfolio;Advisor	GTCSX	1006.442
Glenmede Strategic Equity Portfolio	GTCEX	259.917
GoodHaven Fund	GOODX	108.781

Government Street Equity Fund	GVEQX	80.083
Government Street Opportunities Fund	GVMCX	54.552
Green Century Equity Fund;Individual Investor	GCEQX	354.952
Green Owl Intrinsic Value Fund	GOWLX	99.183
GuideMark Large Cap Core Fund;Service	GMLGX	731.160
GuideMark Small/Mid Cap Core Fund;Service	GMSMX	88.021
GuideStone Equity Index Fund;Inv	GEQZX	2743.830
GuideStone Small Cap Equity Fund;Inv	GSCZX	638.474
GuideStone Value Equity Fund;Inv	GVEZX	416.210
Haverford Quality Growth Stock Fund	HAVGX	328.971
Heartland Value Fund;Investor	HRTVX	597.397
Heartland Value Plus Fund;Investor	HRVIX	381.872
Hillman Value Fund;No Load	HCMAX	232.196
Hodges Blue Chip Equity Income Fund;Retail	HDPBX	23.856
Hodges Fund;Rtl	HDPMX	126.669
Hodges Sm Cap;Rtl	HDPSX	159.615
Hodges Small Intrinsic Value Fund;Retail	HDSVX	15.368
Homestead Growth Fund	HNASX	364.282
Homestead Small-Company Stock Fund	HSCSX	224.167
Homestead Stock Index Fund	HSTIX	178.016
Homestead Value Fund	HOVLX	1037.569
Hussman Strategic Growth Fund	HSGFX	517.581
Intrepid Small Cap Fund;Investor	ICMAX	53.203
Invesco Dividend Income Fund;Investor	FSTUX	3369.364
Invesco Exchange Fund	ACEHX	56.056
Invesco Summit Fund;P	SMMIX	3192.979
Investment House Growth Fund	TIHGX	229.701
James Advantage Small Cap Fund	JASCX	31.072
James Micro Cap Fund	JMCRX	20.004
Jamestown Equity Fund	JAMEX	52.754
Jensen Quality Growth Fund;J	JENSX	2806.151
Johnson Enhanced Return Fund	JENHX	333.946
Johnson Equity Income Fund	JEQIX	514.425
Kinetics Paradigm Fund;No Load	WWNPX	869.449
Kirr Marbach Partners Value Fund	KMVAX	74.521
Leuthold Select Industries Fund	LSLTX	16.252
Lisanti Small Cap Growth Fund	ASCGX	67.734
Longleaf Partners Fund	LLPFX	1190.733
Longleaf Partners Small-Cap Fund	LLSCX	1265.220
LS Opportunity Fund;Institutional	LSOFX	119.627
Madison Dividend Income Fund;Y	BHBFX	262.742
Madison Investors Fund;Y	MINVX	115.851
Madison Mid Cap Fund;Y	GTSGX	620.880
Madison Small Cap Fund;Y	BVAOX	174.020
Mairs & Power Growth Fund	MPGFX	5707.273
Mairs & Power Small Cap Fund	MSCFX	318.757
Manning & Napier Equity Series;S	EXEYX	78.798
Manor Fund	MNRMX	8.654

Manor Growth Fund	MNRGX	15.162
Marathon Value Portfolio	MVPFX	63.055
Marsico Focus Fund;Investor	MFOCX	853.374
Marsico Growth Fund;Investor	MGRIX	393.305
Marsico Midcap Growth Focus Fund;Investor	MXXIX	220.605
Matrix Advisors Value Fund	MAVFX	69.137
Matthew 25 Fund	MXXVX	360.824
Meehan Focus Fund	MEFOX	109.997
Meridian Contrarian Fund;Legacy	MVALX	549.137
Meridian Enhanced Equity Fund;Legacy	MEIFX	57.501
Meridian Growth Fund;Legacy	MERDX	1331.423
Meridian Small Cap Growth Fund;Investor	MISGX	739.437
Midas Magic	MISEX	21.206
MM S&P 500 Index Fund;R4	MIEAX	2242.011
Monetta Fund	MONTX	84.680
Monetta Young Investor Growth Fund	MYIFX	51.315
Monongahela All Cap Value Fund	MCMVX	26.118
Morgan Stanley Pathway Funds Small-Mid Cap Eqt Fd	TSGUX	490.901
Morgan Stanley Pathway Funds: Large Cap Equity Fd	TLGUX	2022.769
MP 63 Fund	DRIPX	100.503
Muhlenkamp Fund	MUHLX	202.089
Nationwide Bailard Cognitive Value Fund;M	NWHFX	84.085
Nationwide BNY Mellon Disciplined Value Fund;K	NWAMX	519.613
Needham Aggressive Growth Fund;Retail	NEAGX	132.039
Needham Growth Fund;Retail	NEEGX	119.257
Needham Small Cap Growth Fund;Retail	NESGX	175.231
Neiman Large Cap Value Fund;No Load	NEIMX	27.949
Neuberger Berman Genesis Fund;Investor	NBGNX	9181.955
Neuberger Berman Large Cap Value Fund;Investor	NPRTX	NaN
Neuberger Berman Mid Cap Growth Fund;Investor	NMANX	1455.672
Neuberger Berman Mid Cap Intrinsic Value Fund;Inv	NBRVX	48.912
Neuberger Berman Small Cap Growth Fund;Investor	NBMIX	298.926
Neuberger Berman Sustainable Equity Fund;Inv	NBSRX	428.285
New Covenant Growth Fund	NCGFX	601.247
Nicholas Equity Income Fund	NSEIX	400.634
Nicholas Fund	NICSX	3753.959
North Country Large Cap Equity Fund	NCEGX	167.992
North Square Advisory Research Small Cap Value F;I	ADVGX	10.220
Northern Income Equity Fund	NOIEX	128.754
Northern Large Cap Core Fund	NOLCX	301.745
Northern Large Cap Value Fund	NOLVX	68.222
Northern Small Cap Core Fund;I	NSGRX	399.815
Northern Small Cap Value Fund	NOSGX	1637.151
Northern Stock Index Fund	NOSIX	12713.816
NorthQuest Capital Fund	NQCFX	8.083
Oakmark Fund;Investor	OAKMX	8656.363
Oakmark Select Fund;Investor	OAKLX	1952.570
Oberweis Micro-Cap Fund;Investor	OBMCX	129.161

Oberweis Small-Cap Opportunities Fund;Investor	OBSOX	87.734
Osterweis Fund	OSTFX	133.755
Papp Small & Mid-Cap Growth Fund	PAPPX	34.670
Paradigm Micro-Cap Fund	PVIVX	101.616
Paradigm Select Fund	PFSLX	86.887
Paradigm Value Fund	PVFAX	44.343
Parnassus Core Equity Fund;Investor	PRBLX	22889.775
Parnassus Endeavor Fund;Investor	PARWX	4129.481
Parnassus Mid Cap Fund;Investor	PARMX	5990.583
Parnassus Mid Cap Growth Fund;Investor	PARNX	663.484
Pax US Sustainable Economy Fund;Individual Invest	PXWGX	234.813
Payden Equity Income Fund;Investor	PYVLX	1312.551
Payson Total Return Fund	PBFDX	226.284
Pear Tree Polaris Sm Cap Fd;Ord	USBNX	69.317
Pear Tree Quality Fund;Ord	USBOX	160.645
Perritt MicroCap Opportunities Fund	PRCGX	51.381
Perritt Ultra MicroCap Fund	PREOX	11.554
Pin Oak Equity Fund	POGSX	121.546
PRIMECAP Odyssey Aggressive Growth Fund	POAGX	6735.899
PRIMECAP Odyssey Growth Fund	POGRX	6608.836
PRIMECAP Odyssey Stock Fund	POSKX	5328.450
ProFunds Bull ProFund;Investor	BLPIX	36.308
ProFunds Large-Cap Growth ProFund;Investor	LGPIX	8.611
ProFunds Large-Cap Value ProFund;Investor	LVPIX	4.833
ProFunds NASDAQ-100 ProFund;Investor	OTPIX	102.289
Prospector Capital Appreciation Fund	PCAFX	24.832
Prospector Opportunity Fund	POPFX	198.731
Provident Trust Strategy Fund	PROVX	192.742
Reinhart Mid Cap PMV Fund;Adv	RPMVX	165.763
Reynolds Blue Chip Growth Fund	RBCGX	51.715
River Oak Discovery Fund	RIVSX	20.030
RiverPark Large Growth Fund;Retail	RPXFX	34.981
Rock Oak Core Growth Fund	RCKSX	9.603
Rydex Guggenheim Long Short Equity Fund;P	RYSRX	13.765
Rydex NASDAQ-100 Fund;Investor	RYOCX	1114.837
Saratoga Large Capitalization Growth Portfolio;I	SLCGX	21.494
Saratoga Large Capitalization Value Portfolio;I	SLCVX	18.334
Saratoga Small Capitalization Portfolio;I	SSCPX	5.406
Sarofim Equity Fund	SRFMX	92.127
Saturna Sextant Growth Fund;Investor	SSGFX	48.901
Schwartz Value Focused Fund	RCMFX	33.862
Segall Bryant & Hamill Workplace Equality Fd;Rtl	WEQRX	21.336
Selected American Shares;S	SLASX	1323.452
Shelton Equity Income Fund;Direct	EQTIX	326.544
Sit Large Cap Growth Fund	SNIGX	128.787
Sit Mid Cap Growth Fund	NBNGX	158.977
Sit Small Cap Growth Fund	SSMGX	94.889
Sound Mind Investing Fund	SMIFX	112.747

Sound Shore Fund;Investor	SSHFX	893.854
SouthernSun Small Cap Fund;N	SSSFX	289.908
State Farm Growth Fund	STFGX	5708.461
Summitry Equity Fund	GGEFX	54.019
TANAKA Growth Fund;R	TGFRX	14.679
Tarkio Fund	TARKX	107.685
Thomas White American Opportunities Fund;Investor	TWAOX	19.079
Thompson LargeCap Fund	THPGX	134.592
Thompson MidCap Fund	THPMX	46.805
Thrivent Large Cap Growth Fund;S	THLCX	1596.834
Thrivent Large Cap Value Fund;S	TLVIX	1659.000
Tocqueville Fund	TOCQX	237.684
Tocqueville Opportunity Fund	TOPPX	54.937
Tocqueville Phoenix Fund	TOPHX	120.095
Torray Fund	TORYX	285.024
Towle Deep Value Fund	TDVFX	91.943
Tributary Small Company Fund;Institutional	FOSCX	607.480
Upright Growth & Income Fund	UPDDX	1.367
USA Mutuals Vice Fund;Investor	VICEX	69.690
USAA Aggressive Growth Fund;Fund	USAUX	1403.180
USAA Growth & Income Fund;Fund	USGRX	1460.074
USAA Growth Fund;Fund	USAAX	1968.445
USAA Income Stock Fund;Fund	USISX	2368.624
USAA Small Cap Stock Fund;Fund	USCAX	872.333
USAA Value Fund;Fund	UVALX	1044.615
Value Line Larger Companies Focused Fund;Investor	VALLX	215.791
Value Line Mid Cap Focused Fund;Investor	VLIFX	422.856
Value Line Select Growth Fund;Investor	VALSX	335.030
Value Line Small Cap Opportunities Fund;Investor	VLEOX	343.850
Voya Corporate Leaders Trust Fund	LEXCX	708.425
Vulcan Value Partners Fund;Inv	VVPLX	899.830
Vulcan Value Partners Small Cap Fund;Inv	VVPSX	613.503
Walthausen Small Cap Value Fund;Investor	WSCVX	64.529
Wasatch Core Growth Fund;Investor	WGROX	2632.436
Wasatch Micro Cap Fund;Investor	WMICX	635.093
Wasatch Micro Cap Value Fund;Investor	WAMVX	292.479
Wasatch Small Cap Growth Fund;Investor	WAAEX	1987.774
Wasatch Small Cap Value Fund;Investor	WMCVX	1233.318
Wasatch Ultra Growth Fund;Investor	WAMCX	1375.006
Weitz Hickory Fund	WEHIX	145.260
Weitz Partners Value Fund;Investor	WPVLX	379.284
WesMark Large Company Fund	WMKGX	288.150
WesMark Small Company Fund	WMKSX	91.133
West Hills Core Fund	LEBOX	5.899
White Oak Select Growth Fund	WOGSX	317.176
William Blair Growth Fund;N	WBG SX	207.834
Wisconsin Plumb Equity Fund;Investor	PLBEX	18.139
YCG Enhanced Fund;R	YCGEX	383.603

Zacks Dividend Fund;Investor	ZDIVX	158.551
Zacks Small-Cap Core Fund;Investor	ZSCCX	38.303

Note: The TNA data is collected from Eikon and is dated 26/12/21. The list contains 340 funds.



 **NTNU**

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