BANCA D'ITALIA

EUROSISTEMA

Temi di discussione

(Working Papers)

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November 2023

Number 1426

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ISSN 2281-3950 (online)

Designed by the Printing and Publishing Division of the Bank of Italy

THE PERFORMANCE OF HOUSEHOLD-HELD MUTUAL FUNDS: EVIDENCE FROM THE EURO AREA

by Valerio Della Corte* and Raffaele Santioni **

Abstract

Mutual funds are a key investment vehicle for households, but past research has questioned the ability of less sophisticated retail investors to optimally select mutual funds. We provide further evidence on this topic by looking at a large sample of mutual funds held by euro-area households from 2009 to 2020. We document that mutual funds with lower participation by institutional investors tend to be more expensive and yield lower risk-adjusted returns, after controlling for many possible predictors of funds' performance. The underperformance is especially pronounced for equity funds and within-fund over time, meaning that households tend to hold proportionally more funds at times when their risk-adjusted performance is inferior. Running flow-performance regressions, we find that household flows chase past returns rather than risk-adjusted returns and exhibit much stronger inertia than institutional investor flows, which may help explain why they earn lower risk-adjusted returns. Overall, our findings are consistent with models in which individual investors face significant search costs in the mutual funds market.

JEL Classification: G5, G14, G23.
Keywords: households finance, investment decisions, retail mutual funds.
DOI: 10.32057/0.TD.2023.1426

Contents

* Bank of Italy, Directorate General for Economics, Statistics and Research. ** Bank of Italy, Directorate General for Consumer Protection and Financial Education.

1. Introduction[1]

Delegated portfolio management, especially through the purchase of shares in mutual funds, is a way in which households can improve their portfolio allocation, earning returns and risk diversification they might not obtain otherwise. Indeed, households worldwide rely significantly on this investment vehicle. On average in the euro area, for instance, 10.2 percent of households were reported to hold shares in mutual fund in 2017, compared with stocks (8.6 percent) and bonds (3.2 percent).[2]

However, investing in mutual funds knowledgeably requires a substantial amount of financial expertise and has information/search costs. Investors must choose among potentially thousands of funds and, after entry, should monitor performance and management costs in order to decide whether to sell or to increase their stake in the funds. Alternatively, they need to trust the actions of their financial advisors.

Several empirical studies thus question consumers' ability to take wise decisions when selecting mutual funds. Investors' decisions seem to be influenced by attention-grabbing information, even irrelevant details like foreign sounding managers' names (Kumar et al., 2015), while often failing to take into account important issues like hidden management costs (Barber et al., 2005); some studies even suggest that some funds might be designed to specifically target behaviourally biased clienteles.[3]

[1]We thank Massimiliano Affinito, Giorgio Albareto, Rui Albuquerque, Francis Breedon, Stefano Federico, Alberto Felettigh, Javier Gil-Bazo, Claire Giordano, Luigi Guiso, Matteo Maggiori, Jonathan Reuter, Gwyneth Schaefer, Philip E. Strahan, Luca Zucchelli and an anonymous referee for comments and suggestions. We thank Morningstar for access to data, and Emanuela Bassi and Francesco Paganelli for valuable advice. The views expressed in this article are those of the authors and do not necessarily represent the views of the institutions with which they are affiliated, Morningstar or its content providers.

[2]According to the Eurosystem Households Finance and Consumption Survey, 2017 wave. Data are available on the ECB website.

[3]Bailey et al. (2011) document for instance that the clients of a large US brokerage house who appear behaviourally biased in stock trading also make poor investment choices when selecting investment funds and that this may be exploited by fund managers. Gil-Bazo and Ruiz-Verdu (2009) document that underperforming funds are also those charging higher fees, a fact that they

On the theoretical side, Gennaioli et al. (2015) construct a model of money management in which retail investors, in order to reduce their anxiety, delegate portfolio management to professionals based not only on their performance but also on their trust in them. As an equilibrium outcome of their model, managers underperform the market net of fees and, rather than correcting their clients' misperceptions, they pander to their beliefs. Even if not affected by behavioural biases, investors with less ability or incentive to engage in search efforts may rationally behave as uninformed investors and hold under-performing funds as a result (Gârleanu and Pedersen, 2018).

Relative to households, other categories such as institutional investors are presumably more capable of evaluating the skills of investment managers, recognising hidden costs and possibly exercising market governance, thanks to economies of scale in information acquisition leading to relatively lower search costs. A strand of the empirical literature thus looks at differences between institutional mutual funds and retail mutual funds and finds evidence that the first have an edge on the market. Money flows towards institutional funds appear to respond to more sophisticated criteria than flows to retail funds (Evans and Fahlenbrach, 2012; Salganik-Shoshan, 2016) and active funds serving big institutional clients tend to overperform, both before and after adjusting for risk and expenses (James and Karceski, 2006).[4] Gerakos et al. (2021) provides evidence consistent with the idea of an efficiently inefficient market (Gârleanu and Pedersen, 2018), where large institutions engage in costly search to identify skilled managers and obtain positive risk-adjusted returns; this overperformance is paid by other investors, who earn negative risk-adjusted returns (among which retail mutual funds clients).

We contribute to this literature by examining the characteristics and perfor-

explain as funds strategically targeting performance-insensitive and unsophisticated investors. Bergstresser et al. (2009) and Del Guercio and Reuter (2014) show that funds sold through brokers tend to perform worse than directly-sold funds, and likely serve inexperienced investors who prefer face-to-face meetings with a financial advisor before purchasing funds.

[4]Institutional funds would also beat passive management, in particular when investing in the emerging markets (Dyck et al., 2013).

mance of euro-area retail funds over the period from 2009 to 2020 and assess to what extent fund performance changes in relation to the share owned by households. A peculiar feature of our work is that we do not compare the performance of purely institutional funds and retail funds, but we look at how changes in the investor base of retail funds (which are also traded by institutional investors) are related to performance and fees. The advantage of the dataset we assemble (which we describe in section 2.1) is that, unlike for prior studies, we do not need to infer the investor base of the fund based on certain characteristics, such as the presence of an institutional share class or the minimum investment amounts required to enter the fund. Instead, we are able to determine the amount of each fund held by households and by institutional investors and we thus can estimate precisely if and to what extent the relative performance of each retail mutual fund improves as the investor base of the fund shifts towards institutional investors.

Furthermore, while most empirical studies look at the US market, we provide a new perspective by exploring the role of the investor base for the euro-area retail market, whose size is similar to that of the US market yet it has received relatively little coverage until now, which we believe this alone to be a contribution.[5] Finally, while past research focused on equity funds, we also consider bond funds, which are important players in the euro-area market.

A summary of our results is as follows. First, we document that households tend to pay more to access the mutual fund industry: they hold funds charging higher fees on average and, within the same fund, they hold more expensive share classes. This is consistent with previous empirical literature and not surprising given that funds tend to charge proportionally lower fees the larger the investment they receive; in addition higher fees may be applied to cover the higher marketing and distributional expenses the funds incur in order to reach small retail investors as a clientele.

Controlling for expenses and for fund characteristics known to influence

[5] At the end of 2020, European funds (of which euro-area funds are the largest component) accounted for 35% of worldwide total net asset value of regulated open-end funds while US funds accounted for 45% (Investment Company Institute, 2021).

performance, our results in Section 4 also highlight a statistically significant and negative relationship between mutual fund risk-adjusted returns and the share of the fund held by the household sector. The conditional underperformance of households' mutual funds is economically significant, amounting to about 40 basis point a year as we move from retail funds mostly held by households to funds mostly held by institutional investors, in our baseline specification. This negative relationship is stronger for equity funds, which may be harder to evaluate for households. The relationship is also stronger when looking at changes over time in the funds' household ownership share, suggesting that the main channel explaining this effect is the inability of households to rebalance their fund holdings in a timely and optimal way i.e. households hold more of a fund when the fund performs worse. We thus also analyse how household flows respond to past performance and find that flows chase past returns rather than past risk-adjusted performance and that household flows show a much stronger autocorrelation than institutional investor flows, suggesting that other factors, not related to past performance and other fund characteristics, generate inertia in these flows.

Our contribution is related to a study on the US market by Evans and Fahlenbrach (2012). They find that the performance of retail funds benefits from institutional investors' monitoring when there is a twin fund sold to these investors through a separate account.[6] On the other hand, they find that the mere presence of institutional share classes, an indication that the retail fund is also offered to institutional investors, does not imply higher performance or investor oversight. They suggest that only small institutional investors operate in the retail market and that they are not able to exert effective market governance or discipline. While we find that institutional investors active in the retail market are not particularly sophisticated given that their flows chase past returns (not only past risk-adjusted returns), they nevertheless are also able to target funds that outperform those held proportionally more by households.

The remainder of the paper is organized as follows. Section 2 describes

[6] A twin fund is defined as a fund sold only to institutional investors but sharing the same managers, family and gross returns as its retail counterpart.

our data sources, our sample, and how we evaluate fund performance. Section 3 shows that the households pay higher fees to access the mutual fund industry. Section 4 discusses our empirical methodology and the results of a panel regression of fund performance on household ownership. Section 5 studies the relationship between past performance and household flows and how they compare with flows from institutional investors. Section 6 concludes.

2. Data

This section provides a description of our dataset, the methodology adopted to compute risk-adjusted returns and the main summary statistics of our sample of funds.

2.1. Data sources

Our sample covers a large portion of the euro-area open-end mutual funds held by households resident in the euro area. We assembled our dataset from two main sources. The first source is the Securities Holding Statistics - Sector of the Eurosystem (SHS-S). The confidential version of this database contains granular data on holdings of financial instruments by euro-area residents with a break-down by institutional sector and country of residency of the holder, at a quarterly frequency, from 2009 to 2020.[7] From this database we obtain the identifiers of all mutual funds shares held by euro-area households, which we consider as true retail funds, and the corresponding shareholding amounts at market value. We then retrieve the shares of the same funds held by euro-area institutional investors, such as insurance companies and pension funds, banks and other financial intermediaries, which we use to complement our measure of households' ownership of retail funds.

Our second data source is the Morningstar Direct database, which provides us with the main characteristics and returns of the mutual funds included in our

[7]The data for the period from 2009 to the third quarter of 2013 are considered 'experimental' as they are compiled based on voluntary data provided by the euro-area national central banks, but from our checks these data are of comparable quality than those for the following sub-period. We obtain similar results if we consider only data from the end of 2013.

sample. The Morningstar database is survivorship bias-free, including both active and dead funds.

Both our sources are at the fund' share class level. A single mutual fund may provide several share classes to investors, which differ in their fees structures but have the same portfolio holdings, managers, and returns before fees. Following most of the literature we conduct our main analysis at the fund level by aggregating multiple share classes of the same fund so as to avoid duplicated observations and, importantly, to compute the appropriate measure of the household ownership share. For each fund, we compute this measure as the ratio between the market value of the fund shares held by euro-area households and the market value of all shares held by both euro-area households and institutional investors. For other quantitative attributes (returns and expenses), we follow the standard practice in the literature (e.g. Kacperczyk et al., 2008) and consider Total Net Asset (TNA)-weighted averages and, for year of origination, the oldest share class. An exception to this is in section 3, when we examine the cross-sectional differences in the fees charged to investors, which are better analysed at the share class level (as in Bergstresser et al., 2009 and Khorana et al., 2009).

Because we have sectoral data of good quality only on the amount held by euro-area investors, we need to exclude investment funds which also serve foreign clientele, i.e. investors resident outside euro-area countries. For these funds we are not able to distinguish between the two types of clientele (households and institutional investors) because of limited sectoral breakdown in the SHS-S and of custodial bias and therefore our households ownership measure may suffer from significant measurement error. Accordingly, we first exclude funds domiciled outside the euro-area, which typically have foreign residents as their main clientele. Second, although most euro-area investment funds are mostly sold to euro-area investors – so that the sum of the amounts owned by the two types of investors is generally close to the fund size – there are in fact also cases of mutual funds for which this is not entirely true, especially those domiciled in European financial centres such as Luxembourg and Ireland. We thus also exclude from our sample those funds for which the ratio between the market value

of the shares in the hands of euro-area investors and the fund size is less than 80 percent.[8]

Our primary focus is on open-end active equity funds, for both comparability with previous studies and because our prior is that these funds are more difficult for households to evaluate. However, for completeness, we also consider mutual funds that invest a significant amount of their assets in bonds, i.e. fixed income funds, given that these funds account for a large share of the euro-area market as well as to validate our prior.[9] As standard in the literature, we remove other types of funds (i.e. passive funds, real estate funds, commodity funds, sector funds, money market funds and allocation funds) using the categories assigned by Morningstar. In our merged sample, equity and fixed income funds both account on average for 23% of the total amount of fund shares held by households (or 46% combined).[10] About 60% of these funds (in value terms) satisfy the coverage ratio condition on the fund size we require.

2.2. Measuring funds performance

For each fund-quarter we compute risk-adjusted net returns (alphas) adopting the Fama-French five factor model (Fama and French, 2015, 2017) augmented with the momentum factor (Carhart, 1997), as in Pástor and Vorsatz (2020) and many other prior works. We estimate factor exposure by regressing the previous 36 months of fund excess net returns on the factors.[11] We then

[8] For robustness, we considered an alternative threshold of 90 percent obtaining comparable results.

[9] At the end of 2020, about 30% of euro-area open-end investment funds were equity funds, and little less were bond funds, according to the ECB investment funds statistics.

[10] After the merge with Morningstar, our sample covers over 92% of the total value of mutual funds held by euro-area households as reported in the SHS. We notice here that allocation funds account for an additional third of households-held funds in the data, but they are rarely held by other types of investors so that they are less relevant for our analysis. A likely reason is that institutional investors are sophisticated enough to achieve their desired risk profile by directly adjusting their mix of bond and equity investment funds rather then relying on a single fund that does that on their behalf. The weight of passive investment funds such exchange-traded funds in our initial sample is instead marginal.

[11] In practice, we require at least 24 months of past returns for a fund-quarter to be included in our analysis.

use the estimated beta and the realized factors to predict the net returns of the fund in the next quarter. The quarterly alpha is computed as the difference between the predicted returns and the realized fund returns and it measures the fund performance in the quarter adjusted for its exposure to well known risk-factors.

The factors we use are conditional on the fund's investment geographical focus, which is revealed by the Morningstar category assigned. We use global factors in the case of funds investing worldwide, and regional factors in the case of funds focusing on a specific geographical area, considering the following regions: North-America, Europe, Japan, Asia-Pacific excluding Japan and emerging markets. All global and regional factors are retrieved from Kenneth French's website.[12] In addition to equity funds, as mentioned above, we also consider the performance of funds that invest a significant amount of their assets in bonds since they account for a substantial share of the euro-area market. To do so, we calculate risk-adjusted return for these type of funds by augmenting the model with two additional factors, following Fama and French (1993), namely the difference between the returns on long-term government bonds and the one-month government bond, and the difference in returns between long-term corporate bonds and long-term government bonds. Both these factors are also defined according to the relevant investment region. Data on bond indices are obtained from Thomson Reuters.

We also compute benchmark-adjusted returns as an alternative measure of fund performance. These are computed as the difference between the fund's returns and the average returns of funds sharing the same benchmark assigned by Morningstar on the basis of the fund investment style (as in Bergstresser et al., 2009). While this means we are moving away from empirical factor pricing models, the advantage of this alternative measure is that directly measures the performance of the fund relative to comparable competitors in the market, i.e. funds in the same investment category, which may be easier to understand and monitor for less sophisticated investors.

[12]We are thankful to Kenneth French for making factors data available in his webpage.

2.3. Sample description

Table 1 shows summary statistics (the mean, standard deviation, 25th percentile, median, 75th percentile and number of observations) for the variables in our sample of retail funds, namely the funds' performance measures (quarter net returns and alphas), the share of the fund size held by euro-area households (hereinafter household ownership share) and the other main characteristics of the funds (fund size, fund family size, age, net flows, cash holdings, flow volatility and expenses).[13]

The funds in our sample yielded on average positive raw net returns (i.e. gross of taxes and net of management fees) to their investors in the period 2009-2020. Equity funds yielded the highest net returns (1.93 percent quarterly or a little less than 8 percent on an annual basis) but they are also those with the highest dispersion (with a standard deviation of 10 percentage points). By contrast, bond funds provided the lowest returns (0.4 percent quarterly) but with the lowest dispersion (5 percent). According to our baseline measure of risk-adjusted returns, the average fund manager does not beat the market once management costs are taken into account, in line with past studies since Gruber (1996).[14]

Not surprisingly equity funds have the highest costs for their investors (1.84 percent annually, more than double than bond funds, on average). Our measure of fund fees (the total expense ratio, TER) has significantly lower observations than other variables. This is because when we aggregate multiple share classes at the fund level we require the majority of the fund share classes to have non missing observations so that the TER is sufficiently representative of the fees charged.

The TNA or size of the funds varies considerably. The funds at the 25th percentile are a little less than a tenth of the size of the funds at the 75th percentile. Size also varies between categories, with bond funds being generally larger. The age of the fund (how long it has been on the market) also varies significantly,

[13]To reduce the impact of outliers and possible errors, net flows and flows volatility are winsorised at the bottom and top 1 percent level.

[14]Elton and Gruber (2013) contains a review of past results on funds' net risk-adjusted returns.

with a mean of about 15 years and a standard deviation of more than 9 years, and so does the age of the asset management company of the fund (with a mean of about 42 years and a standard deviation of 22 years). The statistics for age are instead similar across the two fund categories.

Table 2 explores differences in the means of funds returns and characteristics when they are sorted according to the relative amount held by households, distinguishing for the funds' asset category. More precisely, funds are split into five bins corresponding to value of the household ownership share, where the first bin covers funds held by households up to 20% (for the first bin) while the fifth bin includes the funds held by households by at least 80%.

The results in the table first suggest that the household ownership share follows a peculiar distribution, pointing to a substantial degree of market segmentation, even though by construction the retail funds we consider are available to both categories of investors.[15] More than half of the distribution of the household ownership share is concentrated at the two extreme bins. The distribution appears not only fat-tailed but also slightly asymmetric for both categories of funds.

The second apparent feature is that the mean of raw returns decreases almost monotonically going from the first bin to the fifth bin. Risk-adjusted returns follow a similar pattern, and so do the means in the benchmark adjusted returns. At the same time, equity funds and bond funds held by households on average charge higher operating expenses (TER) to their investors. We explore in depth this dimension in Section 3, where we analyse the fees charged at the share class level.

Households' mutual funds also tend to be smaller on average, as well as belonging to families of funds with overall lower total asset values under management. Another noticeable difference has to do with net flows towards funds,

[15] As mentioned above, for a fund to be included in our dataset, we require that at least one per cent of its TNA is held by the household sector, which we consider as the best proxy for the fund to be effectively available for sale to households. We also considered a less conservative threshold (at least one share class unit in the hands of the household sector over our sample period) obtaining consistent results.

defined as the percentage growth in total assets under management between the beginning and the end of the quarter, net of internal growth (assuming reinvestment of dividends and distributions). Funds mostly held by households had lower inflows in our sample period – in fact, negative – compared with those mostly held by institutional investors. This is also true over time: the correlation between quarterly percentage changes in fund size and changes in the household ownership share is negative (-.24 for equity funds, -.08 for bond funds) suggesting that households tend to stay put in funds that are experiencing outflows by other investors and/or to increase their stakes in growing funds proportionally less than other investors (so that that the households' ownership share overall decreases as the fund grows larger). This last finding suggests that the Berk and Green model (Berk and Green, 2004) is not the likely explanation of why households hold on average lower performing funds. In their model, mutual funds operate in a decreasing return to scale environment, so that inflows of new money may harm their subsequent performance. In fact, we find that households' mutual funds are not only smaller than average, but they also tend to be funds that become smaller over time.[16]

The investor base of many retail mutual funds' changed significantly during the time span covered in our sample. Funds recorded an average shift in the households ownership share of about 21 percentage points (Table 3).[17] Again, the mean value hides a concentration at the extreme values: while the bottom quarter of funds recorded only a negligible change in the households ownership share of less than 9 percentage points, the top quarter recorded a shift of almost 30 percentage points (Figure 1).

[16]Notice also that the negative effect of fund size on the fund performance outside the US is debated, with Ferreira et al. (2013) finding a positive effect in the cross-section of funds they analyse. In section 4 we find that fund size is in general positively correlated with the fund performance in the cross-section of funds, but it is negatively correlated once fund fixed effects are included.

[17]Computed as the difference between the maximum and the minimum value.

3. Households ownership and fees

There is a significant degree of fees dispersion among mutual funds, which can be linked to a variety of features, such as their investment objectives and style, their size, the type of clientele, and the degree of market competition in which they operate (Khorana et al., 2009; Iannotta and Navone, 2012). Not only do funds charge different levels of fees, but a fund may also issue multiple share classes with different fee structures targeting different clientele.

Previous studies document that retail investors pay higher prices for investment funds. Khorana et al. (2009) in a comprehensive cross-country study on fee structure in 2002 show that the TER was inversely related to the minimum required initial investment. Fees were higher for share classes with no minimum investment required, which are those bought by small investors. Evans and Fahlenbrach (2012) show that retail equity funds in the US charged about 40 basis points more than institutional equity funds. Gerakos et al. (2021) show that even pure institutional funds progressively lower their fees the more a client invests in the fund. Looking at the retail market, Del Guercio and Reuter (2014) show that US brokerage-sold equity funds were on average more expensive than directly-sold funds, likely because they need to offset distribution costs and advisors' compensations.

In this section we perform a cross-sectional analysis of the fees charged at the share class level (as a measure of the price of the fund for its investors) and, consistent with past findings, we find robust evidence of a significant fee differential among euro-area retail funds which is strongly related to the amount of the mutual fund held by households.[18] In particular, we run the following regression:

$$\begin{aligned}\text{Fees}_{s,i,t} =& \beta\, \text{households}'\ \text{share}_{s,i} + \gamma_1 log(\text{size}_{s,i,t}) + \gamma_2 log(\text{size}_{i,t}) \\ &+ \gamma_3 log(\text{Fund age}_{i,t}) + \gamma_3 log(\text{Family age}_{i,t}) + \phi_{year,d} + \phi_{year,cat} + \epsilon_{s,i,t}\end{aligned} \tag{1}$$

[18] Unlike the rest of the paper, we choose the share class as our observational unit in this section given the focus on the fees paid (as in Bergstresser et al., 2009 and Khorana et al., 2009).

where *s* indicates the share class of fund *i* at quarter *t* of year *y*.

The measure of fees that we use as the dependent variable for this analysis is the TER. The TER is a comprehensive measure computed as a percentage of the value of assets under management of the fund (or of the value of the fund's class in case of funds issuing multiple share classes) that are deducted from the fund's net assets by management on a daily basis to cover total operating costs, including marketing and distribution costs. Funds, especially retail funds, may however also charge "loads", which are fees that are paid at the time fund shares are purchased ("front-end load") or redeemed ("back-end load"), and compensate distributors. Because of the scant availability on loads from our database, we limit the analysis to the TER. Loads are typically lower (if not nil) for share classes sold to institutional investors and, even when reported in the fund's prospectus, they are often waived to some extent to institutional investors that do not rely on brokers. Therefore, our estimates of the differential in the fees paid by households and those paid by institutional investors in the same market are likely to be conservative.

We perform our analysis by regressing the TER on the households' ownership share and a set of controls, namely the logarithm of the size of the fund and the share class and the logarithm of the age of the fund and the fund family. We include measures of size given that fund size and expense ratio may be inversely related (Berk and Green, 2004; Khorana et al., 2009; Pástor et al., 2020 and Gil-Bazo and Ruiz-Verdu, 2009), and the age of the fund and its family because customers may be willing to pay higher fees for funds showing a longer track record. We include in our sample only the share classes of a fund for which our data on holdings by euro-area investors (retail or institutional) cover at least 80% of the total share size to reduce measurement error issues regarding our households ownership share measure.[19] We include a range of fixed effects so as to compare fees charged by similar funds: dummies by investment objective -

[19]This requirement is in addition to: 1) having a coverage in terms of holdings by euro-area investors of at least 80% of the fund size overall (see section 2); 2) being sold in the retail market (as defined as funds effectively held by households in the corresponding period by at least 1%); 3) of course, having information on the TER from Morningstar, which determines a drop in

year and domicile - year.[20]

Regression results (Table 4) indicate that, as expected, households pay higher fees. This differential is larger for equity funds (column 1), which are also those that on average charge higher fees, and amounts to about 30 basis points more on average for share classes which are 25% held by households compared to those that are held 75% by households, controlling for the investment category and domicile of the fund in each period. For bond funds, the difference is about 20 basis points (column 4). Results are also robust to the inclusion of dummies by fund family (column 2). Since a typical mutual fund family tends to specialise in a segment of the market (either directly-sold or broker-sold funds; Del Guercio and Reuter, 2014), this suggests that our results are not simply driven by the distribution channel of the fund.

To exclude the potential confounding factors, we exploit the fact that many funds issue multiple share classes and we run a regression that includes fund-year fixed effects (dropping the other fixed effects). We obtain even stronger results (Table 4, columns 3 and 6). A peculiar feature of the euro-area mutual fund industry is that a large number of domestic investors buy funds in countries outside their own domicile. At the end of 2019, before the pandemic outbreak, foreign-domiciled funds were 42% of the total market value of funds held by euro-area households and non-financial corporations. However, less than 2% of the funds were domiciled outside the euro area.[21] In fact, the foreign-domiciled funds owned by euro-area households are geographically concentrated in the

observations for the reasons explained in section 2. Requiring a higher coverage of 90% would determine a further drop in observations but without affecting the results.

[20] We include dummies for each year as the TER is calculated on an annual basis, but results are identical if we include a dummy for each date.

[21] We compute these statistics by combining sectoral accounts data and balance of payments (BOP) data from ECB. We consider the households (including non profit institutions serving households) and non financial corporations together since BOP data do not allow to distinguish between the two sectors, but households represent over 80% of the total holdings (domestic plus foreign), according to sectoral accounts data. We sum the cross-border holdings of investment funds by the non financial corporation and households of all euro-area countries and we divide them by the total holdings of funds reported in the flow of funds. The amount of investment funds domiciled outside the euro area is derived from the euro area international investment position.

euro-area financial centres, namely Ireland and Luxembourg; for the other euro-area countries, non domestic euro-area investors account for only 4.5% of fund value.[22]

Here we ask whether the 'TER spread' paid by households compared to institutional investors changes for the foreign-domiciled funds. There are several reasons to expect that these funds may be different in this regard. First, international funds may be willing to to diversify geographically its investor base to reduce risk (Ferreira et al., 2018), and this may favour small retail investors if international funds compete with domestic funds on fees to attract clienteles. On the other hand, foreign funds may be more costly for households if they involve higher distributional costs than domestic funds.[23]

To answer this question, we divide the sample between funds based in Ireland and Luxembourg, which account for about 40% of our observations, and all other euro-area funds. Since funds in these 'onshore offshore financial centres' (Beck et al., 2023) serve almost entirely foreign customers this is roughly a sample split between foreign funds and domestic funds.

We find that the 'TER spread' is actually higher for funds domiciled in the two financial centres (Table 5, column 5).[24] It should be noted that this does not mean that funds domiciled in financial centres are more expensive in general (the average TER is in fact slightly lower for onshore offshore funds in our sample, also conditional on the fund category), but that households pay proportionally higher fees than institutional investors to gain access to these funds. This remains true if we include fund-year fixed effects (columns 2 and 6 and columns 4 and 8). The spread appears to be larger for equity funds.

[22]This statistics is based on the holdings at the end of 2018 and is taken from ECB (2020), Special Features, Box C1.

[23]Khorana et al. (2009) showed that while management fees charged by funds in the offshore centers of Dublin and Luxembourg were lower than those of comparable domestic funds in countries in which they were registered for sale, the opposite was true for the TER and the TSC (which includes the loads). They suggest that this may be due to the fact that economies of scale that exist in management activities are more than offset by the costs of gaining access to customers and distribution channels from abroad.

[24]The statistical significance of the spread is confirmed if we run a formal test on the overall sample and interacting a foreign dummy with our measure of the households ownership share.

As a robustness check, we consider a different way to look at the internationalisation of the industry. We define a fund as international if it is held to a significant extent by investors in at least two countries (which we define as holdings of at least 5% of the fund), regardless of its domicile. This simple measure of geographical diversification of the investor base may be a more accurate signal of a fund being truly international if some funds are located in the offshore financial centres only for tax reasons but only serve investors domiciled in one specific euro-area country. We thus divide the sample in two based on this dummy for the geographical diversification of the fund investor base. Again, we find that funds sold in multiple countries appear to be relatively more expensive for households compared to other investors, again even more so for equity funds (Table A2).[25]

4. Households ownership and performance

4.1. Baseline tests

We have seen that fund performance seems to be generally lower for funds that are mostly owned by households (section 2). However, other variables that are correlated with our measure of households ownership may be driving this result. In this section we thus isolate the effect of household' ownership on fund performance by controlling for fund characteristics that could predict the funds' net returns. We do so by estimating a fund-quarter panel regression using our estimates of the fund risk-adjusted excess net returns as the dependent variable (section 2.2):

$$\alpha_{i,t} = \beta \text{households' share}_{i,t-1} + \gamma' \mathrm{X}_{i,t-1} + \eta_{t,d} + \phi_{t,cat} + \epsilon_{i,t} \qquad (2)$$

where the dependent variable is the alpha of the fund and on the right hand side we include households $\text{share}_{i,t-1}$, which is the share of the fund held by euro-area households, and in the X vector we include a set of controls commonly

[25] As a further alternative, we split the sample based on whether the *share class* (rather than the fund) is sold in multiple countries, obtaining similar results.

used in studies of fund performance. All explanatory variables, including the household ownership share, are lagged by one quarter to mitigate endogeneity concerns. [26]

The regression includes fixed effects by time - domicile ($\eta_{t,d}$) and by time - category of the fund ($\phi_{t,cat}$). The first set of dummies controls for the possibility that under-performing funds are clustered in specific countries (possibly in a time-varying fashion), which may bias our results if the funds' ownership by households is significantly higher or lower than average in these locations. The second set of dummies controls for the cross-sectional dependence among mutual funds of the same type (equity or bond).[27] Standard errors are clustered at the fund level to account for autocorrelation in fund performance.[28]

The main results are shown in Table 6. In our baseline regression (column 1), the coefficient on previous-quarter households' share is statistically significant, negative, and quite sizeable (-0.2). It implies that moving from funds held twenty-five percent by households to funds where households represent three-quarters of the investor base, there is a loss in the risk-adjusted performance of about 10 basis points (bp) in each quarter (or about 40 bp annually), *ceteris paribus*.

Looking at other funds characteristics that may predict subsequent performance, we find that the size of the fund has a positive coefficient. This contrasts with the evidence by Chen et al. (2004) on the diseconomies of scale to US funds, but it is consistent with findings for funds outside the US market (Ferreira et al., 2013). Estimates on the fund family size coefficient are also positive, suggesting that large asset management companies benefit from economies of scale and scope, a result that appears robust worldwide (Ferreira et al., 2013). Older funds appear to yield higher returns (suggesting that younger funds may be more inex-

[26] Results are slightly stronger if we take the value of households ownership share at the end of the contemporaneous quarter.

[27] In section 4.5 we also control for the investment category of the fund, which is more granular.

[28] As robustness checks, we also include fixed effects by fund's family and we cluster the standard errors both at the fund and time level. We obtain very similar results (reported in Table A3 in the appendix).

perienced and face higher costs during the start-up period), while the opposite is true if we consider the age of the asset management company of the fund. While evidence on the US market generally suggests limited or no persistence in funds performance (at least after momentum in stock holdings is taken into account; Carhart, 1997; Fama and French, 2010; Berk and van Binsbergen, 2015), we find the opposite to be true for the euro area (in line with findings by Ferreira et al. (2019) for other countries).

We then consider the possible role of flow volatility (how volatile are the fund's subscription and redemption flows) and the role of the fund's cash holdings. Higher flow volatility may introduce trading inefficiencies as the fund needs to satisfy unexpected redemptions by selling assets or buying securities in response to (negative) positive net flows, and it has been shown to be negatively related to cross-sectional differences in performance (Rakowski, 2010). It is also commonly believed that pure institutional funds that serve large clients and/or use separate accounts are less exposed to flow volatility risk than their retail counterparts, because their clients tend to invest in a stable manner.

As we restrict the analysis to retail funds, it is not obvious that funds mostly held by households will have more volatile flows and/or hold more cash. Institutional investors active in the retail market may be more sophisticated than households and thus trade more aggressively for informational reasons determining more volatile flows. On the other hand, an investor base composed of many individual investors, as in the case of a typical retail fund serving households, may imply strategic interactions among investors (for instance first mover advantages) that are detrimental to the fund performance and lead the fund to hold extra cash.[29] In fact, we have seen in section 2.1 that flow volatility seems to be negatively correlated with households ownership while for cash holdings the evidence is mixed.

To rule out that flow volatility and cash holdings are driving our results,

[29]The expectation that other investors of the fund will redeem their shares increases the incentive for each individual investor to redeem as well, because it reduces the expected return from staying in the fund. This strategic complementarity is weaker if the investor base is more concentrated (Chen et al., 2010).

we include them among the explanatory variables. In particular, we consider the realised volatility in daily net flows (scaled by the size of the fund) and the percentage amount of cash held in the previous quarter by the fund. While this comes at the cost of losing observations (as our data enable us to construct these measures only for a subsample of funds), we find that the estimated coefficient for the share of household ownership share remains almost unchanged (Table 6, column 2).[30]

So far we have excluded from the explanatory variables the TER, because this is lacking for many funds and thus lead to a drastic reduction in our sample size. However, our results are similar if we include it as a control (Table 6, column 3), indicating that the underperformance of households' held mutual funds is not merely reflecting the higher fees they charge.[31]

4.2. Variation within a fund

To further rule out that our baseline results are driven by an omitted variable bias, we include fund fixed effects (columns 4 and 6 in Table 6). This allows us to control for unobserved time-invariant fund heterogeneity that may both attract more money from the household sector and determine lower performance by exploiting within-fund changes in households ownership share. [32] Indeed, we showed in Section 2 that the investor base of many retail funds changes significantly over time.

[30]The coefficients on flow volatility is not statistically significant from zero and that of cash holdings is negative as expected.

[31]If we run the regression with the sample in column 3 but omitting the TER, we obtain a slightly higher coefficient of -.21 (not shown), indicating that underperformance to some extent is also the effect of the the higher fees charged, as expected.

[32]For instance, past literature found that US retail funds that are broker-sold generally underperformed funds directly sold to consumers (Bergstresser et al., 2009; Del Guercio and Reuter, 2014). We do not have data that allows us to control for the distributional channel of the fund. It is however plausible that retail funds held by households are more frequently sold through brokers than funds held by institutional investors active in the retail market, and this may influence our results. Importantly, Bergstresser et al. (2009) mention that the distribution channel of funds rarely change. Del Guercio and Reuter (2014) shows also evidence that a typical mutual fund family serves only a segment of the market, so that this effect is also captured - at least to some extent - by our specification with family fund dummies.

Including fund fixed effects, we estimate a coefficient on the households ownership share of about -0.55, which means that an increase in the household share of 20 percentage points over time (the mean interval change computed over all funds) is associated with a drop in fund performance by more than 40 basis points in annual terms. Our results thus show that in times when households hold a larger share of a fund, it tends to perform below its (time) average.

The finding that the effect is consistently stronger when we look at within fund-changes could be viewed as evidence that the weaker performance of households' mutual funds is related to households inability to identify or calculate risk-adjusted performance, which leads to inertia in leaving (or increasing their holdings in) low performing (high performing) mutual funds. We explore this aspect further by studying the flow-performance relationship in Section 5.

An alternative explanation is that only retail funds that perform well are subsequently sold to institutional investors, so that as a result households end up holding proportionally less of those funds.[33] If this were the only explanation, our main result should not hold (or be very weak) if we restrict our attention to funds already sold to institutional investors to a significant extent. We therefore run a regression where 'pure' households funds are excluded, which we define as funds held for less than five percentage points by institutional investors. We obtain very similar results (reported in Table A4.)

Looking at the other variables, it is interesting to note that the coefficients of the size variables switch sign and become negative. This suggests that looking at the cross-section of funds large funds and funds from large families tend to show stronger performance whilst within a fund there is a negative relation between performance and size. This is consistent with the idea that funds with skilled managers grow larger; but it is also consistent with models with decreasing returns to scale at the fund level, so that as funds grow bigger it becomes harder for managers to outperform the market (Berk and Green, 2004; Pástor et al., 2015).

[33]Evans and Fahlenbrach (2012) show that retail funds overperform other funds before the creation of an institutional share class, which they interpret as advisors deciding to offer to institutional investors retail funds with initially high alpha.

4.3. Performance by fund category

So far we have estimated the coefficient for both types of funds (equity and bond) in the same regression, while including time - category dummies. It is interesting to verify whether and how the impact of households ownership on mutual fund performance varies between funds categories and if funds characteristics affect fund performance differently depending on the fund category. We thus run regression 2 separately by fund type. Results are reported in Table 7. We find the stronger effect for equity funds, for which we estimate a coefficient of -.22/-.30 on previous quarter households share (columns 1 and 2): for this type of fund, shifting the investor base by 50 percentage points towards households amounts to a loss in risk-adjusted returns of about 40/50 basis points in annual terms.

Again, introducing fund fixed effects strengthens this result, with an estimated coefficient of -0.9/-1.0 for equity. The coefficient is also statistically significant for bond funds in all specifications, around half the size of the coefficient for equity funds.

4.4. Performance gross of fees

In Section 3 we showed that the mutual fund shares held by households in general have higher fees. This for instance may be the consequence of the lack of a minimum required initial investment in the shares households purchase or, to put it differently, the cheapest shares require larger investments. If some households have significant liquidity and credit constraints, those cheapest fund shares may be out of their potential choice set. As a result, if they invest in mutual funds, they are forced to sustain higher fees and thus earn lower net returns on average. The lower performance delivered by household-held mutual funds may thus be a reflection of this composition effect in terms of the fund shares that are available to institutional investors and those available to retail investors.[34]

[34] Applied at the fund level, this is the reason why we choose to look only at mutual funds that are sold on the retail market, i.e. are held by at least some households.

To check whether this is the case we run the performance regression 2 using gross alphas (i.e. risk-adjusted returns gross of the fees charged to the customers) instead of net alpha (i.e. obtained using net risk-adjusted returns). While net alpha is what should matter for investors, gross alpha effectively allows us to sterilise the impact of fees on the differential performance among funds. Results are reported in Table 8.

As expected, given the results in Section 3, the coefficient on the households share in Table 8 is lower than the one in Table 6. It is only about -.08 against -.2 in the regression where we do not control for cash and flows volatility (column 1 in the respective tables), while it is about -.1 (against -.18) when these variables are accounted for (columns 2). Finally, if the TER variable is included, then the coefficients are very close to each other (-.15 against -.18; columns 3). It is also very informative to compare the results when fund fixed effects are included. If the results previously obtained were merely driven by a composition effect, i.e. by the fact that an increase in household participation to a fund determines lower net returns only because they purchase more expensive shares, then the coefficients should be zero when we look at gross alphas. On the contrary, the coefficients obtained are quite comparable to those in the baseline regression using net alphas as the dependent variable (in the range of -.40/-.48, columns 4-6 in Table 8 against -.49 to -.56 in Table 6).

Finally we run the regression separately for equity funds and fixed income funds. The results (reported in Table 9) confirm that previous findings: the effect is stronger for equity funds than for fixed income funds (for which the coefficient is negative but not consistently statistically significant across specifications).

4.5. Benchmark-adjusted Returns

Understanding factor-related returns (needed to estimate factor-adjusted alphas as done so far) requires a significant degree of financial sophistication that households likely do not have, as argued by Ben-David et al. (2021). A more accessible way for individual investors to monitor fund performance is to compare a fund's returns against the returns of other similar funds. Following Bergstresser et al. (2009) we define benchmark-adjusted returns as the difference between the

returns of the fund and the returns of the funds in the same Morningstar investment category.[35] We run the same regression as before (equation 2) except that we now use this alternative measure of performance as the dependent variable. Pooling all funds' types together returns a statistically significant coefficient of -.19/-.16 (columns 1–3, Table 10), and a coefficient of -.38/-.57 (columns 4–6), when we include fund fixed effects; these results are roughly comparable to the ones with factor-adjusted returns (Table 10). We then run separate regressions by fund category. We obtain negative coefficients in all specifications (Table 11), but for equity funds we lose statistical significance when the TER is included (column 2).

Overall we thus find that the degree of household ownership also appears to be negatively correlated to cross-sectional differences in benchmark-adjusted returns.

5. Flow-performance relationship by investor group

The fact that households collectively tend to hold mutual funds that deliver lower risk-adjusted returns may be related to how (new) purchases and disposals by households respond to past performance.[36] Del Guercio and Reuter (2014) study retail equity funds in the US market and find that flows towards directly-sold funds (which likely serve a more sophisticated clientele) responded to risk-adjusted past returns, while this was not the case for flows to broker-sold funds. If inattentive investors offer less incentive to generate alphas, fund managers may instead resort to spending in marketing and distribution channels as a means to attract investment.[37]

[35] In our sample we have twenty-two categories for equity funds ("Europe Equity Large Cap" and "Global Equity Large Cap" accounting for 60% of the overall count); eight categories for bond funds (where the category "Europe Fixed Income" accounts for about two-thirds of the observations).

[36] The empirical literature analysing the flow-performance relationship is very large. Early influential work are: Ippolito (1992); Chevalier and Ellison (1997); Sirri and Tufano (1998). More recent works are Barber et al. (2016) and Ben-David et al. (2021).

[37] Barber et al. (2005), Bergstresser et al. (2009), Christoffersen et al. (2013) and Roussanov et al. (2021), among others, document a positive effect of marketing efforts on investor flows. A literature review is in Christoffersen et al. (2014).

With this in mind, we test for differences between households and institutional investors in the flow - performance relation. We start by defining net flows as the growth in holdings by investor group j ($j = 1, 2$) of fund i, less the capital appreciation in period t, all expressed in terms of fund's previous period TNA:

$$Flow_{j,i,t} = \frac{Stock_{j,i,t} - (1 + R_{t,i})Stock_{j,t-1,i}}{TNA_{i,t-1}} \tag{3}$$

In equation 3 we implicitly assume that the flows occur at the end of each period. This is common in the literature because information on the exact timing of the investment is not generally available. We winsorize fund flows by fund category at the bottom and top 1 percent level to attenuate the effect of outliers on the results. Since we analyse net flows by investor group rather than overall funds flow, we also require that the specific investor group had positive holdings of that fund in the previous quarter.[38] We impose a relatively mild requirement of a minimum of 5% ownership share over the total fund size.

Using as dependent variable this measure of flows, we run the following regression:

$$\begin{aligned} \text{Flow}_{j,i,t} =& \gamma_1 \text{factor adjusted alpha}_{i,t-1} + \gamma_2 \text{net return}_{i,t-1} + \gamma_3 \text{Flow}_{j,i,t-1} \\ &+ \delta' \text{X}_{i,t-1} + \gamma_4 \text{ownership share}_{j,i,t-1} + \phi_{t,d} + \phi_{t,cat} + \epsilon_{j,i,t} \end{aligned} \tag{4}$$

As in Del Guercio and Reuter (2014) the relevant independent variables are the lagged factor-adjusted alpha of the fund and its lagged total raw net returns (i.e. not adjusted for factor exposure). The first variable provides a signal of managerial skill, while the second variable controls for more simplistic return-chasing behaviour. An important question is the relevant time horizon for investors when evaluating past performance. More recent past returns may be more informative about a manager's current skills, but may be very noisy, while past returns over a longer horizon may be less up-to-date but have a more adequate signal-to-noise ratio.[39] We adopt an intermediate approach and consider

[38] This is obvious for outflows as investors cannot sell a fund they do not hold.

[39] The choice of the relevant horizon varies significantly in prior empirical works. Seminal

the flow response to the previous four-quarter alpha and raw returns. For robustness, we also report the results where our independent variables are measures of past performance in the short term (previous-quarter alpha and previous-quarter total raw returns; Tables A5 and A5).

We include as controls in $X_{i,t-1}$ other lagged fund variables that may explain flows, namely the size and age of the fund and of its family (as larger and older funds and families may attract more inflows), and fund fees. Because our dependent variable is the flows to/from the fund by investor group (rather than overall fund flows), we also include the percentage amount of the fund held in the previous period by that investor group, so as to control for the possibility that having a large stake in the fund influences subsequent inflow/outflow decisions. Importantly, we also include investor past net flows (by group) to capture the degree of autocorrelation in investment not explained by past performance or by other fund-level controls. We also include domicile - time fixed effects and investment objective - time fixed effects; including these fixed effects ensures that we are comparing flows to similar funds and that the results are not affected by commonality at the country and investment-objective level. We perform our inference clustering standard errors by fund and time, taking into account that flows could be correlated in both these dimensions.

In Table 12 we estimate the regression separately by investor group (households or institutional investors); in order to test for differences between the two categories of investors we run a single pooled regression in which each of the independent variables (including the fixed effects) are interacted with a dummy identifying the investor group. The p-value on the statistical significance of the interaction term is reported in brackets beside the coefficients (columns 3 and 6 in Table 12).[40]

work by Sirri and Tufano (1998) considers raw total returns over a three-year horizon. Ferreira et al. (2012) consider average raw returns and alpha over the previous four quarters. Del Guercio and Reuter (2014) consider alpha and raw returns in the previous month. Barber et al. (2016) estimate the relation between past returns and flows at different lags (up to 18 months) and show that there is a clear decay in this relation so that recent returns are more important than distant returns.

[40]This can be interpreted as a test of the null hypotheses that there is no difference between

The first result is that flows by *both* categories of investors appear to respond more to past returns than to risk-adjusted returns (Table 12, columns 1 and 2). This is consistent with prior findings on the behaviour of retail mutual fund flows (Chevalier and Ellison, 1997; Sirri and Tufano, 1998; Del Guercio and Reuter, 2014, and Ben-David et al., 2021), as well as with survey data documenting that many retail investors believe past returns to be a strong signal of managerial skill (Choi and Robertson, 2020). It also echoes the results in Evans and Fahlenbrach (2012), who find that small institutional investors active in the retail market pay relatively more attention to total returns than to risk-adjusted returns, similarly to households. A difference with their results, however, is that they show also higher sensitiveness to risk-adjusted returns than households (column 3), although this difference loses statistical significance when lagged fund expenses are included (column 6).

The second result that stands out is that flows by households are easier to predict than institutional investors flows because they exhibit a three-times larger autocorrelation coefficient, and the difference between them is statistically significant at any standard confidence level.[41]

While we are not able to pin down the causes of intertia in household flows , we suggest a few plausible explanations. First, households typically have automated investment plans such as retirement accounts, to which they contribute at regular intervals. This, possibly combined with inattention, may lead to sluggish reallocation and strong autocorrelation. Consistent with higher inertia in household flows is also the idea that mutual funds rely more heavily on marketing and distribution channels when they target this clientele: an investment in marketing may attract new flows for several subsequent periods. The stronger coefficient in past household flows might thus capture the marketing efforts by mutual funds to attract this clientele. Finally, if share classes held by households more often come with back-end loads attached, as is likely the case, the incentive to withdraw money from low performing funds would be lower, even for attentive

the two sectors.

[41] The difference remains highly significant if we do not winsorize fund flows.

households.[42]

In our baseline test we have so far assumed a linear relation between past returns and flows. Some prior works on US retail funds document that there is convexity in the flow-performance relation: investors tend to invest disproportionately more in past top performing funds and fail to divest from poor performing funds (Sirri and Tufano, 1998). The degree of convexity however varies significantly across countries, and for some countries it does not hold (Ferreira et al., 2012). To account for possible non linearities we include dummies, as in Del Guercio and Reuter (2014), that indicate whether the fund was in the bottom (top) quintile in terms of past raw returns, where the percentiles are calculated within time and Morningstar investment objectives. Both coefficients on these two dummies (columns 4 and 5) are significant and coherent with previous empirical findings. However, the coefficient on past total returns becomes nil. This suggest that households attention is mostly grabbed by worst and best performing funds.

In Table 13 we report the results of the same regressions carried out separately for equity and bond funds (for reader's convenience, we only report the full specifications). We obtain similar results with the following differences. For equity funds, we find a statistically significant difference in risk-adjusted performance between households and institutional investors even when expense ratios and dummies for bottom and top funds are included. In addition, the response of institutional investors flows to a dummy for top funds is significantly higher than for households. For bond funds, the only statistically significant difference in coefficients is obtained for past flows and fund age.

Overall, we find that household flows show much higher inertia than institutional flows and are generally less responsive to both risk-adjusted returns and raw returns.

[42] Albareto et al. (2017) for instance find evidence that loads reduce the elasticity of subscriptions and redemptions to past returns.

6. Conclusions

There are thousands of mutual funds in the market, which differ in many respects as well as in their performance before and after fees. Investing in mutual funds is thus not necessarily simple, implies search costs, and significant financial expertise to assess the funds. Past empirical literature suggests that there is cross-sectional variation in manager skills among mutual funds which, if coupled with heterogeneity in the consumers' ability and incentives to search for skilled managers, may lead to a market where less sophisticated and small investors end up holding underperforming (relative to the market) funds on average.

In this paper we contribute to the empirical literature that studies differences among mutual funds investors. While most empirical studies look at the US market, we examine a large panel of euro-area retail mutual funds over the period 2009-2020. We show that household ownership of these mutual funds is positively correlated with fund fees and negatively correlated with risk-adjusted returns, indicating that institutional investors trading in the euro-area retail mutual funds market have an edge against households. We also find that household flows towards mutual funds exhibit stronger inertia than flows by institutional investors and that they chase past returns in addition to only previous risk-adjusted performance.

Our results are consistent with a model where small investors (households in our findings) have relatively higher search costs in the asset management market and thus behave as 'noise allocators' as in Gârleanu and Pedersen (2018). An implication is that innovations that make the market more transparent and render information easier to collect, for instance as a result of regulation or improved information technology that allow for easier comparability among mutual funds, are particularly beneficial to this type of investor.

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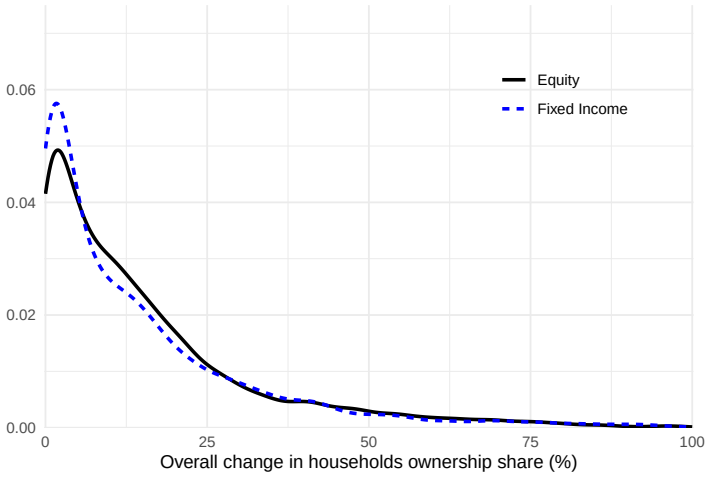
Figures and Tables

Figure 1: **Change in Households ownership share, estimated density.**



Notes: Our calculations using a Gaussian kernel estimate of the density based on SHS-S (Eurosystem) and Morningstar data. Change in households ownership is defined as the difference for each fund between the maximum and the minimum taken by the households ownership ratio. Each observation is weighted by the window over which the fund is in the sample, so that funds covered only for few quarters receive smaller weights.

Table 1: Summary statistics

The table reports the mean, standard deviation, 25th percentile, median, 75th percentile and number of observations for each variable for each type of fund in our sample, namely equity and bond funds, respectively in panel A and in panel B. The sample consists of open-end funds held by euro-area households over the 2009 to 2020 period. See Table A1 in the Appendix for variables definitions.

	Fund Characteristics					
	Mean	St.Dev	25th P.	Median	75th P.	Obs.
Panel A: Equity funds						
Net returns	1.93	10.01	-2.04	2.86	7.62	65,812
Six factors net α (%)	-0.76	3.59	-2.43	-0.69	0.98	65,812
Households ownership share	0.51	0.32	0.20	0.53	0.82	65,812
Fund size (EUR mln)	190	680	18	55	172	65,812
Family size (EUR mln)	56,756	127,120	2,409	14,682	82,279	65,812
Fund age (years)	15.05	9.40	8.70	13.81	19.26	65,565
Family age (years)	43.27	22.78	26.02	34.75	59.53	65,778
Net flows (%)	-0.50	11.21	-4.12	-1.19	1.63	65,181
Flows' daily volatility	0.30	0.24	0.11	0.23	0.44	59,157
Cash holdings	2.55	10.79	0.12	1.66	4.63	49,909
Total Expense ratio (%)	1.84	0.82	1.40	1.74	2.17	23,869
Panel B: Bond funds						
Net returns	0.37	4.94	-2.59	1.08	3.61	50,648
Eight factors net α (%)	-0.98	4.38	-3.40	-0.81	1.07	50,648
Households ownership share	0.53	0.34	0.19	0.59	0.85	50,648
Fund size (EUR mln)	226	639	27	76	219	50,648
Family size (EUR mln)	62,435	119,494	3,719	20,664	90,895	50,648
Fund age (years)	14.66	9.59	6.72	12.98	20.67	50,341
Family age (years)	45.67	21.92	28.16	40.84	60.38	50,535
Net flows (%)	-1.18	13	-5.91	-1.81	1.75	50,043
Flows' daily volatility	0.34	0.26	0.12	0.27	0.51	43,541
Cash holdings	4.61	10.90	0.38	2.50	6.40	39,314
Total Expense ratio (%)	0.84	0.40	0.58	0.80	1.04	17,889

Table 2: Households ownership and fund characteristics

The table reports the mean value for each variable at different levels of households ownership. The sample consists of open-end funds held by euro-area households from 2009 to 2020. See Table A1 in the Appendix for variables definitions.

	Households ownership share bins				
	(.01 - .2)	(.2 - .4)	(.4 - .6)	(.6 - .8)	(.8 - 1)
Panel A: Equity funds					
No. of funds (%)	25.28	15.73	14.08	17.46	27.44
Net returns	2.03	2.04	1.93	2.03	1.71
Six factors net alpha (%)	-0.63	-0.64	-0.76	-0.78	-0.96
Benchmark adjusted returns (%)	0.13	0.16	0.01	-0.01	-0.14
Fund size (EUR mln)	207	236	203	196	137
Family size (EUR mln)	62,254	63,747	56,134	51,009	51,662
Fund age (years)	13.43	15.62	15.98	15.91	15.19
Family age (years)	44.37	45.38	43.69	42.01	41.65
Net flows (%)	-0.11	-0.06	-0.39	-0.71	-1.03
Flows' daily volatility	0.34	0.33	0.31	0.29	0.26
Cash holdings	2.27	2.30	2.68	3.16	2.47
Total Expense ratio (%)	1.60	1.85	1.89	1.93	1.95
Panel B: Bond funds					
No. of funds (%)	25.73	12.92	11.92	16.21	33.22
Net returns	0.58	0.50	0.42	0.31	0.16
Eight factors net alpha (%)	-0.84	-0.86	-1	-0.99	-1.12
Benchmark adjusted returns (%)	0.10	0.07	-0.01	-0.07	-0.11
Fund size (EUR mln)	271	274	260	205	170
Family size (EUR mln)	62,867	64,908	61,494	57,894	63,692
Fund age (years)	14.14	15.35	16.66	16.68	13.09
Family age (years)	47.77	46.96	45.64	43.90	44.42
Net flows (%)	0.56	-0.08	-0.45	-1.22	-3.20
Flows' daily volatility	0.42	0.41	0.35	0.31	0.25
Cash holdings	3.12	3.90	5.15	4.86	5.66
Total Expense ratio (%)	0.67	0.82	0.86	0.95	0.93

Table 3: Change in Households ownership share

The table reports the mean, standard deviation, median and 10^{th}, 25^{th}, 75^{th}, 90^{th} percentile, of the difference for each fund between the maximum and the minimum values taken by the Households ownership share. Each observation is weighted by the window for which the fund enter in the sample, so that funds covered only for few quarters receive smaller weights.

	Mean	Std.Dev	10^{th} P.	25^{th}P.	Median	75^{th} P.	90^{th} P.
Equity funds	21.1	17.8	3.6	8.5	16.1	28.6	46.9
Fixed Income	21.3	18.9	2.4	7.2	16.1	29.7	47.1

Table 4: Fees and households ownership

The table presents ordinary least squares (OLS) regressions of TER on the share of the fund held by euro-area households and a set of controls. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. Standard errors, in parenthesis, are clustered at the fund and quarter level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. Table A1 in the Appendix provides more detailed variables definitions.

	Equity funds			Bond funds		
TER	(1)	(2)	(3)	(4)	(5)	(6)
Households share$_t$	0.6173***	0.6141***	0.7721***	0.4118***	0.3982***	0.4953***
	(0.0263)	(0.0277)	(0.0241)	(0.0225)	(0.0199)	(0.0181)
Log (share class size$_t$)	0.0118***	0.0091**	0.0047	-0.0062	-0.0073**	0.0006
	(0.0042)	(0.0039)	(0.0039)	(0.0038)	(0.0029)	(0.0025)
Log (Fund size$_t$)	-0.0758***	-0.0598***		-0.0413***	-0.0243***	
	(0.0081)	(0.0080)		(0.0073)	(0.0064)	
Log (Fund age$_t$)	0.0639***	0.0786***		-0.0133	-0.0003	
	(0.0134)	(0.0143)		(0.0113)	(0.0096)	
Log(Family age$_t$)	-0.1415***	-0.3034**		-0.0793***	-0.0479	
	(0.0205)	(0.1361)		(0.0208)	(0.1433)	
Inv. Category - Year FE	Yes	Yes	No	Yes	Yes	No
Domicile - Year FE	Yes	Yes	No	Yes	Yes	No
Fund Family FE	No	Yes	No	No	Yes	No
Fund - Year FE	No	No	Yes	No	No	Yes
Observations	58,134	58,121	59,866	51,135	51,124	52,065
R^2	0.343	0.445	0.837	0.267	0.411	0.819

Table 5: Fees and households ownership - domestic and offshore funds

The table presents ordinary least squares (OLS) regressions of TER on a set of variables. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. Standard errors, in parenthesis, are clustered at the fund and quarter level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. Table A1 in the Appendix provides more detailed variables definitions.

	Domestic funds				Offshore funds			
	Equity		Bond		Equity		Bond	
TER	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Households share$_t$	0.4791***	0.6263***	0.2927***	0.3136***	0.7245***	0.8357***	0.4960***	0.5622***
	(0.0348)	(0.0299)	(0.0224)	(0.0227)	(0.0306)	(0.0324)	(0.0255)	(0.0220)
Log (share class size$_t$)	0.0304***	0.0302***	0.0054	0.0130***	0.0024	-0.0069	-0.0103**	-0.0037
	(0.0069)	(0.0058)	(0.0042)	(0.0032)	(0.0047)	(0.0049)	(0.0043)	(0.0034)
Log (Fund size$_t$)	-0.0927***		-0.0515***		-0.0695***		-0.0392***	
	(0.0106)		(0.0079)		(0.0106)		(0.0107)	
Log (Fund age$_t$)	0.0515***		0.0064		0.0774***		-0.0336**	
	(0.0173)		(0.0121)		(0.0189)		(0.0167)	
Log(Family age$_t$)	-0.1111***		-0.0736***		-0.1603***		-0.0870***	
	(0.0285)		(0.0242)		(0.0288)		(0.0318)	
Inv. Category - Year FE	Yes	No	Yes	No	Yes	No	Yes	No
Domicile - Year FE	Yes	No	Yes	No	Yes	No	Yes	No
Fund - Year FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	31,689	33,081	26,418	26,946	26,436	26,785	24,717	25,119
R^2	0.366	0.927	0.255	0.916	0.334	0.735	0.294	0.760

Table 6: Performance of households' mutual funds - all funds

The table presents ordinary least squares (OLS) regressions of fund risk-adjusted performance. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. Standard errors, in parenthesis, are clustered at the fund level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. See Table A1 in the Appendix for variables definitions.

6/8 factors alpha	(1)	(2)	(3)	(4)	(5)	(6)
Households share$_{t-1}$	-0.2016***	-0.1763***	-0.1766***	-0.5584***	-0.4872***	-0.5457**
	(0.0336)	(0.0390)	(0.0634)	(0.1173)	(0.1366)	(0.2443)
Log (TNA$_{t-1}$)	0.0207***	0.0193**	0.0101	-0.3545***	-0.3390***	-0.5770***
	(0.0077)	(0.0082)	(0.0147)	(0.0268)	(0.0296)	(0.0624)
Log (Family TNA$_{t-1}$)	0.0505***	0.0493***	0.0863***	-0.0760	-0.0201	-0.1708
	(0.0081)	(0.0090)	(0.0183)	(0.0522)	(0.0586)	(0.1119)
Log (Fund age$_{t-1}$)	0.1143***	0.1249***	0.1537***	0.3927***	0.5709***	0.8331***
	(0.0164)	(0.0186)	(0.0325)	(0.1193)	(0.1356)	(0.2534)
Log (Fund family age $_{t-1}$)	-0.0916***	-0.0965**	-0.1910***			
	(0.0344)	(0.0386)	(0.0702)			
Flows$_{t-1}$	0.0004	-0.0002	-0.0015	0.0007	-0.0002	-0.0037**
	(0.0006)	(0.0007)	(0.0014)	(0.0007)	(0.0007)	(0.0015)
Past performance	0.0691***	0.0651***	0.0512***	-0.0113*	-0.0153**	-0.0497***
	(0.0066)	(0.0063)	(0.0104)	(0.0066)	(0.0063)	(0.0107)
Flows daily volatility $_{t-1}$		0.0396	0.0149		0.0551	-0.0756
		(0.0397)	(0.0679)		(0.0495)	(0.0829)
Cash$_{t-1}$		-0.0020**	-0.0066**		-0.0007	0.0000
		(0.0008)	(0.0027)		(0.0007)	(0.0037)
TER$_{t-1}$			-0.0960***			0.0192
			(0.0351)			(0.0715)
Domicile - Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Global Cat. - Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	No	No	Yes	Yes	Yes
Observations	111,623	82,119	30,889	111,336	81,847	30,647
R^2	0.468	0.490	0.465	0.496	0.521	0.521

Table 7: Performance of households' mutual funds: breakdown by funds' category

The table presents ordinary least squares (OLS) regressions of fund risk-adjusted performance. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period, distinguishing between open-end equity funds and bond funds. Standard errors, in parenthesis, are clustered at the fund level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. See Table A1 in the Appendix for variables definitions.

6/8 factors alpha:	Equity funds				Bond funds			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Households share$_{t-1}$	-0.2946***	-0.2189**	-1.0033***	-0.8927**	-0.0974***	-0.1720**	-0.2745**	-0.5348**
	(0.0534)	(0.0992)	(0.1862)	(0.4241)	(0.0353)	(0.0676)	(0.1369)	(0.2385)
Log (TNA$_{t-1}$)	0.0280**	0.0032	-0.5524***	-0.9210***	0.0011	0.0034	-0.1577***	-0.2675***
	(0.0124)	(0.0220)	(0.0484)	(0.1169)	(0.0081)	(0.0166)	(0.0257)	(0.0530)
Log (Family TNA$_{t-1}$)	0.0670***	0.0938***	-0.0497	-0.0607	0.0083	0.0435**	-0.0336	-0.2028*
	(0.0131)	(0.0294)	(0.0840)	(0.2170)	(0.0079)	(0.0182)	(0.0446)	(0.1095)
Log (Fund age$_{t-1}$)	0.2009***	0.2974***	0.5809***	1.4019***	0.0370**	0.0215	0.0742	0.0437
	(0.0292)	(0.0566)	(0.2007)	(0.4320)	(0.0154)	(0.0309)	(0.1155)	(0.2887)
Log (Fund family age $_{t-1}$)	-0.1162**	-0.2447**			-0.0137	-0.0283		
	(0.0540)	(0.1099)			(0.0320)	(0.0678)		
Flows$_{t-1}$	-0.0002	-0.0017	-0.0004	-0.0039	0.0009	-0.0016	0.0002	-0.0040**
	(0.0011)	(0.0024)	(0.0011)	(0.0024)	(0.0007)	(0.0015)	(0.0007)	(0.0017)
Past performance	0.0686***	0.0517***	-0.0105	-0.0502***	0.0813***	0.0583***	0.0169	-0.0192
	(0.0073)	(0.0121)	(0.0074)	(0.0129)	(0.0144)	(0.0215)	(0.0131)	(0.0194)
Flows daily volatility $_{t-1}$		0.0775		-0.1123		-0.0389		-0.0948
		(0.1067)		(0.1313)		(0.0769)		(0.0967)
Cash$_{t-1}$		-0.0146***		-0.0084		-0.0018		0.0020
		(0.0046)		(0.0062)		(0.0034)		(0.0049)
TER$_{t-1}$		-0.1030**		0.0608		-0.0001		-0.1983
		(0.0422)		(0.0825)		(0.0628)		(0.1580)
Domicile - Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	No	Yes	Yes	No	No	Yes	Yes
Observations	63,447	17,388	63,221	17,172	48,089	13,434	47,997	13,354
R^2	0.135	0.136	0.214	0.259	0.786	0.769	0.805	0.801

Table 8: Performance of households' mutual funds using gross alphas - all funds

The table presents ordinary least squares (OLS) regressions of fund risk-adjusted performance using gross returns instead of net returns. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. Standard errors, in parenthesis, are clustered at the fund level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. See Table A1 in the Appendix for variables definitions.

6/8 factors gross alpha	(1)	(2)	(3)	(4)	(5)	(6)
Households share$_{t-1}$	-0.0797**	-0.1001***	-0.1542**	-0.4835***	-0.4414***	-0.3963*
	(0.032)	(0.037)	(0.061)	(0.105)	(0.123)	(0.216)
Log (TNA$_{t-1}$)	0.0009	-0.0068	-0.0003	-0.3053***	-0.3136***	-0.4479***
	(0.007)	(0.008)	(0.014)	(0.024)	(0.027)	(0.053)
Log (Family TNA$_{t-1}$)	0.0443***	0.0462***	0.0764***	-0.0550	-0.0047	-0.0860
	(0.008)	(0.009)	(0.017)	(0.045)	(0.050)	(0.081)
Log (Fund age$_{t-1}$)	0.1144***	0.1222***	0.1368***	0.2348**	0.3832***	0.6537**
	(0.016)	(0.018)	(0.031)	(0.119)	(0.138)	(0.263)
Log (Fund family age $_{t-1}$)	-0.1277***	-0.1236***	-0.1833***			
	(0.033)	(0.037)	(0.067)			
Flows$_{t-1}$	0.0007	0.0002	-0.0009	-0.0008	-0.0012*	-0.0044***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Past performance	0.0525***	0.0535***	0.0329***	-0.0170***	-0.0139**	-0.0534***
	(0.005)	(0.006)	(0.009)	(0.005)	(0.006)	(0.009)
Flows daily volatility $_{t-1}$		0.0106	-0.0140		0.0193	-0.0843
		(0.037)	(0.065)		(0.046)	(0.082)
Cash$_{t-1}$		-0.0013	-0.0058**		-0.0016**	-0.0001
		(0.001)	(0.003)		(0.001)	(0.004)
TER$_{t-1}$			0.1074***			0.1500**
			(0.033)			(0.066)
Domicile - Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Global Cat. - Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	No	No	Yes	Yes	Yes
Observations	99,799	76,323	29,138	99,621	76,130	28,948
R^2	0.527	0.542	0.520	0.567	0.584	0.583

Table 9: Performance of households' mutual funds using gross alphas: breakdown by funds' category

The table presents ordinary least squares (OLS) regressions of fund risk-adjusted performance using gross returns. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period, distinguishing between open-end equity funds and bond funds. Standard errors, in parenthesis, are clustered at the fund level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. See Table A1 in the Appendix for variables definitions.

6/8 factors (gross) alpha:	Equity funds				Bond funds			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Households share$_{t-1}$	-0.1215**	-0.1585*	-0.7482***	-0.5977*	-0.0472	-0.1819***	-0.2601**	-0.3473
	(0.050)	(0.092)	(0.165)	(0.356)	(0.034)	(0.065)	(0.107)	(0.213)
Log (TNA$_{t-1}$)	0.0023	-0.0109	-0.4649***	-0.7272***	-0.0101	0.0015	-0.1292***	-0.1931***
	(0.011)	(0.020)	(0.042)	(0.097)	(0.007)	(0.015)	(0.020)	(0.044)
Log (Family TNA$_{t-1}$)	0.0535***	0.0785***	-0.0691	-0.1085	0.0093	0.0428***	-0.0334	-0.0876
	(0.013)	(0.028)	(0.072)	(0.151)	(0.008)	(0.016)	(0.040)	(0.077)
Log (Fund age$_{t-1}$)	0.1861***	0.2746***	0.5397***	1.2990***	0.0480***	0.0046	-0.0194	-0.0169
	(0.027)	(0.051)	(0.195)	(0.417)	(0.015)	(0.030)	(0.107)	(0.241)
Log (Fund family age $_{t-1}$)	-0.1304**	-0.1938*			-0.0567*	-0.0930		
	(0.051)	(0.104)			(0.033)	(0.063)		
Flows$_{t-1}$	0.0003	-0.0001	-0.0018*	-0.0049**	0.0008	-0.0021*	-0.0007	-0.0049***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Past performance	0.0547***	0.0274***	-0.0171***	-0.0649***	0.0549***	0.0632***	-0.0067	-0.0060
	(0.006)	(0.011)	(0.006)	(0.011)	(0.008)	(0.014)	(0.008)	(0.013)
Cash$_{t-1}$		-0.0119***		-0.0048		-0.0026		0.0033
		(0.004)		(0.006)		(0.003)		(0.005)
Flows daily volatility $_{t-1}$		0.0232		-0.1616		-0.0080		0.0230
		(0.101)		(0.125)		(0.074)		(0.096)
TER$_{t-1}$		0.0871**		0.2742***		0.1595**		0.0332
		(0.040)		(0.055)		(0.075)		(0.117)
Domicile - Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	No	Yes	Yes	No	No	Yes	Yes
Observations	58,048	16,892	41,644	12,192	57,931	16,755	41,578	12,136
R^2	0.163	0.177	0.832	0.812	0.236	0.283	0.846	0.836

Table 10: Benchmark-adjusted returns of households' mutual funds

The table presents ordinary least squares (OLS) regressions of benchmark-adjusted net returns. Benchmark-adjusted returns are fund returns minus the average return in that quarter by funds belonging to the same Morningstar investment category. The sample consists of open-end actively managed mutual funds held by euro-area households over the period 2009-2020. Standard errors, in parenthesis, are clustered at the fund level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. See Table A1 in the Appendix for variables definitions.

Benchmark adjusted (net) returns	(1)	(2)	(3)	(4)	(5)	(6)
Households share$_{t-1}$	-0.1924***	-0.1717***	-0.1555***	-0.5722***	-0.4598***	-0.3837*
	(0.0305)	(0.0355)	(0.0592)	(0.0963)	(0.1096)	(0.2092)
Log (TNA$_{t-1}$)	0.0364***	0.0408***	0.0443***	-0.2397***	-0.2430***	-0.4578***
	(0.0069)	(0.0076)	(0.0133)	(0.0214)	(0.0245)	(0.0509)
Log (Family TNA$_{t-1}$)	0.0585***	0.0538***	0.1026***	-0.1100**	-0.0758	-0.0116
	(0.0075)	(0.0084)	(0.0166)	(0.0448)	(0.0503)	(0.0934)
Log (Fund age$_{t-1}$)	0.0712***	0.0547***	0.0778***	0.0018	0.0586	0.3584
	(0.0154)	(0.0178)	(0.0296)	(0.0999)	(0.1175)	(0.2398)
Log (Fund family age $_{t-1}$)	-0.1123***	-0.1205***	-0.2096***			
	(0.0322)	(0.0362)	(0.0612)			
Flows$_{t-1}$	0.0016***	0.0014**	0.0004	0.0005	0.0002	-0.0021
	(0.0005)	(0.0006)	(0.0012)	(0.0005)	(0.0006)	(0.0013)
Past performance	0.0018	-0.0025	-0.0033	-0.0778***	-0.0799***	-0.0983***
	(0.0053)	(0.0061)	(0.0085)	(0.0051)	(0.0059)	(0.0079)
Flows daily volatility $_{t-1}$		-0.0149	0.0159		-0.0097	-0.0670
		(0.0348)	(0.0597)		(0.0424)	(0.0750)
Cash$_{t-1}$		-0.0028***	-0.0111***		-0.0017*	-0.0044
		(0.0010)	(0.0023)		(0.0010)	(0.0029)
TER$_{t-1}$			0.0238			0.3092***
			(0.0354)			(0.0780)
Domicile - Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Global cat. - Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	No	No	Yes	Yes	Yes
Observations	107,435	79,372	29,771	107,094	79,025	29,461
R^2	0.059	0.065	0.067	0.157	0.166	0.201

Table 11: Benchmark-adjusted returns of households' mutual funds by fund category

The table presents ordinary least squares (OLS) regressions of benchmark-adjusted net returns. Benchmark-adjusted returns are fund returns minus the average return in that quarter by funds belonging to the same Morningstar investment category, distinguishing for the funds global category (equity, bond, allocation/balanced). The sample consists of open-end actively managed mutual funds held by euro-area households over the period 2009-2020. Standard errors, in parenthesis, are clustered at the fund level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. See Table A1 in the Appendix for variables definitions.

Benchmark-adjusted returns:	Equity funds				Bond funds			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Households share$_{t-1}$	-0.1791***	-0.0538	-0.7077***	-0.4420	-0.2449***	-0.3547***	-0.4701***	-0.6673***
	(0.0474)	(0.0882)	(0.1538)	(0.3379)	(0.0358)	(0.0702)	(0.0965)	(0.2332)
Log (TNA$_{t-1}$)	0.0498***	0.0572***	-0.3298***	-0.6359***	0.0141*	0.0186	-0.1602***	-0.3202***
	(0.0107)	(0.0199)	(0.0375)	(0.0924)	(0.0078)	(0.0158)	(0.0207)	(0.0515)
Log (Family TNA$_{t-1}$)	0.0627***	0.1221***	-0.0912	-0.0510	0.0298***	0.0351*	-0.0396	-0.0655
	(0.0121)	(0.0254)	(0.0715)	(0.1679)	(0.0082)	(0.0197)	(0.0450)	(0.1068)
Log (Fund age$_{t-1}$)	0.1085***	0.1447***	0.2128	1.0790***	0.0284*	0.0065	-0.1994**	-0.4569*
	(0.0269)	(0.0505)	(0.1620)	(0.3805)	(0.0153)	(0.0303)	(0.1008)	(0.2600)
Log (Fund family age $_{t-1}$)	-0.1253**	-0.2838***			-0.0317	0.0140		
	(0.0494)	(0.0905)			(0.0367)	(0.0740)		
Flows$_{t-1}$	0.0017**	-0.0020	-0.0000	-0.0056***	0.0021***	0.0027*	0.0016***	0.0012
	(0.0009)	(0.0019)	(0.0009)	(0.0020)	(0.0006)	(0.0015)	(0.0006)	(0.0016)
Past performance	0.0287***	0.0179		-0.0401		0.0109		-0.0978
	(0.0061)	(0.0921)		(0.1150)		(0.0724)		(0.0930)
Flows daily volatility $_{t-1}$		-0.0225***		-0.0117**		-0.0054**		0.0015
		(0.0047)		(0.0058)		(0.0022)		(0.0028)
Cash$_{t-1}$		0.0023	-0.0495***	-0.0919***	-0.0730***	-0.0181	-0.1491***	-0.1058***
		(0.0097)	(0.0059)	(0.0092)	(0.0104)	(0.0189)	(0.0094)	(0.0163)
TER$_{t-1}$		0.0188		0.3163***		0.1928***		0.1974
		(0.0411)		(0.0865)		(0.0656)		(0.1972)
Domicile - Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	No	Yes	Yes	No	No	Yes	Yes
Observations	60,622	16,708	60,373	16,482	46,735	12,999	46,632	12,910
R^2	0.083	0.089	0.176	0.220	0.093	0.089	0.189	0.217

Table 12: Flow - Performance regression by investor category

The table presents ordinary least squares (OLS) regressions of quarterly net fund flow by investor category on lagged fund characteristics and measures of fund performance (factors-alpha) and total raw return cumulated over the previous four quarters. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. Standard errors, in parenthesis, are clustered at the fund and time level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. Columns (3) and (6) report the p-values of the test of coefficient differences (in square brackets). See Table A1 in the Appendix for variables definitions.

$Flows_t$:	Households (1)	Inst. (2)	Test coef. diff. (3)	Households (4)	Inst. (5)	Test coef. diff. (6)
$Flows_{t-1}$	0.3261***	0.1140***	[0.000]	0.3180***	0.0935***	[0.000]
	(0.0181)	(0.0098)		(0.0226)	(0.0165)	
Factor $\alpha_{t-1,t-4}$	0.0220***	0.0464***	[0.049]	0.0278**	0.0469***	[0.309]
	(0.0076)	(0.0128)		(0.0111)	(0.0166)	
Total net $return_{t-1,t-4}$	0.0747***	0.1139***	[0.005]	-0.0101	0.0578**	[0.008]
	(0.0118)	(0.0166)		(0.0154)	(0.0285)	
Log (TNA_{t-1})	0.0676***	0.1613***	[0.018]	0.0771**	0.0561	[0.710]
	(0.0215)	(0.0360)		(0.0327)	(0.0461)	
Log (Family TNA_{t-1})	-0.1033***	-0.0692**	[0.389]	0.0050	-0.0104	[0.808]
	(0.0262)	(0.0342)		(0.0409)	(0.0577)	
Log ($Fund\ age_{t-1}$)	-0.0952	-0.4008***	[0.001]	-0.0924	-0.3255**	[0.134]
	(0.0653)	(0.0788)		(0.0889)	(0.1298)	
Log (Fund family age $_{t-1}$)	0.2284**	-0.1396	[0.026]	-0.0370	-0.0792	[0.873]
	(0.0921)	(0.1424)		(0.1354)	(0.2498)	
$Ownership\ share_{t-1}$	-1.8701***	-2.1867***	[0.130]	-1.8927***	-1.9755***	[0.754]
	(0.1304)	(0.1991)		(0.1993)	(0.2670)	
TER_{t-1}				0.1362**	0.0769	[0.626]
				(0.0550)	(0.1126)	
Bottom 20% funds (Net $Ret._{t-1}$)				-0.6736***	-0.2763	[0.052]
				(0.1150)	(0.1989)	
Top 20% funds (Net $Ret._{t-1}$)				0.6966***	0.5411***	[0.444]
				(0.1098)	(0.1815)	
Domicile - Time FE	Yes	Yes		Yes	Yes	
Inv. Cat. - Time FE	Yes	Yes		Yes	Yes	
Observations	73,855	66,636		25,504	22,670	
R^2	0.224	0.071		0.236	0.097	

Table 13: Flow - performance regression by fund and investor category

The table presents ordinary least squares (OLS) regressions of quarterly net fund flow by investor category on lagged fund characteristics and measures of fund performance (factors-alpha) and total raw return cumulated over the previous four quarters. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. Standard errors, in parenthesis, are clustered at the fund and time level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. Columns (3) and (6) report the p-values of the test of coefficient differences (in square brackets). See Table A1 in the Appendix for variables definitions.

	Equity funds			Bond funds		
Flows$_t$:	Households	Inst.	Test coef. diff.	Households	Inst.	Test coef. diff.
	(1)	(2)	(3)	(4)	(5)	(6)
Flows$_{t-1}$	0.2208***	0.1016***	[0.000]	0.3703***	0.0874***	[0.000]
	(0.0263)	(0.0221)		(0.0285)	(0.0204)	
Factor $\alpha_{t-1,t-4}$	0.0344***	0.0644***	[0.0996]	0.0475*	-0.0039	[0.155]
	(0.0125)	(0.0185)		(0.0256)	(0.0339)	
Total net return$_{t-1,t-4}$	0.0329*	0.0627*	[0.372]	-0.0119	0.0294	[0.340]
	(0.0172)	(0.0358)		(0.0362)	(0.0468)	
Log (TNA$_{t-1}$)	0.0791**	-0.0198	[0.121]	0.0893*	0.1696**	[0.404]
	(0.0388)	(0.0532)		(0.0520)	(0.0773)	
Log (Family TNA$_{t-1}$)	-0.0118	-0.0226	[0.890]	-0.0071	0.0285	[0.713]
	(0.0419)	(0.0657)		(0.0641)	(0.0938)	
Log (Fund age$_{t-1}$)	-0.2601*	-0.2345	[0.901]	0.0511	-0.4785**	[0.020]
	(0.1294)	(0.1660)		(0.1183)	(0.2142)	
Log (Fund family age $_{t-1}$)	-0.0376	0.0555	[0.729]	0.0495	-0.3910	[0.342]
	(0.1407)	(0.2445)		(0.2396)	(0.4460)	
Ownership share$_{t-1}$	-1.8006***	-2.0211***	[0.575]	-2.0202***	-1.8782***	[0.764]
	(0.2448)	(0.3182)		(0.3034)	(0.4834)	
TER$_{t-1}$	0.0981	0.1004	[0.989]	0.3065*	0.0405	[0.455]
	(0.0658)	(0.1457)		(0.1766)	(0.3205)	
Bottom 20% funds (Tot. Ret.$_{t-1}$)	-0.0203	0.0438	[0.846]	-1.0427***	-0.7607***	[0.270]
	(0.1364)	(0.2920)		(0.1802)	(0.2563)	
Top 20% funds (Tot. Ret.$_{t-1}$)	0.2693**	0.6946***	[0.077]	0.8168***	0.5144	[0.369]
	(0.1231)	(0.2488)		(0.1798)	(0.3067)	
Domicile - Time FE	Yes	Yes		Yes	Yes	
Inv. Cat. - Time FE	Yes	Yes		Yes	Yes	
Observations	14,318	12,723		11,091	9,873	
R^2	0.206	0.127		0.293	0.098	

Appendix. Variable definitions and robustness checks

Table A1: Variable definitions.

Alpha	Alpha (percentage per quarter) estimated using 3 years of past monthly fund returns with Fama-French Regional 7 factors model plus momentum factor. (Source: Morningstar and Kenneth French' website)
Benchmark adjusted returns	Difference between fund returns and returns of funds in the same Morningstar category. (Source: Morningstar)
Cash Holdings	The percentage of the fund's assets in cash. It encompasses both actual cash and cash equivalents (fixed-income securities with a maturity of one year or less) held by the portfolio plus receivables minus payables. (Source: Morningstar)
Domicile	The country in which the fund is legally organized. (Source: Morningstar)
Fund Size	Total net asset value in EUR millions of the fund. (Source: Morningstar)
Fund Family size	TNA EUR millions of the fund family (asset management company) to which the fund belongs. (Source: Morningstar)
Fund Age	The age of the oldest share class of the fund (Source: Morningstar)
Fund Family Age	The age of the oldest fund of the asset management company (Source: Morningstar)
Flow	Percentage growth in TNA in a quarter, net of internal growth (assuming reinvestment of dividends and distributions). (Source: Morningstar)
Flows' daily volatility	Standard deviation of the net daily flows of the fund in a quarter (Source: Morningstar)
Households ownership share	Share of TNA held by euro-area households over total holdings of euro-area investors. (Source: SHS-S)
Morningstar Category	The Morningstar Category identifies funds based on their actual investment styles as measured by their underlying portfolio holdings (portfolio and other statistics over the past three years). (Source: Morningstar)
Total Expense Ratio	Total annual expenses as a percentage of TNA (Source: Morningstar)

Table A2: Fees and households ownership - investors base diversification

The table presents ordinary least squares (OLS) regressions of TER on a set of variables. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. Standard errors, in parenthesis, are clustered at the fund and quarter level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. Table A1 in the Appendix provides more detailed variables definitions.

	Funds serving clienteles in a single country				Funds serving clienteles in multiple countries			
	Equity		Bond		Equity		Bond	
TER	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Households share$_t$	0.4742***	0.6807***	0.2979***	0.3505***	0.7899***	0.8195***	0.5384***	0.5626***
	(0.0332)	(0.0328)	(0.0263)	(0.0307)	(0.0331)	(0.0329)	(0.0275)	(0.0239)
Log (share class size$_t$)	0.0333***	0.0246***	-0.0031	0.0096***	0.0002	-0.0081*	-0.0038	-0.0029
	(0.0059)	(0.0056)	(0.0044)	(0.0033)	(0.0050)	(0.0047)	(0.0050)	(0.0038)
Log (Fund size$_t$)	-0.0981***		-0.0518***		-0.0718***		-0.0358***	
	(0.0113)		(0.0087)		(0.0102)		(0.0115)	
Log (Fund age$_t$)	0.0711***		-0.0011		0.0586***		-0.0346*	
	(0.0187)		(0.0123)		(0.0177)		(0.0177)	
Log(Family age$_t$)	-0.1616***		-0.0733***		-0.1003***		-0.0856**	
	(0.0266)		(0.0227)		(0.0310)		(0.0330)	
Inv. Category - Year FE	Yes	No	Yes	No	Yes	No	Yes	No
Domicile - Year FE	Yes	No	Yes	No	Yes	No	Yes	No
Fund - Year FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	33,577	34,902	28,803	29,318	24,540	24,679	22,326	22,512
R^2	0.313	0.907	0.238	0.901	0.376	0.727	0.343	0.746

Table A3: Performance of households' mutual funds - Robustness checks

The table presents ordinary least squares (OLS) regressions of fund risk-adjusted performance. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. Columns (1-2) include family fund fixed effects. Columns (3-4) exclude the observations for 2020 from the sample. Columns (5-6) double cluster standard errors by fund and time. Where not otherwise specified, standard errors, in parenthesis, are clustered at the fund level. See Table A1 in the Appendix for variables definitions.

6/8 factors alpha	(1)	(2)	(3)	(4)	(5)	(6)
Households share$_{t-1}$	-0.1833***	-0.1857**	-0.2323***	-0.5040**	-0.1906**	-0.5532**
	(0.0375)	(0.0727)	(0.0826)	(0.2410)	(0.0878)	(0.2456)
Log (TNA$_{t-1}$)	0.0058	-0.0075	0.0149	-0.5510***	0.0156	-0.5740***
	(0.0080)	(0.0153)	(0.0171)	(0.0613)	(0.0184)	(0.0915)
Log (Family TNA$_{t-1}$)	0.0501***	0.1191***	0.0881***	-0.0494	0.0468***	-0.1141
	(0.0185)	(0.0415)	(0.0218)	(0.1154)	(0.0169)	(0.1166)
Log (Fund age$_{t-1}$)	0.1087***	0.1382***	0.1479**	0.7808***	0.1481***	0.7186*
	(0.0172)	(0.0341)	(0.0557)	(0.2891)	(0.0547)	(0.4111)
Log (Fund family age $_{t-1}$)	-0.1813	1.5167***	-0.1713*			
	(0.2377)	(0.5347)	(0.0870)			
Flows$_{t-1}$	0.0003	-0.0017	-0.0015	-0.0036**	-0.0015	-0.0037**
	(0.0006)	(0.0014)	(0.0016)	(0.0015)	(0.0016)	(0.0015)
Past performance	0.0626***	0.0434***	0.0454	-0.0548***	0.0515	-0.0443*
	(0.0065)	(0.0105)	(0.0318)	(0.0110)	(0.0308)	(0.0247)
Flows daily volatility $_{t-1}$		0.0092	0.0109	-0.1058	0.0158	-0.0935
		(0.0693)	(0.0684)	(0.0812)	(0.0686)	(0.0663)
Cash$_{t-1}$		-0.0053*	-0.0082**	-0.0036	-0.0062*	-0.0019
		(0.0029)	(0.0031)	(0.0032)	(0.0033)	(0.0038)
TER$_{t-1}$		-0.1106***	-0.0983*	0.0148	-0.0929	0.0230
		(0.0382)	(0.0579)	(0.0718)	(0.0568)	(0.0942)
Domicile - Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Global Category - Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Family Fund FE	Yes	Yes	No	No	No	No
Fund FE	No	No	No	Yes	No	Yes
Excluding 2020	No	No	Yes	Yes	No	No
Clustering by fund and time	No	No	No	No	Yes	Yes
Observations	111,595	30,869	29,647	29,366	31,017	30,598
R^2	0.472	0.472	0.436	0.519	0.466	0.541

Table A4: Performance of households' mutual funds - excluding pure households funds

The table presents ordinary least squares (OLS) regressions of fund risk-adjusted performance. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. Standard errors, in parenthesis, are clustered at the fund level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. See Table A1 in the Appendix for variables definitions.

6/8 factors alpha	(1)	(2)	(3)	(4)	(5)	(6)
Households share$_{t-1}$	-0.1824***	-0.2128***	-0.1453*	-0.5458***	-0.4449***	-0.6677**
	(0.0404)	(0.0465)	(0.0764)	(0.1273)	(0.1521)	(0.3099)
Log (TNA$_{t-1}$)	0.0168**	0.0145	0.0081	-0.3918***	-0.3875***	-0.6901***
	(0.0082)	(0.0091)	(0.0163)	(0.0302)	(0.0336)	(0.0842)
Log (Family TNA$_{t-1}$)	0.0508***	0.0483***	0.0796***	-0.1401**	-0.1014	-0.6200***
	(0.0089)	(0.0102)	(0.0204)	(0.0581)	(0.0680)	(0.1572)
Log (Fund age$_{t-1}$)	0.1166***	0.1377***	0.1504***	0.3557***	0.5303***	1.0858***
	(0.0184)	(0.0212)	(0.0367)	(0.1379)	(0.1536)	(0.3482)
Log (Fund family age $_{t-1}$)	-0.0960**	-0.0897**	-0.1624**			
	(0.0385)	(0.0437)	(0.0780)			
Flows$_{t-1}$	0.0001	0.0001	-0.0009	0.0004	-0.0004	-0.0078***
	(0.0007)	(0.0008)	(0.0015)	(0.0007)	(0.0008)	(0.0018)
Past performance	0.0627***	0.0525***	0.0467***	-0.0216***	-0.0265***	-0.0375***
	(0.0071)	(0.0069)	(0.0118)	(0.0067)	(0.0067)	(0.0090)
Flows daily volatility $_{t-1}$		0.0743*	0.0383		0.0589	-0.0592
		(0.0434)	(0.0716)		(0.0528)	(0.1019)
Cash$_{t-1}$		-0.0026**	-0.0068**		-0.0015	-0.0022
		(0.0011)	(0.0034)		(0.0012)	(0.0043)
TER$_{t-1}$			-0.0756**			0.0015
			(0.0385)			(0.0896)
Domicile - Time FE	Yes	Yes	Yes	No	No	No
Global Cat. - Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	No	No	Yes	Yes	Yes
Observations	92,183	68,152	25,508	91,882	67,824	25,313
R^2	0.463	0.464	0.466	0.496	0.521	0.333

Table A5: Flow - Performance regression by investor category (short term performance)

The table presents ordinary least squares (OLS) regressions of quarterly net fund flow by investor category on lagged fund characteristics and measures of fund performance (factors-alpha) and total raw return. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. Standard errors, in parenthesis, are clustered at the fund and time level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. Columns (3) and (6) report the p-values of the test of coefficient differences (in square brackets). See Table A1 in the Appendix for variables definitions.

$Flows_t$:	Households (1)	Inst. (2)	Test coef. diff. (3)	Households (4)	Inst. (5)	Test coef. diff. (6)
$Flows_{t-1}$	0.3402***	0.1258***	[0.000]	0.3397***	0.1085***	[0.000]
	(0.0171)	(0.0093)		(0.0198)	(0.0152)	
Factor α_{t-1}	0.0267*	0.0476*	[0.350]	0.0374*	0.0738**	[0.254]
	(0.0149)	(0.0243)		(0.0200)	(0.0335)	
Total $Return_{t-1}$	0.1184***	0.1721***	[0.0154]	-0.0111	0.0678**	[0.023]
	(0.0199)	(0.0248)		(0.0250)	(0.0326)	
Log (TNA_{t-1})	0.0901***	0.1841***	[0.0119]	0.0797**	0.0701*	[0.861]
	(0.0213)	(0.0335)		(0.0316)	(0.0406)	
Log (Family TNA_{t-1})	-0.1056***	-0.0406	[0.0676]	0.0027	0.0077	[0.929]
	(0.0236)	(0.0320)		(0.0343)	(0.0591)	
Log (Fund age_{t-1})	-0.1275*	-0.4361***	[0.000]	-0.0806	-0.3028***	[0.087]
	(0.0636)	(0.0722)		(0.0834)	(0.1054)	
Log (Fund family age $_{t-1}$)	0.2248**	-0.2336*	[0.003]	-0.0197	-0.2564	[0.310]
	(0.0845)	(0.1296)		(0.1185)	(0.2254)	
Ownership $share_{t-1}$	-1.9436***	-2.1083***	[0.000]	-1.9452***	-1.9267***	[0.946]
	(0.1227)	(0.1915)		(0.2049)	(0.2665)	
TER_{t-1}				0.1426***	0.1067	[0.737]
				(0.0516)	(0.1022)	
Bottom 20% funds (Net. $Ret._{t-1}$)				-0.3855***	-0.3475**	[0.823]
				(0.0929)	(0.1529)	
Top 20% funds (Net. $Ret._{t-1}$)				0.3612***	0.3525**	[0.956]
				(0.0899)	(0.1455)	
Domicile - Time FE	Yes	Yes		Yes	Yes	
Inv. Cat. - Time FE	Yes	Yes		Yes	Yes	
Observations	85,219	76,470		30,575	27,330	
R^2	0.228	0.071		0.237	0.093	

Table A6: Flow - performance regression by fund and investor category (short term performance)

The table presents ordinary least squares (OLS) regressions of quarterly net fund flow by investor category on lagged fund characteristics and measures of fund performance (factors-alpha) and total raw return. The sample consists of open-end actively managed mutual funds held by euro-area households over the 2009 to 2020 period. Standard errors, in parenthesis, are clustered at the fund and time level. ***, **, and * indicate statistical significance at 1, 5, and 10 per cent, respectively. Columns (3) and (6) report the p-values of the test of coefficient differences (in square brackets). See Table A1 in the Appendix for variables definitions.

	Equity funds			Bond funds		
$Flows_t$:	Households	Inst.	Test coef. diff.	Households	Inst.	Test coef. diff.
	(1)	(2)	(3)	(4)	(5)	(6)
$Flows_{t-1}$	0.2553***	0.1259***	[0.000]	0.3912***	0.0946***	[0.000]
	(0.0258)	(0.0188)		(0.0238)	(0.0206)	
Factor α_{t-1}	0.0481**	0.0994**	[0.210]	0.0331	0.0273	[0.912]
	(0.0203)	(0.0427)		(0.0445)	(0.0561)	
Total net $return_{t-1}$	0.0304	0.0633	[0.475]	-0.0217	0.0369	[0.460]
	(0.0230)	(0.0440)		(0.0568)	(0.0708)	
Log (TNA_{t-1})	0.0849**	0.0381	[0.447]	0.0918*	0.1325*	[0.659]
	(0.0357)	(0.0527)		(0.0534)	(0.0700)	
Log (Family TNA_{t-1})	0.0021	0.0061	[0.956]	-0.0267	0.0361	[0.486]
	(0.0372)	(0.0704)		(0.0546)	(0.0881)	
Log ($Fund\ age_{t-1}$)	-0.3221***	-0.3659**	[0.807]	0.1056	-0.2537	[0.048]
	(0.1102)	(0.1549)		(0.1132)	(0.1548)	
Log (Fund family age $_{t-1}$)	-0.1127	-0.0988	[0.954]	0.1990	-0.6580*	[0.036]
	(0.1319)	(0.2352)		(0.2127)	(0.3792)	
$Ownership\ share_{t-1}$	-1.7465***	-1.8088***	[0.867]	-2.1886***	-2.0095***	[0.673]
	(0.2601)	(0.2930)		(0.2676)	(0.4397)	
TER_{t-1}	0.1313**	0.1479	[0.900]	0.2699	0.0731	[0.541]
	(0.0621)	(0.1272)		(0.1853)	(0.3118)	
Bottom 20% funds (Net $Ret._{t-1}$)	-0.0338	-0.3951*	[0.142]	-0.6001***	-0.2620	[0.180]
	(0.1152)	(0.2168)		(0.1419)	(0.2261)	
Top 20% funds (Net $Ret._{t-1}$)	0.1453	0.2021	[0.836]	0.4664***	0.6474***	[0.427]
	(0.0930)	(0.2555)		(0.1409)	(0.2242)	
Domicile - Time FE	Yes	Yes		Yes	Yes	
Inv. Cat. - Time FE	Yes	Yes		Yes	Yes	
Observations	17,081	15,367		13,374	11,857	
R^2	0.202	0.118		0.288	0.097	

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