Out of Sight, Out of Mind:
The Effects of Expenses on Mutual Fund Flows

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Abstract

We argue that the purchase decisions of mutual fund investors are influenced by salient, attention-grabbing information. Investors are more sensitive to salient in-your-face fees, like front-end loads and commissions, than operating expenses; they are likely to buy funds that attract their attention through exceptional performance, marketing, or advertising. Our empirical analysis of mutual fund flows over the last 30 years yields strong support for our contention. We find consistently negative relations between fund flows and front-end load fees. We also document a negative relation between fund flows and commissions charged by brokerage firms. In contrast, we find no relation (or a perverse positive relation) between operating expenses and fund flows. Additional analyses indicate that mutual fund marketing and advertising, the costs of which are often embedded in a fund's operating expenses, account for this surprising result.

Introduction

We analyze the fees charged by mutual funds over the last several decades. Mutual funds have dramatically changed the way that they charge expenses. The proportion of diversified U.S. equity mutual fund assets invested in front-end load funds has dropped from 91 percent in 1962 to 35 percent in 1999 (see figure 1). In contrast, asset-weighted operating expenses for these funds increased by more than 60 percent – from 54 basis points in 1962 to 90 basis points in 1999 (see figure 2), despite the great increase in total assets under management. In addition to documenting these facts, which are interesting on their own, we argue that the most plausible explanation for this change over time is investor learning. Investors have learned by experience to avoid mutual fund expenses. However, they have learned more quickly about front-end load fees, which are large salient one-time fees, than operating expenses, which are smaller ongoing fees that are easily masked by the volatility of equity returns.

When shopping for a mutual fund, investors can choose from thousands of funds, far more than any investor can carefully consider. Most investors have no formal training in what factors to weigh when selecting a fund. Academic finance advises investors that low fees are preferable to high fees, that past returns are poor predictors of future returns in the long run, and that there is little, or no, evidence that active managers can outperform indices. Thus, investors would be best off choosing any well-diversified mutual fund with low fees (e.g., an index fund).

Over the last three decades, mutual fund investing has increased dramatically.[1] Investors, in aggregate and individually, have had the opportunity to learn about mutual funds and to change the ways in which they weigh various factors when buying funds. Funds, too, have had the opportunity to adapt to a changing marketplace.

In this paper, we focus on changes in how investors treat various mutual fund expenses, i.e., front-end load fees, commissions, and operating expenses. We contend

that, over time, investors have become increasingly aware of and averse to mutual fund costs. However, they have more quickly learned to avoid high front-end load and commission costs than high operating expense costs.

We argue that front-end loads are more salient than operating expenses. Front-end load fees are paid when a fund is purchased and generally obvious in nominal terms on the first statement following the transaction (load fees are approximately the difference between the amount initially invested in the fund and the fund value on the first monthly statement). Therefore, front-end load fees are transparent and thus salient in-your-face expenses. While the salience of these expenses may come too late for first-time fund investors (e.g., may coincide with first monthly statement), it is likely to be remembered when they buy again. Thus, we hypothesize that investors have learned to avoid front-end load funds by experience. We test this hypothesis in two ways. First, we use fund flows data from 1970 to 1999 to estimate cross-sectional regressions of fund flows on front-end load fees and other fund characteristics. Consistent with our hypothesis, we find a significant negative relation between fund flows and front-end load fees. Second, using brokerage account data pulled from the trades of 78,000 households from 1991 to 1996, we contrast first-time mutual fund purchases with repeat mutual fund purchases. The results of this test provide direct evidence of learning; experienced fund purchasers pay, on average, about half the front-end load fees of first time purchasers.

Operating expenses are less salient than loads. While operating expenses constitute a steady drain on a fund's performance, the effect of that drain is masked by the considerable volatility in the returns on equity mutual funds.[2] Thus, we hypothesize that investors are less likely to avoid funds with high operating expenses. Using fund flows data from 1970 to 1999 and cross-sectional regressions, we document that there is

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[1] For example, from 1989 to 1998, the percentage of households owning mutual funds nearly doubled from 7.1 percent to 16.2 percent. In contrast, the percentage of households owning stock directly increased from 16.2 percent to 19.2 percent (Kennickell and Starr-McCluer (1994, 2000)).

[2] Mutual funds report returns net of operating expenses. This may cause investors to be less sensitive to operating expenses than if operating expenses and gross returns were reported separately. Thaler (1985) shows that, in general, people are less sensitive to losses (e.g., operating expenses) when those losses are aggregated with other losses (e.g., negative gross fund returns) or with larger gains (e.g., gross fund returns in excess of expenses).

at best no relation, and at worst a perverse *positive* relation, between fund flows and operating expenses. Using brokerage data from 1991 to 1996, we find virtually no difference between the operating expenses of first-time fund purchases and repeat fund purchases.

Our analyses help to inform ongoing policy discussions regarding how mutual fund expenses should be disclosed to investors. The implicit assumption underlying this debate is that mutual fund investors are sensitive to the form in which fund expenses are disclosed to investors. For example, in June 2000, The General Accounting Office issued the following recommendation:

> Although most industry officials that the GAO interviewed considered mutual fund disclosures to be extensive, others, including some private money managers and academic researchers, indicated that the information currently provided does not sufficiently make investors aware of the level of fees they pay. These critics have called for mutual funds to disclose to each investor the actual *dollar amount* of fees paid on their fund shares. Providing such information could reinforce to investors the fact that they pay fees on their mutual funds and provide them information with which to evaluate the services their funds provide. In addition, having mutual funds regularly disclose the dollar amounts of fees that investors pay may encourage additional fee-based competition that could result in further reductions in fund expense ratios. GAO is recommending that this information be provided to investors.

In December 2000, the Securities and Exchange Commission issued a report recommending "…that information about the *dollar amount* of [mutual fund] fees and expenses be presented in a fund's shareholder reports."

Both front-end load fees and operating expenses are used to pay for marketing (e.g., distribution payments to brokers or advertising). We do not contend that load fees spent on marketing are less efficacious than operating expenses spent on marketing. Rather, we believe that over time investors have more quickly learned to avoid salient load fees than obfuscated operating expenses. While virtually all front-end load fees are used for marketing, operating expenses can be disaggregated into 12B-1 fees—fees earmarked for marketing—and other operating expenses. We find the significant positive relation between flows and expenses is confined to 12B-1 fees. Thus, all else equal,

investors do not prefer to buy mutual funds with high operating expenses, but they do buy funds that attract their attention through advertising and distribution. In short, consistent with the findings of Jain and Wu (2000), mutual fund advertising works.

After discussing related literature, we describe our data, present results, and conclude.

I. Related Literature.

Several academic studies have documented a negative relation between a fund's operating expense ratio and performance (e.g., Gruber (1996) and Carhart (1997)). Thus, it is sensible for investors to eschew the purchase of funds with high operating expenses. Generally, investors pay fees to mutual funds through operating expense ratios applied to assets under management or through load fees charged when investors purchase (or less commonly sell) a mutual fund. When purchasing funds through a broker, investors pay a commission to the broker for some mutual funds, but not for others, which are designated as non-transaction fee (NTF) funds.

Survey and experimental evidence support our contention that mutual fund investors are generally unable to assess the tradeoff between different fees charged by mutual funds. Wilcox (1998) presents 50 consumers who currently invest in mutual funds with profiles of stock mutual funds with different expense ratio and load combinations. He documents that 46 of the 50 study participants overemphasize loads relative to expense ratios. Alexander, Jones, and Nigro (1998) document that less than 20 percent of 2,000 surveyed mutual fund investors could give an estimate of the expenses incurred for their largest mutual fund holding. Furthermore, despite empirical evidence to the contrary, 84 percent of respondents believed that mutual funds with higher expenses earned average or above average returns.

There is surprisingly little empirical research on how investors consider expenses when investing in mutual funds. The only empirical work that we are aware of is Sirri and Tufano (1998), who document a negative relation between fund flows and total fund expenses (amortized front-end load fees and operating expenses).

We fill this void in the empirical literature by analyzing new money flowing into mutual funds from 1970 through 1999. When we separate front-end load fees and expense ratios, we find strong evidence that investors treat the two differently. In both univariate and multivariate analyses, we document a significant negative relation between fund flows and front-end load fees, but no relation, or a positive one, between fund flows and operating expenses. When we disaggregate operating expenses into 12B-1 fees and other operating expenses for the limited sample period for which we have 12B-1 fee data (1993 to 1999), we find the significant positive relation between flows and expenses confined to 12B-1 fees.

II. Data

We obtain data on mutual funds from the Center for Research in Security Prices (CRSP) mutual fund database. Consistent with many prior mutual fund studies, we restrict our analysis to diversified U.S. equity mutual funds.[3] Thus, we exclude from our analyses bond funds, international equity funds, and specialized sector funds. The number of funds meeting these data requirements grows over time. In 1970, 465 funds meet these requirements, while in 1998, 3,533 funds meet these requirements.

We analyze the period 1970 through 1999, since the CRSP database reports total net assets (*TNA*) on a quarterly basis beginning in 1970. Consistent with prior research, we calculate new money as a percentage of beginning-of-period *TNA* as:

$$\frac{TNA_{it} - TNA_{i,t-1}(1+R_{it})}{TNA_{i,t-1}},$$

where R_{it} is the return of fund i in period t. Essentially, this is a percentage growth in new money during period t. Here we assume that new money flows in and out of each fund at

[3] We select funds according to the following criteria. First, we select funds with the following ICDI objectives: aggressive growth, growth and income, long-term growth, or total return (only if they have the following Strategic Insight's fund objectives: flexible, growth, or income growth). If ICDI objectives are missing, we select funds with the following Strategic Insight's fund objectives: aggressive growth, growth & income, growth, income growth, or small company growth. If both ICDI and Strategic Insight's objectives are missing, we select funds with the following Weisenberger fund types: AAL, AGG, G, G-I, G-I-S, G-S, G-S-I, GCI, GRI, GRO, I-G, I-G-S, I-S, I-S-G, MCG, SCG, or TR. If all

the end of each period since we do not know the exact timing of cash flows. For some analyses we use quarterly growth, while for others we use annual growth. The median mutual fund experiences annual growth of 5.3 percent and quarterly growth of 1.2 percent. There is considerable cross-sectional variation in growth. The interquartile range is –21 to 51 percent for annual growth and –3 to 11 percent for quarterly growth. High growth in new money relative to other funds will generally lead to greater market share.[4]

III. Results

A. Univariate Sorts

Our primary focus is the relation between different forms of expenses and the growth of new money. We begin by presenting basic descriptive statistics for two partitions of our data. In the first partition, we construct deciles on the basis of expense ratios; in the second partition, we compare funds with front-end loads to those without front-end loads. For each partition, we calculate mean expense ratios, front-end load fees, and TNA for the sorting year, while we calculate the annual growth of new money and fund returns during the following year.

We calculate the mean monthly return for funds in each partition and two performance measures – the capital asset pricing model (CAPM) alpha and a three-factor alpha. These performance measures are based on the time-series of mean monthly returns for mutual funds within a partition (R_{pt}), where funds are reassigned to partitions annually. The CAPM alpha is the intercept from the following time-series regression:

$$\left(R_{pt} - R_{ft}\right) = \alpha + \beta\left(R_{mt} - R_{ft}\right) + \varepsilon_t \ ,$$

where:

three of the above criteria are missing, we select funds described as common stock funds according to the policy and objective codes.

[4] There are obviously exceptions to this general relationship. For example, a fund with strong performance and negative growth in new money might lose market share – clearly an unusual occurrence since it is well documented that the highest growth in new money occurs for funds with strong performance.

R_{ft} = the monthly return on T-Bills,[5]

R_{mt} = the monthly return on a value-weighted market index,

α = the CAPM intercept (Jensen's alpha),

β = the market beta, and

ε_i = the regression error term.

The Fama-French alpha is the intercept from the three-factor model developed by Fama and French (1993):

$$\left(R_{pt} - R_{ft}\right) = \alpha + \beta\left(R_{mt} - R_{ft}\right) + sSMB_t + hHML_t + \varepsilon_t \ ,$$

where SMB_t is the return on a value-weighted portfolio of small stocks minus the return on a value-weighted portfolio of big stocks and HML_t is the return on a value-weighted portfolio of high book-to-market stocks minus the return on a value-weighted portfolio of low book-to-market stocks.[6] The regression yields parameter estimates of $\alpha, \beta, s,$ and h . The error term in the regression is denoted by ε_t .

The results of this analysis are presented in Table 1. In panel A, we present results for mutual funds sorted into deciles on the basis of expense ratios, while panel B contrasts front-end load and no-front-end load funds. Load fees and operating expenses are not perfect substitutes. Though low expense funds have higher front-end load fees than high expense funds, the relation between expenses and front-end loads is far from monotonic. In addition, front-end load funds have higher average expense ratios than funds without front-end loads. Clearly, investors could choose a fund with no front-end load and with low expenses. For example, in May 2002 the Vanguard 500 Index fund charged no front-end load and sported an expense ratio of 18 basis points.

[5] The return on T-bills is from Stocks, Bonds, Bills, and Inflation, 1997 Yearbook, Ibbotson Associates, Chicago, IL.

[6] The construction of these portfolios is discussed in detail in Fama and French (1993). We thank Kenneth French for providing us with these data.

Funds with low expense ratios are dramatically larger than funds with high expense ratios. For example, the funds in the lowest expense decile represent 36 percent of assets in mutual funds, while funds in the highest expense decile represent only one percent. This is consistent with the evidence in Khorana and Servaes (2000), who document fund families with low expenses have higher market share than fund families with higher expenses. Low expenses may attract investors, or new money may lead to economies of scale that allow funds to lower expenses. Thus, it is unclear whether low expenses lead to greater market share or greater market share leads to lower expenses.

If low expenses lead to greater market share, we would expect growth rates to be higher for funds with low expenses. This is not the case during our sample period. In fact, our crude univariate sorts indicate a nearly monotonic *positive* relationship between expenses and growth rates. Funds with high expenses have the highest growth rates. In contrast, funds without front-end loads, which tend to be smaller than front-end load funds, enjoy higher growth rates.

In the last three columns of Table 1, we present the mean monthly returns for each partition, the CAPM alpha, and the Fama-French alpha. Though there is no discernible relationship between performance and expenses for the majority of funds, investors clearly pay a large price for investing in funds with the highest expenses. These funds underperform by an economically large margin (26 to 37 basis points *per month*).[7] Furthermore, the returns on front-end load funds are not significantly different from the returns on other funds. Thus, these results confirm the conventional wisdom that investors should spurn funds with front-end loads or high expenses.

B. Multivariate Analyses

The results based on univariate sorts are insufficient evidence to draw strong conclusions about the relationship between new money and operating expenses or front-end load fees. It is possible that the univariate relationships are driven solely by mean

[7] During our sample period, the CAPM alpha for the average diversified U.S. equity mutual fund is –0.10 percent per month, while the Fama-French alpha is –0.02 percent per month. Neither figure is reliably different from zero.

reversion in market share over time – small funds, which have high expense ratios, gain market share, while large funds, which have low expense ratios, lose market share.

To address this possibility, we estimate a series of cross-sectional regressions. The dependent variable in these regressions is the quarterly net flow scaled by beginning of quarter TNA for each diversified U.S. equity mutual fund from the first quarter of 1970 to third quarter of 1999.[8] For each quarter, we regress this dependent variable on a series of independent variables, which we describe below. Test-statistics are based on the time-series of coefficient estimates across the 119 quarters. Note that our dependent variable measures changes in investor buying behavior over time. For example, if flow scaled by TNA is negatively related to front-end load fees, then investors are putting relatively less money into front-end load funds over time.

To control for the effect of performance on fund flows, we include the annual market-adjusted returns on the fund during each of the two years preceding quarter *t* as independent variables in the regressions. The annual market-adjusted return is the annual fund return less the annual return on the CRSP NYSE/ASE/Nasdaq value-weighted index. We include squared market adjusted returns for each of the previous two years to capture the well-documented nonlinear relation between performance and fund flows (Sirri and Tufano (1998), Chevalier and Ellison (1997)). We also include a fund's monthly return standard deviation (measured over the two years leading up to quarter *t*), as an independent variable in the regression. Monthly return standard deviation measures the short-term volatility of a fund. All independent variables in the regressions are from the CRSP mutual fund database.[9]

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[8] To reduce the effect of outliers on the coefficient estimates, we winsorize the dependent variables at the 99th percentile. Our results are qualitatively similar when we include these outliers. We also exclude 26 funds that were closed to new investment during our sample period. Fund closing data are from CRSP. These funds are excluded in the year of closing and all subsequent years.

[9] The CRSP mutual fund database reports zero operating expenses and turnover for a large number of funds. Based on our discussions with CRSP, zero operating expenses likely indicate missing information. Thus, we exclude funds with either zero operating expenses from these analyses. From 1990 to 1995, CRSP reports nonzero operating expense ratios for 87 percent of funds.

Our primary focus is the relation between fund flows and expenses. First, we replicate the results of Sirri and Tufano (1998) by calculating total expenses for each fund. As in Sirri and Tufano (1998), total expenses are defined to be the operating expense ratio plus one-seventh of the percentage front-end load fee, if any.[10] This calculation assumes that an investor in a load fund would hold the fund for seven years, thus amortizing the front-end load fee over that holding period. This regression specification obviously assumes that investors respond similarly to load fees and expense ratios. To test our conjecture that they do not, we then estimate regressions that include operating expenses and front-end load fees as separate independent variables. We include a dummy variable that takes on a value of one if a fund is in the highest expense decile, since it is among these funds where high expenses extract the largest performance penalty. To control for the possibility that fund families are steering money into new funds (with lower front-end loads and higher operating expenses) and thus creating a spurious correlation between loads and growth, we include the log of fund age as an independent variable. We also estimate these regressions excluding funds less than five years old. Since we are concerned that our results might be driven by small funds, we include the log of total net asset value as an independent variable. We also estimate these regressions in each quarter for the 50 mutual funds with the largest beginning-of-quarter *TNA* and estimate regressions excluding the smallest 30 percent of funds in our sample.

In a plausible equilibrium, we would expect no relation between fund flows and any of our expense variables. For example, one group of investors might reasonably prefer front-end load funds with low expenses, while a second group of investors might reasonably prefer no load funds with higher expenses. Assuming the preferences of the two groups do not change over time and the wealth of the two groups grows similarly over time, expenses and loads would be unrelated to fund flows. Thus, the coefficient estimates on our expense variables from the cross-sectional regressions are tests of changing preferences over time. We hypothesize that investors have learned to avoid

[10] We exclude back-end load fees from our calculation of total expenses for two reasons. First, data on back-end loads is not available in the CRSP database prior to 1993. (The post-1993 data on back-end loads also often reports a redemption fee as a back-end load.) Second, back-end loads are often waived if an investor holds a fund for a specified period of time.

front-end load funds, but not operating expenses. Thus, we predict a stronger negative relation between front-end load fees and flows than between operating expenses and flows.

The results of this analysis are presented in Table 2. Consider first the results for the control variables. The coefficient estimates on the return variables are consistent with the non-linearity in the relationship between performance and fund flows. The cross-sectional standard deviation of market-adjusted returns for mutual funds is roughly 10 percent. Thus, our regression estimates for all funds indicate that a fund that beats the market by 10 percent (roughly a one standard deviation event) experiences growth of five percent (e.g., using coefficients from the second column of Table 2: $0.393*0.1 + 1.01*0.1^2 \approx 0.05$), while a fund that lags the market by 10 percent shrinks by three percent. A fund that beats the market by 20 percent experiences growth of 12 percent, while a fund that lags the market by 20 percent shrinks by only four percent. Consistent with the evidence in Ellison and Chevalier (1997), these patterns are less pronounced for larger and younger funds. There is a negative relationship between monthly volatility and flows. Small funds experience higher growth rates, though this relation reverses when we analyze only the largest 50 funds. Older funds also experience lower growth rates than younger funds.

There is a significant negative relation between total expenses and fund flows, consistent with the results reported by Sirri and Tufano (1998). This relation holds for all funds, though the economic significance of the relation is modest. A 100 basis point decrease in total expenses is associated with 0.39 percent growth in new money. The results of our remaining analyses are generally consistent with this negative, but economically small relation between total expenses and flows.

However, when we include operating expenses and front-end load fees as separate independent variables in the regression, the negative relation between total expenses and flows is clearly driven by a significant negative relation between front-end load fees and flows. For all funds, there is no relation between operating expenses and flows, while for

the largest 50 funds, the largest 70 percent of funds, and funds older than five years there is a *positive* relation. This evidence indicates that the results from the univariate sorts presented previously are not driven solely by small or young funds. Thus, consistent with our hypothesis that investors respond differently to different expenses, we document a significant negative relation between flows and front-end loads. In contrast, there is, at best, no relation between operating expenses and flows and, at worst, a perverse *positive* relation between expenses and flows for large funds.[11]

C. The Role of Advertising

The lack of relation between expense ratios and fund flows suggests that mutual funds can raise operating expense ratios with impunity. This is not the case. Mutual fund managers have a choice between pocketing expenses or spending on marketing. In this section, we present evidence that expenditures on marketing can largely explain the lack of relation between expense ratios and fund flows.

Mutual funds can take out up to 1.25 percent of average daily fund assets each year to cover the costs of selling and marketing shares, an arrangement allowed by the SEC's Rule 12B-1, which was passed in 1980. CRSP provides data on these so-called 12B-1 fees beginning in 1993. For the period 1993 to 1999, we are able to separately identify fees devoted to the selling and market of shares (12B-1 fees) and other fees (non 12B-1 fees). We augment our regression analysis by including these two variables separately as independent variables in the regression.

We suspect that both front-end load fees and 12B-1 fees are spent in the manner that the fund managers believe will best attract fund flows. We anticipate that fund flows will be positively related to 12b-1 fees because the positive effects on flows of marketing

[11] A significant portion of cash flows to mutual funds come from employee-sponsored retirement plans. These cash flows also tend to be persistent, as investors in employee-sponsored retirement plans do not change their fund allocations regularly. Though we are unable to identify the source of funds in the analyses that rely on aggregate flows using CRSP data, we later analyze flows at brokerage accounts that do not include employee-sponsored retirement plans. Similar to the results discussed here, we find a negative relation between front-end loads and flows, but no reliable relation between operating expenses and flows. Furthermore, these results are similar when we separately identify flows in taxable accounts and tax-deferred accounts (e.g., 401k and Keogh).

will dominate the negative effects of fees charged as operating expenses; fund flows will be less positively related to front-end loads because the positive effects on flows of spending front-end load fees on marketing will be at least partially offset by the negative effect of loads being salient to investors; and fund flows will be negatively related to non-12b-1 operating fees because the negative effect of fees is not, here, offset by marketing.

The results of this analysis are presented in Table 3. To provide a baseline for comparison, we also include results for total expenses. Because of the reduced sample period, the power of the empirical tests is diminished; for example, the relation between total expenses and fund flows is no longer reliably negative.

When operating expenses are separated into 12B-1 and non-12B-1 fees, the coefficient estimates for 12B-1 fees are reliably positive for all funds, for the large funds, and for older funds; the coefficient estimates for non-12B-1 fees are negative—though not statistically significant for the largest 50 funds and funds over five years old; and the coefficient estimates for front-end load fees always lie between those of 12B-1 and non-12-1 fees.[12]

Advertising works. Funds with higher expenditures on 12B-1 fees garner more new money. This result is consistent with the findings of Jain and Wu (2000), who document that 294 mutual funds that advertised in Barron's or Money Magazine grew faster than a control group of funds with similar performance prior to the advertising period.

A natural question that arises from this discussion is whether the long-run increase in operating expenses can be solely explained by increasing expenditures on

[12] Operating expenses are paid annually, while load fees are a one time expense and thus should be amortized over an investors holding period for comparison purposes. Thus, the comparison of the coefficient estimates on front-end load fees should be divided by the relevant holding period. Using any reasonable holding period, the coefficient estimates on loads always fall between those of non 12b-1 expenses and 12b-1 expenses. Indeed, despite a much shorter time-series and, thus, less powerful tests, we can comfortably reject the null hypothesis that flows are equally sensitive to 12B-1 fees and load fees for all funds, the largest 50 funds, and the largest 70 percent of all funds.

12b-1 fees as a result of the emergence of many new funds and mutual fund supermarkets. This is a plausible conjecture, as more and more funds compete to be heard above the din of mutual fund advertising. Consistent with this conjecture, from 1993 to 1999 the mean (TNA-weighted) 12b-1 fee charged by mutual funds increased from 0.139 percent to 0.202 percent. (There was also a marked increase in the proportion of funds charging 12b-1 fees during this period – from 34 percent of all funds in 1993 to 57 percent of all funds in 1999.) However, from 1962 to 1999 the mean (TNA-weighted) operating expense increased by 35 basis points. Thus, increased expenditures on 12b-1 fees, though they may have contributed to the long-run increase in operating expenses, cannot totally explain the increase.

D. Mutual Fund Commissions

With the exception of front-end load fees, mutual fund investors can generally purchase mutual funds directly from the fund complex at zero transaction costs. However, many mutual funds are traded through mutual fund marketplaces at major brokerage firms. When purchasing mutual funds through a broker, a commission is charged for the purchase or sale of some funds, but not others. Generally fund complexes will pay a fee to the broker to gain status as a non-transaction fee (NTF) fund. Laplante (2001) documents that funds traded with NTF status on marketplaces have expense ratios that are 17 to 19 basis points higher than funds not available in the marketplaces.[13] We hypothesize that commissions, like load fees, are salient expenses for many investors and thus expect that funds with NTF status will garner more new money, despite higher average operating expenses.

To test this hypothesis, we analyze the mutual fund purchase and sale decisions of households with accounts at one nationwide discount broker. The data span the period 1991 through 1996 (see Barber and Odean (2000) for a more complete description of these data). Of the 78,000 sampled households, 32,199 (41 percent) had positions in

[13] Ciccotello, Greene, and Walsh (2003) analyze funds traded in a supermarket and those that are not. They document that the mean expense ratios of funds traded in marketplaces are similar to those not traded in a marketplace. They also find that funds do not increase their expense ratios or the 12b-1 fees after they join an NTF supermarket. In contrast, the conclusions of LaPlante (2001) are based on a multivariate regression of operating expenses on fund characteristics.

mutual funds during at least one month; the remaining households either held cash or investments in securities other than mutual funds. For the 78,000 households, seventeen percent of all market value was held in mutual funds and 64 percent in individual common stocks. There were over 3 million trades in all securities. Mutual funds accounted for 18 percent of all trades; individual common stocks accounted for 64 percent. By virtue of being bought or sold through one brokerage, all of the funds traded in this sample are part of that brokerage's mutual fund "supermarket," but not all funds in the supermarket have NTF status. In our sample, 76 percent of fund purchases and 49 percent of sales are NTF funds.

Of the 32,199 households with positions in mutual funds, the average held 3.6 mutual funds worth $36,988. Both of these numbers are positively skewed. The median household held 2 mutual funds worth $12,844 dollars. For these households, the positions in mutual funds and individual common stocks were roughly equal. Forty-two percent of the market value in these accounts was held in mutual funds and 39 percent in individual common stocks. In aggregate, these households held 1,073 mutual funds worth $1.4 billion in December 1996.

For each fund (i) in each month (t), we estimate new money as the value of buys (B) less the value of sells (S) scaled by beginning of month total net assets (TNA): $\frac{B_{it} - S_{it}}{TNA_{i,t-1}}$. Unlike that in the aggregate case, here we know the exact amount and timing of new money. As before, we estimate cross-sectional regressions for each month and then average coefficient estimates across months. We also include a dummy variable that takes on a value of one if a fund can be traded without a commission (a non-transaction fee (NTF) fund).[14]

The results of this analysis are presented in Table 4. Consistent with our prior results, we find either no relation or a positive relation between funds' operating expenses

[14] We define a fund as a non-transaction fee fund if more than 90 percent of the trades in the fund were executed without a commission during our sample period.

and new money for these households. Also consistent with our prior evidence, we find a significant negative relation between front-end load fees and new money.

The primary variable of interest – the NTF dummy – is consistently positive for all eight regressions and significant for six of these. NTF funds garner significantly more new money than funds for which investors pay a commission to buy or sell. Commissions are salient, one-time expenses to which investors attend.

E. Experienced vs. First-Time Mutual Fund Buyers

We contend that front-end load fees are more obvious and salient to investors than operating expense fees. We believe that a large one time fee is more likely to capture an investor's attention than a smaller, ongoing expense. Both loads and fees are usually quoted in percentage terms. However, the dollar cost of a front-end load is likely to be obvious when an investor receives the first fund statement (i.e., approximately the difference between the amount invested and the first statement balance). The immediate effect of operating expenses on the investor's principal is small and the subsequent drain of operating expenses on return is likely to be masked by fund volatility. An important implicit assumption in our argument is that investors learn by experience and they learn more quickly about salient load fees than the less obvious operating expenses. We are able to test this hypothesis directly using the discount brokerage account data.

Many investors purchase more than one mutual fund in their life. If we are correct in our contention that load fees are more salient than operating expenses, and investors learn over time, then we would expect repeat buyers to demonstrate more aversion to loads than first time buyers and more aversion to loads than operating expenses. Table 5 reports descriptive statistics for first time fund purchases and subsequent fund purchases by investors in our large discount brokerage data set.[15] Our estimate of total expenses is unchanged for first time and subsequent purchases. Experienced fund buyers have a

[15] We categorize purchases as first time if the investor has not previously purchased a fund at this brokerage during our sample period. Obviously, some purchases categorized as first time were made by investors who had previously purchased funds elsewhere or before our sample period. Purchases incorrectly labeled first time will only make it more difficult to distinguish differences in the characteristics of funds actually purchased for the first time and other funds.

small, but statistically significant, tendency to buy funds with higher operating expenses. As we anticipated, experienced buyers choose funds with much lower loads than first time buyers: 0.06 percent for experienced buyers vs. 0.11 percent for first time buyers. Experienced buyers also put apparently less weight on a fund's previous returns than do first time buyers.

To test the robustness of these results, we separately analyze the three major fund categories in our dataset – aggressive growth, growth and income, and long-term growth. In each of these three fund categories, the front-end loads paid by first-time buyers are reliably greater than that paid by experienced buyers. In contrast, the pattern for operating expenses is not consistent across these three fund categories; the operating expenses paid by first-time buyers is lower for aggressive growth and growth and income funds, but higher for long-term growth funds.

F. Changes in Expenses

We find evidence that mutual fund investors pay attention to salient in-your-face fees like front-end loads and commissions, while they attend less to operating expense ratios. Yet low expense mutual funds have greater average market share than high expense mutual funds. Our results indicate that the high market share enjoyed by low expense funds is not a result of new money flowing into low expense funds. Low expense funds may have greater average market share because fund growth *leads* to lower expenses; indeed, many mutual fund prospectuses prescribe reductions in operating expenses as assets under management grow. In this section, we present empirical evidence consistent with this conjecture.

To test whether funds lower expenses as they grow, we calculate the change in operating expenses for all funds, the 50 largest funds, the largest 70 percent of funds, and funds older than five years. Assets under management can grow by attracting new money or posting strong returns. Since mutual funds enjoy economies of scale (Baumol, Goldfeld, Gordon, and Koehn (1990)), increased assets under management would allow funds to lower expenses. In each year, we regress the change in operating expenses on

new money received in the prior two years and the fund's raw return in the prior two years. We include the raw return squared, since it is unlikely that economies of scale are linearly related to fund size. We include changes in front-end load fees as an independent variable, since some funds may increase expenses when they lower or eliminate a front-end load fee. Fund size and the monthly standard deviation of fund returns are also included as control variables.

The results of this analysis are presented in Table 6. For all funds, the largest 70 percent of funds, and funds older than five years, there is strong evidence that growth *leads* to lower expenses for mutual funds. New money and strong returns lead to lower expenses. For example, the coefficient estimate for all funds of –0.00591 on a fund's prior year return indicates that a 10 percent return is associated with an average decrease in the expense ratio of 6 basis points in the following year. When we restrict our analysis to the 50 largest funds, we find no evidence that new money or fund performance predicts expense changes. This is not surprising, since large funds already enjoy economies of scale.

IV. An Alternative Hypothesis: Search Costs and Service

A possible alternative explanation for our results is search costs. Perhaps investors find it extremely costly to search for mutual funds. Thus, rather than incur the hassle of finding a fund, they merely invest in funds that come to their attention through advertising. In short, these investors knowingly sacrifice performance (i.e., the cost of advertising, which is a net drain on fund performance) to reduce the hassle of picking a mutual fund.

We believe attention influences investors' choices of mutual fund just as it influences their choices of stocks (Barber and Odean, 2001). We do not believe, however, that our results are driven solely by rational investors who, in order to minimize search costs, buy mutual funds that catch their attention. On the one hand, many—if not most—mutual fund investors do not minimize search costs. On the other hand, even when

attention is not an issue, individuals overemphasize front-end loads relative to expense ratios. Several facts support this view.

First, Wilcox (1998) presents 50 consumers who currently invest in mutual funds with profiles of stock mutual funds with different expense ratio and load combinations. He documents that 46 of the 50 study participants overemphasize loads relative to expense ratios. There is clearly no search cost in this experimental design, yet he observes the same general patterns that we find in flow data.

Second, many investors actively trade mutual funds. In the brokerage account data that we use, mutual fund turnover exceeds 70 percent annually (which corresponds to a holding period of less than 18 months). In general, redemption rates for mutual funds are quite high – reaching 40 percent in the late 1990s, which implies a holding period of 30 months.[16] If search costs loom large, we would expect investors to trade their mutual funds somewhat less often than they do.

Third, we can bring some data to bear on this issue. Using the brokerage data, we are able to identify mutual fund sales followed by mutual fund purchases within three weeks. It is unlikely that these sales were liquidity motivated, since they were followed by a purchase within three weeks. Though some of these sales might have been made to realize a tax-loss, the average sale clearly was not since the average fund sold outperformed the market (by more than four percent during a period when the market averaged more than 17 percent annually). Thus, it is likely that these sales followed by purchases were speculative in nature. It is worth noting that roughly half of all mutual fund sales in our brokerage data are followed by purchases within three weeks.

Clearly, the most straightforward way for investors who already own mutual funds to reduce search costs is to continue holding the mutual funds they already own. Yet, these investors do not do so. They willingly sell one fund to buy another. If the

[16] See "Vanguard Founder Targets Short Focus of Fund Firms," *The Wall Street Journal*, May 16, 2000, pC1.

desire to minimize search costs were driving our findings then our findings would be dramatically different for these investors, who are clearly not minimizing search costs.

We present descriptive statistics on the funds bought and the funds sold in Table 7. Consistent with our broad evidence, the average operating expense ratio of funds bought is slightly higher than that of funds sold, though the average front-end load fee is lower. Investors are more likely to buy a fund with NTF status. Prior to the transaction, the funds bought had exceptional performance; the funds sold also beat the market, though by a much smaller margin.

In addition to search costs, investors might choose mutual funds with high expenses if high-expense funds provided better service than other funds. We believe that different levels of service are unlikely to explain our results since first-rate service and low expenses are not mutually exclusive. For example, Vanguard, which is well-known for its low-cost mutual fund offerings, has won numerous service awards.[17]

V. Conclusions

Investing is a learning process. Over the last several decades investors have learned about mutual funds. They have grown less willing to invest in funds with higher front-end load fees. However, funds with higher operating expense ratios have not lost market share. Using mutual fund flows from 1970 to 1999 and actual mutual fund purchase and sale decision by investors at a large discount broker from 1991 to 1996, our empirical analysis documents consistently negative relations between fund flows and front-end load fees or commissions, but no relation (or a perverse positive relation) between fund flows and operating expenses. When we split operating expenses into marketing expenses (12b-1 fees) and other expenses, we find that investors are more likely to buy funds with higher marketing expenses but less likely to buy those with

[17] "Mutual Funds" named Vanguard #1 in the "Best Service" category and as the favorite fund family overall, based on a 1999 survey of 2,000 subscribers. A November 2000 "SmartMoney" survey of 600 randomly selected readers named Vanguard as the "Best Fund Family." "Worth" designated Vanguard the winner in both the "Best Fund Family" and "Best Discount Broker" categories for service and performance, based on a 1999 survey of 4,000 readers.

higher other operating expenses. We argue that, all else equal, investors prefer to pay lower fees to mutual fund companies, but they have grown sensitive to front-end load fees and commissions more quickly than to operating expenses. This is because front-end load fees and commissions are more obvious and salient. Front-end load fees are particularly salient for investors who have previously paid them. We find that experienced mutual fund investors are less likely to pay front-end loads than first time buyers, but experienced mutual fund investors do not invest in mutual funds with lower operating expenses.

We report evidence that mutual fund marketing does work. On average, any negative effect of expense fees on fund flows is more than offset when that money is spent on marketing; non-marketing expenses, however, reduce fund flows. Though front-end load fees are also spent on marketing, the positive effect of marketing on flows does not appear to be sufficient to offset investors growing awareness of and aversion to loads.

From 1962 to 1999, the average operating expense charged by mutual funds has steadily increased (see figure 2), while the proportion of funds charging front-end load fees and the level of those load fees has declined (see figure 1). While there are no doubt many plausible explanations for this observed pattern, one possibility is that mutual fund managers have figured out that investors are sensitive to load fees, but less so to operating expenses.

Investors would benefit from a greater understanding and awareness of mutual fund expenses. While educating investors is a complex and multifaceted task, our results support the GAO's recommendation that one step in that process could be for mutual funds to disclose to investors the actual dollar amount of fees paid. Expenses that remain out of sight are likely to remain out of mind.

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Table 1: Descriptive Statistics for Mutual Funds sorted by Expense Ratio Deciles (Panel A) and Front-End Load vs. No-Load Funds (Panel B): 1970 to 1999

In Panel A, funds are sorted into deciles on the basis of operating expense ratios in year t-1 from 1969-1998. In Panel B, funds are sorted into deciles on the basis of front-end load fees in year t-1 from 1969-1998. The table presents the number of funds, mean expense ratio, front-end load fee and mean TNA in sorting year (*t-l*). New money as a percentage of TNA and the equally-weighted mean monthly return for each performance decile are for the subsequent year (*t*). CAPM alpha is the intercept from a monthly time-series regression of the mean monthly excess return for each sample partition on the market excess return. Fama-French alpha is the intercept from a monthly time-series regression of the mean monthly excess return for each sample partition on the market excess return, a zero-investment portfolio formed on the basis of firm size, and a zero-investment portfolio formed on the basis of book-to-market ratios.

Decile	Mean Expense Ratio (%)	Mean Load Fee (%)	Mean TNA ($mil.)	Mean New Money (% of TNA)	Mean Monthly Return (%)	CAPM alpha (%)	Fama-French alpha (%)
Panel A: Operating Expense Partition							
1 (Low)	0.47	3.77	844.821	-1.33	1.056	-0.059	-0.004
2	0.72	4.19	456.255	-0.89	1.038	-0.068	-0.006
3	0.85	3.84	301.311	1.57	1.066	-0.057	0.006
4	0.96	4.36	232.351	2.76	1.010	-0.102	-0.035
5	1.07	4.23	151.334	6.76	1.079	-0.037	0.055
6	1.18	4.19	112.470	9.79	1.010	-0.149	-0.052
7	1.34	3.90	93.703	9.37	1.027	-0.119	-0.040
8	1.53	3.10	77.198	17.37	1.055	-0.057	0.026
9	1.76	2.68	46.936	20.82	1.096	-0.029	0.030
10 (Hi)	3.18	1.67	25.037	20.77	0.816	-0.366**	-0.256*
Panel B: Front-end load vs. No Front-End Load Funds							
No-Load	1.07	0	158.479	6.61	1.079	-0.059	0.012
Load	1.13	6.77	296.890	0.04	1.026	-0.098	-0.017

**, * - significant at the 5 or 10 percent level, two –tailed test.

Table 2: Cross-Sectional Regressions of Quarterly New Money on Fund Characteristics: 1970 to 1999

This table reports the mean coefficient estimates and associated t-statistics (in parentheses) from cross-sectional regressions of fund flows on selected fund characteristics from the first quarter of 1970 to the third quarter of 1999. The dependent variable is the quarterly net fund flows scaled by the beginning of quarter TNA. The independent variables include total expenses (TX, operating expenses plus one-seventh of a fund's front-end load fee), operating expenses (X), front load (L), a dummy variable which takes a value of 1 if the fund appeared in the highest expense decile in year t-1(Hi-Expense Dummy), the annual market-adjusted fund return for the previous 12 months (MAR) and the annual market adjusted fund return for the 12 months in year t-2, the annual adjusted fund returns squared for years t and t-1, the monthly standard deviation of the fund's return over the previous 24 months, log of beginning-of-quarter TNA, and log of fund age. The dependent variable is winsorized at the 99^{th} percentile. Funds closed to new investors are excluded from the analyses at the time and after they became closed. Test statistics (in parentheses) are based on the time-series of coefficient estimates across 119 quarters.

	All Funds		Largest 50 Funds		Largest 70 percent of Funds		Old Funds (age > 5 years)	
Total Expenses	-0.389**		-0.424***		-0.298**		-0.180*	
(TX_{t-1})	(-2.11)		(-3.11)		(-2.08)		(-1.76)	
Operating		0.104		0.833**		0.826**		0.511*
Expense (X_{t-1})		(0.24)		(2.06)		(2.08)		(1.85)
Front-end load		-0.066**		-0.082***		-0.077***		-0.056***
(L_{t-1})		(-2.25)		(-3.76)		(-3.19)		(-2.86)
Hi-Expense	0.010	0.001	-0.005	-0.006	0.010*	-0.005	0.011***	-0.002
Dummy	(1.55)	(0.17)	(-1.38)	(-1.65)	(1.71)	(-0.70)	(2.88)	(-0.39)
MAR_{t-1}	0.393***	0.397***	0.252***	0.257***	0.359***	0.364***	0.314***	0.317***
	(11.17)	(11.30)	(9.89)	(9.76)	(11.14)	(11.39)	(13.33)	(13.51)
MAR^2_{t-1}	1.01***	0.993***	0.396***	0.351**	0.801***	0.786***	0.716***	0.698***
	(9.02)	(8.90)	(2.63)	(2.32)	(7.14)	(7.04)	(10.36)	(10.06)
MAR_{t-2}	0.166***	0.164***	0.158***	0.161***	0.172***	0.172***	0.167***	0.166***
	(10.40)	(10.37)	(8.15)	(78.45)	(10.00)	(10.06)	(12.25)	(12.16)
MAR^2_{t-2}	0.106	0.067	-0.024	-0.027	0.124*	0.091	0.258***	0.214***
	(1.16)	(0.75)	(-0.12)	(-0.14)	(1.72)	(1.30)	(4.46)	(3.79)
σ(R)	-0.596***	-0.599***	-0.350**	-0.322**	-0.640***	-0.636***	-0.575***	-0.577**
	(-4.63)	(-4.68)	(-2.21)	(-2.07)	(-4.71)	(-4.70)	(-6.01)	(-6.11)
$\ln(TNA_{t-1})$	-0.009***	-0.009***	0.002**	0.003***	-0.003***	-0.002**	-0.003***	-0.002***
	(-8.89)	(-7.29)	(2.08)	(2.98)	(-4.46)	(-2.30)	(-6.79)	(-3.56)
ln(Age)	-0.014***	-0.014***	-0.014***	-0.013***	-0.014***	-0.013***	-0.012***	-0.011***
	(-8.76)	(-8.63)	(-7.92)	(-7.59)	(-8.42)	(-8.24)	(-9.20)	(-8.94)
Adj. R-Squared	0.139	0.146	0.309	0.318	0.178	0.185	0.180	0.189

***, **, * - significant at the 1, 5, or 10 percent level, two–tailed test.

Table 3: Cross-Sectional Regressions of Quarterly New Money on Fund Characteristics: 1993-1999

This table reports the mean coefficient estimates and associated t-statistics (in parentheses) from cross-sectional regressions of fund flows on selected fund characteristics from the first quarter of 1993 to the third quarter of 1999. The dependent variable is the quarterly net fund flows scaled by the beginning of quarter TNA. The independent variables include total expenses (TX, operating expenses plus one-seventh of a fund's front-end load fee), front load (L), a dummy variable which takes a value of 1 if the fund appeared in the highest expense decile in year t-1 (Hi-Expense Dummy), non-12B expenses, 12B expenses, the annual market-adjusted fund return for the previous 12 months (MAR) and the annual market adjusted fund return for the 12 months in year t-2, the annual adjusted fund returns squared for years t and t-1, the monthly standard deviation of the fund's return over the previous 24 months, log of beginning-of-quarter TNA, and log of fund age. The dependent variable is winsorized at the 99th percentile. Funds closed to new investors are excluded from the analyses at the time and after they became closed. Test statistics (in parentheses) are based on the time-series of coefficient estimates across 27 quarters.

	All Funds		Largest 50 Funds		Largest 70 percent of Funds		Old Funds (age > 5 years)	
Total Exp. (TX_{t-1})	-0.523		-0.050		0.221		0.122	
	(-1.58)		(-0.18)		(0.79)		(0.64)	
Front-end load (L_{t-1})		0.040		-0.039		0.037		0.080*
		(0.65)		(-0.73)		(0.68)		(2.02)
Hi-Expense Dummy	0.006	0.008	-0.001	-0.003	0.017**	0.018*	0.011**	0.011**
	(0.66)	(0.69)	(-1.00)	(-1.00)	(2.08)	(1.87)	(2.64)	(2.11)
$Non12B_{t-1}$		-1.828***		-1.223		-1.171**		-0.212
		(-2.95)		(-1.39)		(-2.69)		(-0.67)
$12B_{t-1}$		1.454***		1.542***		1.432***		0.957**
		(2.81)		(3.23)		(2.89)		(2.42)
MAR_{t-1}	0.781***	0.788***	0.494***	0.506***	0.715***	0.721***	0.602***	0.605***
	(11.33)	(11.10)	(9.70)	(9.49)	(10.66)	(10.71)	(15.61)	(15.57)
MAR^2_{t-1}	1.634***	1.678***	-0.277	-0.141	1.564***	1.602***	1.039***	1.057***
	(6.83)	(7.38)	(-0.75)	(-0.39)	(5.43)	(5.68)	(7.38)	(7.44)
MAR_{t-2}	0.246***	0.251***	0.228***	0.236***	0.273***	0.274***	0.285***	0.290***
	(7.05)	(7.29)	(5.37)	(5.38)	(8.63)	(8.61)	(13.92)	(14.18)
MAR^2_{t-2}	-0.026	0.064	-1.235**	-1.379**	-0.224	-0.189	0.278**	0.315***
	(-0.18)	(0.46)	(-2.22)	(-2.50)	(-1.61)	(-1.35)	(3.56)	(4.04)
$\sigma(R)$	-1.094***	-1.029***	-0.310	-0.139	-1.263***	-1.201***	-0.957***	-0.939***
	(-4.01)	(-3.74)	(-0.80)	(-0.35)	(-4.67)	(-4.40)	(-5.31)	(-5.16)
$\ln(TNA_{t-1})$	-0.020***	-0.021***	0.001	-0.0002	-0.006***	-0.008***	-0.005***	-0.005***
	(-8.32)	(-8.60)	(0.37)	(-0.07)	(-6.35)	(-7.35)	(-8.28)	(-8.01)
ln(Age)	-0.015***	-0.013***	-0.017***	-0.016***	-0.019***	-0.018***	-0.013***	-0.012***
	(-7.23)	(-6.00)	(-7.60)	(-6.81)	(-8.87)	(-8.51)	(-7.68)	(-7.57)
Adj. R-Squared	0.099	0.101	0.402	0.417	0.153	0.156	0.174	0.177

***, **, * - significant at the 1, 5, or 10 percent level, two –tailed test.

Table 4: Cross-Sectional Regressions of Monthly New Money from Discount Brokerage Accounts: 1991-1996

This table reports the mean coefficient estimates and associated t-statistics (in parentheses) from cross-sectional regressions of fund flows based on the account transaction data from a U.S. discount brokerage firm on selected fund characteristics from January 1991 to November 1996. The dependent variable, $\frac{B_{it} - S_{it}}{TNA_{i,t-1}}$, is the total value of buys less the total value of sells for fund i scaled by the beginning-of-month TNA. The independent variables include total expenses (TX, operating expenses plus one-seventh of a fund's load fee), operating expenses (X), front load (L), a dummy variable which takes a value of 1 if the fund appeared in the highest expense decile in year t-1(Hi-Expense Dummy), the annual market-adjusted fund return for the previous 12 months (MAR) and the annual market adjusted fund return for the 12 months in year t-2, the annual adjusted fund returns squared for years t and t-1, the monthly standard deviation of the fund's return over the previous 24 months, log of beginning-of-quarter TNA, and log of fund age. The dependent variable is winsorized at the 99th percentile and is multiplied by 1,000,000. Funds closed to new investors are excluded from the analyses at the time and after they became closed. Test statistics (in parentheses) are based on the time-series of coefficient estimates across 72 months.

	All Funds		Largest 50 Funds		Largest 70 percent of Funds		Old Funds (age > 5 years)	
Total Expenses (TX_{t-1})	990.64		-989.92***		-1103.60		1002.82	
	(0.67)		(-3.17)		(-1.20)		(0.64)	
Operating Expense (X_{t-1})		6264.49**		-338.17		5837.25***		4716.46*
		(2.41)		(-0.34)		(2.63)		(1.78)
Front-end Load (L_{t-1})		-1018.58***		-179.74*		-1033.02***		-682.60***
		(-4.14)		(-1.92)		(-4.40)		(-3.00)
Hi-Expense Dummy	66.52*	-11.70	7.35	6.19	103.36	3.49	32.55	-26.26
	(1.66)	(-0.26)	(1.60)	(1.30)	(1.62)	(0.05)	(0.89)	(-0.63)
NTF Dummy	30.20**	52.65***	5.94	7.05**	8.38	25.52***	34.52***	51.41***
	(2.63)	(4.54)	(1.55)	(2.05)	(0.77)	(2.67)	(3.44)	(4.80)
MAR_{t-1}	1081.23***	1095.17***	155.96***	192.01***	841.94***	849.86***	883.96***	900.24***
	(7.39)	(7.51)	(2.60)	(3.07)	(7.21)	(7.44)	(6.61)	(6.64)
MAR^2_{t-1}	2887.57***	2671.81***	712.34	562.33	3026.80***	2878.48***	1769.01**	1585.74**
	(3.37)	(3.19)	(1.11)	(0.92)	(4.77)	(4.58)	(2.25)	(2.05)
MAR_{t-2}	53.19	54.65	193.66***	160.57***	46.82	19.05	104.59	106.51***
	(0.47)	(0.47)	(3.28)	(2.73)	(0.42)	(0.18)	(0.99)	(0.99)
MAR^2_{t-2}	-666.86	-1027.06	-341.61	-287.18	-1287.98*	-1607.39**	-380.15	-710.38
	(-0.94)	(-1.47)	(-0.72)	(-0.60)	(-1.81)	(-2.23)	(-0.55)	(-1.06)
σ(R)	-4928.40***	-4934.79***	-868.63**	-897.09**	-1820.23	-1805.24	-5307.07***	-5254.63***
	(-3.31)	(-3.33)	(-1.96)	(-1.96)	(-1.61)	(-1.61)	(-3.78)	(-3.75)
$\ln(TNA_{t-1})$	6.81	14.91*	0.34	0.71	-12.31**	-1.32	12.70	18.59**
	(0.93)	(1.77)	(0.16)	(0.41)	(-2.51)	(-0.26)	(1.64)	(2.07)
Ln(Age)	15.68**	21.49***	0.46	1.05	7.47	14.25*	13.82**	18.42**
	(2.29)	(2.81)	(0.15)	(0.30)	(1.13)	(1.80)	(2.04)	(2.52)
Adj. R-Squared	0.082	0.088	0.190	0.206	0.112	0.121	0.079	0.085

***, **, * - significant at the 1, 5, or 10 percent level, two–tailed test.

Table 5: Mean Characteristics of First Mutual Fund Purchases (19,056) vs. Subsequent Purchases (188,506) from Discount Broker Trades Data: 1991 to 1996

Descriptive statistics are for 19,056 first mutual fund purchases of households and 188,506 subsequent purchases. Data are from trades made at a large discount broker from 1991 through 1996. Variables include total expenses (operating expenses plus one-seventh of a fund's load fee), operating expenses, front load, non-transaction fee (NTF) status at the broker, the annual market-adjusted fund return for the previous 12 months (*MAR*), and the annual market adjusted fund return for the 12 months in year t-2. *t-statistics* are in parentheses.

	First Purchases	Subsequent Purchases	Difference
Total Expenses (%)	0.95	0.95	0.00
			(0.82)
Operating Expenses (%)	0.93	0.94	-0.01**
			(-2.18)
Front-End Load Fees (%)	0.111	0.061	0.05***
			(10.69)
NTF Status (%)	39.67	39.09	0.58
			(1.57)
Fund MAR_{t-1} (%)	7.16	5.58	1.57***
			(14.22)
Fund MAR_{t-2} (%)	6.14	5.00	1.14***
			(10.46)

, * -- significant at the 1 and 5 percent level, respectively (two-tailed test)

Table 6: Cross-Sectional Regressions of Annual Expense Changes on Fund Characteristics: 1970-1999

This table reports the mean coefficient estimates and associated t-statistics (in parentheses) from cross-sectional regressions of annual expense changes on selected fund characteristics from 1970 to 1999. The dependent variable, $X_t - X_{t-1}$, is the change in expense ratios. The independent variables include change in front-end load fees (L), annual fund new money scaled by the beginning of year TNA (NM), the annual market-adjusted fund return for the previous 12 months (MAR) and the annual market adjusted fund return for the 12 months in year t-2, the annual adjusted fund returns squared for years t and t-1, the monthly standard deviation of the previous 24 months fund returns, log of TNA at the beginning of each quarter, and log of fund age. The new money variables are winsorized at the 99th percentile.

	All Funds	Largest 50 Funds	Largest 70 percent of Funds	Old Funds (age > 5 years)
Change in Front Loads ($L_t - L_{t-1}$)	0.00176 (0.79)	-0.00446 (-1.16)	-0.00591** (-2.28)	0.00212 (0.92)
New Money (*t-1*) NM_{t-1}	-0.00048** (-2.41)	-0.00054 (-1.39)	-0.00043** (-2.10)	-0.00063* (-1.89)
New Money (*t-2*) NM_{t-2}	-0.00005 (-0.42)	0.00011 (0.31)	-0.00008 (-0.91)	-0.00008 (-0.63)
R_{t-1}	-0.00591** (-2.21)	0.00271 (0.60)	-0.00463** (-2.65)	-0.00485* (-2.00)
R^2_{t-1}	0.00964 (1.28)	-0.00642 (-0.57)	0.00282 (0.62)	0.00898 (1.22)
R_{t-2}	-0.00753*** (-2.75)	-0.00764 (-1.30)	-0.00652** (-2.24)	-0.00896** (-2.61)
R^2_{t-2}	0.00952* (1.85)	0.011060 (0.99)	0.00758* (1.33)	0.01325** (2.14)
σ(R)	-0.00723 (-1.02)	0.00530 (1.04)	-0.00741 (-0.96)	-0.00823 (-1.10)
$\ln(TNA_{t-1})$	-0.00001 (-0.41)	-0.00001 (-0.25)	0.00001 (0.11)	-0.00001 (-0.37)
ln(Age)	0.00005 (0.47)	0.00008 (0.74)	0.00001 (0.16)	0.00004 (0.34)
Adj. R-Squared	0.069	0.103	0.095	0.079

***, **, * - significant at the 1, 5, or 10 percent level, two –tailed test.

Table 7: Mean Characteristics of Mutual Fund Sales followed by Mutual Fund Purchase within Three Weeks from Discount Broker Trades Data: 1991 to 1996

Descriptive statistics are for 14,862 mutual fund sales followed by a mutual fund purchase within three weeks. Data are from trades made at a large discount broker from 1991 through 1996. Variables include total expenses (operating expenses plus one-seventh of a fund's load fee), operating expenses, front load, non-transaction fee (NTF) status at the broker, the annual market-adjusted fund return for the previous 12 months (*MAR*), and the annual market adjusted fund return for the 12 months in year t-2. *t-statistics* are in parentheses.

	Funds Bought	Funds Sold	Difference
Total Expenses (%)	0.998	0.989	0.009
			(2.44)**
Operating Expenses (%)	0.983	0.963	0.021
			(5.72)***
Front-End Load Fees (%)	0.099	0.180	-0.080
			(-10.44)***
NTF Status (%)	22.8	18.9	3.9
			(9.09)***
Fund MAR_{t-1} (%)	8.25	0.55	7.70
			(58.40)***
Fund MAR_{t-2} (%)	4.97	4.93	0.04
			(0.34)

, * -- significant at the 1 and 5 percent level, respectively (two-tailed test)

Figure 1: Mean Front-End Load Fee and Percentage of Assets Invested in funds with Front-End Loads for U.S. Diversified Equity Mutual Funds: 1962 to 1999

Front-end load fees are from the CRSP mutual fund database. The mean load fee is based only on funds charging a front-end load and is weighted by fund size.

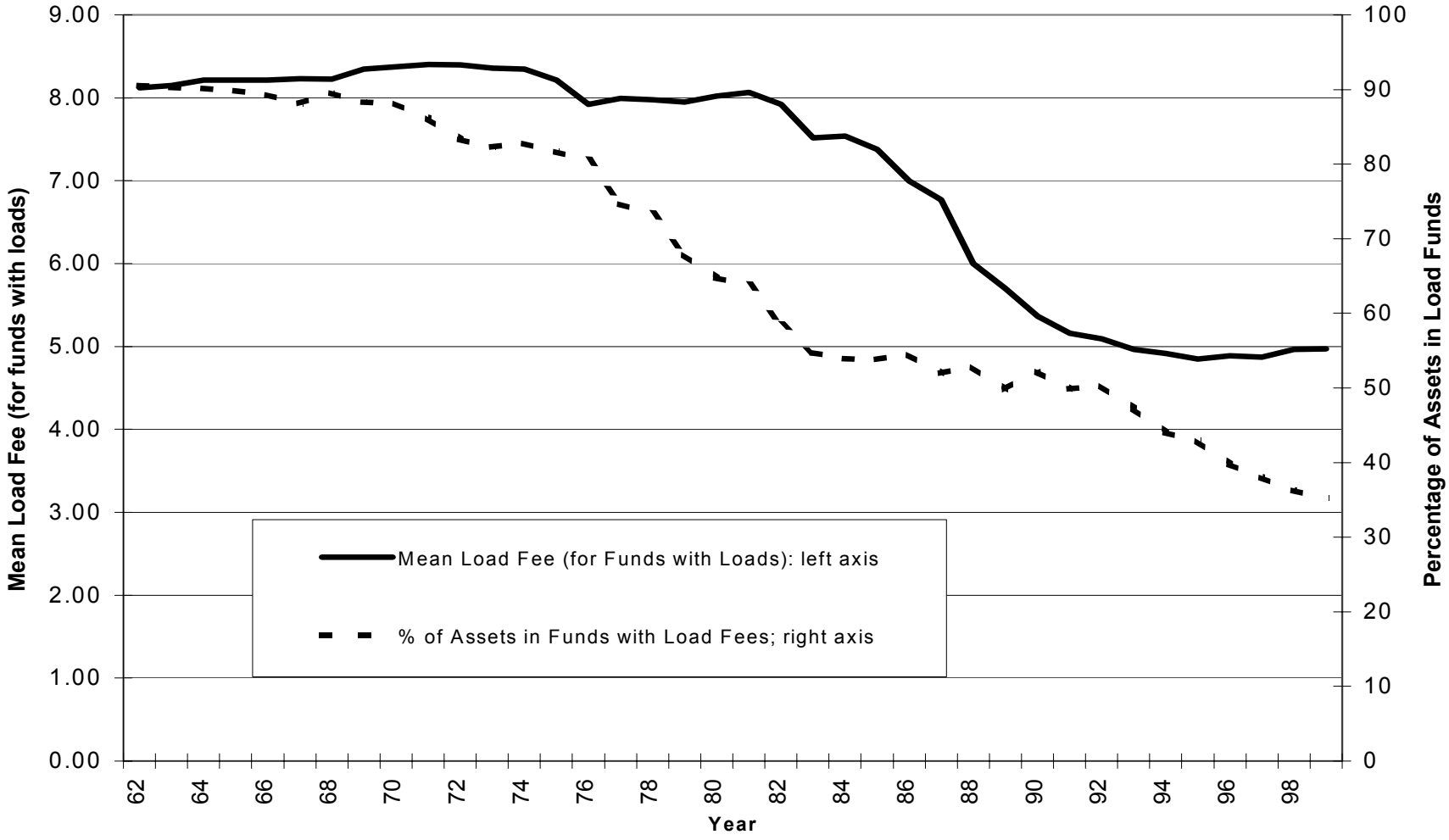

Figure 2: Mean Operating Expense Ratio for U.S. Diversified Equity Mutual Funds: 1962 to 1999

The mean operating expense ratio is calculated based on expense ratios reported in the CRSP mutual fund database for U.S. diversified equity mutual funds and is weighted by fund size. Funds with zero expense ratios are excluded from the calculation of the mean. On average, 97 percent of assets are held in funds with nonzero expense ratios, ranging from 92 percent in 1987 to 100 percent in 1999.