Madison Avenue Meets Wall Street:  
Mutual Fund Families, Competition and Advertising

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Abstract

We examine strategic decisions of mutual fund families and the effects of these decisions on investor flows to the family. We find that, similar to evidence found at the individual fund level, investor flows to a family of funds have a piecewise linear relation with a family’s past performance. We also find the same type of relation between a family’s flows and its relative levels of advertising expenditures and that the advertising effect is independent of the performance effect. We also find that other decisions of the fund family, such as load fees and the use of 12b-1 fees for paying brokers and other distributors, have significant effects on the family’s flows and the volatility of those flows.
1. Introduction

Investment companies, particularly open-end mutual funds, have been the fastest growing segment of the institutional investor community in recent years. Despite the importance of this institutional investor class, questions still remain concerning the supply and demand for the financial services they provide. Regarding the supply, although early research tended to focus on individual funds (primarily growth funds), more recent research has considered the mutual fund family as the relevant unit of measure.\(^1\) This is an important distinction because many decisions are made from a family, rather than individual fund, perspective since most mutual funds are managed by an investment advisory company that manages a family of such funds. Decisions such as advertising budget, which distribution channels to pursue, service quality, or individual manager appointments primarily originate on the mutual fund family level. Thus, to fully understand the motivation and impact of these types of decisions, one needs to focus on the mutual fund family complex.

Regarding the demand for the financial services provided by mutual funds, a number of studies have examined the consumer choice aspects of the demand as well as the relation between fund flows and performance.\(^2\) However, these studies have also tended to focus on the demand issue from an individual fund rather than family of funds perspective. Although research has examined some of the interactions between the mutual fund family and the fund in individual choice decisions (e.g., Nanda, Wang and

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Zheng’s (2002) analysis of the existence of a star fund in the family), the question of how demand is reflected in the family’s aggregate investor flows is not fully addressed.

In this paper we address the supply and demand issues by focusing on strategic decisions of the suppliers (the mutual fund family) and examining how these decisions affect the demand. In particular, we examine how the family’s strategic decisions affect aggregate net flows of new assets under management. Although the investment management company that sponsors the funds is certainly interested in the level of flows to each of their individual funds, they view those funds as a series of products, with the central interest being in the aggregate flows to the entire family of funds. We examine three major strategic decisions, the level of advertising expenditures, which distribution channels to employ, and the level of expenses, and these decisions affect flows into the complex. We first examine aggregate family level flows and how they are affected by the outcome of the family-level strategic decisions: overall family return performance, the existence of a star fund in the family, distribution channels employed (proxied by the existence of sales loads and 12b-1 fees), expenses and portfolio turnover. This analysis allows us to compare the determinants of family-level flows to the determinants of individual fund flows found in previous research.\(^3\)

In order to compare our results on the family level to the earlier results on the individual fund level, we first examine the family flow-performance relation without regard to advertising.\(^4\) We find that at the top end of performance, the family flows have a convexity similar to that found in earlier studies on individual funds (primarily growth funds). Employing a piecewise linear specification, we find, consistent with the Sirri and

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\(^3\) With regard to studies of fund families, Khorana and Servaes (2003) examine determinants of family market shares rather than fund flows. Thus, they examine percentage levels of assets, while we examine percentage changes in levels of assets. Siggelkow (2003) examines the dollar amount of family flows on an annual basis. We employ the percentage flows, which is comparable to the earlier work on individual funds’ flows.

\(^4\) Most previous studies have examined individual fund flows on an annual basis (e.g., Sirri and Tufano, 1998), semiannual basis (Edelen, 1999), or aggregate flows on a daily basis (e.g., Edelen and Warner, 2001). Previous studies have not examined the determinants of flows into a family of funds on a quarterly basis.
Tufano (1998) study of individual funds, the relation between flows to the family and previous year performance to be significantly positive for the highest performance group of fund families. However, in contrast to their individual fund results, we find the family flow-performance relation to also be significantly positive for the lowest performing group as well. This result is consistent with the nonlinear specification of Chevalier and Elison (1997), however. We find that the middle group (or groups for greater divisions) do not have a significant relation between family fund flow and average family return performance.

Consistent with the Nanda, Wang and Zheng (2004) analysis for individual funds, we find that the aggregate flows to the family are increasing in the existence of at least one star fund in the family. Distribution channels make a difference as well. We find that the existence of a load has a positive effect on the flows to the family, although the size of the load has a negative effect. We also find that the relative sizes of the family’s average 12b-1 fee and the family’s average expense ratio also affect the flows to the family.

We then focus on a specific fund family complex decision, the advertising decision, to examine how such a strategic decision can affect flows of funds into the family by affecting individual investors’ choice of funds. The economic role of advertising in such consumer choice problems has been hypothesized to result in the lowering of consumer search costs because advertising provides the consumer with information about the product – such as the product’s existence and characteristics (Bagwell and Ramey, 1994). Advertising has also been hypothesized to be a signal of product quality (Nelson, 1970, 1974; Kihlstrom and Riordan, 1984; Milgrom and Roberts, 1986). The implication of these hypotheses is that advertising increases sales of a product due to lowered search costs either for the product in general or for the high quality product. In the case of mutual funds, advertising’s lowering of search costs would be expected to increase investor flows into the funds. However, the extent to which advertising can
lower search costs for mutual funds is limited due to the substantial information on mutual fund performance and characteristics available from media coverage of funds and from services such as Lipper or Morningstar.

Under these hypotheses of advertising as an information provider and signal of quality, the result of a mutual fund family’s advertising expenditures would be an increase in assets under management, ceteris paribus, which in turn implies motivation for the use of advertising. It then follows that because the fund family sponsor’s income is commonly a percentage of assets under management,\(^5\) increased investor flows from advertising would result in a corresponding increase in the sponsor’s income. Additional benefits of the increased investor flows from advertising would include the benefits of economies of scale since the shared expenses for fund management operations would become a smaller fraction of the assets under management, ceteris paribus.\(^6,7\)

Surprisingly little attention has been paid to the link between advertising and fund flows, particularly on the mutual fund family level, where the decision is made. A few studies have examined marketing costs through 12b-1 fees (e.g., Khorana and Servaes, 2003; Barber, Odean and Zheng, 2003) or total fees (e.g., Sirri and Tufano, 1998). Such fees, however, do not reflect the differences in advertising expenditures across mutual funds or mutual fund families. For example, many mutual funds do not charge 12b-1 fees, yet they advertise. Further, Reid and Rea (2003) cite an Investment Company Institute survey finding that less than five percent of 12b-1 fees were used for advertising and other sales-promotion activities (the remainder was used for distribution charges). Much of the fund family’s advertising expenditures are paid by the management company, rather than being a direct expense to fund shareholders through 12b-1 fees.

\(^5\) See, for example, Deli (2002), Golec (2003) or Golec and Starks (2004).

\(^6\) Baumol, et. al. (1980), Collins and Mack (1997) and Latzko (2001) have found evidence of economies of scale in the mutual fund industry.

\(^7\) Advertising could also be used as an attempt by fund management to create barriers to entry as suggested by Tirole (1995). Such barriers may be desired since previous research (Baumol, Goldfeld, Gordon and Kehn, 1980; Khorana and Servaes, 2003) suggests that the mutual fund industry is highly competitive with low barriers to entry.
Consequently the full extent of advertising expenditures are not observable through regulatory filings or other common mutual fund databases.

Other studies have examined advertising in a more direct fashion. Jain and Wu (2000) examine the existence of advertisements in two business periodicals over the July 1994 through June 1996 sample period. They find that the existence of an advertisement is associated with increased flows to the individual fund advertised. They do not examine whether there are effects on the family as a whole. Jain and Wu also find that the funds that are advertised tend to have higher return performance than their benchmarks. Cronqvist (2003) examines advertising in Sweden by 401-k type funds around a specific period of time when laws changed. He finds a relation between the funds that advertised and the investors’ subsequent allocation choices. Reuter and Zitzewitz (2004) examine advertising expenditures by fund families and conclude that such expenditures may influence mutual fund recommendations in personal finance magazines. Our study differs from these previous and contemporaneous studies in terms of focus, data and methodology.8

Fund family complexes budget their advertising expenditures and enter into advertising contracts on an annual complex-wide basis. They then make the decisions regarding whether to advertise the general family or individual funds, and the choice of which funds to advertise, later in the fiscal year. Thus, although the advertisement itself may focus on a particular fund, the decision to place the ad, how many ads to place, and which funds to include in the ads are made at the family level. Further, even in the case of ads focused on individual funds, the intent of the ad may be to attract attention to the

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8 Recent papers also consider advertising by corporations. Grullon, Kanatas and Weston (2004) find a relation between the level of corporate advertising and the breadth of ownership and liquidity of the firm’s common stock. Fehle, Tsypakov, and Zdorovtsov (2004) find that advertising in the Super Bowl broadcast is associated with increases in stock market volume the following Monday, and that the average trade size is smaller, suggesting a higher proportion of individual investors in the increased volume.
fund complex rather than simply the fund itself. Because these are complex-wide decisions, it is most appropriate to examine the effects of these decisions on a complex-wide basis and to compare these effects to those of other complex-wide strategic decisions.

With regard to the relation between family flows and family advertising expenditures, we find that advertising does not affect flows in a linear relation, only in a non-linear relation similar to the effect of high return performance. Thus, considering advertising expenditures as a strategic decision, these results imply that for advertising to matter, the family must ensure that they are one of the top advertisers. Further, the relation between family flows and relative advertising expenditures is independent of the relation between family flows and performance or distribution channels. These results have implications for both the empirical and theoretical evidence on the determinants of mutual fund flows.

We find evidence that the fund family strategic decisions we examine affect flows to the family. If these decisions affect flows, then they also have the potential to affect the volatility of those flows. Chordia (1996), Edelen (1999), Greene and Hodges (2002), and Rakowski (2003) have suggested that fund flow volatility is costly to mutual fund operations. Thus, an important factor in the strategic decisions could be the concomitant effects on the family’s flow volatility. However, the direction of these effects is unclear, a priori. On the one hand, the strategic decisions could result in lower overall redemptions by shareholders in the family complex of funds, thus, reducing flow volatility, ceteris paribus. (For example, Goetzmann and Peles (1997) hypothesize that advertising could discourage shareholder redemptions by reducing their cognitive dissonance.) The mutual fund family could then make strategic decisions in part to manage the cost of

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9 In conversations with mutual fund family executives, they indicated that the intent of the advertising is often not the particular fund advertised, but the fund family itself. Further, investors who call in on the advertisement may be counseled to invest in other funds, depending on their goals and risk tolerances.
their flow volatility. On the other hand, if these decisions successfully attract additional flows to funds, they could also have an unintended consequence of increasing flow volatility and costs.

We find mixed results in terms of the relation between family flow volatility and the family strategic decisions. We find no significant relation between a family’s average fund flow volatility and its advertising expenditures, suggesting that although advertising increases flows to the family, it does not appear do so in relation to a family’s management of fund flow volatility, nor do there appear be to be additional costs imposed from the increased flows associated with advertising. We find, however, that load fees and 12b-1 fees do have significant effects on flow volatility, with load fees reducing that volatility and 12b-1 fees increasing the volatility, suggesting that choice of distribution channels not only has significant effects on the level of flows, but also on the volatility of those flows. The relative level of the expense ratios has a significantly negative effect on flow volatility. That is, families with higher average expenses have lower flow volatility.

Finally, in order to check for endogeneity problems, we examine the determinants of the family’s advertising expenditures. We find that the level of the advertising expenditures is dependent on the average expense ratio of the fund family, the average load and the average turnover. We do not find that family return performance affects the family’s advertising expenditures.

2. Data

We obtain quarterly information on the print advertising expenditures of mutual fund families over the 1992-2001 time period from Competitive Media Research (CMR).\textsuperscript{10} Over our sample period these advertisements appeared in over 288

\begin{footnotesize}
\textsuperscript{10} CMR is a third-party collector and distributor of data on advertising expenditures for many products, both print advertising and other media advertising. Our data is limited to the print
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publications, from the *Wall Street Journal* (the greatest amount of advertising dollars spent) to the *Elgin Courier News* (the least amount of advertising dollars spent). Our data on characteristics of mutual fund families and their constituent funds (such as total net assets, expense ratios, load fees, 12b-1 fees, objectives and returns) is obtained from the CRSP mutual fund database. Since our focus is on the mutual fund family rather than individual funds, we only include families with a minimum of $1 billion under management.¹¹

Table 1 provides characteristics of the mutual fund families included in our sample over the 1992-2001 time period. Consistent with the growth in mutual fund assets in general over the sample period, the number of large fund families grows from 99 in 1992 to 124 in 1996 and then contracts to 107 in 2001. The total assets under management at these families increases from $939 billion to almost $4.2 trillion. Further, the average assets under management at these families increases by a factor of four across the period. Consistent with the mergers of mutual fund complexes in the late 1990s, there appears to have been some consolidation in the industry. However, 107 mutual fund families with over $1 billion in assets under management are still remaining at the end of our sample period. Thus, it is perhaps not surprising that an analyst for the mutual fund industry stated that the “degree of fragmentation is greater today than it was in 1990, contrary to other parts of the financial services industry.”¹²

Consistent with this statement, Table 1 shows that although the average assets under management for a fund family grew from $9.48 billion in 1992 to $39.38 billion in 2001, advertising, but according to Reuter and Zitzewitz (2004), mutual fund print advertising accounts for about 80% of total advertising expenditures.

¹¹ We omit the very small fund families because their differences from the typical fund family (including the small assets under management, the small number of funds offered, and the lack of capability for advertising) results in a decision process that would vary considerably from that of the large fund families. Further, our sample of fund families with at least $1 billion in assets under management covers 99.5% of the total net assets of mutual funds that advertised in the CMR database at the end of our sample period (2001) and 97% at the beginning (1992).

the share that this represented of the total market fell from 1% to .9%. The table also shows the growth in assets under management was strong in the early 1990's, with average quarterly net flows of about 5% of assets, but these flows fell to a little less than 3% in 2001.

Table 1 provides information on distribution channels of the families in the sample. The broad use of 12b-1 fees and load fees implies that the families use multiple strategies for distribution channels. At the beginning of the sample period, almost 70% of the families had at least one share class that charged 12b-1 fees. By the end of the sample, 82% of the families had at least one share class with 12b-1 fees. Similarly, at the beginning of the sample period about 70% of the families had at least one fund with a front-end load fee, by the end of the sample period, 74% of the families charged such fees. Thus, most families use multiple channels. Across all funds in a family, the average front-end load fee was about 1.38% in 1992 and 1.08% in 2001, suggesting a reduction in load fees. However, when we restrict the average to funds within a family that have a load, there is little change in the average load fee across time, remaining between 4% and 5%. The difference is due to the offering of more funds without load fees.

Table 1 also shows the changes in average expense ratios over the ten-year period. We find only a small increase from 1.13% to 1.25%. This increase in average expense ratios for the fund families is most likely due to an increase in specialized or international funds over the period, which have higher costs of operations.

The quarterly advertising expenditures (as a percentage of fund assets) dropped from around 9 cents per $1000 in 1992 and 1996 to about 4 cents per $1000 in 2001. Figure 1 shows more detail regarding how the dollar amount of advertising as a percentage of fund family assets has varied over time. In the early part of the period, advertising expenditures increased from around 8 cents per $1000, growing to greater than 12 cents per $1000 of fund family assets. Since 1994, the advertising percentage
has been decreasing. Part of this decrease is undoubtedly from the fact that advertising expenditures have not grown as rapidly as have mutual fund assets under management. The latter growth is shown in Figure 2.

3. Determinants of fund flows on the family level

We first provide a cross-sectional analysis of the determinants of fund flows on the family level in order to compare the results to those of previous studies that employ individual funds. We employ determinants used in previous studies of mutual fund flows on the individual fund level, particularly past performance.13

3.1 Family fund flows and past performance

For each quarter, the dependent variable is the net flows into fund family $k$ for quarter $t$:

$$\text{NetFlow}_{k,t} = \sum_i \left\{ \frac{TNA_{i,t} - (TNA_{i,t-1} \times (1+R_{i,t}))}{TNA_{k,t}} \right\}$$

where $TNA_{i,t}$ represents fund $i$’s total net assets at time $t$, $R_{i,t}$ represents fund $i$’s return in quarter $t$ and $TNA_{k,t}$ represents fund family $k$’s total net assets at time $t$. Figure 3 shows more detail regarding the changes in net fund flows over the sample period. As the figure shows, quite a bit of volatility exists in family flows over the sample period, suggesting that strategic decisions made by the fund complex can have substantial effects.

The primary independent variable is the fund family’s average return performance over the previous year, measured as the average return on the fund family’s portfolios, weighted by the total net assets (i.e., market value) of the funds. Because we need to aggregate the quarterly cross-sectional regression results across

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time, we normalize the fund family average returns for each period. To do so, we follow the Sirri and Tufano (1998) technique of ranking the sample average returns over the immediate past year and then mapping these returns onto the [0,1] interval. An advantage of this technique is that it converts the family’s average returns into their rankings in comparison to other families’ returns on a period-by-period basis.

A potential complicating factor in the empirical specification of the model is the existence of persistence in fund flows. To control for this potential factor, we employ lag fund flows (i.e., the fund’s flows over the previous quarter). We include the following control variables as well: the log of the total net assets (at the beginning of the quarter), a dummy variable equal to one if the family has a star fund in the quarter (where star fund is defined as a fund whose return is in the top five percent of returns for the fund’s category for the period), a dummy variable to indicate fund families that have at least one fund with a load fee, the average front-end load fee ranked against other families, a dummy variable to indicate fund families that have no 12b-1 fees, the average 12b-1 fee ranked against other families, the average expense ratio (excluding 12b-1 fees) ranked against other families, and the average turnover of the funds’ portfolios as a proxy for fund trading costs.

No theory exists to give us guidance as to the correct specification for the fund flow-performance relation. Although previous empirical studies have employed a variety of specifications, recent studies provide evidence of a nonlinear relation (e.g., Ippolito, 1992; Carhart, 1994; Gruber, 1996; Chevalier and Elison, 1997; Goetzmann and Peles, 1997; Sirri and Tufano, 1998; and Lynch and Musto, 2003). Accordingly, we employ the Sirri and Tufano (1998) piecewise linear specification in which we assume that the kinks

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14 Nanda, Wang and Zheng (2002) define star fund as a fund in the top 100 performers of a category. They further state that the star funds constitute about 5% of their sample. Such funds should also be related to funds with top Morningstar rankings as Morningstar ratings are heavily dependent on returns (Blume, 1998; Sharpe, 1998; Del Guercio and Tkac, 2002).

15 We average return, expense ratio, 12b-1 fees, load fees, and turnover by calculating the market-weighted average across funds in the family.
are identical for each quarterly period. Once we have run the cross-sectional
regressions for each quarter, we then use the Fama-MacBeth (1973) technique to
aggregate the coefficients across the 1992-2001 sample period.\textsuperscript{16}

The results are shown in Table 2. Model 1 shows the family fund flow-
performance relation with a simple linear specification. Models 2 and 3 show two
piecewise linear specifications consistent with the Sirri and Tufano (1998) model
specifications where Model 2 shows the results when there are assumed to be four kinks
and Model 3 shows the results with an assumption of two kinks. According to the Akaike
Information Criterion (AIC) and Schwarz Criterion (SC) tests, the two-kink specification is
at least as good as the four-kink specification.\textsuperscript{17}

Model 1 of Table 2 shows that family flows are significantly positively related to
the family’s past performance. However, the piecewise linear specifications in Models 2
and 3 suggest that this relation is driven by extreme performing families rather than the
average performing families. In these two models, family flows in a quarter are
significantly related to whether the family’s average return in the previous year is in the
bottom or top group of all families’ average returns. If a mutual fund family is in the
bottom or top group, the models suggest that the flows will be positively related to past
performance.

In general, previous studies find that the flows to individual funds are related to
the fund’s past performance, but more so for the highest-performing funds than the
lowest-performing funds. In contrast to our analysis of the value-weighted family flows,
most of these studies have restricted their samples to individual funds with a growth
objective. The relation we find at the upper end of the return distribution is consistent
with the previous results for individual funds (e.g., Sirri and Tufano, 1998; Chevalier and

\textsuperscript{16} All of the Fama-MacBeth t-statistics are based on the Newey-West (1987) heteroskedasticity
and autocorrelation consistent standard errors.
\textsuperscript{17} We also tried one kink and three kink specifications, but the analysis using the AIC or SC test
did not support these specifications over the ones we have shown in the table.
Ellison, 1997). The relation at the lower end of the return distribution is consistent with the earlier Chevalier and Ellison results, but not with the earlier Sirri and Tufano results. The magnitudes of the coefficients and t-statistics on the top and bottom performance groups suggest a stronger relation for the top performers than the bottom performers.

Some fund families specialize in certain categories of mutual funds such as fixed income funds. Even without such specialization, the proportions (and net assets) in the different fund categories vary across families suggesting that our results on the flow-performance relation at the family level could be driven by the different proportions of fund categories in the fund families. This concern is supported by Lettau’s (1997) analysis in which he correlates mutual fund flows with lag returns for different categories of funds and finds stronger correlations for aggressive growth and growth funds than for growth and income or balanced funds. To test whether our family results are influenced by different proportions of equity and fixed income funds across families, we also ran the cross-sectional regressions in Table 2 including only the growth funds in the fund families. We found the same qualitative results as we did when including all of the funds in the families. The significantly positive coefficients were again in the bottom and top groups.

In terms of the control variables, the coefficients remain at approximately the same sign, magnitude and significance across all three models. The coefficient on the lag flow variable shows a strong persistence in flows to a family across periods. The large persistence in fund flows (about 30% of the previous quarter’s flows) suggests that funds receive a sizable proportion of their flows from fixed commitments such as retirement accounts or savings plans.

The coefficients on the other control variables provide information about the effects of some strategic decisions on family flows. We find that when other characteristics of the family are included, the size of total assets under management does not affect flows into the family. In addition, (although not shown in the table), if we
substitute the log of the number of funds in the family (or number of funds in the family ranked against other families) for the log of total net assets, the substituted variable also does not result in a significant coefficient. These results provide different conclusions from those of Sigglekow (2003) who concludes that having more funds attracts more flows to the family. He bases his conclusions on an analysis that uses dollars of flows (rather than percentage flows) as the dependent variable and finds a significant relation between dollar flows and number of funds.

Another potential strategy for mutual fund families, suggested by Nanda, Wang and Zheng (2002), is to diversify so as to increase the likelihood of having a star fund that will attract flows to the whole family of funds. Consistent with their empirical evidence, we find that fund families with a fund in the top five percentile of performance of the funds in their investment category receive a higher inflow of performance. This result is also consistent with the evidence in Del Guercio and Tkac (2002) regarding Morningstar ratings.

Table 2 also provides implications regarding strategic decisions for the family’s distribution channels. Being a fund family with at least one fund with front-end load fees is associated with higher fund flows. However, the coefficient on the family’s ranked front-end load fee shows that fund flows are decreasing in the magnitude of the load fee, implying that larger loads impose an impediment to increased flows. This negative relation is consistent with previous evidence on the deterrents of load fees to mutual fund purchases. For example, Barber, Odean and Zheng (2003) find a negative relation between fund flows and load fees. Thus, the load fee is not simply a marketing expense to increase flows into the fund. The positive coefficient on the front-end load dummy variable combined with the negative coefficient on the ranked average load fee suggests

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18 A high correlation exists between the log of number of funds in a family and the log TNA, which is why we use them as substitutes.
that fund families with multiple distribution channels, but low load fees, do the best in terms of increasing their overall fund flows.

   The results for the 12b-1 fees are somewhat different. While there is no difference in flows between families with 12b-1 fees and those families that do not pay such fees, we find for those families that pay a higher magnitude of these marketing fees receive higher inflows.

   We have two variables that capture the costs of the mutual funds: the average expense ratio and the average turnover (which would be correlated with the average trading costs for the funds). In contrast to most of the research on individual funds, we find that the coefficient on the ranked average expense ratio is significant and negative, implying that investors are sensitive to this source of fund costs on a family level. The coefficient on the other proxy for fund costs, portfolio turnover, has mixed results being significantly negative in one specification and insignificantly different from zero in the other two.

   In summary, our specifications for the determinants of fund flows on the family level support the hypothesis that the convexity in the flow-performance relation found for individual funds continues for the fund family in aggregate. Our results also indicate that similar factors affect family flows in aggregate as previous research has found for individual funds.19

3.2 Family fund flows and advertising expenditures

   Lettau (1997) points out that a rationale for individuals to invest in mutual funds “can be viewed as a decision in terms of an optimal allocation of time.” If the investors want to reduce time spent on researching financial markets, they most likely would also

19 For an additional robustness check, we also ran cross-sectional regressions in which we used average load fees, 12b-1 fees, and expense ratios, rather than using their ranked values as we have in Table 2. We found no qualitative difference in results in terms of magnitudes or significance.
want to reduce time spent on researching fund management and performance, particularly given that more mutual fund share classes exist than do stocks traded on the NYSE, AMEX and NASDAQ national markets combined. In fact, Sirri and Tufano (1998) and Huang, Wei and Yan (2004) argue that fund flow should be related to the mutual fund investors’ search costs.\footnote{Tkac (2004) provides a discussion of mutual fund investor search costs as well.} According to Bagwell and Ramey (1994), optimal consumer search uses advertising to guide that search. Thus, advertising could be an important source of information to individuals’ mutual fund choices.

Sirri and Tufano (1998) hypothesize that funds from larger, more well-known fund families, with more extensive marketing efforts, and those receiving greater media attention would have lower search costs and thus would have an advantage in receiving greater fund flows. The authors employ several measures of the reduced search costs, one of which, total fees charged, is their proxy for marketing and distribution expenditures.\footnote{Sirri and Tufano (1998) include one-seventh of any load fee in their total fees charged measure.} They find no relation between the flow-performance relation and this proxy, except in the case in which they separate the funds into those with high fees and those with low fees. In that case they find that funds with higher fees, which the authors assume are funds with greater marketing efforts, have greater flow-performance sensitivity. However, because they are forced to employ a coarse proxy for marketing efforts, they cannot ensure that their results are not caused by confounding factors.

Jain and Wu (2002) use a dummy variable approach to compare fund flows of individual funds that have advertisements in one of two magazines in a month to flows of funds without advertisements in these magazines. They find that the advertised funds have higher net inflows, after controlling for prior performance, lag flows, and size. Cronqvist (2004) examines a number of issues with the advertising of the Swedish 401k-type funds, including what funds advertise, which types of advertising affect the investors allocation choices, whether fund advertising is a signal of future performance.
To examine whether the relative level of advertising expenditures affects mutual fund family flows, we measure advertising as the total dollars in quarterly family advertising expenditures scaled by the total family net assets. As in our measure of the return variable discussed in the previous section, we need to aggregate the cross-sectional relation between family fund flows and advertising expenditures across the multiple quarterly periods. Accordingly, we normalize the advertising variables on a [0,1] interval analogous to the Sirri and Tufano (1998) normalization procedure for the performance variable. We then assume a piecewise linear relation between family flows and advertising expenditures, an assumption similar to the assumption regarding the relation between family flow and past performance. In addition, we include a dummy variable if the family did not advertise during the quarter.

Our specifications for the flow-performance relation in these analyses are the same piecewise linear specifications employed in the previous section. We also include the same family control variables: the lag family fund flow, the log of the total net assets from the previous quarter, a dummy variable equal to one if the family has a star fund in the quarter (where star fund is defined as a fund whose return is in the top five percentile of returns for the period), a load dummy, the ranked average load fee, a dummy for 12b-1 fees, the ranked average 12b-1 fees, the ranked average expense ratio, and the average turnover of the funds’ portfolios.22

Table 3 shows the results from this analysis. For easier comparisons of coefficients, Model 1 shows the two-kink piecewise linear flow-performance relation without advertising variables from Table 2. Models 2 and 3 then include the advertising variables. Model 2 has the simplest linear specification of advertising in which we have a variable for no advertising and a variable for the advertising expenditures ranked against other families. Model 3 employs the piecewise linear specification as described

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22 In these cross-sectional analyses we omit any fund families that are less than three years in age or that have only one quarter of advertising expenditures over the entire sample period.
above. The results of Models 2 and 3 show that advertising has a significantly positive effect on fund flows for the heavy advertisers, but that advertising viewed from a simple linear specification appears to have no significant effect.  

This suggests that a threshold of advertising expenditures exists before it has effects. The advertisers who spend the least have no significant relation between their advertising dollars and fund flows. In contrast, those families in the middle range of advertising spending per assets under management, actually show a negative flow-advertising relation. Given that advertising has a significantly positive impact only at the top end, the advertising decision becomes a strategic decision for the fund family management. The results imply that just advertising is not sufficient for significantly increasing flows, rather the family has to extensively advertise.

As in the analysis without advertising expenditures in Model 1, the convexity in the flow-performance relation appears for the top performing funds, and the control variables still have effects similar to those when the advertising variable is absent. Conceptually, one might expect advertising to affect the flow-performance relation in that advertising could mitigate or magnify the importance of fund performance. We do not find this to be the case. Comparing the coefficients on the performance variables between Model 1 and Models 2 or 3 shows virtually no change when advertising is included in the regressions. If we employ an interaction term between family advertising expenditures and family return performance (not shown), we also do not find significant results. Thus, while Table 3 shows that family advertising expenditures can affect family flows, it does so independent of the family return performance. Similarly, the relation between fund flows and advertising also does not affect the relation between flows and the magnitude of the 12b-1 fees. Families with larger 12b-1 fees have higher net inflows regardless of the extent to which they advertise.

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23 In a separate analysis (not reported) we run a pooled cross-sectional analysis of the effects of advertising on the fund flows. The results are consistent with those reported in Table 3.
The results from Table 3 suggest that mutual fund families have independent strategies with which they can affect their net flows: achieve superior (or inferior) return performance, achieve star status for at least one fund in the complex, spend a sufficient percentage of assets on advertising, or lower their expense ratios.

Thus far, we have found that heavy advertising by a mutual fund family results in increased flows to the family. The question that naturally arises is the degree to which the advertising has persistent effects. That is, does the advertising affect individuals who are making investment choices soon or is there a residual effect on individuals who make their choices later? We also explore this question and find that when we include the advertising from last month, the advertising from previous months has no effect on the flows, suggesting that there is no persistence in advertising – the level of the most recent month’s advertising expenditures dominates. That is, advertising is short-lived.

4. Family fund flow volatility and strategic decisions

Just as in the case of individual funds (Chordia, 1996; Edelen 1999; Greene and Hodges, 2002; and Rakowski, 2003), flow volatility on the family level can impose costs on both the individual fund shareholders and on the investment management company sponsoring the funds. Thus, the investment company may employ strategic choices to reduce the family level flow volatility. As mentioned in the introduction, these choices could have two opposing effects on the average volatility of a family’s flows. On the one hand, the benefits of these decisions in terms of increased flows could be offset by increased costs from increased flow volatility. For example, in the case of advertising, the decision could increase flow volatility by attracting additional assets in an uneven fashion, particularly if the advertising is sporadic or targeted toward particular funds based on their previous performance. This could be the case given previous research. Kempf and Ruenzi (2004b) find that a fund’s growth is dependent not only on the fund’s return relative to its peers, but also relative to other funds in the same family. Such a
result would be consistent with families advertising their best funds and those funds having higher growth due to the advertising.\textsuperscript{24}

On the other hand, a strategic choice by the family could reduce flow volatility by bringing in a constant stream of dollars and by helping the funds retain shareholders. Thus, the family could employ a strategy to reduce average fund flow volatility due to the costs this volatility imposes on fund returns as shown by Edelen (1999) and Rakowski (2003). In this section we examine whether the family’s strategic choices affect the family’s average fund flow volatility in either of these directions.

The dependent variable for our tests is the average standard deviation of fund flows over the previous twelve months, where the average is taken across the funds within the family.\textsuperscript{25} We control for the persistence in family flow volatility by including the previous year’s flow volatility measure. One aspect of family flow volatility is that larger families with more funds being offered could have lower volatility just from the averaging process and from the ease of switching between funds. We control for this effect with two variables: current family flows and the log total net assets. Whether having a star fund in the family adds to the family’s flow volatility is an empirical question we address in this analysis by including a dummy variable for whether the family had a star fund in the previous period. We run the regression across all families in our sample.

The results of these analyses, provided in Table 4, show that the family’s strategic decisions have mixed effects on the family flow volatility. In general, advertising has no significant effect on flow volatility, however, load fees, 12b-1 fees, and expense ratios all significantly affect the volatility. The existence of a load fee increases flow volatility as does the existence of 12b-1 fees. These results combined suggest that the use of distribution channels increases the variability of the flows into the funds, adding more uncertainty. The size of the load fees reduces the volatility of the

\textsuperscript{24} Consistent with this result, Jain and Wu (2002) find that advertised funds tend to earn higher returns than do their category benchmarks.

\textsuperscript{25} The results are similar if volatility is computed over six months.
flows. Families with higher average load fees tend to have smaller flow volatility as well, suggesting that employing brokers can reduce the volatility of fund flows, thus, reducing the costs to the existing fund shareholders (who do not encounter the front-end load fees). In addition, the size of the family’s average expense ratio relative to other fund families reduces the volatility of the flows. The latter could occur if the expense ratios are a proxy for service, as suggested by Sirri and Tufano (1998), and investors are more likely to stay in a fund when there is increased service.\textsuperscript{26} The table also shows a large amount of persistence in family flow volatility and, as expected, that flow volatility is less for larger family complexes.

5. Determinants of advertising

One issue that arises from the models of the relation between advertising and family flow is the issue of whether an endogeneity exists in the relation. For example, fund management companies with higher flows, and thus, higher resultant management fees, could have more resources with which they could pay for advertising. We investigate this issue by examining whether systematic determinants exist for a family’s choice of the amount of advertising dollars to spend.

Economic studies of firm advertising have proposed various motivations and roles for the advertising. For example, as discussed earlier, advertising can reduce search costs for the consumer. Additionally, Nelson (1970, 1974) argues that for some types of products (“experience” products) the quality of the product is not ascertainable prior to purchase. For such products, the existence of advertising itself can reflect a high-quality product. Nelson further argues that the key to advertising is in repeat purchases for a product. Since consumers are more likely to repeat a purchase of a high-quality product, it becomes important for the high-quality producers to advertise and explain the puzzle of the Elton, Gruber, and Busse (2004) results.

\textsuperscript{26} The willingness of investors to pay for mutual fund service (or for financial advisers’ service) may explain the willingness of such investors to pay differential fees for S&P 500 index funds. and explain the puzzle of the Elton, Gruber, and Busse (2004) results.
reach the consumer on the first purchase. In terms of the mutual fund market, the repeat purchases manifest themselves in maintaining and increasing investment in the fund.\textsuperscript{27} The quality of a mutual fund family could depend on several factors, including performance and services.

To test determinants of family advertising expenditures, our dependent variable is the relative level of advertising, i.e., the annual advertising dollars spent by the family normalized by the family’s total net assets under management. The potential explanatory variables are proxies for family quality plus control variables. The proxies for quality are the current quarter’s return, the previous year’s return and the average expense ratio (omitting 12b-1 fees). Sirri and Tufano (1998) posit that total expenses may be a measure of services provided by the fund. The control variables are the previous year’s flow, the previous year’s flow volatility, the logarithm of total net assets, the average 12b-1 fee, average load, and average turnover. Because economies of scale can affect the ability to advertise as well as the benefits from the advertising, we also divide the sample of families at the median for the size of total net assets under management. We run the cross-sectional regressions on an annual basis and use the Fama-MacBeth (1973) technique to aggregate the coefficients across the periods.

The results when all mutual fund families are included in the regression are shown in Model 1 of Table 5. In Models 2 and 3 the families are divided by the size of assets under management. According to all three models, the amount of advertising dollars spent by a family is not affected by the family’s relative average current return or return in the previous year (as ranked against other families). Thus, it is not the case that when a complex performs well, they advertise more. Across both large and small

\textsuperscript{27} Nelson’s (1970, 1974) hypothesis considers repeat purchases to be the key goal of advertising, however, Johnson (2004) finds that most individual investors do not make repeat purchases of the same mutual fund. The question of who the advertisements are reaching to increase fund flows is the subject of ongoing research.
mutual fund families, the amount of advertising dollars spent by a family is positively influenced by the family’s average expense ratio.

Interpreting the results for mutual fund family performance and family expense ratios as reflections of quality would provide conflicting interpretations. If one assumes that quality of the mutual fund family can be captured by return performance, then our results suggest that quality does not influence the advertising decision. On the other hand, if one assumes that quality of the fund family can be captured by the family’s expenses as a proxy for service, then our results suggest that higher quality funds are the ones that advertise more heavily. Alternatively, one could interpret the coefficient on the expense ratio as suggesting that higher fee families can afford to expend more on advertising.

The evidence in Table 5 also suggests that endogeneity is not a problem for our earlier results on the flow-advertising relation. We find that neither the family’s previous annual flow nor the volatility of the flows appear to influence the advertising budget. The amount of advertising is affected by the average turnover for the family, the average load fee for the family, and whether the family is in the top half or bottom half of fund families in terms of size. Advertising expenditures are increasing in smaller families’ 12b-1 fees and marginally decreasing in large fund families’ 12b-1 fees. One important implication of this result is that it points to a problem in studies that use 12b-1 fees to proxy for advertising expenditures. These proxies may be misleading, particularly for larger funds.

The regression also shows that families with load funds do not spend advertising dollars as much as do families with only no-load funds. This result is expected because of the differences in distribution systems. Load funds rely more on brokers and dealers, rather than advertising, to reach the investors.
7. Conclusions

Our interest in this paper is in the decisions a mutual fund family makes regarding the supply and demand of mutual fund products. We examine several strategic decisions on the family level and the effects of these decisions on the family’s net flows into its funds. We establish that the previously documented relation between past return performance and flows into the fund at the individual fund level (on an annual basis) also exists at the mutual fund family level (on a quarterly basis). We find that past returns are a significant predictor of future family flows, but only for extreme relative returns. We also find, consistent with previous research on individual funds, that family level flows are related to load fees and 12b-1 fees.

The addition of advertising expenditures to this analysis does not significantly change the performance-flow relation, but advertising does affect fund flows. In fact, the form of the advertising-flow relation is similar to that of the flow-performance relation. High relative levels of advertising are significantly related to high fund flows at the family level. Our result that advertising affects fund flows is consistent with the previous evidence by Jain and Wu (2002) that the existence of advertisements in two periodicals is related to increased fund flows. Our results go on to show that the relative amount of the expenditure not only increases fund flows, but has a nonlinear relation with fund flows. Further, the increased flow is independent of the flow-performance relation.

We find that a family’s average flow volatility is related to its choice of distribution channels and its overall expenses, but not to the relative level of advertising expenditures. Whether the latter result is due to offsetting effects is a subject for future research with data sources that allow the differentiation between fund inflows and outflows.

Economic theory has suggested that high quality fund families should be the families that expend resources on advertising. If one assumes that the quality of fund families is reflected in their performance and in their services (proxied by expense
ratios), then our results on this theory are mixed. No significant relation exists between prior year’s returns and advertising expenditures, but we do find that the amount of advertising expenditures per dollar of assets is significantly related to a family’s average expense ratio (excluding 12b-1 fees), which would be consistent with high quality funds advertising. These mixed results also require further study.

The results of our analyses indicate that previous proxies of marketing expenses do not reflect the entire picture as advertising expenditures have not been included. In particular, our results on the relation between advertising expenditures and 12b-1 fees in which we find that advertising is marginally decreasing in 12b-1 fees for large fund families implies that studies which use 12b-1 fees to proxy for advertising expenditures are not capturing the true advertising expenditures and thus, the relation between fund flows and the advertising.

Overall, our results suggest that the fund’s strategic decisions are important mechanisms through which mutual fund family management companies can affect their fund flows and consequent income. Our work contributes to previous evidence on the other decisions by mutual fund family complexes. For example, Mamaysky and Spiegel (2002) develop a model of mutual funds in which the fund families do not specialize, rather the optimal strategy is for the families to offer their products in multiple fund categories. Their model is consistent with empirical and theoretical work by Sigglekow (2003), Massa (2003), and Khorana and Servaes (2003). Sigglekow finds that fund families with more diversified offerings (i.e., less focus) have greater dollar flows. Massa similarly argues that a family’s tendency to offer multiple funds across fund categories is a tool that fund families can employ to limit competition and increase market coverage. Khorana and Servaes find that product differentiation is an important aspect of competition among mutual fund families.

Our evidence on the effects of advertising and its role would be consistent with the arguments of Massa (2003). In discussing fund family decisions, Massa argues that
performance-maximization is not necessarily the optimal strategy for fund families – that the profit-maximizing mix of fees, performance and number of funds could result in lower levels of performance. This results from the ability of fund families to differentiate themselves in terms of non-performance related characteristics so that they do not need to compete solely on the basis of performance.
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Table 1
Mutual Fund Family Characteristics
This table provides descriptive statistics on the sample and mutual fund family characteristics as of the first quarters of three years in the sample, 1992, 1996, and 2001. The table provides the number of mutual fund families in the sample along with their total assets. For the family characteristics, the table shows the total mutual fund assets under management, the aggregate family flows as a percentage of assets, the percent of families with at least one 12b-1 fund share class, the percent of families with at least one fund share class with a front-end load fee, the average load fees across funds in the families, the average load fees across funds with loads in the family, the average expense ratio and the quarterly advertising expenditures as a percentage of assets (in thousandths of a percent).

<table>
<thead>
<tr>
<th>Date</th>
<th>Year</th>
<th>1992</th>
<th>1996</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sample characteristics</td>
<td>Number of families</td>
<td>99</td>
<td>124</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>Total assets ($billion)</td>
<td>Mean</td>
<td>938.77</td>
<td>1967.18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S.D.</td>
<td>1.91</td>
<td>3.48</td>
</tr>
<tr>
<td></td>
<td>Total assets ($billion) Mean</td>
<td>9.48</td>
<td>15.86</td>
<td>39.38</td>
</tr>
<tr>
<td></td>
<td>Flow as a percentage of assets</td>
<td>Mean</td>
<td>5.11%</td>
<td>5.29%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S.D.</td>
<td>1.07%</td>
<td>0.75%</td>
</tr>
<tr>
<td></td>
<td>Percent with at least one 12b-1 fee fund share class</td>
<td>69.70%</td>
<td>77.40%</td>
<td>82.20%</td>
</tr>
<tr>
<td></td>
<td>Percent with at least one front-end load fee fund share class</td>
<td>70.71%</td>
<td>75.81%</td>
<td>73.83%</td>
</tr>
<tr>
<td>Family characteristics</td>
<td>Average load fees</td>
<td>Mean</td>
<td>1.36%</td>
<td>1.18%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S.D.</td>
<td>0.19%</td>
<td>0.15%</td>
</tr>
<tr>
<td></td>
<td>Average load fees (load funds only)</td>
<td>Mean</td>
<td>4.46%</td>
<td>4.54%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S.D.</td>
<td>0.12%</td>
<td>0.08%</td>
</tr>
<tr>
<td></td>
<td>Average expense ratio</td>
<td>Mean</td>
<td>1.13%</td>
<td>1.21%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S.D.</td>
<td>0.06%</td>
<td>0.05%</td>
</tr>
<tr>
<td></td>
<td>Advertising quarterly expenditures as a percentage of assets</td>
<td>Mean</td>
<td>8.96%</td>
<td>10.29%</td>
</tr>
<tr>
<td></td>
<td>(in thousandths of a percent)</td>
<td>S.D.</td>
<td>2.28%</td>
<td>1.97%</td>
</tr>
</tbody>
</table>
Table 2
The Relation between Mutual Fund Family Flows, Previous Performance, and Strategic Decisions

This table provides the results of linear and piecewise linear specifications of the mutual fund family flow with explanatory variables for that flow. Model 1 shows the linear specification. Models 2 and 3 show the piecewise linear specifications with four kinks and two kinks, respectively. For the piecewise linear specifications, the family’s value-weighted average return performance variable is broken into sub-variables that range from 0-.20 in the four-kink case (or 0-.33 in the two kink case) and the sum of which is equal to the original variable. The other variables are the lag flow from the previous month, the log of the total net assets (TNA), dummies for whether the following are in a family: star fund, front-end load fee, 12b-1 fee. Also included are load fees, 12b-1 fees and expense ratios (without 12b-1 fees) averaged across the funds in the family and the average is ranked against other families in the sample and average portfolio turnover. The models are run cross-sectionally each month from 1992-2001. The coefficients shown are the averages across the 114 months. The table also provides Newey-West t-statistics for the coefficients from the Fama-MacBeth aggregation technique and the average adjusted R-squareds from the regressions.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>0.011</td>
<td>2.08*</td>
<td>0.004</td>
<td>0.84</td>
<td>0.008</td>
<td>1.55</td>
</tr>
<tr>
<td><strong>Past returns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th performance group</td>
<td>0.065</td>
<td>4.48**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th performance group</td>
<td>-0.021</td>
<td>-1.59</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd performance group</td>
<td>0.014</td>
<td>1.68</td>
<td>0.022</td>
<td>3.79**</td>
<td>0.022</td>
<td>3.79**</td>
</tr>
<tr>
<td>2nd performance group</td>
<td>0.005</td>
<td>0.69</td>
<td>-0.005</td>
<td>-1.25</td>
<td>-0.005</td>
<td>-1.25</td>
</tr>
<tr>
<td>1st performance group</td>
<td>0.015</td>
<td>8.87**</td>
<td>0.073</td>
<td>7.26**</td>
<td>0.044</td>
<td>8.32**</td>
</tr>
<tr>
<td><strong>Strategic decisions and control variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lag flow - previous month</td>
<td>0.076</td>
<td>2.58**</td>
<td>0.068</td>
<td>2.29*</td>
<td>0.069</td>
<td>2.34*</td>
</tr>
<tr>
<td>Log TNA</td>
<td>-0.001</td>
<td>-2.97**</td>
<td>-0.001</td>
<td>-2.48*</td>
<td>-0.001</td>
<td>-2.51*</td>
</tr>
<tr>
<td>Dummy - star fund in family</td>
<td>0.004</td>
<td>4.17**</td>
<td>0.003</td>
<td>3.86**</td>
<td>0.003</td>
<td>3.96**</td>
</tr>
<tr>
<td>Dummy - front-end load fee</td>
<td>0.006</td>
<td>4.50**</td>
<td>0.006</td>
<td>4.60**</td>
<td>0.006</td>
<td>4.94**</td>
</tr>
<tr>
<td>Ranked average load fee</td>
<td>-0.009</td>
<td>-5.42**</td>
<td>-0.008</td>
<td>-4.84**</td>
<td>-0.009</td>
<td>-5.13**</td>
</tr>
<tr>
<td>Dummy - 12b-1 fees</td>
<td>-0.001</td>
<td>-0.74</td>
<td>-0.002</td>
<td>-0.96</td>
<td>-0.002</td>
<td>-0.94</td>
</tr>
<tr>
<td>Ranked average 12b-1 fees</td>
<td>0.007</td>
<td>3.58**</td>
<td>0.007</td>
<td>3.15**</td>
<td>0.007</td>
<td>3.39**</td>
</tr>
<tr>
<td>Ranked average expense ratio</td>
<td>-0.007</td>
<td>-2.70**</td>
<td>-0.006</td>
<td>-2.55*</td>
<td>-0.007</td>
<td>-2.68**</td>
</tr>
<tr>
<td>Average turnover</td>
<td>-0.002</td>
<td>-2.54*</td>
<td>-0.002</td>
<td>-1.86</td>
<td>-0.002</td>
<td>-1.81</td>
</tr>
</tbody>
</table>

Adj. R-squared: 0.121 0.130 0.129
### Table 3
The Relation between Mutual Fund Family Flows, Performance, and Strategic Decisions with Advertising Expenditures

This table provides the results of piecewise linear specifications of the family flow relation with explanatory variables including advertising expenditures. For comparison purposes, Model 1 shows the family flow relation without advertising from Table 2. Models 2 and 3 include the flow-performance advertising relation as well. For the piecewise linear specifications, the advertising variable is broken into sub-variables that range from 0-.33, and the sum of which is equal to the original variable. The other control variables are the lag flow from the previous month, the log of the total net assets (TNA), dummies for whether the following are in a family: star fund, front-end load fee, 12b-1 fee. Also included are load fees, 12b-1 fees and expense ratios (without 12b-1 fees) averaged across the funds in the family where the average is ranked against other families in the sample and average portfolio turnover. The models are run cross-sectionally each month from 1992-2001. The coefficients shown are the averages across the 114 month. The table also provides Newey-West t-statistics for the coefficients from the Fama-MacBeth aggregation technique and the average adjusted R-squareds from the regressions.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.008</td>
<td>0.006</td>
<td>0.006</td>
</tr>
<tr>
<td>t-statistic</td>
<td>1.55</td>
<td>1.02</td>
<td>1.09</td>
</tr>
<tr>
<td>Ad variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No advertising dummy</td>
<td>0.002</td>
<td>0.001</td>
<td>0.006</td>
</tr>
<tr>
<td>Low advertising group</td>
<td>1.41</td>
<td>0.27</td>
<td>2.82**</td>
</tr>
<tr>
<td>Mid advertising group</td>
<td>-0.009</td>
<td>-2.00*</td>
<td>-2.00*</td>
</tr>
<tr>
<td>High advertising group</td>
<td>0.023</td>
<td>2.82**</td>
<td></td>
</tr>
<tr>
<td>Past returns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low performance group</td>
<td>0.023</td>
<td>3.94**</td>
<td></td>
</tr>
<tr>
<td>Mid performance group</td>
<td>-0.006</td>
<td>-1.40</td>
<td></td>
</tr>
<tr>
<td>High performance group</td>
<td>0.044</td>
<td>8.40**</td>
<td></td>
</tr>
<tr>
<td>Other strategic decisions and control variables</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Lag Flow from previous month</td>
<td>0.069</td>
<td>2.34*</td>
<td></td>
</tr>
<tr>
<td>Log TNA</td>
<td>-0.001</td>
<td>-2.51*</td>
<td></td>
</tr>
<tr>
<td>Dummy for star fund in family</td>
<td>0.003</td>
<td>3.80**</td>
<td></td>
</tr>
<tr>
<td>Dummy for front-end load fee</td>
<td>0.007</td>
<td>5.23**</td>
<td></td>
</tr>
<tr>
<td>Ranked average load fee</td>
<td>-0.009</td>
<td>-4.78**</td>
<td></td>
</tr>
<tr>
<td>Dummy for 12b-1 fees</td>
<td>-0.002</td>
<td>-1.10</td>
<td></td>
</tr>
<tr>
<td>Ranked average 12b-1 fees</td>
<td>0.007</td>
<td>3.53**</td>
<td></td>
</tr>
<tr>
<td>Ranked average expense ratio</td>
<td>-0.007</td>
<td>-2.81**</td>
<td></td>
</tr>
<tr>
<td>Average turnover</td>
<td>-0.002</td>
<td>-1.73</td>
<td></td>
</tr>
<tr>
<td>Adj. R-squared</td>
<td>0.129</td>
<td>0.125</td>
<td>0.120</td>
</tr>
</tbody>
</table>
Table 4
The Effects of Strategic Decisions on Mutual Fund Family Average Flow Volatility
This table provides the results of regressions of mutual fund family average flow volatility on advertising expenditures and control variables. Model 1 provides a linear specification for advertising in which advertising expenditures are ranked against other families in the sample. Model 2 provides a piecewise linear specification for advertising. The other control variables are the volatility from the previous year, the current flows into the family, the log of the total net assets (TNA), dummies for whether the following are in a family: star fund, front-end load fee, 12b-1 fee. Also included are load fees, 12b-1 fees and expense ratios (without 12b-1 fees) averaged across the funds in the family and the average is ranked against other families in the sample and average portfolio turnover. The models are run cross-sectionally each month from 1992-2001. The coefficients shown are the averages across the 114 months. The table also provides the Newey-West t-statistics for the coefficients from the Fama-MacBeth aggregation technique and the average adjusted R-squareds from the regressions.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.053</td>
<td>12.34**</td>
<td>0.053</td>
<td>12.16**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ad variables</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising</td>
<td>-0.001</td>
<td>-0.74</td>
<td>0.000</td>
<td>-0.32</td>
</tr>
<tr>
<td>No advertising</td>
<td>0.000</td>
<td>0.40</td>
<td>0.000</td>
<td>-0.32</td>
</tr>
<tr>
<td>Low advertisers</td>
<td>-0.003</td>
<td>-0.64</td>
<td>-0.012</td>
<td>-3.08**</td>
</tr>
<tr>
<td>Mid advertisers</td>
<td>-0.012</td>
<td>-3.08**</td>
<td>-0.012</td>
<td>-3.08**</td>
</tr>
<tr>
<td>High advertisers</td>
<td>0.021</td>
<td>3.13**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Past returns</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low performance</td>
<td>-0.001</td>
<td>-0.26</td>
<td>-0.001</td>
<td>-0.12</td>
</tr>
<tr>
<td>Mid Performance</td>
<td>-0.016</td>
<td>-3.19**</td>
<td>-0.016</td>
<td>-3.12**</td>
</tr>
<tr>
<td>High performance</td>
<td>0.002</td>
<td>0.36</td>
<td>0.002</td>
<td>0.26</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategic Decisions and other control variables</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous year flow volatility</td>
<td>0.318</td>
<td>10.46**</td>
<td>0.318</td>
<td>10.38**</td>
</tr>
<tr>
<td>Current family flows</td>
<td>0.033</td>
<td>2.00*</td>
<td>0.033</td>
<td>2.01*</td>
</tr>
<tr>
<td>Log lag TNA</td>
<td>-0.003</td>
<td>-8.31**</td>
<td>-0.003</td>
<td>-7.84**</td>
</tr>
<tr>
<td>Dummy for star fund in family</td>
<td>0.000</td>
<td>-0.29</td>
<td>0.000</td>
<td>-0.35</td>
</tr>
<tr>
<td>Dummy for front-end load fee</td>
<td>0.005</td>
<td>4.21**</td>
<td>0.004</td>
<td>4.06**</td>
</tr>
<tr>
<td>Ranked load fee</td>
<td>-0.006</td>
<td>-3.75**</td>
<td>-0.006</td>
<td>-3.63**</td>
</tr>
<tr>
<td>Dummy for 12b-1 fees</td>
<td>0.000</td>
<td>7.53**</td>
<td>0.000</td>
<td>7.53**</td>
</tr>
<tr>
<td>Ranked 12b-1 fees</td>
<td>0.000</td>
<td>7.53**</td>
<td>0.000</td>
<td>7.53**</td>
</tr>
<tr>
<td>Ranked expense ratio</td>
<td>-0.009</td>
<td>-6.25**</td>
<td>-0.009</td>
<td>-6.67**</td>
</tr>
<tr>
<td>Average turnover</td>
<td>-0.001</td>
<td>-1.23</td>
<td>-0.001</td>
<td>-1.33</td>
</tr>
</tbody>
</table>

Adj. R-squared                       | 0.256            |             | 0.251            |             |
### Table 5
**Determinants of Mutual Fund Family Annual Advertising Expenditures**

This table provides the results of a regression of family advertising expenditures on a set of family characteristics. Model 1 presents the results for all families with a dummy variable if the family is a large family, defined as a family above the median in assets under management. Models 2 and 3 present the results when the regression is run separately for small and large families, respectively. The other control variables are the lag flow from the previous year, the lag volatility from the previous year, the log of the total net assets (TNA), dummies for whether the following are in a family: star fund, front-end load fee, 12b-1 fee. Also included are load fees, 12b-1 fees and expense ratios (without 12b-1 fees) averaged across the funds in the family and the average is ranked against other families in the sample and average portfolio turnover. The models are run cross-sectionally each year from 1992-2001. The coefficients shown are the averages across the 10 years. The table also provides the Newey-West t-statistics for the coefficients from the Fama-MacBeth aggregation technique and the average adjusted R-squareds from the regressions.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
<th>Mean coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.098</td>
<td>-0.51</td>
<td>-0.460</td>
<td>-0.87</td>
<td>-0.229</td>
<td>-0.43</td>
</tr>
<tr>
<td>Low performance group</td>
<td>0.249</td>
<td>1.00</td>
<td>0.177</td>
<td>0.44</td>
<td>0.221</td>
<td>0.79</td>
</tr>
<tr>
<td>Mid performance group</td>
<td>-0.234</td>
<td>-0.81</td>
<td>0.197</td>
<td>0.34</td>
<td>-0.278</td>
<td>-1.05</td>
</tr>
<tr>
<td>High performance group</td>
<td>0.173</td>
<td>0.70</td>
<td>0.101</td>
<td>0.21</td>
<td>0.249</td>
<td>1.08</td>
</tr>
<tr>
<td>Past returns</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous year flow</td>
<td>0.093</td>
<td>0.63</td>
<td>0.027</td>
<td>0.12</td>
<td>-0.107</td>
<td>-0.36</td>
</tr>
<tr>
<td>Previous year volatility</td>
<td>1.001</td>
<td>0.66</td>
<td>1.308</td>
<td>0.42</td>
<td>3.546</td>
<td>0.89</td>
</tr>
<tr>
<td>Log TNA</td>
<td>0.020</td>
<td>1.37</td>
<td>0.038</td>
<td>0.73</td>
<td>0.021</td>
<td>0.46</td>
</tr>
<tr>
<td>Dummy for star fund</td>
<td>-0.016</td>
<td>-0.42</td>
<td>0.038</td>
<td>0.69</td>
<td>0.022</td>
<td>0.78</td>
</tr>
<tr>
<td>Dummy for front-end load</td>
<td>0.024</td>
<td>0.43</td>
<td>-0.017</td>
<td>-0.12</td>
<td>0.076</td>
<td>2.34**</td>
</tr>
<tr>
<td>Ranked load fee</td>
<td>-0.425</td>
<td>-3.91***</td>
<td>-0.494</td>
<td>-2.45**</td>
<td>-0.062</td>
<td>-0.54</td>
</tr>
<tr>
<td>Dummy for 12b-1 fees</td>
<td>0.007</td>
<td>0.09</td>
<td>-0.036</td>
<td>-0.28</td>
<td>-0.074</td>
<td>-0.93</td>
</tr>
<tr>
<td>Ranked 12b-1 fees</td>
<td>0.334</td>
<td>2.23**</td>
<td>0.615</td>
<td>2.80***</td>
<td>-0.136</td>
<td>-1.49</td>
</tr>
<tr>
<td>Ranked expense ratio</td>
<td>0.208</td>
<td>2.09**</td>
<td>0.274</td>
<td>1.51</td>
<td>0.262</td>
<td>1.73*</td>
</tr>
<tr>
<td>Average turnover</td>
<td>0.060</td>
<td>2.04**</td>
<td>0.078</td>
<td>1.15</td>
<td>0.050</td>
<td>1.60</td>
</tr>
<tr>
<td>Size dummy</td>
<td>-0.130</td>
<td>-3.60***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj. R-squared</td>
<td>0.248</td>
<td></td>
<td>0.271</td>
<td></td>
<td>0.149</td>
<td></td>
</tr>
</tbody>
</table>

Strategic decisions and other controls
Figure 1
Advertising Expenditures

This figure shows how advertising expenditures have changed through the sample period. For each quarter, 1Q1992-2Q2001, total advertising expenditure in the sample (times 1000 for scale) is divided by total net assets for all families in the sample for that quarter.
Figure 2
Total Net Assets
This figure shows how assets under management have changed through the sample period.
This figure shows how fund flows have changed through the sample period. This value is calculated for each quarter as 
\[ \text{Flow}_t = \frac{(\text{TNA}_t - \text{TNA}_{t-1} \times (1 + \text{R}_t))}{\text{TNA}_{t-1}} \], where TNA is the total net assets in the sample and R is the market value weighted return for all funds in the sample.