

Investor Attention, Advertising, and Search and Participation Costs for Mutual Funds

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Abstract

We find that advertising appears to have significant effects on investor flows at the industry, family and individual fund level. At the industry level, flows are higher in months with more advertising dollars spent, even for non-advertising families. At the family level, flows have a convex relation with advertising expenditures, similar to that for performance, with a significant positive effect for high relative advertisers only. At the individual fund level, advertising stems redemptions rather than increasing purchases of fund shares. We further find that advertising can affect the fund's flow-performance sensitivity, dampening it for poorly performing funds and increasing it for highly performing funds.

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Investment companies, particularly open-end mutual funds, have been the fastest growing segment of the institutional investor community in the last few decades. Despite the importance of mutual funds, questions still remain concerning investor selection of particular funds and fund families. An important factor in the selection process is the role that advertising plays. Previous research has hypothesized that advertising can lower the mutual fund investors' search or participation costs (e.g., Sirri and Tufano, 1998; Huang, Wei, and Yan, 2007); can attract investors' attention to certain funds (e.g., Barber, Odean, and Zheng, 2005) or can persuade investors to purchase funds (Mullainathan, Schwartzstein, and Shleifer, 2008). What has not been established is the extent to which advertising meets these expectations although empirical evidence has documented that advertising appears to affect investors' choices of which funds to hold (e.g., Jain and Wu, 2000; Cronqvist 2006; Gualtieri and Petrella, 2005).¹

In this paper we address several questions with regard to the advertising of mutual funds. First, we address the issue of whether advertising is an important factor in mutual funds flows. We examine whether and how advertising affects mutual fund flows at the individual fund, fund family complex and industry levels. Second, we address the issue of whether advertising affects investors' attention or their search and participation costs. This issue implies a relation between advertising and fund flows. With our data we are able to address the specific question of whether advertising attracts new inflows into the individual fund or helps keep investors in the fund, i.e., stems outflows). Third, we address the issue of whether advertising interacts with mutual fund performance.

¹ A number of studies have focused on the relation between operating companies' advertising and their market value or investor interest. See, for example, Frieder and Subrahmanyam (2005), Grullon, Kanatas and Weston (2004), Fehle, Tsyplakov, and Zdorovtsov (2004), Joshi and Hannsens (2004), Lou (2008), and McAlister, Srinivasan, Kim (2006) and Chauvin and Hirschey (1993).

That is, does advertising change the fund flow-performance sensitivity as has been hypothesized by previous authors and if so, how?

To address these issues, we employ two novel datasets on mutual fund advertising and test hypotheses concerning how the fund family's advertising decisions affect investor demand. We measure investor demand by the aggregate flows of assets under management as well as net flows, inflows, and outflows to the individual funds that are advertised. We use two types of data on mutual fund advertising. First, we use data from Video Monitoring Services (VMS), a third party collector and distributor of images of print advertising. We use individual ads for particular funds to examine the relation between advertising for that fund and the fund's inflows and outflows, i.e., purchases and redemptions. This data allows us to address the fundamental questions of the effects of advertising on investor choices. Second, we use data from Competitive Media Research (CMR), a third party collector and distributor of data on advertising expenditures at the fund family level.² We use fund family advertising expenditures to examine the expenditure effects on the net inflows to the fund family and the industry.

To examine the question of whether advertising affects investors' search costs, their attention or persuades them to invest, we start with an examination of the relation between the existence of advertisements and net flows for individual mutual funds. We find that the existence of an ad in a month increases net flows by about 1%, on average. These results are consistent with those of Jain and Wu (2000) who examine advertisements in two business periodicals over a two-year period. They find that the existence of an ad in one of these periodicals is associated with larger flows to the individual funds advertised than to a matched sample of funds.³ Our results are also consistent with those of Cronqvist (2006) who examines advertising in Sweden by the

² Reuter and Zitzewitz (2006) also employ the CMR data set, but as explained later they focus on media bias rather than fund decisions or flows.

³ Their sample consist of 294 equity funds advertised in *Barron's* or *Money* magazines between July 1994 and June 1996.

managers of tax-deferred retirement funds around the time Sweden launched a partial privatization of their social security system. He finds that investors' initial dollar allocations are related to the advertising by funds. Our analysis contributes beyond these studies by addressing additional issues on the individual fund level (which was the focus of these papers) and later, on the family and industry level. First, by decomposing the net fund flows into purchases and redemptions we establish new insights into the effects of advertising. We find that the increase in net fund flows associated with the existence of an advertisement tends to be driven by a reduction in redemptions rather than an increase in purchases, suggesting that the role of advertising is less successful in garnering investor attention than in lessening cognitive dissonance (as hypothesized by Goetzmann and Peles, 1997).

Moreover, we find that advertising can change the flow-performance sensitivity of individual funds. We find that for the poorest performing funds, the existence of ads in general lowers their flow-performance sensitivity, while for the best performing funds, the existence of non-informative ads increases their flow-performance sensitivity. These results suggest that advertising has two roles in affecting the demand for mutual funds. It lowers participation costs as hypothesized by Sirri and Tufano (1998) and Huang, Wei and Yan (2007). In addition, it acts as persuasion as hypothesized by Mullainathan, Schwartzstein, and Shleifer (2008).

We next turn our attention to the question of how advertising affects aggregate fund flows at the family complex level. The reason the question is important is because the advertising decision is generally made at the family complex level. Fund family complexes typically budget their advertising expenditures and enter into advertising contracts on an annual complex-wide basis, making the decisions about when to advertise, and which funds to advertise, later in the fiscal year. Thus, although the advertisement itself may focus on a particular fund, the decision on when to place the ad, how many ads to place, and which funds to include in the ads are made at the family

level (not the individual fund level). It is important to emphasize that the decision is generally *not* made by the individual funds' portfolio managers. Further, even in the case of ads focused on individual funds, the decision is made at the family level as the intent of the ad may be to attract attention to the fund complex rather than attract attention to the fund itself. In interviews with executives from large mutual fund families, 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 to purchase shares based on the advertisement are often counseled to invest in other funds, depending on their goals and risk tolerances. Because advertising decisions, in particular, expenditure decisions, are complex-wide decisions, it is appropriate to examine the effects of these decisions on a complex-wide basis. To our knowledge, ours is the first paper to conduct such an analysis.

At the family level we find that advertising matters but a striking finding is that it matters in a relative sense. That is, in order for fund families to gain flows from their advertising expenditures, they need to be a complex that expends more resources on advertising than their competitors during that period. Advertising expenditures affect flows in a non-linear fashion similar to that of the flow-performance relation, with a convexity at the upper end. High relative levels of advertising are significantly related to high fund flows. We also find that the returns to advertising for these fund families are economically significant in terms of increased flows. For families with low levels of relative advertising we find no significant relation between their advertising and their flows.

An important issue in our analysis and conclusions regarding fund family advertising expenditures and its flows is the question of the endogeneity of the advertising decision. Thus, we also examine the determinants of the family's advertising expenditures. Importantly, we do not find that the level of advertising expenditures is endogenous to fund flows although we do find that the level of the advertising

expenditures is dependent on several fund family characteristics: the average expense ratio of the fund family, the distribution channel used, the fund family's trading costs (as proxied by average turnover) and the size of the family complex.

Finally, we examine advertising's effects at the industry level with a focus on two issues, seasonality and spillover effects. We find substantial seasonality in advertising, which may explain some of the seasonality in fund flows. Further, we find that in periods with more advertising dollars being spent, even fund families that do not advertise experience greater flows. The implication of this result is that advertisers create a beneficial externality for the industry.

Although our study is related to several previous studies that examine advertising for investment funds (Jain and Wu, 2000; Cronqvist, 2006; Reuter and Zitzewitz, 2006), our study is very different in terms of both motivation and scope. Jain and Wu and Cronqvist find that fund advertising is associated with greater flows or allocations to the advertised funds. We find this as well, but we also provide additional important insights into how advertising affects investor choice through our examination of the association of advertising with changes in the flow-performance sensitivity of a fund and our examination of the effects of advertising on purchases and redemptions (rather than net flows). We also examine the information in the advertisements similar to that of Cronqvist who finds that only a small proportion of his advertising data had information content directly relevant to investors' choices, but that there still exists a relation between the funds that advertised and the investors' subsequent allocation choices.⁴ Cronqvist examines one point in time, while we find that the information in the advertisements depends on the recent performance of the stock market in general. Further, by examining the effects of advertising at the fund complex level, we find that advertising expenditures do not always result in increased flows at the family level. The

⁴ In their analysis of uninformative persuasion, Mullainathan, Schwartzstein, and Shleifer (2008) examine the content of mutual fund ads in *Businessweek* and *Money Magazine*.

association of flows with advertising at the family level depends on the relative, rather than absolute, level of advertising.

Reuter and Zitzewitz (2006) also examine the advertising expenditures of fund families using the same advertising expenditure data set that we employ. However, their motivation and analysis is very different from ours. They focus on the question of whether fund family advertising expenditures influence journalistic content and conclude that while these expenditures do not appear to influence all periodicals, a significant relation exists between the mutual fund recommendations of personal finance magazines and the advertising dollars spent by fund families at those magazines.

A few studies have examined, at the individual fund level, marketing costs through 12b-1 fees (e.g., Khorana and Servaes, 2003; Barber, Odean and Zheng, 2005) 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. Consequently the full extent of advertising expenditures are not observable through regulatory filings or other common mutual fund databases. Further to this point we find that while the level of a fund family's advertising expenditures is affected by their distribution channel, size of assets under management, and expense ratio, it is only related the magnitude of the 12b-1 fees charged by the small fund families. There is no relation between the level of advertising and 12b-1 fees for the large fund families.

The remainder of the paper is organized as follows. In the next section we examine the relation between advertising expenditures and mutual fund flows. We first

describe the fund and advertising data used and examine the effects of advertisements on the net flows, inflows (purchases) and outflows (redemptions) of individual funds. In Section 2 we provide a cross-sectional analysis of the determinants of family flows including advertising expenditures as an independent variable. We also present evidence regarding whether advertising decisions have an effect on flow volatility at the family level. In Section 3 we provide results on the determinants of advertising expenditures at the family level. Following that in Section 4 the relation between advertising expenditures and family flows on the industry level.. We conclude in Section 4.

1. Advertisements on individual mutual funds

Our focus in this section is on individual mutual funds rather than mutual fund families. We examine the relation between the appearance of an advertisement and the funds' net flows, inflows and outflows. In analyzing whether the advertising affects flows and flow-performance sensitivity, we address the questions of whether advertising appears to affect investors' participation costs as suggested by Sirri and Tufano (1998) and Huang, Wei and Yan (2007). Advertising could affect these costs because of the information it conveys to the investors.

1.1 Data

For this section we employ our first source of advertising data, images of print advertisements on mutual funds which appeared in national newspapers and magazines. These images were collected by VMS, a company that provides monitoring of news media and advertising to corporate executives as well as to marketing, public relations and advertising professionals. From the print advertising images, we hand-collected data on the mutual fund and mutual fund family doing the advertising, as well as a subjective assessment of the type of advertisement, that is, whether the

advertisement is informative (versus 'non-specific'), whether it reports past performance, and the number of funds covered by the advertisement. Due to limited data availability, we were able to obtain this data for two periods: 1994-1996 and 2000-2001. The advantage of these time periods is that they are two very different market return periods.

For the individual funds we obtain fund purchases (inflows) and redemptions (outflows) on a monthly basis from the Securities and Exchange Commission (SEC) Edgar website. The SEC requires investment companies, including mutual funds, to file semi-annual reports. These filings, called N-SAR filings, contain administrative and financial data for each mutual fund, including total monthly dollar inflows and outflows. We merged this data with the CRSP database over the 1994-2002 time period (by hand) according to company and fund name. We then verified the merger by comparing the total net assets reported by the two sources. During the 1994-1995 period electronic filing was not required by the SEC, but was widely used. For this period we were able to match 57.7% of the CRSP universe by fund (and 64.9% by total net asset). During the 1996-2002 period we were able to match 68.4% of the CRSP universe by fund and 77.5% by total net assets.

1.2 Descriptive statistics on advertisements and advertised funds

Before examining the relation between flows and the appearance of advertisements, we first examine the characteristics of the advertised funds. As might be expected since they generate greater investor interest, equity funds have a higher rate of print advertising than do bond funds.⁵ Given this higher likelihood of ads for equity funds as well as the greater focus of the literature on equity funds, we restrict our attention to these types of funds.

⁵ We find print advertisements over the 1994-1996 (2000-2001) period for 4.2% (3.5%) of the equity funds (aggressive growth, long-term growth and growth and income categories), and less than 2% of the bond funds.

An empirical implication of the Mullainathan, Schwartzstein, and Shleifer (2008) persuasion hypothesis is that mutual fund advertisements should be more likely to have performance information following periods of higher returns versus periods of lower returns. In our sample of advertisements on equity funds, we find that, on average, 78% (83%) report performance in the ad over the 1994-1996 (2000-2001) time frame. Figure 4 shows how this percentage varies over time by showing the percentage of the sample advertisements on equity funds that report performance information for each quarter of our two sample periods. The figure also shows the average annual return of the S&P 500 Index for the three year period ending in the previous quarter. As can be seen from the figure, the percentage of ads that report performance information varies quite a bit, from a low of around 30% in the third and fourth quarters of 1994 to a high of almost 90% in the second, third and fourth quarters of 2000. The drop in the percentage of ads reporting performance information from the first quarter to the last quarter of 1994 corresponds to changes in returns. The S&P 500 Index return for the three years ending December 1993 is 12.2% as compared to 6.1% for the three years ending September 1994. Similarly the high percentage of ads with performance information in early 2000 correspond to very high returns from the preceding three years of 20.89%, 28.34% and 31.86%. The stock market peaked in March 2000 and the percentage of ads reporting performance drops from close to 90% in the fourth quarter of 2000 to 58% in the third quarter of 2001. Thus, these results correspond roughly to Proposition 7 in Mullainathan, Schwartzstein and Shleifer (2008) which proposes that when mutual fund returns have been high, advertisements will include performance information, but when mutual fund returns have been low, such information will be omitted.⁶

⁶ Mullainathan, Schwartzstein and Shleifer (2008) also examine the presence of performance information in print advertisements in *Business Week* and *Money Magazine* over the 1994-2003 period.

In Table 1 we present descriptive statistics for the funds that have advertisements as compared to funds in the same CRSP equity category (aggressive growth, growth and income or long term growth) without advertisements. Panel A shows that pure no-load funds are more likely to have advertisements, particularly for growth and income and long-term growth funds since we find that 50% of the growth and income funds and 53% of the long-term growth funds without ads have at least one share class with a load fee, whereas 30% of the growth and income funds and 23% of the long-term growth funds with advertisements have at least one share class with a load fee. The difference between the proportions of funds with ads is significantly different than the proportions without ads. We find more similarity across funds in terms of the existence of at least one share class with 12b-1 fees, but there is a significant difference between the proportion of funds with ads versus without ads for long-term growth objective. Not surprisingly, we find that funds that are star funds are more likely to be advertised. In the aggressive growth group, we find that 5.2% of the funds without ads are star funds, whereas 19.9% of the funds with ads are star funds. An even bigger difference exists for the growth and income category. We find that while 6% of the funds without ads are star funds, 25% of the funds with ads are star funds. Finally, for long-term growth funds, 5.7% of the funds without ads are star funds versus 10.8% of the funds with ads. All of these differences are statistically significant beyond the 1% level.

We examine the relation between a fund's performance and its advertising more closely by conducting an examination of advertising choices within fund families. That is, although we find that funds that are advertised are more likely to be star funds, we address a somewhat different question – whether fund families tend to advertise their better performing funds over their other funds. To do so, we rank funds within their objective class across all families to find which funds are the better performing funds across families. We then rank funds within the family across objective classes and determine the rank of the advertised funds. We find that the mean (median) rank is .742

(.750), suggesting that as expected fund families have a tendency to advertise their highest performing funds.

Panel B shows that funds with advertisements tend to be larger than funds without advertisements. This could result for at least two reasons. First, larger fund families, which tend to have larger funds, advertise more. Second, fund families tend to advertise their larger funds. In fact, using the same process as we used for the question of whether fund families advertise their better performing funds but with the relative size of the fund, we find that the mean advertised fund was in the 76th percentile of size within the family/objective code.

With regard to expense ratios, we do not find it to be the case that funds with advertisements have larger expense ratios or 12b-1 fees than those that do not have advertisements. Thus, it appears that a fund expense ratios and 12b-1 fee are not reasonable proxies for fund advertising.

1.3 Individual mutual fund flows, performance, characteristics and advertising

In this section we examine the relation between individual mutual fund flows (net flows, inflows and outflows) and the fund's characteristics and advertising. Many funds are offered in multiple share classes which are invested in the same underlying portfolio, but which differ in their fee structures. That is, they charge different levels of load, administrative and 12b-1 fees to provide services that appeal to different types of investors. All of the share classes are invested in the same underlying portfolio. As the CRSP database has data by share class, we aggregate a given fund's share classes into a single unit, taking the market value weighted average of the underlying variables.⁷

Given the non-linear relation between fund flows and fund return performance found by a number of studies (e.g., Ippolito, 1992; Carhart, 1994; Gruber, 1996;

⁷ We would like to thank Jon Reuter for providing a share class to fund mapping.

Chevalier and Elison, 1997; Goetzmann and Peles, 1997; Sirri and Tufano, 1998; and Lynch and Musto, 2003), we employ the Sirri and Tufano (1998) piecewise linear specification. Specifically, we conduct cross-sectional regressions on a monthly basis assuming that the kinks are identical across the months. We conduct separate cross-sectional regressions for the net flows, inflows and outflows where the independent variables consist of the funds' performance, characteristics and advertising.

Once we have run the cross-sectional regressions for each month, we then use the Fama-MacBeth (1973) technique to aggregate the coefficients across the sample period. The Fama-MacBeth method is the most appropriate approach for our times series data because it allows for differences in returns and relative advertising across periods and controls for seasonality in advertising. Using a panel data set with fixed effects would not allow the slopes to change over time. All of the Fama-MacBeth t-statistics are based on the Newey-West (1987) heteroskedasticity and autocorrelation consistent standard errors.

We measure fund return performance through the piecewise linear specification for returns. That is, we follow the Sirri and Tufano (1998) technique of ranking the sample average returns over the immediate past month and then normalizing these rankings onto the $[0,1]$ interval.⁸ The advantage of this technique is that it converts the fund's average returns into their rankings in comparison to other funds' returns on a period-by-period basis.

Previous research has found that flows to individual funds are associated with other characteristics of funds such as fund fees, turnover, lagged flows, fund size and being a star fund (e.g., Sirri and Tufano, 1998; Nanda, Wang and Zheng, 2002; Barber, Odean and Zheng, 2005; Del Guercio and Tkac, 2002). Accordingly, we also include a set of control variables: a load dummy if the fund has at least one share class with a

⁸ That is, each fund is assigned a number between 0 and 1, with the best performer getting a 1 and the worst a 0. In between, the numbers are evenly spaced.

load fee, the average load fee for the fund, a dummy for 12b-1 fees if the fund has at least one share class with 12b-1 fees, the average 12b-1 fees for the fund, the fund's average expense ratio, the funds' portfolio turnover, the lag fund flow, the log of the total net assets from the previous month, and a dummy variable equal to one if the fund is a star fund.⁹ The fund performance and characteristics are calculated as the weighted-average of the values for the fund's share classes where the weights are based on total net assets in the share classes.

We use the data on individual advertisements to examine the relation of the fund's various flow variables to the existence of an ad in that month. We include several variables to capture the effects of advertising on individual fund flows. First, we add a dummy variable that takes the value of one if a print advertisement for that fund appeared in the previous month (and zero otherwise). In addition, we take into account whether the ad was informative, that is, whether the ad contains information regarding the past return performance of the fund. To test whether even advertisements without information have effects on fund flows, we include a dummy variable that takes a value of one if the ad is non-informative and zero if it is informative. Given possible spillover effects from ads for another fund in the family, we include a dummy variable equal to one if another fund in the family has an ad that month and zero otherwise.

One of our central questions is whether advertising affects the flow-performance sensitivity of the advertised fund as has been hypothesized. To test this hypothesis we include interaction terms between the existence of an ad and whether a fund's performance is in the top or bottom performance group. We add another interaction term

⁹ A star fund is defined as a fund whose return is in the top five percent of returns for the fund's category for the past year. This is a slightly different definition from that of Nanda, Wang and Zheng (2002) who define star fund as a fund in the top 100 performers of a category. However, they 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).

between the existence of a non-informative ad and whether a fund's performance is in the top or bottom performance group.

The results of these regressions are provided in Table 2. The dependent variables are different versions of flows as a percentage of total net assets with Model 1 showing monthly net flow, Model 2 showing monthly inflows, and Model 3 showing monthly outflows. The outflows measure is a negative number, so a significantly positive coefficient means that the outflows are reduced and a significantly negative coefficient means that the outflows are increased. The ability to decompose the net flows into inflows and outflows using the N-SAR data allows for a better understanding of the effects of advertising on investors' purchase versus redemption decisions.

The coefficient on the existence of an advertisement variable in Model 1 shows that the presence of advertising is related to a significant increase in net fund flows of about 1% percent of fund assets per month. The coefficients on this variable in Models 2 and 3 show that the effect of advertising on net flows is being largely driven by a reduction in outflows rather than an increase in inflows. The results also show that whether an ad is informative or not has no further effect on fund flows. We also do not find evidence of spillover effects between an ad on one fund and the other funds in the same family. However, this result does not imply that there are never spillover effects from ads, only that these effects do not affect all other funds in the family. The lack of a result may be due to the averaging process and our specification cannot pick up any such effects.

An examination of the interaction terms in Models 1, 2, and 3, provides even further insights into the effects of advertising on fund flows. The net flows are associated with fund performance for all performance groups, but the relation of the other flow variables tends to differ depending on a fund's performance. For example, for the lowest performance group, net flows, inflows and outflows are sensitive to the performance - fund inflows are lower and fund outflows are larger according to the

performance. Moreover, the interaction term between the lowest performance group and the existence of an ad shows that the existence of an ad reduces flow-performance sensitivity. That is, for these poorly performing funds performance has a smaller negative effect on flows.

Examining the highest performing group, we find that the relation between net flows and performance is being driven by the relation between inflows and performance. There is not a significant relation between outflows and performance for this group. This result is also consistent with the effects of being a star fund, which is also related to an increase in net flows and inflows, but has no association with outflows. Further the interaction terms show that the existence of a non-informative ad increases the flow-performance sensitivity for the top performing group of funds.

These results imply that advertising has diverse effects on investors, both in the lowering of search or participation costs as hypothesized by Sirri and Tufano (1998) and Huang, Yan and Wei (2007) and in persuading investors to hold funds as hypothesized by Mullainathan, Schwartzstein and Shleifer (2008).

2. Advertising expenditures and mutual fund family flows

2.1 Data

For this section we employ the second of our two data sources on mutual fund advertising, the CMR database, to obtain information on the print advertising expenditures of mutual fund families over the 1992-2001 period.¹⁰ CMR reports the name of the company placing the ad, the publication, the size of each advertisement and estimates the cost of the advertisement from published advertising rates, adjusted for estimated discounts.

¹⁰ Although CMR collects data on both print and other media advertising, our data is limited to the print advertising. According to Reuter and Zitzewitz (2006), mutual fund print advertising accounts for about 80% of total advertising expenditures.

As pointed out in the introduction, the CMR data is collected at the family level because this is a family level decision. Thus, we match this data with data on family level characteristics over the same sample period. The data on the characteristics (such as total net assets, expense ratios, load fees, 12b-1 fees, objectives and previous returns) of the set of mutual funds managed by the same investment management company under the same name (termed mutual fund family) is obtained from the CRSP mutual fund database. Since our focus in this section is on the mutual fund family rather than individual funds, we only include families with a minimum of \$1 billion under management.¹¹ Although there are a number of very small mutual fund families (see, for example, Kempf and Ruenzi, 2008a), this size restriction has little impact on our sample as the 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).¹² Thus, from an economic perspective the fund families omitted are not of great importance.

Table 3 describes the sample and advertising characteristics of the mutual fund families included in our sample over the 1992-2001 time period. The number of fund families grows from 98 in 1992 to 124 in 1996 and then contracts to 109 in 2001 and the total assets under management at these families increases from \$935 billion to over \$5 trillion, ending at about \$4.2 trillion.

In terms of the fund family advertising expenditures, the mutual fund families spend a large amount of money in print advertising, over \$1 billion dollars in aggregate over the last five years of the sample period. The advertisements appear in over 288 publications, from the *Wall Street Journal* (the greatest amount of advertising dollars

¹¹ Using a cutoff of \$5 billion does not change our results qualitatively.

¹² 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) potentially results in a decision process that would vary considerably from that of the other fund families. The fact that very few of the small fund families show up in our advertising database supports our assumption that they lack the capability of advertising in the same manner as the fund families with more than \$1 billion under management.

spent) to the *Elgin Courier News* (the least amount of advertising dollars spent). However, the expenditures tended to be concentrated in a set of publications. For example, aggregating the dollars spent over the last five years of our sample period, the *Wall Street Journal* received by far the largest proportion, 23.5% of the dollars spent. The next two greatest recipients were *Money* magazine with 10.7% and the *New York Times* with 6.8%. The top ten recipients received 69.2% of the total advertising dollars spent and the top twenty-five recipients received 88.9%.

Table 3 shows advertising expenditures during the first quarters of 1992, 1996 and 2001, to demonstrate the changes in the expenditures through time. For example, a majority of fund families in the sample advertise – the percent of sample families that used print advertising ranged from about 73.5% in 1992 to 64.5% in 2001. The funds that advertised also represent a large percentage of the assets under management. Although the percentage of fund families advertising over the sample period decreased somewhat, the dollar amount of advertising more than tripled, with much of that coming from the heavy advertisers as the average advertising expenditure slightly more than doubled over the period.

2.2. Advertising and industry flows

Figure 2 presents the dollar amounts spent on mutual fund advertising across our sample period. As the figure shows, there exists quite a bit of variation throughout the time period, with an apparent seasonality. Figure 3 shows the seasonality in the average expenditures by providing the percentage of each year's advertising expenditures that occurs in a given month, showing that most monthly advertising is relatively higher in the beginning of the year. These differences in advertising seasonality are statistically significant.

We first test the hypothesis that flows in the mutual fund industry in general are associated with aggregate levels of advertising in the industry. To do so, we regress percentage monthly flows to the industry against the advertising expenditures as a percent of total assets under management (lagged by one month), the total industry flows from the previous month, and the average industry return from the previous year. The results for all fund families, provided in Model 1 of Table 4, show a strong positive relation between aggregate industry flows and advertising expenditures, suggesting that advertising has an overall positive influence on industry flows. In periods with more advertising, fund flows in general increase.

Advertising by a mutual fund family has the potential to affect not only its own flows, but flows to other fund families as well. In Model 2 we test this related hypothesis by limiting the dependent variable to flows into families that did not advertise. We find that the flows of fund families that do not advertise are also significantly associated with the advertising by others in the industry. This result suggests substantial spillover effects from advertising.

The table also shows a strong positive relation between flows to the industry and returns in the previous period. This latter relation is consistent with that found by Edelen and Warner (2001) for daily aggregate flows to equity mutual funds.

2.3 Family fund flows and advertising expenditures

Because the advertising expenditure decision is made at the family level, in this section we examine the effects of advertising on fund family complex flows. We calculate the monthly family net flows by aggregating across funds in the same family. The net flows into fund family k for month t are:

$$NetFlow_t^k = \sum_i \{TNA_t^i - (TNA_{t-1}^i \times (1 + R_t^i))\} / TNA_{t-1}^k \quad (1)$$

where TNA_t^i represents fund i 's total net assets at time t , R_t^i represents fund i 's return in month t and TNA_t^k represents fund family k 's total net assets at time t .

We again employ the Sirri and Tufano (1998) piecewise linear specification in which we conduct monthly cross-sectional regressions and then use the Fama-MacBeth (1973) technique to aggregate the coefficients across the sample period.¹³ We measure family return performance as the average return on the individual fund portfolios, weighted by the total net assets (i.e., market value) of the funds, and include a piecewise linear specification for returns.¹⁴ That is, we follow the Sirri and Tufano (1998) technique of ranking the sample average returns over the immediate past month and then normalizing these rankings onto the $[0, 1]$ interval.¹⁵ The 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.

Because of the differences in size across the fund complexes (and consequent differences in ability to spend advertising dollars), we need to scale the monthly advertising expenditures. Our choice is to use the total net assets under management for the fund complex. As in our measure of the return variable, we need to aggregate the cross-sectional relation between family fund flows and advertising expenditures across the multiple monthly periods. Accordingly, we normalize the advertising expenditure variable in each year on a $[0, 1]$ interval analogous to the Sirri and Tufano

¹³ 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 families. However, Gallaher, Kaniel and Starks (2008) show that the relation for the fund family is basically qualitatively the same whether one employs a category-adjusted return method or a raw return method. Thus, we employ the raw return specification here, noting any differences from the adjusted return specification where appropriate.

¹⁴ An alternative specification of family return performance could be achieved by aggregating each individual fund's excess return over their objective category average. Such a specification would take into account the fact that the individual funds within a family compete against other funds in general as well as in different asset classes. Gallaher, Kaniel and Starks (2008) show that the two specifications yield similar results.

¹⁵ That is, each family is assigned a number between 0 and 1, with the best performer getting a 1 and the worst a 0. In between, the numbers are evenly spaced.

(1998) normalization procedure for the return performance variable described above. 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 a family did not advertise during a month.

Our set of control variables include the log number of objectives that the family's funds span, a load dummy if the family has at least one fund with a load fee, the ranked average load fee for the family, a dummy for 12b-1 fees if the family has at least one fund with 12b-1 fees, the ranked average 12b-1 fees for the family, the ranked average expense ratio, the average turnover of the funds' portfolios, the lag family fund flow, the log of the total net assets from the previous month, and a dummy variable equal to one if the family has a star fund.¹⁶

Table 5 shows the results from this analysis. In order to compare the effects of advertising with those of other variables, Model 1 shows the two-kink piecewise linear flow-performance relation without advertising variables. The results are consistent with those of Gallaher, Kaniel and Starks (2008) on mutual fund family flows in showing that at the family level there exists a strong positive relation between the flows into a mutual fund family and the family's past average return performance for the cases in which the family exhibits extreme return performance. 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 Ellison, 1997). The relation at the lower end of the return distribution is consistent with the earlier Chevalier and Ellison results, but not with

¹⁶ In these cross-sectional analyses we omit any fund families that are less than three years in age or that have only three months of advertising expenditures over the entire sample period. A star fund is defined as a fund whose return is in the top five percent of returns for the fund's category for the past year. This is a slightly different definition from that of Nanda, Wang and Zheng (2002) who define star fund as a fund in the top 100 performers of a category. However, they 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).

the earlier Sirri and Tufano results. Further, 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.

Models 2 and 3 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 above. The results of Models 2 and 3 show that advertising has a significantly positive effect on family flows for the heavy advertisers, but when viewed from a simple linear specification, advertising at the family complex level appears to have no significant effect.¹⁷ These results suggest that a threshold of advertising expenditures relative to competitors' advertising expenditures exists before the advertising can have significant effects on flows into the family. 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 expending funds on advertising is not alone sufficient for significantly increasing flows at the aggregate family level, rather the family has to extensively advertise relative to other families' advertising in that period.

Comparing Model 1 (with no advertising variables) to Models 2 and 3 (with advertising variables), the coefficients on the other variables show little to no change. That is, the other variables still have effects similar to those when the advertising variable is absent. For example, 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 at the fund family complex level. The convexity in the flow-performance relation appears for the top performing funds in all

¹⁷ 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. We also ran the regression by normalizing the ad variable by the beginning of the year TNA instead of the beginning of the month TNA. We found no change in results.

specifications. Thus, while Table 5 shows that family advertising expenditures can affect family flows, it does so independent of the family return performance.¹⁸ 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.

These results suggest that mutual fund families can affect net flows through the performance of their funds, including achieving star status for at least one fund in the complex (e.g., Nanda, Wang and Zheng, 2004). They also have additional strategies with which they can affect their net flows: spend a sufficient percentage of assets on advertising relative to their competitors, offer funds in a large range of objectives, pay marketing expenses for distribution channels through load or 12b-1 fees, or lower their expense ratios. In Section 3 of the paper we examine the relations between these strategic variables more thoroughly and whether our results on family advertising appear to be affected by endogenous relations with the other variables.

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.

The levels of statistical significance in Table 5 show that heavy advertisers can increase flows into the family. The economic significance of these results is reflected in Figure 3, which shows the total returns to advertising in terms of the flow/advertising relation. The figure shows the times series results for the 85th and 95th percentile

¹⁸ Adding an interaction term between performance and advertising does not change these conclusions.

advertisers at each point in time. That is, at each point in time we took the advertising expenditures of the fund family that was closest to (and above) the 85th (95th) percentile in advertising expenditures and applied the coefficients from that period's regression to generate the dollar flows to advertising. The dollar flows to advertising were then divided by the actual advertising cost to derive the returns to advertising. As Figure 3 indicates, the returns to advertising for the heavy advertiser can be economically large, typically around 20% and sometimes 60% for the 85th percentile. For the very heavy advertiser, one above the 95th percentile, the returns to advertising in terms of flows were usually above 20% and often as high as 60%, 80% or even 100%.

These results can be contrasted with previous studies on the relation between *individual* fund flows and proxies for advertising of those funds. For example, Sirri and Tufano (1998) use total fees charged as a proxy for marketing and distribution expenditures.¹⁹ 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, such as funds with higher service levels (associated with the higher fees) attracting greater flows.

Our results show that increased spending on advertising has effects on the overall family flows, but only for families that are the top advertisers on a relative basis. That is, the relation between advertising and family flows has a convexity similar to that of the relation between performance and fund flows. These results are important to our

¹⁹ Sirri and Tufano (1998) define total fees as total expense ratio plus one-seventh of any load fee. Thus, their total fee measure includes the fund's operating expense ratio, 12b-1 fee, and one-seventh of the load fee, if any.

understanding of the effects of advertising because the advertising expenditure decision is a fund complex decision, not an individual fund decision.

2.4 Robustness checks

Thus far, we have found that heavy advertising by a mutual fund family results in statistically and economically significant 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 reran the regressions in Table 5 and included the cumulative family advertising expenditures of the previous two months, four months, or twenty-four months. This was done for both the linear specification and the piece-wise linear specification in Table 5. The results (not shown) indicate that at the family level, the lagged advertising expenditures from previous months do not affect current flows. These results suggest that there is no persistence in the impact of advertising – the level of the most recent month’s advertising expenditures dominates. That is, advertising effects on family flows are short-lived.²⁰

In order to determine whether our results are driven by flows to the star funds in the family (which may be more likely to be the advertised funds as well), we reran the regressions in Table 5 eliminating star funds from both the left- and right-hand side variables. That is, the dependent variable, flows to the family, does not include flows to any star funds, and each of the independent variables is calculated without the inclusion of the star funds. For the advertising variables, the results are very similar when star funds are included. Heavy advertising relative to other families results in significantly increased flows to non-star funds in the family.

²⁰ These results are consistent with previous studies for operating companies which have found that advertising has a short-term elasticity on sales that is positive but low (see, e.g., Leone and Schultz, 1980 or others cited in Joshi and Hanssens, 2004).

Given the volatility in advertising expenditures across time, we examine whether advertising expenditures have differential effects in up-markets as compared to down-markets. Accordingly, we divide the sample period into those months in which market returns are positive over the month and those periods in which market returns are negative. We find that advertising does not have significant effects during down-markets. Our results on family advertising expenditures are driven by the relation between fund flows and advertising expenditures during up-market periods.²¹

Two potential problems in our analysis could develop from our methodology of scaling the advertising expenditures. The first problem is that our results could be driven by a spurious correlation between fund returns and advertising. That is, since we scale our advertising variable by the previous month's total net assets under management of the fund family, we could be inducing a result between the change in the total net assets and the fund flows. To check this potential problem, we reran the regressions in Table 5 and scaled the advertising expenditures by the total net assets from the beginning of the calendar year. That is, for each month in a year, a family's advertising expenditures is scaled by the same variable, which does not change during the year. Our results from this analysis do not qualitatively differ from those reported, suggesting that our results are not driven by variation in performance rather than advertising expenditures.

The second potential problem is that our scaling methodology is inappropriate because of the differences in sizes across the fund families. To check this problem, we divided our advertisers into three groups, by size of assets under management, and then ranked the advertising expenditures within each group. Again our results are qualitatively the same as those reported.

²¹ Over our sample period, only 35% of the months were down months according to this definition. We also define up-markets and down-markets for the market return compared to the riskfree rate. In this case 39% were down months. The results remain unchanged.

2.5 Family fund volatility and advertising expenditures

In previous research authors have argued that fund flow volatility is costly to mutual fund operations (e.g., Chordia, 1996; Edelen, 1999; Greene and Hodges, 2002; Alexander, Cici, and Gibson, 2006; and Rakowski, 2008). Beyond affecting fund flows, advertising could affect the complex's average flow volatility across its funds. A priori, the direction of these effects is unclear. On the one hand, the advertising decisions could bring in a constant stream of dollars or 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.) On the other hand, if advertising successfully attracts additional flows to funds, the advertising could also have the unintended consequence of increasing average flow volatility and costs. For example, the advertising decision could increase average 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 (2008b) 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.²²

In this section we examine whether the family's advertising decisions 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.²³ Edelen, Evans and Kadlec (2008) provide evidence that larger funds have lower flow volatility than do

²² Jain and Wu (2002) find that advertised funds previously earned higher returns than their category benchmarks.

²³ The results are similar if volatility is computed over six months rather than twelve months.

smaller funds. The management of a fund family would be expected to be particularly concerned about the volatility in flows to the smaller funds in the family for two reasons. First, flow volatility could have a greater effect on those funds' need to sell securities for redemptions. Second, those funds' operating expenses could be more affected by the flow volatility. Given that it is likely the family would be most concerned about the flow volatility in the smaller funds in the family, we employ an equal-weighted average of the individual funds' flow volatility.²⁴ We control for the persistence in family flow volatility by including the previous year's flow volatility measure. One aspect of family flow volatility that could potentially affect our results is if larger families have lower average flow volatility simply because they offer more funds. Having more funds to average the flow volatility across would make outliers less important and could reduce volatility. We control for this possible effect with two variables: current family flows and the log of total net assets.²⁵ Whether having a star fund in the family adds to the family's flow volatility is an empirical question we address by including a dummy variable for whether the family had a star fund in the previous period.

The results of these analyses, provided in Table 6, show that family flow volatility is associated with the family's advertising decisions in that those families that do not advertise have increased flow volatility. However, family flow volatility does not appear to be related to the relative level of advertising by a fund family.²⁶

²⁴ For robustness we also looked at the case where fund volatilities are value weighted. The results are similar to the ones reported.

²⁵ Total net assets is highly correlated with number of fund in the family. If we use the latter variable, we get similar results.

²⁶ One possibility is that the advertising could reduce downside volatility. To test for such asymmetric effects on volatility from these variables, we reran the regressions in Table 4, using semi-variance rather than variance as our dependent variable. The results (not shown) are similar to those in Table 4.

3. Determinants of advertising expenditures

One issue that arises from the models of the relation between family advertising expenditures 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 in two ways: by examining the correlations between the advertising variables and other fund family decision variables and by examining whether systematic determinants exist for a family's choice of the amount of advertising dollars to spend.

Table 7 provides the correlations between the advertising variables and other fund complex decision variables. As the table shows, although sizable correlations exist between some of these variables, there is little correlation between the advertising variables and the other variables.

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 denominator in the dependent variable is lagged by one year because the relation between performance and the current level of assets under management could mask a relation between the advertising variable and performance. The potential explanatory variables are the variables used in the earlier analyses: the previous year's flow, the previous year's flow volatility, the logarithm of total net assets, and ranked average turnover (as a proxy for trading costs). Because a fund family's size 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.²⁷

The results when all mutual fund families are included in the regression are shown in Model 1 of Table 8. In Models 2 and 3 the families are divided by the size of assets under management, where assets under management are measured one year prior to the observation.²⁸ The evidence 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.

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 lagged return. Thus, it is not the case that when a complex performs well, they advertise more. The one group in which return performance matters is for the small families who are the poorest performers. These families have a tendency to have a significantly higher level of relative advertising as we will see in the next section, advertising limits fund outflows.

Across both large and small mutual fund families, the amount of advertising dollars spent by a family is positively influenced by the family's average expense ratio. This result could be due to a relation between higher service and higher quality, leading to the conclusion that higher quality families are the ones that advertise more heavily. Such a conclusion would be consistent with Nelson's (1970, 1974) argument of a relation between product quality and advertising. Alternatively, one could interpret the coefficient on the expense ratio as suggesting that higher fee families can afford to expend more on advertising. It is also the case that larger families have a tendency to spend relatively more on advertising.

²⁷ Because of the limited power of the Fama-MacBeth (1973) technique with the annual regressions, we also ran a pooled, cross-sectional regression. There was no increase in the significance of the independent variables – the results were basically the same.

²⁸ The results do not change when current total net assets is used instead of lag assets.

Fund families with funds in more objective classes do not advertise as much as do families with fewer objectives. This is consistent with the hypothesis that having more funds in different objective classes in and of itself provides more exposure for the fund family.

The relative amount of advertising is affected by the distribution channel decisions. Fund families with higher average load fees do not advertise as much as do fund families with lower average load fees. This result holds for both large and small families and is consistent with the hypothesis that advertising is directed more toward the retail investor than the financial advisers who would be receiving the commissions reflected in the load fees. Load funds rely more on their distribution channels (the brokers and dealers), rather than advertising, to reach their investors.²⁹

Relative advertising expenditures are increasing in families' 12b-1 fees, driven by the smaller families' 12b-1 fees. If we limit the analysis to large fund families, there is no relation between relative advertising and 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.

In sum, Table 8 shows that the fund family's other decision variables can affect the advertising decision, but these relations tend to be concentrated in the smaller funds of the sample.

4. Conclusions

Our interest in this paper is in the effects of advertising on mutual fund flows, and in particular, whether advertising affects investor search costs, attention or persuasion as has been previously hypothesized. Employing two novel datasets on mutual fund advertising, we examine the relation between mutual fund families' advertising decisions

²⁹ See Bergstresser, Chalmers and Tufano (2006) for a discussion of the roles of brokers in the mutual fund industry.

and flows into the mutual funds on three levels: individual funds, fund families, and the fund industry. We find that

- On the individual fund level, a significant relation exists between the appearance of an ad and flows into the fund. The appearance of an ad appears to increase net flows by about 1%, but this increase is driven more by a reduction in redemptions than an increase in purchases. Further, we find that the advertising appears to change the flow-performance sensitivity of many funds, but in different ways. For the funds with the worst performance, the appearance of an ad tends to dampen their flow-performance sensitivity. For the top performing funds, the existence of a non-informative ad enhances their flow-performance sensitivity.
- On a fund family level, a convexity exists in the relation between flows and advertising expenditures, similar to the convexity in the relation between flows and return performance found in earlier work (e.g., Sirri and Tufano, 1998; Chevalier and Ellison, 1998). That is, high relative levels of advertising are significantly related to high fund flows at the family level, while variations of relative levels of advertising within the low advertising group do not have a significant impact on flows to the family, suggesting that the relative amount of advertising expenditures has a nonlinear relation with fund flows. Further, the increased flow from high relative levels of advertising is independent of the flow-performance relation at the family level.
- On an industry level, there are greater flows into mutual funds during periods with greater advertising. Moreover, this effect holds even for non-advertised fund families.

The analysis at the individual fund level using the relation between the existence of an ad and the funds' monthly purchases and redemptions allows us to provide insights into the role of advertising for mutual funds. Our results that the existence of non-informative ads increases the fund flow-performance sensitivity for the high

performing funds suggest that ads reduce search costs consistent with the hypotheses of Sirri and Tufano (1998) and Huang, Wei and Yan (2007). On the other hand, the result that ads lessen the flow-performance sensitivity of low performing funds suggests that advertising also helps in reducing cognitive dissonance as suggested by Goetzmann and Peles. The fact that advertising appears to work the most in reducing fund outflows helps explain why non-informative ads increase net flows which suggests that persuasion is useful primarily for existing shareholders as in Mullainathan, Schwartzstein, and Shleifer (2008).

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, on the fund family level, we find that advertising increases in 12b-1 fees for small fund families but has no significant relation to 12b-1 fees for large fund families. On the individual fund level we find no difference between funds that are advertised and those that are not advertised in the magnitude of their 12b-1 fees or in whether they have at least one share class with 12b-1 fees. These results at both the family and the individual fund level imply that studies that use 12b-1 fees to proxy for advertising expenditures are not capturing the true advertising expenditures or existence of ads and thus, they are not capturing the relation between fund flows and the advertising.

Overall, our results suggest that the fund's advertising decisions are important mechanisms through which mutual fund family management companies can affect their fund flows and consequent income. Specifically, we show that the relative level of advertising is an important strategic decision which has a nonlinear impact on the resulting flows to the fund family. Our work contributes to the literature that tries to understand the impact of increased visibility on investors' decisions and to the literature on the role of advertising.

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Table 1

Descriptive statistics on individual funds with or without advertisements

This table provides descriptive statistics on funds that had advertisements as compared to funds without advertisements in each objective category. Panel A includes the percentage of funds with at least one share class with a load fee, at least one share class with a 12b-1 fee and the group that are star funds, 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 past year. Panel B provides the means and the standard deviations for the fund's total net assets, average expense ratios, 12b-1 fees and load fees across classes, average turnover. The asterisks indicate whether the results for funds with advertisements are statistically significantly different from those without advertisements, where *, **, and *** represent 10%, 5% and 1% significance respectively.

Panel A.

	Aggressive Growth			Growth and Income			Long-term Growth		
	No Ad	With Ad	Report Perf.	No Ad	With Ad	Report Perf.	No Ad	With Ad	Report Perf.
% with load share class	48.7%	43.2%	42.0%	50.1%	30.0%***	25.7%	53.4%	23.2%***	17.8%
% with 12b-1 share class	55.6%	63.1%	62.0%	53.2%	53.4%	52.9%	57.6%	47.5%***	45.1%
% that are star funds	5.2%	19.9%***	22.7%	6.0%	25.0%***	28.6%	5.69%	10.8%***	10.8%

Panel B.

Variable	Aggressive Growth			Growth and Income			Long-term Growth		
	No Ad	With Ad	Report Perf.	No Ad	With Ad	Report Perf.	No Ad	With Ad	Report Perf.
TNA	649 (2132)	6413*** (11119)	7172 (11782)	1427 (4887)	6051*** (11030)	5262 (6998)	1181 (4687)	5958*** (8047)	6523 (8645)
Expense ratio	0.014 (0.006)	0.013** (0.004)	0.013 (0.004)	0.011 (0.007)	0.010 (0.003)	0.010 (0.002)	0.013 (0.005)	0.011*** (0.003)	0.011 (0.003)
12b-1 fee	0.002 (0.003)	0.002 (0.002)	0.002 (0.002)	0.002 (0.003)	0.001** (0.002)	0.001 (0.002)	0.002 (0.003)	0.001*** (0.002)	0.001 (0.002)
Load fee	0.016 (0.022)	0.013 (0.020)	0.013 (0.020)	0.018 (0.023)	0.014** (0.023)	0.013 (0.023)	0.020 (0.024)	0.009*** (0.019)	0.007 (0.016)
Turnover	1.044 (0.786)	0.962 (0.622)	1.012 (0.621)	0.623 (0.620)	0.781*** (0.676)	0.825 (0.615)	0.877 (0.722)	1.178*** (0.888)	1.214 (0.839)

Table 2

The Relation of Individual Mutual Fund Net flows, Inflows, and Outflows and the Existence of an Advertisement

This table provides the results of piecewise linear specifications of the individual fund flow relation with explanatory variables, a variable to indicate the existence of an advertisement for the fund during the month, and interaction terms between performance and ad existence or informativeness. Model 1 shows the net flows. Models 2 and 3 show the decomposition of the net flows into inflows and outflows, respectively. For the piecewise linear specifications, the fund's return performance variable is broken into sub-variables. The low and high performance groups range from 0-.20, while the middle group ranges from 0-0.6. The sum of the sub-variables is equal to the original variable. The other explanatory variables include the lag flow from the previous month, the log of the total net assets (TNA), dummies for whether the fund is a star fund, has a front-end load fee, or a 12b-1 fee. Also included are the magnitude of the load fees, 12b-1 fees and expense ratios (without 12b-1 fees) and portfolio turnover. The models are run cross-sectionally each month. The coefficients shown are the averages across the months. The table also provides Newey-West (1987) t-statistics for the Fama-MacBeth (1973) coefficients and the average adjusted R-squareds from the regressions.

Variable	Model 1: Net flows		Model 2: Inflows		Model 3: Outflows		
	Mean coefficient	t-statistic	Mean coefficient	t-statistic	Mean coefficient	t-statistic	
Intercept	0.015	3.62***	0.023	6.51***	-0.011	-5.10***	
Past return performance	Low performance group	0.015	3.60***	0.023	6.44***	-0.011	-5.03***
	Mid performance group	0.044	5.52***	-0.002	-0.27	0.021	4.09***
	High performance group	0.022	10.03***	0.015	7.66***	0.001	1.02
Existence of ad variables	Dummy – Existence of ad	0.010	3.16***	0.003	0.88	0.005	2.83***
	Dummy – Non-informative ad	-0.002	-1.29	-0.002	-1.21	0.001	0.95
	Dummy – Ad in family	-0.002	-1.08	0.000	0.01	-0.002	-1.37
Interaction terms between ad and performance	3rd perf group X Exist. of ad	-0.006	-2.07**	-0.003	-0.78	-0.002	-0.93
	1st perf group X Exist. of ad	0.003	1.00	0.006	1.42	-0.003	-1.63
	3rd perf group X Noninf. ad	0.001	0.93	0.001	0.57	0.001	1.01
	1st perf group X Noninf. ad	0.005	2.53**	0.006	2.35**	0.000	-0.49
Lagged flows	% Net flow (t-1)	0.212	9.24***				
	% Inflow (t-1)			0.467	21.94***		
	% Outflow (t-1)					0.613	35.03***
Fund characteristics	Dummy – Star fund	0.011	5.78***	0.009	3.71***	-0.001	-0.62
	Log TNA	-0.001	-4.25***	0.000	-1.89*	0.000	-1.74*
	Dummy – Front-end load fee	0.003	2.88***	0.001	0.65	0.001	1.49
	Load fee	-0.077	-3.81***	-0.154	-6.98***	0.082	6.12***
	Dummy – 12b-1 fees	-0.003	-2.98***	0.001	1.49	-0.002	-4.92***
	12b-1 fees	1.188	6.08***	1.083	6.39***	-0.249	-3.45***
	Expense ratio	-0.180	-1.91*	0.061	0.85	-0.112	-3.13***
	Turnover	0.002	3.10***	0.006	9.00***	-0.003	-10.77***
	Adj. R-squared	0.137		0.283		0.404	

Table 3
Mutual Fund Family Advertising Characteristics

This table provides descriptive statistics as of the first quarters of 1992, 1996, and 2001 for the sample mutual funds, which are funds in CRSP with at least \$1 billion in assets under management who had advertising expenditures in the CMR database. The table shows the number of funds, the total assets under management for all families (in billions), the percent of the mutual fund families in the sample each year that advertised during the quarter, the percent of the sample total net assets under management represented by the advertising mutual fund families' assets under management, total monthly advertising expenditures by all fund families, average fund family monthly advertising expenditures, minimum and maximum fund family monthly advertising expenditures, average monthly advertising expenditures as a percentage of assets (in thousandths of a percent).

		<u>1992</u>	<u>1996</u>	<u>2001</u>
Sample characteristics	Number of families	98	124	109
	Total assets for all families (\$billion)	\$935.4	\$1970.2	\$4225.0
	Percent of families advertising	73.5%	71.0%	64.2%
	Percent of sample TNA represented by advertisers' TNA	62.2%	61.1%	68.6%
	Total monthly advertising expenditures (\$millions)	\$31.34	\$42.58	\$105.88
Family advertising characteristics	Fund family monthly advertising expenditures (\$ thousands)			
	Average	\$1,253	\$1,216	\$2,786
	Minimum	\$9	\$25	\$8
	Maximum	\$11,062	\$12,070	\$38,492
	Average monthly advertising expenditures (in thousandths of a percent)	.00335%	.00418%	.00226%

Table 4**The Relation between Aggregate Flows to Fund Families, Advertising Expenditures, and Performance**

This table provides the results of times series regressions in which the dependent variable is the aggregate monthly flow to all fund families in our sample in Model 1 and aggregate monthly flows to the non-advertising fund families in Model 2. The independent variables are the lag monthly flows to the fund families, the aggregate advertising expenditures across all funds, and the lag annual average performance across the fund families. The table also provides Newey-West (1987) t-statistics for the coefficients and the average adjusted R-squareds from the regressions.

Variable	Model 1		Model 2	
	All Families		Non-advertising Families	
	Mean coefficient	t-statistic	Mean coefficient	t-statistic
Intercept	0.002	1.06	0.000	0.15
Lag aggregate flows - previous month	-0.249	-2.88**	-0.231	-2.66**
Aggregate advertising expenditures	0.482	2.68**	0.177	1.93*
Lag return performance – previous year	0.023	2.28**	0.042	2.62**
Adj. R-squared	0.093		0.081	

Table 5

The Relation between Mutual Fund Family Flows and Advertising Expenditures

This table provides the results of piecewise linear specifications of the family flow relation with explanatory variables. For comparison purposes, Model 1 shows the family flow relation without advertising. Models 2 and 3 include the flow-performance advertising relation as well. For the piecewise linear specifications, the low and high performance (advertising) groups range from 0-.20, while the middle group ranges from 0-0.6. The sum of these sub-variables is equal to the original variable. The other control variables are the family's lag flow from the previous month, the log of the family's 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 months. The table also provides Newey-West (1987) t-statistics for the Fama-MacBeth (1973) coefficients and the average adjusted R-squareds from the regressions.

		<u>Model 1</u>		<u>Model 2</u>		<u>Model 3</u>	
Variable		Mean	t-	Mean	t-	Mean	t-
		coefficient	statistic	coefficient	statistic	coefficient	statistic
	Intercept	0.006	1.23	0.004	0.68	0.004	0.70
Ad variables	No advertising dummy			0.002	1.53	0.001	0.84
	Ranked advertising			0.002	1.08		
	Low advertising group					0.002	0.22
	Mid advertising group					-0.002	-0.71 **
	High advertising group					0.037	2.81 ***
Past returns	Low performance group	0.045	4.01 ***	0.046	4.04 ***	0.045	3.70 ***
	Mid performance group	0.002	0.66	0.001	0.41	0.001	0.36
	High performance group	0.089	8.02 ***	0.089	8.03 ***	0.090	8.02 ***
Control variables	Log fund objectives offered	0.002	2.60 ***	0.002	2.56 **	0.002	2.82 ***
	Dummy - front-end load fee	0.006	4.30 ***	0.006	4.59 ***	0.006	4.56 ***
	Ranked average load fee	-0.008	-4.91 ***	-0.008	-4.41 ***	-0.008	-4.18 ***
	Dummy - 12b-1 fees	-0.002	-0.99	-0.002	-1.17	-0.002	-1.15
	Ranked average 12b-1 fees	0.008	3.79 ***	0.008	3.89 ***	0.008	3.45 ***
	Ranked average expense ratio	-0.008	-2.95 ***	-0.008	-3.10 ***	-0.008	-3.02 ***
	Average turnover	-0.002	-2.21 **	-0.002	-2.13 **	-0.002	-2.16 **
	Lag Flow from previous month	0.067	2.28 **	0.067	2.25 **	0.064	2.13 **
	Log TNA	-0.002	-3.19 ***	-0.001	-2.70 ***	-0.001	-2.61 ***
Dummy - star fund in family	0.003	3.26 ***	0.003	3.10 ***	0.003	2.84 ***	
	Adj. R-squared	0.131		0.128		0.123	

Table 6
The Effects of Advertising Decisions on Mutual Fund Family Flow Volatility

This table provides the results of regressions of family average flow volatility on advertising decisions 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 control variables are the relative performance of the family, 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, average portfolio turnover and log of the number of fund objectives offered. The coefficients shown are the averages across the model run cross-sectionally each month from 1992-2001. Also provided are the Newey-West (1987) t-statistics for the Fama-MacBeth (1973) coefficients and the average adjusted R-squareds.

	Variable	Model 1		Model 2	
		Mean coefficient	t-statistic	Mean coefficient	t-statistic
	Intercept	0.048	4.69***	0.049	4.54***
Ad variables	Advertising	0.007	1.64		
	No advertising	0.009	3.98***	0.009	1.74*
	Low advertising group			0.009	0.28
	Mid advertising group			0.001	0.11
	High advertising group			0.051	1.57
Past returns	Low performance group	-0.074	-3.83***	-0.070	-3.57***
	Mid performance group	-0.014	-3.46***	-0.014	-3.32***
	High performance group	0.035	1.62	0.039	1.82*
Control variables	Log fund objectives offered	0.007	3.68***	0.014	11.03***
	Dummy - front-end load fee	0.013	10.48***	0.007	2.32**
	Ranked average load fee	0.007	2.45**	-0.015	-2.71***
	Dummy - 12b-1 fees	-0.015	-2.94***	0.029	13.48***
	Ranked average 12b-1 fees	0.030	14.55***	0.004	0.83
	Ranked average expense ratio	0.003	0.82	-0.019	-3.60***
	Average turnover	-0.018	-3.60***	-0.002	-1.07
	Previous year flow volatility	-0.001	-0.74	0.466	17.70***
	Current family flows	0.465	17.60***	-0.034	-1.49
	Log lag TNA	-0.039	-1.75*	-0.004	-3.22***
	Dummy - star fund in family	-0.003	-3.19***	0.008	3.97***
	Adj. R-squared	0.230		0.228	

Table 7

Correlations between Advertising and Other Family Decision Variables

This table provides the results of correlations of mutual fund family decision variables. Advertising is the relative advertising of the family against other families in the sample. Low advertising group, Mid advertising group and High advertising group are dummy variables for whether the family is a member of each of these groups. 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. The table also includes the log of the fund objectives offered by the family. All correlations are significant beyond the .001 level with the exception of correlations between the log fund objectives and the advertising variable, the mid advertising variable and the ranked average expense ratio which have significance levels of .7168, .0298, and .1478, respectively

Variable	Advertising	Ranked average expense ratio	Dummy - load fee	Ranked average load fee	Dummy - 12b-1 fees	Ranked average 12b-1 fees	Log fund objectives offered
Advertising	1.00	0.15	-0.12	-0.18	-0.08	-0.03	0.00
Low advertising group		0.10	-0.08	-0.14	-0.08	-0.04	0.12
Mid advertising group		0.15	-0.12	-0.18	-0.08	-0.04	-0.02
High advertising group		0.18	-0.13	-0.15	0.01	0.05	-0.20
Ranked average expense ratio	0.15	1.00	0.12	0.44	0.27	0.67	-0.01
Dummy - front-end load fee	-0.12	0.12	1.00	0.65	0.49	0.38	0.33
Ranked average load fee	-0.18	0.44	0.65	1.00	0.46	0.66	0.22
Dummy - 12b-1 fees	-0.08	0.27	0.49	0.46	1.00	0.62	0.18
Ranked average 12b-1 fees	-0.03	0.67	0.38	0.66	0.62	1.00	0.10
Log fund objectives offered	0.00	-0.01	0.33	0.22	0.18	0.10	1.00

Table 8
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 (1987) t-statistics for the coefficients from the Fama-MacBeth (1973) aggregation technique and the average adjusted R-squareds from the regressions.

Variable	Model 1 All families		Model 2 Small families		Model 3 Large families		
	Mean coefficient	t- statistic	Mean coefficient	t- statistic	Mean coefficient	t- statistic	
Intercept	0.033	0.10	-0.286	-0.38	0.441	1.68 **	
Past returns	Low performance	0.107	0.31	1.056	3.35 ***	-0.280	-1.01
	Mid performance	-0.065	-0.48	-0.059	-0.21	-0.144	-0.56
	High performance	-0.563	-0.76	-0.095	-0.10	0.396	0.36
	Log fund objectives offered	-0.273	-3.61 ***	-0.185	-1.63	-0.004	-0.05
Control variables	Load dummy	0.135	1.56	0.069	0.48	0.074	0.61
	Ranked average load	-0.461	-3.30 ***	-0.436	-2.38 **	-0.183	-2.24
	12b-1 fees dummy	-0.033	-0.38	0.020	0.19	-0.091	-1.00
	ranked 12b-1	0.171	1.78 *	0.366	3.94 ***	-0.083	-1.10
	ranked expense ratio	0.361	2.80 ***	0.332	1.27	0.060	0.68
	Average turnover	0.090	1.96 *	0.064	1.02	0.087	1.62
	Previous year flow	0.201	1.53	0.031	0.21	0.296	1.16
	Previous year flow volatility	0.789	0.41	-0.353	-0.12	0.087	0.08
	Log lag TNA	0.065	1.98 **	0.051	0.58	-0.011	-0.34
	Dummy - star fund in family	0.042	1.09	0.093	1.70 *	-0.048	-0.51
	Size dummy	0.037	0.86				
Adj. R-squared	0.286		0.134		0.197		

Figure 1
Percent of Advertisements Reporting Performance Information

This figure shows for each quarter of our sample periods (1994-1996, 2000-2001) the percentage of the advertisements that reported performance on the mutual funds on the left axis and the percentage average annual return on the S&P 500 Index for the previous three years (ending the preceding quarter-end) on the right axis.

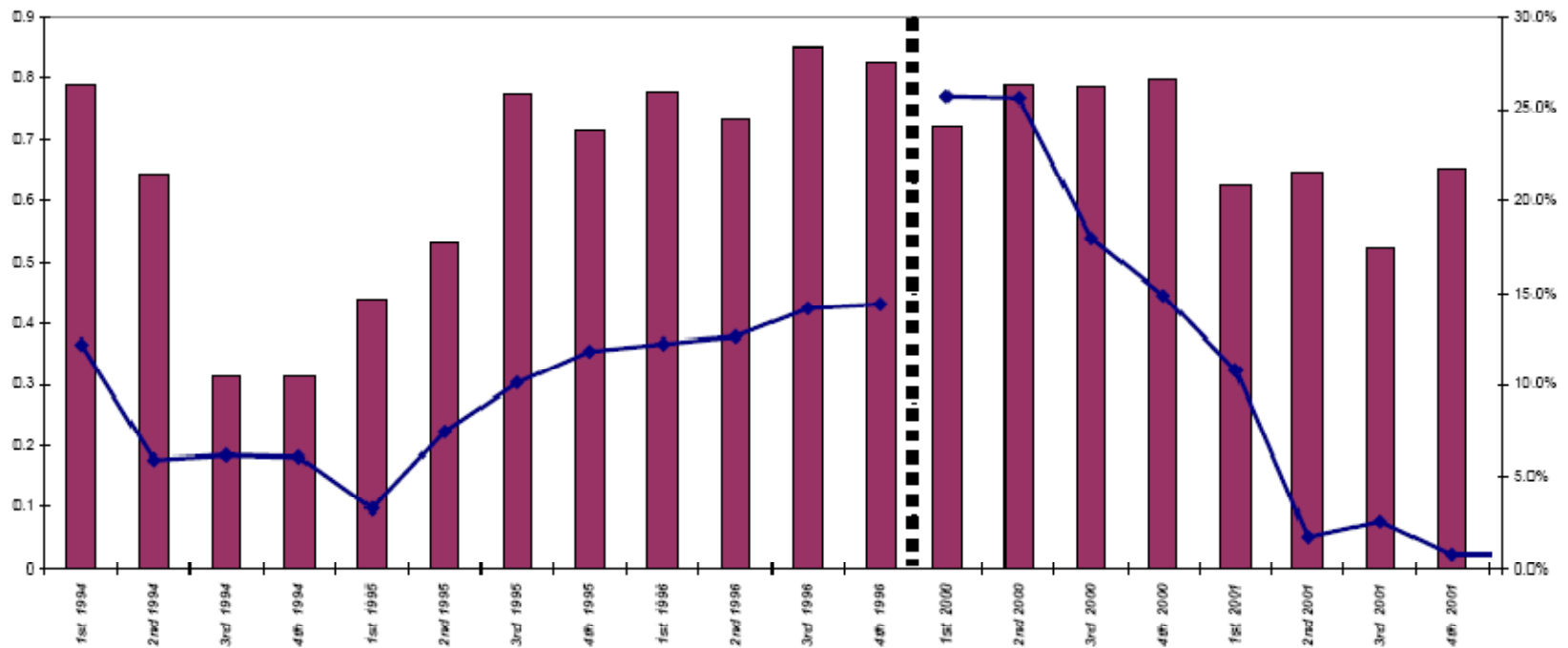


Figure 2
Dollar Advertising Expenditures

This figure shows the quarterly dollar advertising expenditures (in \$1000) by mutual fund families over the 1992-2001 sample period.

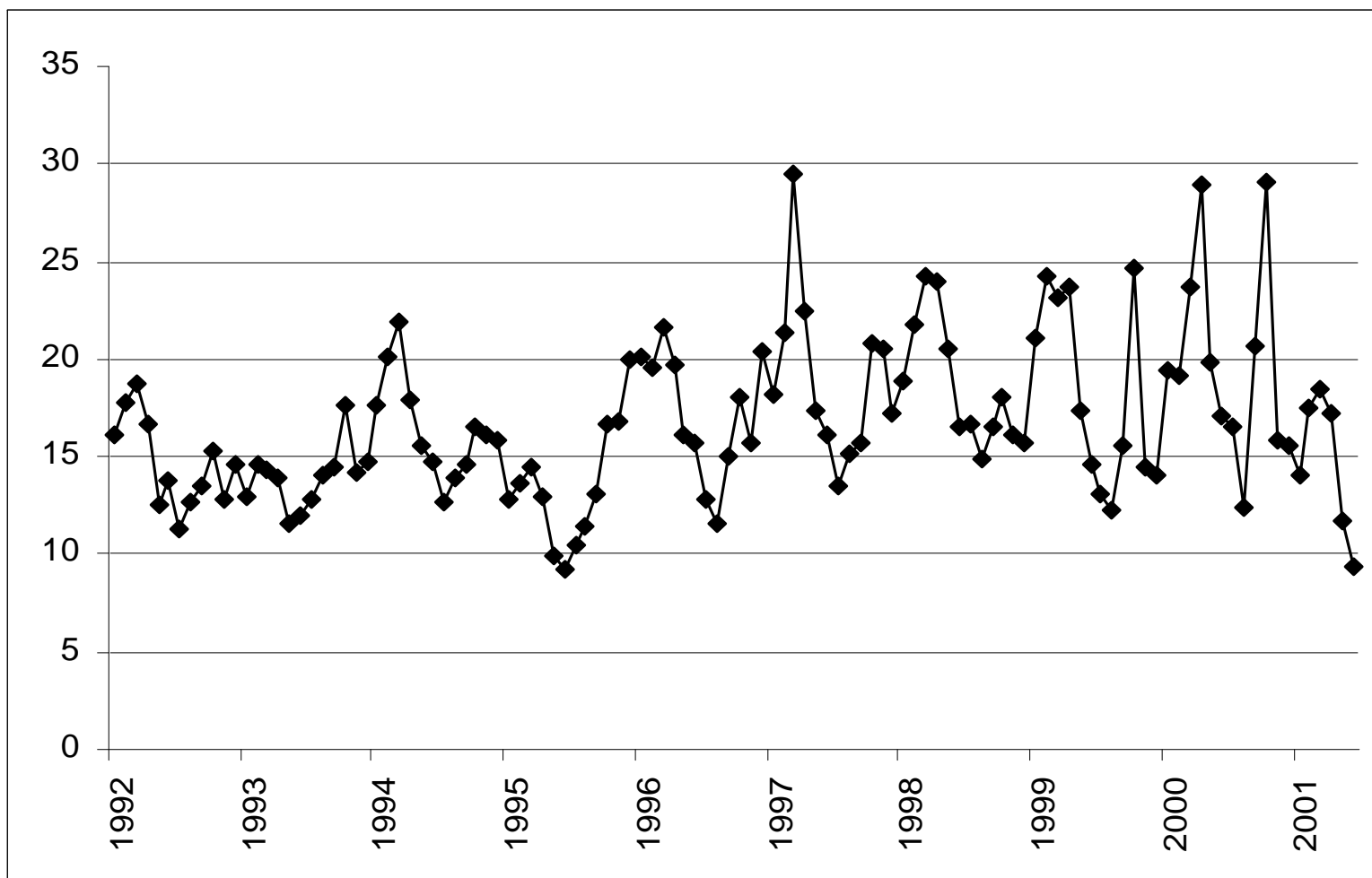


Figure 3
Seasonality in Advertising Expenditures

This figure shows the percentage of advertising expenditures averaged across each month in the 1992-2001 sample period.

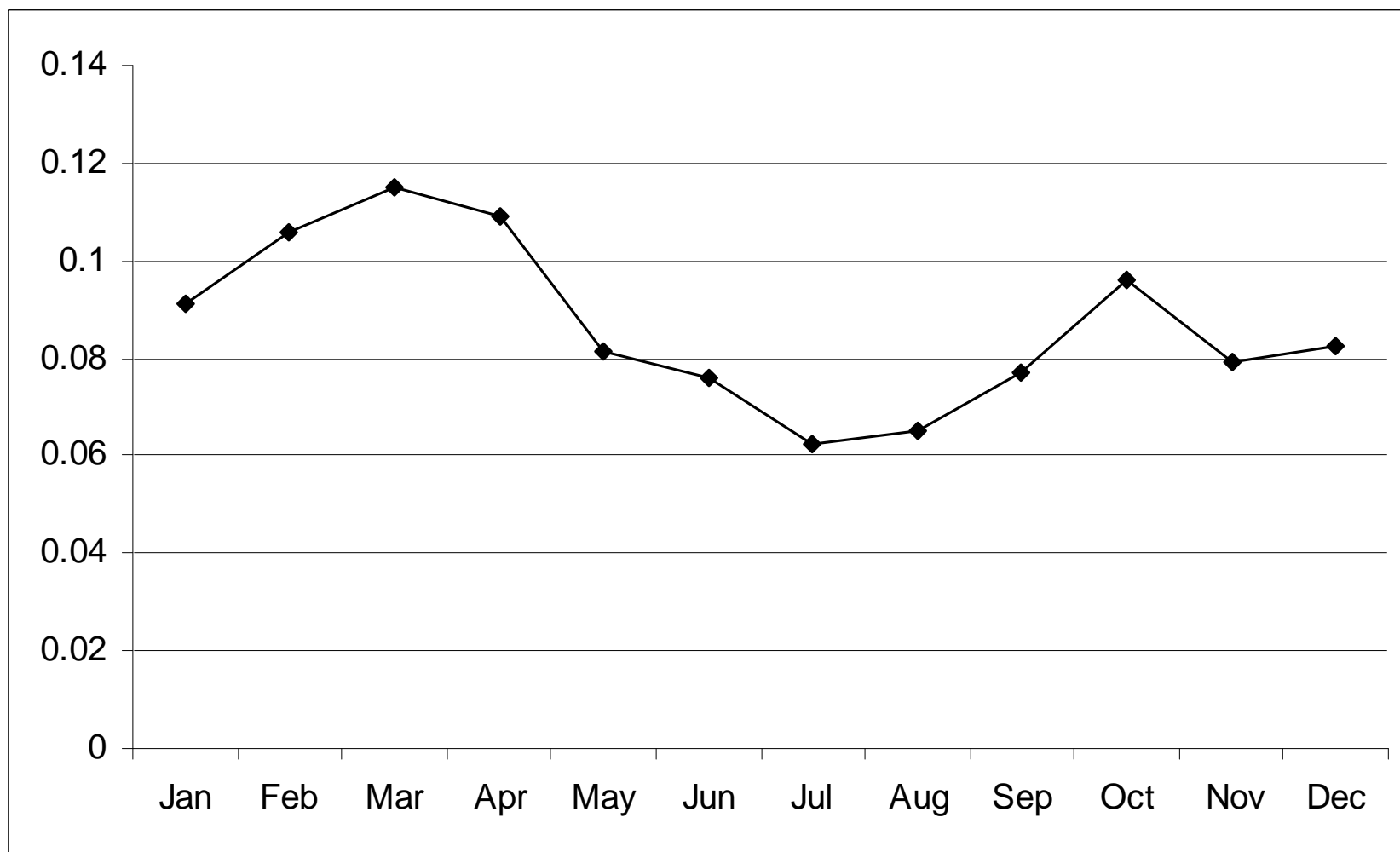


Figure 4
Estimated Total Return to Advertising

This figure shows the total returns to advertising in terms of the flow/advertising relation by showing the times series results for the 85th and 95th percentile advertisers at intervals over the 1992-2001 sample period. At each point in time we took the advertising expenditures of the fund family that was closest to (and above) the 85th (95th) percentile in advertising expenditures and applied the coefficients from that period's flow-performance regression to generate the dollar flows to advertising. The dollar flows to advertising were then divided by the actual advertising to derive the returns to advertising.

