

Assessing the Costs and Benefits of Brokers in the Mutual Fund Industry^{*}

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Abstract

Many investors purchase their mutual funds through intermediated channels, engaging and paying brokers or financial advisors for fund selection and advice. We analyze five possible benefits to consumers of brokered fund distribution: (a) Assistance selecting funds that are harder to find or harder to evaluate; (b) Access to funds with lower costs *excluding* distribution costs; (c) Access to higher performing funds; (d) superior asset allocation, and (e) Attenuation of behavioral investor biases. Along these dimensions, we find it difficult to identify the tangible benefits delivered by brokers. While brokerage customers are directed toward funds that are harder to find and evaluate, they pay substantially higher fees and the funds they buy have lower risk-adjusted returns than directly-placed funds. Brokered funds exhibit no better skill at asset allocation. Furthermore, funds sold through brokers demonstrate more performance sensitivity than funds sold through the direct channel. While the costs of brokers' services are relatively clear, their benefits are not easily captured by the tangible measures explored in this paper.

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Abstract

Many investors purchase their mutual funds through intermediated channels, engaging and paying brokers or financial advisors for fund selection and advice. We analyze five possible benefits to consumers of brokered fund distribution: (a) Assistance selecting funds that are harder to find or harder to evaluate; (b) Access to funds with lower costs *excluding* distribution costs; (c) Access to higher performing funds; (d) superior asset allocation, and (e) Attenuation of behavioral investor biases. Along these dimensions, we find it difficult to identify the tangible benefits delivered by brokers. While brokerage customers are directed toward funds that are harder to find and evaluate, they pay substantially higher fees and the funds they buy have lower risk-adjusted returns than directly-placed funds. Brokered funds exhibit no better skill at asset allocation. Furthermore, funds sold through brokers demonstrate more performance sensitivity than funds sold through the direct channel. While the costs of brokers' services are relatively clear, their benefits are not easily captured by the tangible measures explored in this paper.

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1. Introduction

The neoclassical model that is the baseline for financial economics leaves little room for financial institutions (Allen (2001)). However, all mutual fund investors hire professional investment managers to select securities. In addition, while some investors buy funds directly, many choose to pay substantial fees to engage the services of distribution professionals such as brokers or advisors, thus adding another link to the intermediation chain. In aggregate, fund distribution is a big business. Using a variety of industry data, we estimate that mutual fund investors may have paid as much as \$3.6 billion in front end loads in 2002, \$2.8 billion in back-end loads and another \$8.8 billion in 12b-1 fees, in addition to the \$23.8 billion paid in 2002 for investment management fees and other operational expenses.¹

The question we pose in this paper is a simple one: What benefits do broker-channel mutual fund consumers enjoy in exchange for their expenditures on loads and on 12b-1 fees? While research has focused on whether mutual fund investors, on net, benefit from professional investment management, there is less work to date analyzing the benefits of professional brokerage services in the mutual fund industry. We focus on five measurable characteristics of the funds purchased through the broker and direct channels:

- (a) Do consumers in the broker channel find funds with *high search or analysis costs*, i.e., those that would be otherwise difficult to find or evaluate;
- (b) Do consumers in the broker channel find funds with *lower non-distribution fees*;
- (c) Do consumers in the broker channel find *better performing* funds;
- (d) Do consumers in the broker channel enjoy superior *asset allocation*;
- (e) Do consumers in the broker channel display fewer *investor 'biases'*.

¹ Reported estimated aggregate front and back loads are based on data from three sources. Aggregate sales and redemptions come from April 2003 Investment Company Institute publication, 'Trends in mutual fund investing'; average maximum front and back loads for individual fund share classes come from the FRC database that is the base of the empirical analysis in this paper; average assessed loads as a share of maximum come from the February 2004 ICI publication "The cost of buying and owning mutual funds."

We find some evidence that brokers focus on smaller, younger funds that are not covered by major fund rating services. These funds are likely to be more difficult for consumers to find on their own. However, funds sold through the broker channel do not appear to charge lower non-distribution fees; brokers are not directing investors to less expensive funds. Brokered funds do not perform better than direct-channel funds. We find that funds sold through the broker channel have lower raw and risk-adjusted returns than direct-channel funds, even before distribution expenses are deducted. Broker-sold funds reflect different asset allocations that change over time, but when risk-adjusted, these recommendations produce an aggregate Sharpe Ratio similar to that of direct channel funds. Finally, customers of brokers exhibit stronger performance sensitivity than investors in direct-channel mutual funds. There has been debate about the optimality of performance-chasing. Without directly addressing this debate, we demonstrate that this behavior is most pronounced in funds sold through the broker channel.

As a whole, our investigation identifies little tangible evidence of additional value delivered by broker-channel funds. However, our search for broker benefits is incomplete, given the data we currently have at hand. We draw inferences from fund-level data, not shareholder account level data nor behavioral market research. The more granular information would allow us to test if customers of brokers save more than they would without brokers, choose more appropriate investments or more customized portfolios, or have higher satisfaction and comfort levels about their investment decisions. We fully recognize that these benefits may be very real and substantial, but will be addressed only with data that allow us to evaluate individual investors' decisions. This paper establishes, at an aggregate level, a set of baseline facts about the funds that are sold through the broker and direct channels and the customers who buy them.

We believe that the study of fund distribution channels is long overdue. Fund industry participants, policy-makers, and the academic community can all benefit from an analysis of this aspect of the mutual fund business. From a business perspective, distribution channels consume a substantial portion of fees paid by mutual fund consumers. Distribution capability is the scarce resource in the U.S.

fund industry and there is a vigorous debate in the asset management business regarding the value added by the “factory” (investment management) versus the “channel” (distribution or sales channel). In this debate, the importance of the distribution channel is increasingly being acknowledged as critical to success in the asset management industry.

From an academic perspective, the past 10 years have seen an explosion in research focusing on how behavioral biases affect investment behavior. While biases like overconfidence, mental accounting, and loss aversion characterize individuals, little research has focused on whether distribution professionals attenuate—or magnify—these biases. For example, while investors might have bounded rationality—and be unable to process the mountain of information on the thousands of funds available—paid professional advisors might be able to help them sift through all of this data and make better investment decisions.

Finally, some of the recent scandals in the fund industry have focused on distribution practices alleged to harm consumers. For example, it has been alleged that brokers have subverted their clients’ interests to their own and to the operators of the funds they sell. While expensive marketing and sales efforts promote a large variety of products, important differences separate the responsibilities owed by those who sell financial products from the responsibilities of those who sell other products. Parties who advise clients about investments and sell them financial products may owe their clients certain duties that are higher than “*caveat emptor*.” At a minimum, brokers are subject to NASD rules, which include a requirement that they recommend suitable investments for their clients. Financial advisors, as fiduciaries of their clients, owe an even higher standard of care, and must put their clients’ interest ahead of their own. The extent to which financial advisors can be held to these higher standards is a complex issue in regulation and law, and is currently a topic of substantial debate.² In light of these alleged duties, it seems appropriate to look for evidence that sellers of funds deliver valuable benefits to their customers. Unfortunately, there are few hard facts in this public debate. Furthermore, the allegations of prosecutors, politicians, and the news media invariably focus on pathologic situations that are likely to capture

² See K. Pender, “Brokers versus advisors” San Francisco Chronicle, 9/21/ 2004 for a recent layperson’s discussion of the evolving issues. <http://sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2004/09/21/BUGI18S4DJ1.DTL>

attention. Given the importance and increasing regulatory attention paid to the mutual fund industry, it is important that academic researchers establish a set of baseline facts about how fund distribution works.

The remainder of the paper is organized as follows. Section 2 is a brief sketch of the means by which mutual funds are distributed in the United States. Section 3 describes our data sources and provides summary statistics. Section 4 looks for evidence that brokers help consumers find funds that would be hard to find or evaluate. Section 5 assesses whether brokers help consumers find funds with lower *non-distribution* fees. Section 6 analyzes the realized returns of funds in brokered and direct channels. Our goal in this section is to see if brokers direct their clients to funds that outperform, or at least perform well enough to make up for the higher costs of distribution. Section 7 provides an analysis of aggregate asset allocation decisions in the broker and direct channels. Section 8 tests whether home bias and return-chasing behavior are more or less pronounced among the customers of brokers than among direct-channel mutual fund customers. Section 9 outlines alternative explanations for some of our results. Section 10 concludes the paper and suggests directions for future research.

2. Distribution Channels in Mutual Funds

This section describes the mutual fund business and mutual fund distribution channels. In addition, we motivate the empirical work by discussing five hypotheses about the potential benefits of brokers for mutual fund investors.

Distribution of Mutual Funds. Marketing analysis starts with a “channel map” which, applied to the mutual fund industry, traces out the various sales channels that bring mutual funds and consumers together. In putting together this description, we draw liberally from our discussions with mutual fund practitioners, as well as from Gremillion (2001), Pozen (2000) and Reid and Rea (2003). We acknowledge that categorizing fund distribution channels is a difficult task given the relatively poor disclosure of distribution activity in this industry.

Each mutual fund is an independent legal entity with a board of directors that has the fiduciary duty to make decisions that benefit the fund shareholders. In principle, each year, a fund’s board selects a set

of service providers to serve the fund's investors; these include the investment manager, the distributor, the fund administrator, fund counsel, fund auditors and others. Funds typically have no employees and function by outsourcing 100% of their activities to the various service providers. A fund's board is legally free to replace the investment manager or distribution agent, just as it is free to replace a fund's counsel or auditor. In practice, boards rarely terminate contracts with investment managers. A result (or perhaps cause) of this 'stickiness' is that consumers typically identify funds with their sponsors. Sponsors are generally the investment manager for the funds within a particular fund family. Examples of well-known fund sponsors include Fidelity, Franklin-Templeton, Putnam, Vanguard, among many others.

One of a fund's key business decisions is how it will be distributed or sold to consumers. The fund sponsor has a keen interest in sales and distribution, and more generally in the asset-gathering process. Investment management contracts in the U.S. virtually always pay investment managers a fee that is a mildly downward-sloping function of the amount of assets under management. Asset-gathering strategies that increase investor inflows and retain existing assets produce higher revenues to fund sponsors. Given that many costs of investment management are fixed, this would suggest that sponsors would enjoy increasing profitability as assets grew. Another reason for the interest in distribution is that asset-gathering strategies which provide stable investor bases lead to less frequent transactions and hence lower transaction costs for the portfolio-management side of the business.

A variety of channels link mutual funds and their consumers; the categorization of channels in the fund industry is quite complicated. For example, Figure 1 shows the distribution categories used by three fund industry consultants (Lipper, Financial Research Corporation, Strategic Insight) and the industry trade association, the Investment Company Institute. Each classification scheme defines channels with different labels and different levels of specificity. These taxonomies divide funds along three dimensions: who sells the funds; who buys the funds; and what ancillary services are offered.

Along the first dimension, *Who sells the funds?*, the choices are direct sales from a fund itself or sales through a broker/dealer. These broker/dealers might be freestanding organizations, they may be

affiliated with the fund itself under a “captive” arrangement, and they may be part of a bank or an insurance company.

Along the second dimension, *Who buys the funds?*, the fund can either be sold to a single consumer or to a group or organization that acts as the representative for a group of individuals. The latter include institutional sales to 401k plans, pension funds, profit sharing plans and endowments; Lipper separately breaks out bank sales to bank trust departments. Other smaller groupings include affinity funds which are sold to individuals who have a relationship with a member organization or employee funds.

Some taxonomies—like that of the ICI—add the dimension of ancillary services, by distinguishing between broker/dealers who provide advice (full-service broker) and those who primarily provide execution (so-called supermarkets that vend a variety of funds but provide little personalized advice.) Strategic Insight categorizes this latter channel as part of direct channel.

For this paper, we employ a high-level categorization of distribution methods, based on the FRC and Lipper definitions. In our taxonomy, funds may be *directly distributed* or *broker-distributed*. We combine bank, captive and wholesale channels into a single “broker” channel. We exclude funds sold through the ‘institutional’ channels, sales of which may be driven by a set of dynamics different from the retail fund market.³ We also exclude fund share classes for which the primary distribution channels reported by Lipper and FRC are inconsistent with each other.

The direct channel is comparatively easy to characterize. Direct channel funds have relatively straightforward financial arrangements with mutual fund investors. Investors generally do not pay front-end or back-end loads to purchase mutual funds through the direct channel. However, direct sales funds often levy annual fees for distribution, called “12b-1” fees, named for the section of the Investment Company Act under which they were authorized. Funds with 12b-1 fees under 25 bp may still market themselves as “no-load” funds, leading some funds without 12b-1 fees to market themselves as “*pure no-loads.*”

³ The institutional channel includes funds that sell to organizations rather than to individuals. These institutions included corporations, endowments, pension plans, and fiduciaries such as bank trusts, legal trustees or accountants who serve as trustees.

The academics' image of the direct channel is perhaps best represented by Vanguard, which obtains new customers through advertising and through word of mouth. However, the direct channel has been evolving into an increasingly complex system. Funds that are "directly" distributed are sometimes used by fee-based financial advisors who assist clients. These funds are also often made available through fund supermarkets like Schwab OneSource, or available for purchase as part of defined contribution retirement plans.⁴ This service is typically paid for with an advisory fee that is outside of the fund expenses or distribution costs. As a practical matter, the "direct" channel may not be as direct as we might imagine, in which case, there may be fewer differences between it and more labor-intensive distribution channels.

The broker channel involves more complex financial arrangements with both the mutual fund investor and the mutual fund's management company. From an investor's perspective, the broker provides financial advisory services and can be paid in a number of ways.⁵ Explicit distribution fees include front-end loads, back-end loads, and annual 12b-1 fees collected from the investor's mutual fund investments directly. Brokers are also sometimes compensated with indirect distribution fees. For instance, arrangements where management companies pay part of their management fee to brokers in the form of "revenue sharing agreements" have recently received attention in the press.⁶ The result is a complex and often poorly disclosed set of payments and incentives. In this paper, we sometimes construct a measure of "non-distribution expenses" by subtracting from funds' annual expenses their reported 12b-1 distribution charges, which are explicitly identified. Nevertheless, we recognize that there

⁴ We attempt to exclude funds sold into defined contribution plans by excluding from our study share classes that are identified as being made available to these plans.

⁵ In practice there is not necessarily a one-to-one link between the timing of distribution fees paid by the consumer and those received by the broker. The actual payments made to brokers may be accelerated relative to the payments received by consumers by borrowing against or securitizing future expected distribution fees. Conversely, it is possible to pay brokers at a slower rate than the payments received by the consumer. Information on the specific payments made to brokers are typically not disclosed and we do not have access to this data.

⁶ For example, see Johannes, Laura and John Hechinger, "Conflicting Interests, Why a Brokerage Giant Pushes Some Mediocre Mutual Funds," *The Wall Street Journal*, January 9, 2004, A1.

may be distribution fees hidden within in management fees or in returns that we are unable to explicitly measure.

Why should the form and quality of distribution matter? Sales effort consumes resources, and the expenses for fund distribution are material. As we report later in the paper, 53% of all assets in our sample are held in the broker channel, and total fees on funds sold through this channel are over twice as large as the fees of funds sold through the direct distribution channel. Revealed preference, combined with the thriving continuing existence of broker-sold mutual funds, suggests that there must be benefits to having a broker assist in fund selection.

There are many potential benefits of brokers that we are currently unable to measure, and which we discuss later in the paper. We focus on a variety of measurable ways in which the performance of broker-channel funds and the behavior of broker-channel investors could differ from the performance and behavior observed in the direct channel. We then assess what these differences reflect about measurable benefits and costs that the labor-intensive and expensive mutual fund brokerage industry may bring to its customers:

1. Reduced search and analysis costs. Finding and selecting a mutual fund from among the thousands of possible choices is a difficult and potentially confusing task. The search and evaluation costs for some types of funds and customers may be greater than for others. “Harder to find funds” may include those that are younger and smaller. Funds not covered by Morningstar, which has evolved into the premier source of consumer mutual fund data, may also be more difficult for unaided investors to find and analyze. In addition, there is some variety among funds in how easily their investment strategies and performance can be interpreted by an unaided individual investor. Money market funds and index funds are likely easier to understand than would be international funds or

more specialized funds.⁷ If consumers use brokers to help them find funds for which search and analysis costs are higher, then we should see brokers specializing in these types of funds.⁸

2. Reduced non-distribution expenses. There is ample evidence that higher expenses are systematically correlated with lower after-expense performance.⁹ Inserting a paid broker into the fund selection process seems to potentially increase the total costs borne by the fund consumer. Since they do not make portfolio decisions, brokers cannot change the performance of a fund. They may, however, direct consumers to different types of funds. If brokers help the consumer find funds whose *non-distribution costs*, such as investment management, custody, legal, and audit expenses, etc., are lower, then these lower non-distribution fees may partially or entirely offset the higher costs of distribution for broker-channel funds.
3. Higher risk-adjusted returns. Just as consumers pay investment managers with the hope that they will select *portfolios of securities* that produce positive risk-adjusted returns, perhaps they pay brokers to select *mutual funds* that produce positive risk-adjusted returns. While academic research has failed to find that investment managers can repeatedly outperform risk-adjusted indices, perhaps professional brokers might help their customers find superior performing funds. These funds may not be “superior” in an absolute sense, with persistent positive alphas, but rather in a relative sense, i.e., relative to the alphas of funds sold through the direct channel.
4. Improved asset allocation. Perhaps a benefit of working with a broker is to deliver timely asset allocation decisions. While we cannot identify whether individual investors’ asset allocation decisions are ideal given their preferences and levels of risk aversion, we can observe differences in channel-wide aggregate asset allocation, as measured by the channel-specific asset weights of the various major investment classes. We can also evaluate the performance of portfolios whose weights

⁷ An important caveat: flows in and out of broker-channel money market mutual funds may reflect their role as a transaction account, rather than an investment asset.

⁸ The importance of search costs has been modeled in papers by Hortacsu and Syverson (2003), Garcia and Vanden (2003). Elton, Gruber and Busse (2004) study investors’ index fund choices, perhaps construed as including search costs.

⁹ This is a large literature; for example, see Jensen (1968), Elton and Gruber (1996), Malkiel (1995), Elton, Gruber, and Blake (1996), Carhart (1997) to name a few for evidence of the negative impact of expenses on performance.

correspond to these asset-weighted channel allocations. In evaluating channel-specific asset allocation ability, we separate the potential asset allocation benefit from the fees and security selection ability by applying index returns to the channel asset weights.

5. Attenuation (or accentuation) of investor ‘biases’. Recent academic research has focused on the impact of potential behavioral biases on individual investors’ portfolio decisions.¹⁰ Most of these biases are costly to investors to the extent that they induce decisions that impose additional taxes and transaction costs on investors. The biases considered include myopia and extrapolation of historical results into the future. These biases affect behavior in the mutual fund industry in a variety of ways
- a. Home bias: investors appear to over-invest in local assets and under-invest in assets from more distant locations.
 - b. Recency: investors appear to overweight the most recent data (e.g., performance data) in performance evaluation. This might be less of a problem if the funds to which funds are directed exhibit stronger momentum effects which could benefit investors.
 - c. Extrapolation: the tendency to extrapolate current trends, manifested in a strong relationship between past performance and current flows.
 - d. Saliency: Barber, Odean and Zheng (2003) argue that investors are more sensitive to salient fees like front-end loads than they are to ongoing but less visible mutual fund charges like 12b-1 fees and other expenses.
 - e. Non-linear preferences: While loss aversion predicts that consumers should react more strongly to losses than gains, existing mutual fund research suggests that investors respond more to positive performance than to negative performance (the so-called non-linear performance flow relationship.) Given the persistence of negative performance, this relative

¹⁰ For a recent survey of work on behavioral finance, see the review piece by Barberis and Thaler (2003).

insensitivity of flows to negative results is sometimes considered anomalous, although recent papers suggest otherwise.¹¹

We focus on assessing the pervasiveness of behavior consistent with these biases among funds sold through the broker and direct channels. On one hand, brokers may play a role in attenuating investors' biases. On the other, it may be that some of the biases that have been attributed to individual investors, looked at more closely, reflect the advice of brokers. Individuals who go to brokers are sometimes characterized as seeking either "advice" or "validation." It is reasonable to assume that the decisions of brokerage clients will reflect, in whole or part, the advice or validation they get from their brokers, and we use this assumption to compare the apparent biases of direct investors versus those advised by brokers.

Broker channel attributes that we do not measure. We acknowledge caveats with these predictions and more generally with our research design. First, we cannot measure the intangible benefits that a broker might deliver to her clients, such as the sense of security that accompanies having a "professional" help with a major decision. We also cannot measure the value of having investments tailored to their individual needs and risk preferences. In addition, we cannot observe what assets brokered-served customers would have been purchased had brokerage advice been unavailable. In the absence of a broker, it is likely that much of the money invested in broker-sold mutual funds would have gone uninvested or would have been invested in entirely different asset classes. While we cannot measure these potential benefits to brokers, we are open to the possibility that they are very valuable to consumers and hope to address some of them as part of a longer-term research agenda.

A second but related caveat concerns the interpretation of our results. If we observe differences between the brokered and direct channel, we cannot generally distinguish whether these are caused by the actions of the brokerage channel or the result of the sorting of different investor types to different channels. Industry research suggests that "do-it-yourselfers" populate the direct channel, whereas others, seeking advice and validation, populate the broker channel. These groups may have different fee

¹¹ For a discussion of this issue, see Gruber (1996), Zheng (1999), Berk and Green (2003). More generally, the work on failure of funds to demonstrate repeated performance would suggest that return chasing might not be optimal.

sensitivity, confidence in their own abilities, risk preferences, etc. Different behavior observed by channel may reflect the sorting of consumers to the channel, rather than any activities of brokers.

An alternative model. Rather than seeing their primary responsibilities as to the investors who buy funds, brokers give priority to their self-interest or to the interests of the management companies whose funds they sell. This alternative view of the brokerage relationship would predict that brokers' advice to their clients would reflect a concern with maximizing the value of present and future fees and other benefits to the brokers. While we do not have data on broker-level sales incentives, we can provide some evidence on the question by studying the relationship between fund sales and the level of distribution fees. Specifically, we assess whether fund flows are higher when the level of sales incentives are greater, holding other fund characteristics equal. Because there is no reason to believe that funds which pay the highest sales commissions are those that are either the most suitable for investors nor in the clients' best interest, positive evidence in this test suggests that this alternative view may have some power for describing brokers' actions.

Our empirical approach in this preliminary study is to first look for evidence of measurable benefits that would offset the costs of using another layer of intermediation in the investing decision. While we recognize the inherent limitations of our empirical design, we feel that the benefits of providing benchmark facts on performance and behavior in the direct and broker channels outweigh these costs.

3. Data and Descriptive Statistics

Our dataset combines information from the Financial Research Corporation (FRC), from the CRSP "survivor-bias-free mutual fund database" and from Morningstar. The Financial Research Corporation performs research on the investment management industry, and focuses in particular on mutual fund distribution.¹² FRC provided with industry snapshots from 1998, 2000, and 2002. Each snapshot has some historical data, and our analysis uses fund-year and fund share class-year observations from 1996

¹² For more information, see http://www.frcnet.com/frc_about.asp. As we note in our introduction, the views in this report do not reflect those of FRC, its clients or any of the other commercial parties from which we obtained data or advice.

through 2002. The critical piece of data provided by FRC is a distribution code for each fund share class, which characterizes the primary distribution channel for that share class. FRC also reports the distribution code assigned by Lipper, another major fund data provider. For individual fund share classes, these codes rarely change over our sample period.¹³

Coding the distribution channel of a fund share class introduces a problem similar to assigning a primary SIC to categorize a firm—while the code may fairly represent the bulk of the firm’s activities, a single code is not perfectly nuanced for a multiproduct firm and must reflect some degree of judgment. We compare the FRC codes to Lipper distribution channel codes, and we exclude from our analysis fund share classes where the two sources differ substantively in the reported distribution channel. This occurs for 5.9% of the fund classes that represent 3.2% of the assets in our sample.¹⁴ We also exclude institutional funds, leaving a sample of fund share classes sold through the direct channel and a sample of fund share classes sold by brokers.

We use the CRSP data to measure monthly mutual fund returns and to corroborate the various fund investment objectives and other descriptive information. In some tests, we use factor loadings from the CRSP database, which require a 3-year fund return history.¹⁵ This may induce some survivorship bias in the sample of funds for which we can observe factor loadings. We also collected additional fund data from Morningstar, including Morningstar ranking and manager tenure.

Table 1 reports the top 25 largest fund share classes for our two broad distribution channels (direct and broker). While most mutual fund research focuses primarily on equity funds, money markets funds account for 13 of the top 25 in the brokered channel versus four in the direct channel, while bond funds account for one or two of the top 25 among each channel. Table 2 reports the aggregate size of our

¹³ These codes are defined by share class, rather than by fund, allowing for a more specific classification of fund classes by distribution type.

¹⁴ We also checked our channel classifications against data for 2002 provided by the ICI. We repeated our analysis on a sample of funds that excludes those for which the ICI channel classification does not match the the FRC and Lipper classification. With the exception of the inflow velocity results documented below, the results in this paper are very similar in this more restricted sample.

¹⁵ Factor loadings for newly introduced share classes of funds with existing track records are assumed to match the factor loadings of the older share classes of the same fund,

sample. Panel A reports the number of funds, Panel B the number of share classes and Panel C the assets under management. In each panel, we report the total in our sample and the division by broker and direct distribution. We report data for 1996, 1998, 2000, and 2002.

In 2002, our sample covers 10,415 share classes in 4,541 funds representing assets of \$3.8 trillion.¹⁶ Brokered distribution is the dominant form of distribution, representing 81% of all share classes, 66% of all funds and 53% of all assets in 2002. Direct distribution accounts for the remainder of the funds in our sample, with institutional funds, exchange-traded funds, and other funds excluded from our sample. Funds sold through the broker channel account for a larger fraction of share classes than funds because brokered funds are more likely to have multiple share classes, differing in the structure of their fees.¹⁷ The brokered channel has been losing share overall to the direct channel in assets, with its assets under management dropping from 59% of this total to 53% over the period that we study.

These aggregate data help frame our analysis of the differences between fund channels. Investors hold trillions of dollars in savings through each of these channels, and differences in investor behavior between the channels are an issue of first-order importance to the economy and to household welfare. While the line between “direct” and “brokered” distribution is not always drawn sharply, and there are funds that are sold both directly and through brokers or other investment advisors, professionals in the fund industry view the two channels as having quite different characteristics. The analyses in the sections that follow assess the dimensions along which differences between these channels exist.

4. Do brokers help their customers find “hard to pick” funds?

The mutual fund buying process reflects search costs: finding appropriate mutual funds can consume both time and money spent on expert advice. The average fund-owning household has a handful of funds, which it must select from thousands of choices (in our sample, from over 10,000 different share classes in

¹⁶ These numbers exclude institutional funds and those for which the method of distribution is ambiguous. Including these, there were 15,616 share classes with \$5.8 trillion in assets under management in 2002. Institutional funds account for the majority of the difference between our sample and the overall sample with respect to number of share classes (68%) and assets under management (81%). The data restriction imposed in later tests where we require factor loadings causes us to lose approximately 35% of all funds but only about 13% of all assets.

¹⁷ See Nanda, Wang, and Zheng (2003) for a study of the impact that the explosion of share classes has had on the relation between loads and flows.

over 4,500 funds.) We speculate that, left to their own devices, fund investors would be more likely to select funds that are easier to find and analyze, and less likely to select those funds that are harder to find and analyze. One benefit of working with professional brokers is that they might help investors to locate and invest in funds that might otherwise be overlooked. The corollary of this statement is that we might find that brokers specialize in matching investors with hard-to-find funds.

We posit that a fund is easier to find if it has a larger business footprint: It is bigger, it is older, its management team has been in place longer, it is covered by the major fund rating services, it is well covered in the press, or it is the subject of conversations by friends, coworkers or family.¹⁸ To assess empirically whether brokers direct investors to funds where search costs are higher, we look several measures of fund visibility. We also distinguish between the funds that are “offered” and the funds that are “sold” by each channel. Our view is that equal-weighted results capture the product set or menu *offered* by a channel.¹⁹ We also report asset-weighted figures, which represent what investors have actually *purchased*, on net, over time. The characteristics we analyze include:

- The average size of funds sold through the direct and broker channels.
- The average age of the funds offered (equal-weighted) and sold (asset-weighted).
- The share of funds offered and sold that are “young” (i.e., under 3 years old)
- The share of funds offered and sold that are “small” (i.e., under \$100 million in assets under management)

Once a consumer has identified a fund, she then has to analyze whether the fund is appropriate. Brokers can help consumers analyze funds whose performance and strategies would otherwise be hard to understand. To test whether brokers specialize in harder or easier to understand funds, we look at various elements of a fund’s portfolio that affect its ease of evaluation:

- We hypothesize that “easier” to evaluate funds include money market funds, named index funds, and domestic funds, especially larger cap funds.

¹⁸We also acknowledge that performance plays a role in identifying a fund, and discuss this further in Section 6.

¹⁹ We acknowledge that in some cases, equal weighting may over-weight infrequently used share classes in these calculations and therefore the value weighted results may more dependably represent the nature of the industry..

- “Harder” to evaluate funds include international funds and smaller cap equity funds. We also hypothesize that the strategies of actively managed funds are harder to evaluate than those of index funds. Finally, funds not covered by Morningstar are harder for individual investors to evaluate without the aid of a broker.

Table 3 reports characteristics of funds by channel, and Table 4 reports the composition of fund portfolios by channel. Table 3, Panel A shows that brokers offer funds that are considerably smaller than those offered in the direct channel.²⁰ For example, in 2002, funds sold by brokers were 38% smaller than those sold through the direct channel, with an average fund size of \$725 million versus \$1,174 million. This is consistent with the hypothesis that brokers bring smaller funds to the attention of their clients. However, examining this result more closely in Panel B, we find that additional evidence does not support this proposition. If we examine the fraction of funds offered that are “very small,” i.e., with assets of less than \$100 million, the menu proposed by brokers to their customers has fewer small funds. A small number of very large funds drive the larger average size of direct-channel funds; the broker channel, in aggregate, does not seem to direct a larger share of assets to the very small funds.

Panel C examines the age of funds offered and sold by the different channels. Starting with the average age of funds, brokers *offer* products that are equivalent to the offerings of the direct channel, with an average age of 11.2 versus 11.4 years (in 2002). Looking at the products actually sold (versus offered), the asset-weighted results confirm this result: there is little difference between the average age of funds sold by the two channels. But, in Panel D, we see that the funds sold by brokers (asset-weighted) are more than two times as likely to be young, in the sense of being less than three years old.

Panel E examines funds by channel as a function of manager tenure. In most years, brokers offer funds whose managers have been in place for a shorter period of time, which is consistent with the broker channel selling funds that are more likely to be under three years old.

²⁰ While our unit of analysis is normally a share class, for the analysis in Table 3 we look at the fund as the unit of analysis, as the visibility of a fund is probably more related to its overall size, as opposed to the sizes of its individual share classes.

Finally, Panel F examines funds by channel as a function of whether the funds are rated by Morningstar. Morningstar does not rate money market funds, so this analysis is conducted among bond and equity funds. We posited that funds without Morningstar ratings might be more difficult for consumers in the direct channel to evaluate, so they would be more likely to be offered and sold in the brokered channel, where a broker can offer her opinion on the fund. Indeed, brokers are more likely to offer unrated funds; throughout the period we analyze they are considerably more likely to sell them and this tendency is stronger in recent years. The asset-weighted results suggest that unrated equity funds are two to three times more prevalent among those equity funds sold by brokers versus those sold directly.

The different panels of Table 3 suggest that funds that go through brokered distribution are on average somewhat smaller²¹, younger and are less likely to be rated by Morningstar. This pattern of results is somewhat consistent with our hypothesis that the broker channel helps steer investors toward funds that are more difficult to identify.

Table 4 presents characteristics of the portfolios of funds sold through the direct and brokered channels. We hypothesize that brokers have a comparative expertise in assisting customers pick funds that are “hard to analyze.” No simple metric identifies the “degree of difficulty” in assessing a fund, so we report a variety of measures of fund portfolio characteristics. Our priors are that harder to evaluate portfolios include international securities and small cap stocks, as well as actively managed equities. In contrast, brokers might have little comparative advantage over direct channels in selling “easier” products. These products would include money market mutual funds, which have historically maintained stable net asset values; index funds, where differences tended to focus on expenses, rather than skill; and large-cap stocks.

The evidence in Table 4 is mixed. Consistent with the idea that brokers play a role in helping investors assess the performance and strategies of “complicated” funds, Panel A shows that the brokerage channel offers and sells substantially more foreign funds than does the direct channel, 14.0% versus 10.4% in funds offered and 7.3% versus 5.5% in funds actually sold. Panel D shows that they offer and

²¹ However, the prevalence of very small funds is the same across the two channels.

sell considerably less of the simplest equity products, index funds. In aggregate, only 2.4% of the assets in the brokered channel are in index funds, versus 18.9% in the direct channel.

In contrast, the data in Panel A suggest that brokers are less likely to offer and sell equities than the direct channel funds. Taken at face value, this seems inconsistent with the notion that the broker channel specializes in helping clients with informationally-demanding investments. However, examining the 2002 asset-weighted figures, we can calculate the amount of *actively-managed* equity sold by the two channels using the data on index funds from Panel D. For brokers, 35% of all assets are in actively-managed equities (37.4% - 2.4%), whereas for the direct channel, this figure is only 29.6% (48.5% - 18.9%). This is somewhat more consistent with the hypothesis that brokers “specialize” in marketing funds that allegedly require greater analysis: actively managed domestic equities and as mentioned above, international securities.

Countering this view, substantially more of the assets held through the broker channel potentially require the least assistance from a broker: money market funds. While brokers offer a smaller number of money market fund share classes, the asset-weighted results tell a different story: 29.9% of all assets in brokered funds are in money market funds versus 22.3% in the direct channel. While there may be benefits of holding money market assets in a brokered distribution channel, it is unlikely that this benefit is the superior advice given by the broker regarding money market fund selection. This finding suggests that the broker channel is not only a means by which investment advice is delivered, but also a means for handling transaction needs of customers. Alternatively, broker-channel money market holdings may represent another type of brokerage firm customer—investors holding individual stocks who use their money market funds as a place to hold cash.

Overall, this first investigation provides some results that are consistent with the notion that brokers tend to specialize in products that are harder for the consumers to find and analyze. The one main exception to this general finding is that the broker channel offers and sells considerably more money market mutual funds. This is probably less due to the role of brokers in giving advice on mutual fund

selection than to clients using their brokerage accounts (and money market funds) as pools of liquidity for subsequent investment or transactions.

5. Do brokers help their customers find lower cost funds?

Brokers charge investors for their services, adding to the cost of fund acquisition and ownership. The most consistent pattern of evidence in the academic literature on mutual funds is that expenses are a drag on performance. However, if brokers direct investors toward funds whose non-distribution expenses are lower, then higher distribution charges on funds sold through the broker channel may be partially or fully offset.

We test this hypothesis by measuring the fees that fund investors pay for services other than distribution. We define “non-distribution expenses” as the annual expense ratio net of any 12b-1 fees. Non-distribution expenses thus include management fees, as well as administration, custody, transfer agency, audit, legal and board fees. We acknowledge that some distribution charges will be hidden in what we label “non-distribution charges”, in particular when management companies engage in revenue sharing with the brokers who sell their funds. We also report the components of distribution fees, including annual 12b-1 fees, maximum front-end loads, and maximum back-end loads, and construct a measure of the annuitized level of all distribution fees, assuming a five-year investor holding period.²² Table 5 reports the fee components by channel for equity, bond and money market funds, as well as the class of “broad equity” funds, which excludes funds which focus on particular specialty sectors. Table 6 reports a multivariate analysis of non-distribution fees.

Distribution charges. Front-end and back-end loads and 12b-1 fees compensate brokers and support other marketing activities. Table 5 shows the components of these expenses, reported on both equal weighted and asset weighted bases. As expected, 12b-1 fees, maximum front-end loads and back-end loads are all substantially higher for brokered funds than for direct funds. All of these fees are highest for

²² We have data on the maximum distribution fees that might be levied. Funds often have break points for distribution fees, whereby larger investments enjoy lower distribution fees. In addition, many retirement accounts are sold on a “load waived” basis. Due to these discounts, actual loads paid are likely to range from 25-50% of the maximum loads we report (See ICI *Fundamentals*, February 2004, p. 19)

equity funds, smaller for bond funds and smallest for money market funds. Except for money market funds, brokered distribution fee components are substantially larger—by a multiple of five or more—than for direct distribution. The data on front-end loads and back-end loads reflect the maximum loads that the funds can charge, however. While this matches the load that an individual consumer with a small account would pay, larger investors and those who purchase funds on a load-waived basis pay substantially lower fees.

Non-distribution charges. Not only are distribution charges for brokered funds higher, non-distribution expenses for brokered funds are slightly higher as well. Weighted by assets, non-distribution expenses are 2 basis points, 23 basis points, and 4 basis points higher respectively for equity, bond, and money market funds sold through the broker channel. The first two of these differences are statistically significant, while the third is not. This univariate result, confirmed in a multivariate setting below, suggests that the higher fees paid to brokers are not offset by lower non-distribution charges. Rather, investors in brokered funds tend to pay more for not only distribution, but also other services.

Equal-weighted versus asset-weighted differences. A preference for lower fees or the existence of economies of scale would suggest that asset-weighted expenses should be smaller than equal-weighted expenses. This simple prediction is borne out for *most* of the components of expenses. In both channels, non-distribution charges and 12b-1 are lower on an asset-weighted basis than on an equal-weighted basis. For example, non-distribution fees are 10 to 40% smaller on an asset-weighted basis than on an equal-weighted basis.

Panel D shows one exception to this broad observation. Focusing on front-end loads, the average load of the funds actually sold (asset weighted) is higher than the equally-weighted front-end load. This result is consistent with customers—or more likely their brokers—having a preference for buying (or selling) funds that generate larger up-front fees to support sales commissions.²³ This result helps to explain the result, documented in Panel G, that annuitized fees in the broker channel are over 100 basis points higher for both equity and bond mutual funds.

²³ This result is likely to be sensitive to load breakpoints and load-waived sales of funds as discussed earlier.

Modeling the tradeoff between distribution fees and non-distribution fees. While the univariate results in Table 5 do not suggest that higher distribution fees offset lower non-distribution fees, we know that brokered funds tend to operate in different segments and operate at smaller average sizes. As a result, their costs may vary from those of direct-channel funds for reasons that reflect these different characteristics of the funds. To sharpen our test of the tradeoff between distribution and non-distribution fees, and to test for the presence of channel-specific differences in fees, we turn to multivariate analysis of the fund distribution expenses, non-distribution expenses, characteristics, and channel classification. Table 6 reports the results of this analysis, showing the results of regressions of non-distribution fees on the individual components of distribution fees, as well a dummy variable for whether or not the fund is distributed through the direct channel. Additional controls include complex size, included to capture possible economies of scale; minimum initial investment amounts, to capture lower costs due to larger account size; investment objectives dummy variables, which reflect differences across sectors in the costs of managing portfolios; and year fixed effects. We show the results for all funds, as well as separate analyses for bond, equity, and money market funds.

The coefficients on the control variables are consistent with expectations. There is some evidence of economies of scale at the fund level, and this evidence is most pronounced among equity funds. We find some evidence of complex-level economies of scale among bond and equity funds. Younger funds (less than five years old) have lower non-distribution fees, perhaps reflecting a conscious strategy of subsidizing distribution effort for newer funds. Finally, we see some evidence of account-level economies of scale, with funds demanding larger initial minimums having lower fees.

If distribution charges and non-distribution charges are substitutes, then the coefficients on 12b-1 fees, front-end loads and back-end loads should be negative. If they are perfect substitutes, the coefficient on 12b-1 fees would be -1.0 and the coefficient on the loads would be inversely related to the expected holding period of investors. However, the coefficient on 12b-1 fees, while negative and statistically significant, is only -0.08 , suggesting that when 12b-1 fees are 100 basis points higher, non-distribution charges are lower by only 8 basis points. This result suggests that reduced non-distribution expenses do

not compensate investors for higher 12b-1 fees. Looking across investment sector, the largest trade-off appears to occur in money market funds, where the coefficient estimate is -0.29. Furthermore, there is no statistically significant relationship between front-end loads and non-distribution expenses, and non-distribution fees are *positively* related to maximum back-end loads. This evidence fails to support the hypothesis that brokers may charge for their services, but their clients enjoy lower fees for non-distribution services in return for paying higher distribution fees.

6. Do brokers offer and sell higher performing funds?

We now examine the performance of mutual funds sold through the broker and direct distribution channels. Our earlier analysis suggests that funds sold by brokers are somewhat different: smaller, younger, and less likely covered by Morningstar. It is also possible that, in addition to directing investors toward parts of the fund universe where search costs are higher, the funds selected brokers have levels of performance that differ from funds sold through the direct channel.

Table 7 presents data on the performance of funds in the three main sectors -- equity, bonds, and money markets by distribution channel. We report average raw returns, benchmark-adjusted returns, and various measures of risk-adjusted performance. For risk-adjustment we use the standard methodology, calculating returns in a traditional manner (net of all expenses, but before the deduction of front-end or back-end loads). We do, however, focus on *returns net of only non-distribution expenses*, as defined above. Our goal in reporting performance net of non-distribution expenses is to assess whether brokers have access to or sell funds that perform better, before the deduction of their own fees. Because the alpha measures require the CRSP factor loading data, we also recalculate the raw and adjusted returns for the restricted sample. The cross-sectional average return measures are calculated on equal-weighted and value-weighted bases using asset values as of the beginning of the return period.²⁴

²⁴ Betas are estimated over years t-3 through t-1, abnormal returns are estimated over year t and asset weights are calculated using asset values at the beginning of time t.

The results in Table 7 are remarkably consistent. For bond and equity funds, there is no evidence that funds sold by brokers outperform those sold through the direct channel. Even before deducting any distribution expenses, the funds offered by and sold by brokers earn returns that either equal or underperform direct-sold funds.

For example, consider the asset-weighted performance of equity funds. *Before deducting any distribution expenses*, brokered funds underperformed direct funds by 7.5 basis points in absolute terms. They underperformed direct funds by 17.8 basis points on a benchmark-adjusted basis. Using one, three, and four factor risk adjustment, they underperformed by 21.4, 92.6, and 76.7 basis points respectively. The differences in returns based on three and four factor risk-adjustment models are both economically large and statistically significant. The equity funds clients of brokers purchase deliver substantially lower returns than directly-placed funds. For bonds, the differences are approximately of the same order of magnitude, with the brokered funds underperforming by 53-68 basis points on a risk-adjusted basis.²⁵ All of these differences are *prior to deducting any 12b-1 charges, front-end loads, or back-end loads*.

Money market funds are the only exception to this pattern; in some specifications, money market funds offered by brokers outperform those offered by the direct channel. It is consistent with the larger trade-off coefficient estimate between non-distribution charges and 12b-1 fees seen in table 6 for money market funds. Taken as a whole, however, the evidence described in this section suggests that brokers channel investors toward equity and bond funds that deliver performance that is substantially inferior to the performance of funds sold through the direct channel.

7. Do brokers exhibit better asset allocation and timing abilities?

A potential source of value for investors investing through the broker channel could be superior asset allocation decisions. This section provides some evidence on this point. In order to abstract from fund picking expertise of brokers, we take the broker channel aggregate asset allocation weights and apply

²⁵ One natural concern with these results is that perhaps these merely reflect differences between actively managed and passively managed funds and are not necessarily related to the distinction between distribution channels. We have rerun Table 7 excluding all index funds from the equity funds and find our results qualitatively unchanged.

those weights to asset return indexes. We compare the cumulative value of \$1 invested December 31, 1980 using annually rebalanced asset allocations prevailing in the broker and direct channels at the beginning of each year.

While we can show the differences in asset allocations across eight asset classes (Domestic Equity, Specialty Equity, Foreign Equity, Domestic Bond, Foreign bond, Muni Bond, Money Market, and Muni Money Market) we calculate returns based upon only four of these classes (Domestic Equity, Domestic Bond, Municipal Bond and Money Market). This is partly due to the difficulty of choosing the relevant index returns for the other four asset classes and partly due to the fact these four asset classes account for the bulk of the assets in these channels. Because of the focus on these four asset classes, we rescale the weights under the assumption that these four asset classes represent the entire investment universe for these funds.

Figure 2 provides a graph of the differences between the Broker weights and the Direct Channel weights invested in each of the eight asset classes. Brokers are consistently over-weighted relative to direct channel investors in bonds and money markets. In Figure 3 we provide the cumulative value of \$1 invested using broker weights and direct channel asset allocation weights. The indexes used for the asset returns are the Value weighted CRSP index returns for the NYSE, ASE and NASDAQ stocks, the Lehman Aggregate Domestic Bond index, the Lehman Aggregate Municipal Bond index, and the returns to the 30-day treasury bill. The results imply that direct channel asset allocations led to more cumulative wealth over this 22 year period of time. However, it is important to risk-adjust these returns. The broker channel underperformed in part because investors there choose a blend of lower risk and lower return securities. We therefore calculate the Sharpe Ratio of the two portfolios, as reported in the panel below.

Including Money Market Assets	Broker Channel	Direct Channel
Mean Excess Return (beyond T-bill) per Month	0.19%	0.25%
Standard Deviation of Monthly Excess Returns	1.84%	2.46%
Sharpe Ratio	0.1020	0.1021

While the direct channel had higher mean excess returns (relative to the risk free return on Treasury bills), it had substantially higher standard deviations of returns. The two channels produce virtually identical Sharpe Ratios, with the direct channel yielding a slightly higher level. Recall that this analysis is applied to portfolio weights from the different channels, but to index returns. When applied to actual channel returns, the brokered channel would show a distinct disadvantage, as we have already shown that broker channel funds underperform direct channel funds.

It is possible that large cash balances held in broker-channel funds may more precisely reflect transactions purposes than active long-term portfolio choice decisions. (A literal interpretation of this argument would suggest that clients of brokers are underinvested in long term investments, relative to direct-sale investors.²⁶) If so, it may be useful to evaluate the two model investment portfolios excluding the cash component. Weighting the two portfolios excluding money market assets, we find that the Sharpe ratio for the direct channel is .1120 versus .1106 for the broker channel.

Excluding Money Market Assets	Broker Channel	Direct Channel
Mean Excess Return (beyond T-bill) per Month	0.32%	0.39%
Standard Deviation of Monthly Excess Returns	2.91%	3.47%
Sharpe Ratio	0.1106	0.1120

These analyses of Sharpe ratios provide no evidence that brokers, in aggregate, display superior asset allocation. We conduct a more formal test using Merton and Hendriksson's (1981) non-parametric test of market timing ability. Using the Merton-Hendriksson approach, and examining direct channel and broker channel changes to bond and equity allocations, we cannot reject the hypothesis that brokers have no forecasting power, either absolutely or relative to the direct channel. For example, over the period from 1981 to 2002, there are six years in which the broker channel, in aggregate, increased its asset allocation to bonds (relative to equities). In two of the years, subsequent to the asset allocation change, bonds outperformed equities. Not surprisingly, the Merton-Hendriksson non-parametric statistic cannot reject

²⁶ The ICI (2004) reports that users of directly-placed and brokered funds are equally likely to have assets invested in bank or thrift deposits, although the study does not report the level of transaction deposits held in these accounts. However, customers of brokers have only 50% of their household financial assets with funds (vs. 55% for clients of direct-sold funds), which suggest that their non-fund transaction accounts may be even higher than for customers of direct-sold funds.

the null that these two correct asset allocation moves happened by chance. Analyzing the broker channel asset allocation changes relative to direct channel asset allocation changes leads to the same conclusion.

Our examination of asset allocations in the broker and direct channels leads us to conclude that there is no evidence to support the hypothesis that, in aggregate, brokers provide asset allocation advice that helps their investors time the market. While these tests do not test the asset allocation skills of individual brokers nor the degree to which brokers fashion customized portfolios for their clients, the aggregate asset allocations observed by brokers do not outperform the aggregate asset allocations in the direct channel. Furthermore, the aggregate broker channel does not exhibit market timing skill when measured on its own relative to the market.

8. Do different channels exhibit different behavioral biases?

There is a large and growing literature exploring the impact of behavioral biases on investors' portfolio behavior.²⁷ In most cases, these behavioral biases are thought to impose additional costs on investors. A broker able to attenuate these biases would provide a valuable service to individual investors. The empirical tests in this section explore whether portfolio patterns that have been associated with behavioral biases are more or less predominant in the direct channel versus the broker-intermediated channel.

Undersaving. Recent empirical work (Venti and Wise, 2004) using longitudinal panel data has suggested that the level of saving, rather than portfolio choices and returns, is the major factor driving differences in asset sufficiency for households in retirement. Given our research design, however, the role that brokers play in encouraging households to save is outside of our analysis. While this study represents a first step, comparing products offered directly to products sold through brokers, it remains for future work to compare the assets chosen by households investing through brokers to consumption and savings decisions that would have been made in their absence.

²⁷ See Barberis and Thaler (2003) for a recent summary of this literature.

Home bias. An extensive literature documents investors' home bias, i.e., the tendency to invest disproportionately in assets that are nearby, underweighting foreign and distant domestic assets. We see home bias in our results in Table 4, where the percentage of foreign funds offered is larger than the percentage of assets captured by those funds, in all channels. There is also evidence that brokers partially counteract home bias, encouraging their investors to invest a larger share of assets outside the U.S. Of all brokered assets, 7.3% are in held in international products, versus only 5.5% of all directly-placed funds. While investors in direct channel funds may hold their international investments elsewhere, this evidence suggests that brokers play some role in countering home bias.

Performance sensitivity. While fund advertising acknowledges that current performance is not an indicator of future performance, and evidence on the persistence of performance of individual mutual funds is limited, there is ample evidence that investors are performance sensitive.²⁸ This may reflect an extrapolation bias, where investors believe that the future will look like the past. Research on the relationship between performance and subsequent inflows suggests that investors respond asymmetrically to performance data. Overall, they are more sensitive to high performance rather than low performance, i.e., flows tend to pick up dramatically for high performing funds but outflows are more modest for poorly performing funds. Table 8 and Figure 4 report the results of a multivariate analysis of the performance flow relationship by channel. Appendix A summarizes the methodology we used for our calculations of net flow.

Figure 4 presents the flow performance/results graphically, using kernel regression techniques as well as a straight line fitted to the data. We show the relationship between benchmark-adjusted performance and flows, by channel. The linear relation clearly implies that brokered-funds are more sensitive to performance than direct funds, exhibiting a steeper relationship between performance and flow. The kernel regression shows a steeper performance-flow relationship for high performance.²⁹

²⁸ See Sirri and Tufano (1998), Brown Harlow and Starks (1996) or Chevalier and Ellison (1997) for earlier studies of this phenomenon.

²⁹ We show the kernel results over the range of performance outcomes common to the two distribution channels; the graph omits a few outliers beyond this range, but all of the data is in the multivariate regression that follows.

Table 8 reports a multivariate analysis of the relationship between flows and performance, using a standard linear regression and a piecewise linear relationship between flows and returns. As controls, we include variables to capture for year effects, objective categories, fund size, complex size, manager tenure, 12b-1 fees, loads, and fund age. Consistent with the bulk of the existing literature on the relationship between fund performance and inflows, we conduct this analysis on a sample that includes only equity funds. Our goal is to determine: (a) whether the sensitivity of performance on flows is higher in the brokered channel than in the direct channel; and (b) whether intensity of selling effort, as measured by the size of distribution fees, is positively related to flows.³⁰

We cannot statistically reject the hypothesis that among funds whose performance places them among the bottom 60 percentiles, the performance-flow relationship is the same among broker-channel funds as among direct-channel funds. However, there are differences between broker and direct channel funds in the performance-flow relationship in the top 40 percentiles of performance. This relationship is steeper for direct funds in the fourth quintile and much steeper for brokered funds in the top quintile. Overall, linear regressions show more performance sensitivity among brokers, consistent with the finding of O’Neal (2004), who finds that funds that charge loads have incrementally steeper slopes between performance and flows. O’Neal differentiates between purchases and redemptions, and finds that load fund investors (which roughly correspond to our brokered channel) are more performance-sensitive in redeeming poorly performing funds. We only observe net flows and cannot replicate this result.

Recency. Not only do people tend to predict the future using data from the past, but they also sometimes tend to use the most recent data to do so. To assess whether the channels differ with respect to this phenomenon of “recency”, we look at the speed of adjustment to performance data calculated over different time horizons, which we call velocity. Velocity seeks to measure of how quickly mutual fund flows respond to changes in performance.

³⁰ Nanda, Wang, and Zheng (2003) ask several questions surrounding the introduction of new share classes the impact on flows into funds. They find that among multi-class load funds (A, B and C shares), those funds sold as C shares (characterized by large 12b-1 fees and low back-end loads) are more sensitive to past performance than A and B shares.

In Table 9 we measure this speed of reaction to funds' recent performance. Panel A presents the results for all funds, while Panels B and C report the results for samples made up exclusively of small and large funds. The columns in each panel present results for the different channels that are the focus of our study. The rows represent different horizons over which the return-inflow relationship is being studied. In each case, we have included the same control variables used in Table 8. We present three statistics for each horizon. First is the coefficient on the return variable in a regression of flows on returns plus the control variables. The returns are measured from time (t- Horizon) to t and flows are measured for time t to (t+horizon). In all the tables we observe that as the horizon increases the coefficient on returns rises up to a nine-month horizon and falls at the twelve- month horizon.

Consistent with the results in Table 8, Table 9 shows that the broker channel is significantly more sensitive to returns at each horizon. Comparing the coefficients between broker-channel and direct-channel funds at each return horizon, while the broker coefficients are significantly larger for each and every horizon, they are about 50% larger at longer horizons but 300% larger at shorter horizons. This suggests that customers of brokers are made aware—and act upon—the most recent performance data. In Panel B, we see that these results are more pronounced in the small funds.

There is a caveat to this result, however. While our analysis has included all of the different fund families, including such large and potentially influential fund families as Vanguard, Fidelity, and the American Funds group, it is important to note that the results in Table 9 are more sensitive than the other results in this paper to the inclusion or exclusion of two particular fund families. The ProFunds and Rydex families of funds, which are marketed to 'market timers' who wish to enter and exit the market at high frequency and sold predominantly through the direct channel, show *negative* high-frequency relationships between performance and subsequent inflows. Including these families of funds in the sample makes a substantial difference in the coefficients estimated and reported for the direct channel analysis at high frequencies; in regression results that exclude these two fund families the cross-channel difference in the 'velocity' with which inflows respond to performance is more narrow,

9. Do Brokers Merely Sell what they are Paid to Sell?

The results in Tables 8 and 9 suggest that there are differences in the pervasiveness of investment patterns associated with behavioral biases between direct and broker-channel funds. The broker channel exhibits greater return-chasing behavior. Whether this result is the product of selection where return-chasers find brokers, or salesmanship where brokers sell recent performance, cannot be determined by our data. However, it seems curious that the most short-term and performance-sensitive money would be invested in a channel with higher transaction costs, such as front-end and back-end loads, as well as higher expenses. Furthermore, given our performance results from section 6, the funds that the brokered channel uses to implement return-chasing strategies perform no better—and indeed perform worse—than those available in the direct channel.

We also find among our control variables in table 8 some suggestive results on the relationship between the intensity of selling effort and inflows to individual mutual funds. The coefficients on both 12b-1 fees and front-end loads are positively and significantly related to flows. The coefficient of 31.9% on the 12b-1 fee variable suggests that, controlling for other fund characteristics, an increase of 25 basis points in a fund's reported 12b-1 fee is associated with an 8 percent increase in the expected net inflows to that fund. The coefficient on front loads of 1.09 suggests that, controlling for the other fund characteristics, an increase of 100 basis points in the reported maximum sales charge for a fund share class is associated with 1.09 percent higher net inflows. These results suggest that sales effort, measured by compensation to brokers through front loads and 12b-1 fees, is positively associated with reported net inflows at the fund share-class level.³¹ However, in this multivariate setting, while higher sales charges are positively associated with net inflows, back loads, controlling for expenses, returns, and front loads, are negatively associated with net inflows, with a coefficient of 1.5.

³¹ These results are generally consistent with the results in Barber, Odean and Zheng (2003) (BOZ) and Zhao (2003). BOZ find that investors are more sensitive to loads than to annual fees and that 12b-1 fees increase flows. However, BOZ find that flows are reduced by higher load fees in their sample. Zhao finds that higher loads and 12b-1 fees both are associated with higher flows.

An alternative explanation is that broker channels are most concerned about the fees associated with their sales and only secondarily concerned with the welfare of the customer. This might lead brokers to sell inferior products that are harder to evaluate because they are young, small, hard to evaluate and could more easily allow account churning. We can alternatively interpret at least some of our results to support this view. Using data from Table 5 we tabulated the ratios of equally weighted to asset weighted expenses and loads—recalling that we interpret equally weighted fees to represent those funds offered and asset-weighted results as those funds sold to consumers. When the ratio of asset weighted to equally weighted fees is less than 1, it is likely to be a reflection of economies of scale and the preference of lower cost funds. However in these ratios we find a dramatic exception in front-end loads where the ratio of asset weighted to equally weighted front-end loads is 1.76 for equities and 1.47 for bond funds.³² This suggests that broker clients buy funds with higher loads.

	Equities		Bonds	
Nondistribution fees	Direct	Broker	Direct	Broker
Equally Weighted	1.17	1.11	0.74	0.83
Asset Weighted	0.73	0.75	0.51	0.74
Asset / Equal Weighted	0.62	0.67	0.69	0.89
12b-1 fees	Direct	Broker	Direct	Broker
Equally Weighted	0.10	0.63	0.07	0.57
Asset Weighted	0.02	0.48	0.01	0.44
Asset / Equal Weighted	0.16	0.77	0.12	0.78
Front-end loads	Direct	Broker	Direct	Broker
Equally Weighted	0.25	1.99	0.06	1.66
Asset Weighted	0.02	3.49	0.02	2.44
Asset / Equal Weighted	0.07	1.76	0.42	1.47

10. Conclusions and Future Work

Our study of mutual fund distribution channels and the customers who use them attempts to understand how the various channels differ and the nature of the relation between channel and consumer behavior. We begin with an implicit hypothesis: the prominence of funds sold through brokers implies that brokers provide consumers with valued services.

³² Nanda, Wang and Zheng's results suggest that within the broker channel lower cost classes have more volatile flow.

Our study has identified few, if any, of these benefits. Some evidence suggests that the broker channel sells funds that broadly could be characterized as harder to find and analyze. A potentially important exception to this pattern is the disproportionate sale of money market funds through the broker channel. There is also some evidence that home bias is less pronounced in funds sold in the brokered channel.

The bulk of our evidence fails to identify tangible advantages of the broker channel. In the broker channel, consumers pay extra distribution fees to buy funds with higher non-distribution fees expenses. The funds they buy underperform those in the direct channel even before deductions of any distribution related expenses. They exhibit no superior asset allocation. With respect to behavioral biases, funds sold by brokers exhibit substantially greater trend-chasing behavior. Finally, realized flows of money into individual funds appear to flow into funds with larger front end loads.

At this point, we cannot say much about the welfare consequence of the broker channel to investors. If the alternative for broker channel investors is to remain invested in cash or not to save at all, it's likely that the broker channel substantially increases the welfare of investors. On the other hand, if broker channel investors were likely to have placed their money in direct funds in the absence of the broker channel, the likely magnitude of the broker channel's welfare enhancement seems smaller. What we can say is that in aggregate broker sold funds cost substantially more than direct sold funds and those higher costs are not offset by better performing fund choices. We can also say comfortably, that return chasing behaviors are more pronounced in broker sold funds. Both of these findings are useful findings in locating where the benefits of brokers might be found.

In the end, the costs and benefits of using the brokered channel can only be judged by the consumers that make these decisions. A recent Investment Company Institute (2004) study surveys the differences between consumers who purchase funds directly and consumers who purchase funds through brokers. Customers who purchase funds through the sales force channel are less wealthy (with a median income of \$93,800 vs. \$101,300), have lower median financial assets (\$363,700 vs. \$447,900), and are slightly less well-educated (57% vs. 65% have a four year college degree or more). They are a bit more risk averse,

with only 34% (vs. 39%) reporting that they are willing to take on substantial or above average risk for commensurate gain. These characteristics may explain some of the differences we observe in this paper, such as the higher holdings of bonds or cash in the brokered sector.

Yet the investing goals and aspirations of the two groups seem quite similar, when measured by most attitudinal questions in the survey. These similarities make some of our findings a bit harder to explain. For example, roughly equal fractions of customers of brokered (93%) and direct sold fund funds (95%) say that the levels of fees and expenses are very or somewhat important reasons for owning mutual funds, but the clients of brokered funds choose to pay considerably more. Customers of brokered funds are more likely (88% vs. 82%) to say that “professional money management” is a very important or important reason why they own funds, yet the funds they purchase earn lower pre-distribution fee returns. Both express virtually identical investing time frames and profess equal disinterest in short term fluctuations in the value of their fund investments, yet the relationship between performance and inflows, in aggregate, is more pronounced in the brokered channel.

Where these investors differ most markedly is the answer to one question: “I tend to rely on the advice of a professional financial advisor when making mutual fund purchase and sales decisions,” with 81% of clients of sales-force sold funds agreeing strongly or somewhat, versus 62% for purchasers of directly marketed funds. One challenge for a broader research agenda is to identify the intangible benefits that drive this difference in behavior and perceptions, and to measure if the distribution channels indeed deliver these benefits. An even broader policy and business question is whether distribution channels—which have experienced less academic scrutiny—are agents that improve the welfare of the households who trust them.

Appendix A: Calculation of Flows

We use the standard definition of percentage flow for our funds given by equation,

$$\%Flow_{i,t} = \frac{Assets_{i,t} - Assets_{i,t-1}(1 + r_{i,t})}{Assets_{i,t-1}} \forall \text{ months } t, \text{ funds } i. \quad (1)$$

Using dummy variables for each year we estimate equation,

$$\%Flow_{i,t} = \{\alpha_{YearDum}\} + \beta_1 I(r_{i,t-1} < 0) r_{i,t-1} + \beta_2 I(r_{i,t-1} \geq 0) r_{i,t-1} + X_{it} \Gamma + \varepsilon_i. \quad (2)$$

The slope of the flow / performance relation above and below zero is captured by β_1 and β_2 and we include a number of control variables X_{it} . The X_{it} are expense ratios, turnover, complex size categorical variables, Morningstar Ratings, age categorical variables, manager tenure categorical variables, and dummy variables capturing whether or not the fund has back load or a sales charge. **Table 8** presents the equally weighted cross-sectional average of the estimated β_1 and β_2 from using equation,

$$FlowPerf_{ew} = \frac{1}{N} \sum_{i=1}^N \beta_{1,i} \quad \text{or} \quad FlowPerf_{vw} = \sum_{i=1}^N \frac{Assets_{i,year-1} \beta_{1,i}}{\left(\sum_{i=1}^N Asset_{i,year-1} \right)}. \quad (3)$$

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Figure 1: Various experts' classifications of fund distribution channels

Financial Research Corp.	Investment Company Institute	Strategic Insights	Lipper
Direct	Direct Supermarket	Direct to Do-It-Yourself Individual Investors Through No-Load Supermarkets	Direct Marketer
Wholesale (Non-proprietary)	Advice	Through Registered Investment Advisors Broker-Dealer Distributed	Dealer Regional Broker Dealer Wirehouse (NYSE member firm with proprietary funds)
Wholesale (Proprietary)		Mutual Fund Wrap Accounts	Captive
Bank		Bank	Bank Retail
Institutional	Institutional	Institutional	Bank-Related Fiduciary and Institutionally Focused Institutional
	Retirement Plan	Defined Contribution Plans	
		Variable Annuities	Insurance Affinity Funds Employee Funds

Figure 2
Broker minus Direct Asset Allocation Weights from 1980 – 2002

The table below shows the difference between the asset weights in the broker-distributed sector and the direct sold sector. Positive numbers indicate that the broker sector has a higher weight on the asset than the direct sector; negative weights indicate that the direct sector has larger weights. The sum of the weights totals zero. The assets classes shown are money market (MONEY MAR), domestic bonds (BOND-DOM), broad equity (EQUITY-BR), specialized equity (EQUITY-SP), Balanced, foreign equity (FOREIGN-E), municipal bonds (MUNI) and municipal money market (MUNI-MONE)

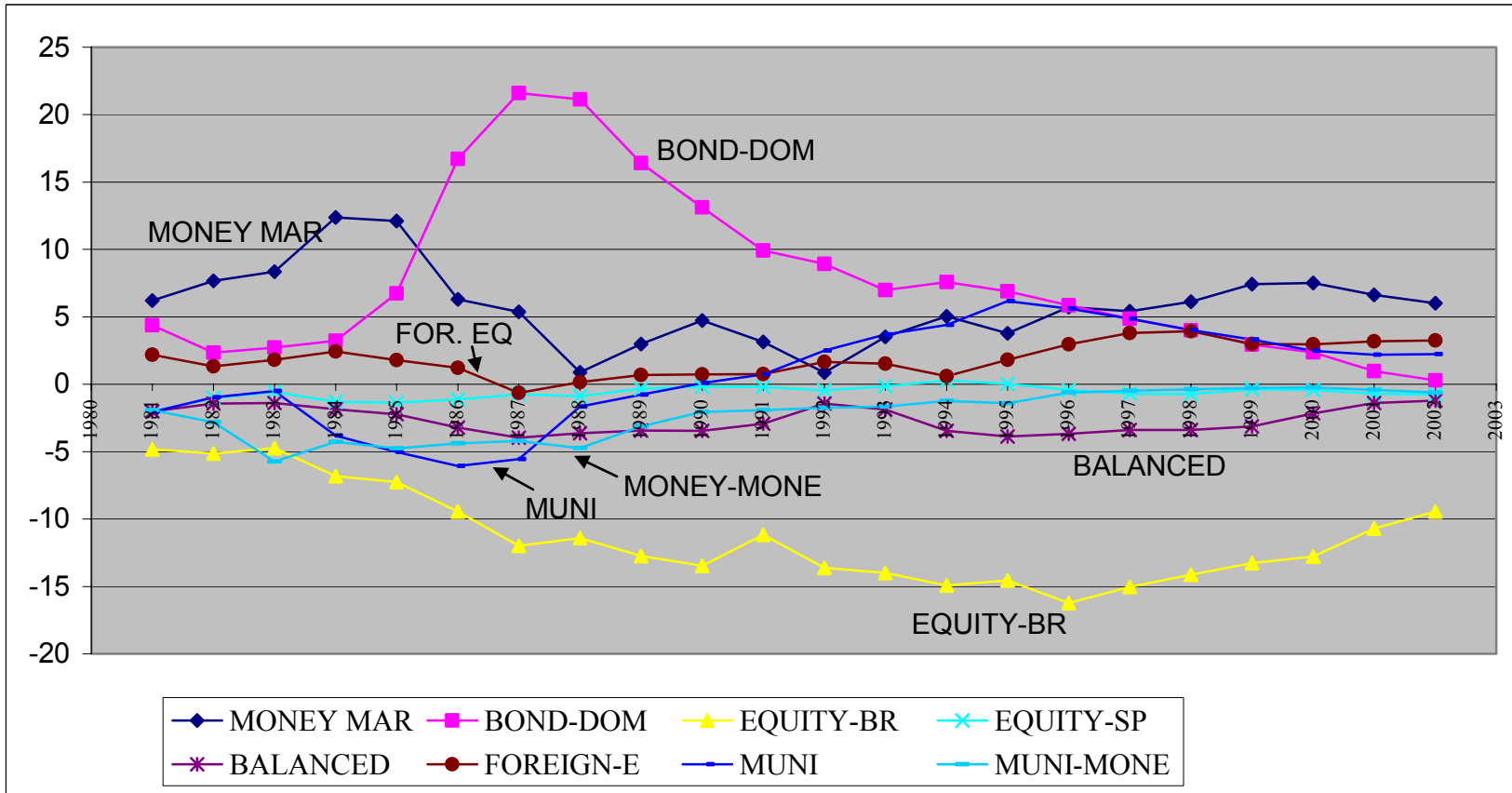


Figure 3

Value of a dollar invested in a model portfolio composed of market indices weighted by the asset weights of the two channels, 1980-2002

The figure below shows the value of a dollar invested in 1980 when invested in model portfolios holding four classes of assets: cash, stocks, bonds and municipal bonds. The indexes used for the asset returns are the Value weighted CRSP index returns for the NYSE, ASE and NASDAQ stocks, the Lehman Aggregate Domestic Bond index, the Lehman Aggregate Municipal Bond index, and the returns to the 30 day treasury bill. While we have data on asset allocations across eight asset classes (Domestic Equity, Specialty Equity, Foreign Equity, Domestic Bond, Foreign bond, Muni Bond, Money Market, and Muni Money Market) we calculate returns based upon only four of these classes (Domestic Equity, Domestic Bond, Municipal Bond and Money Market). This is partly due to the difficulty of choosing the relevant index returns for the other four asset classes and partly due to the fact these four asset classes account for the bulk of the assets in these channels. Because of the focus on these four asset classes, we rescale the weights under the assumption that these four asset classes represent the entire investment universe for these funds

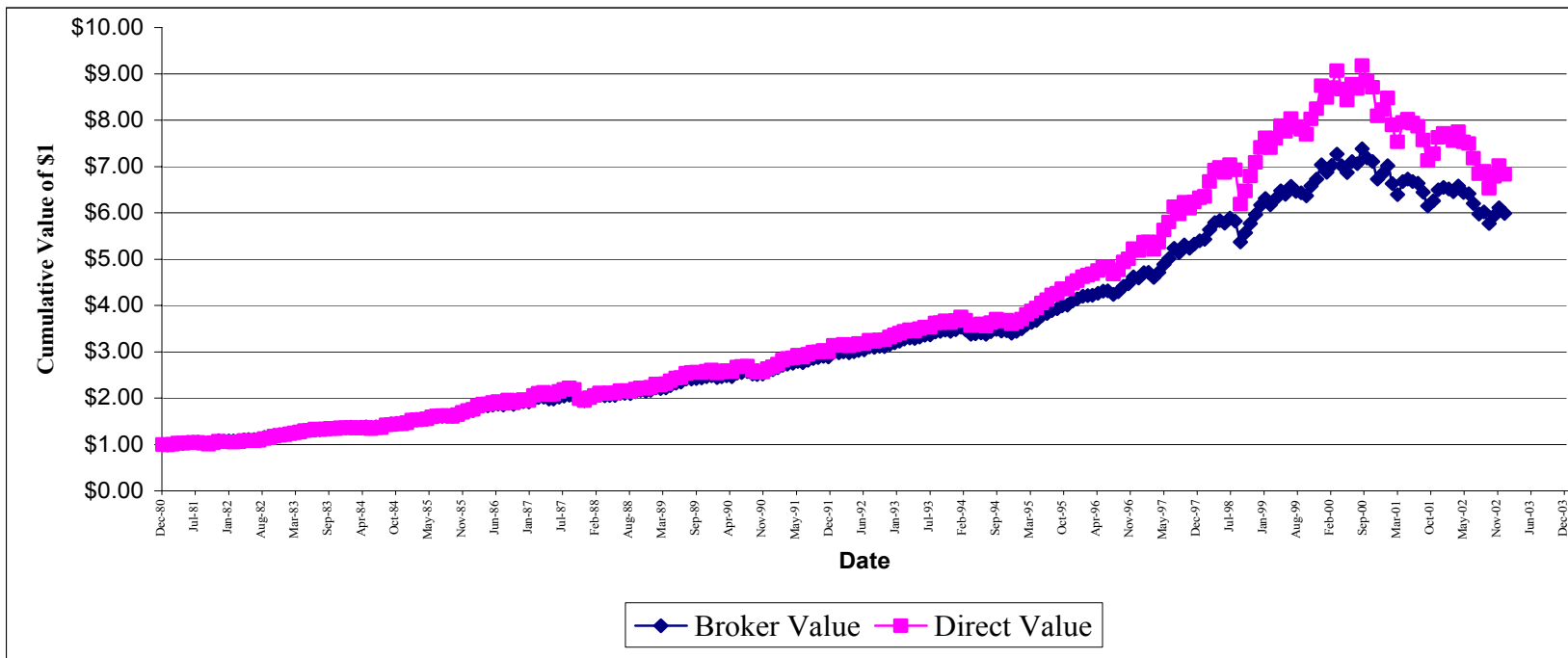


Figure 4

Linear and kernel estimates of the performance-flow relationship of equity mutual funds, 1996-2002, by broad channel

Linear regression estimates based on regression of fund share class net inflows on lagged benchmark-adjusted returns. Regressions run separately for broker and direct channel fund share classes. Specifications reported below include no additional covariates. Kernel regressions also run separately for each channel, with no independent variables except for lagged benchmark-adjusted returns. Reported lines in graph below reflect fitted value from kernel regression. Kernel regression gives the locally weighted average of the dependent variable (inflows) at each part of the distribution of the independent variable (lagged benchmark-adjusted returns). If in a general kernel regression of y on x , with a bandwidth of h , we first rank the observations by x and for each observation x_i we take the h percent of the observations on either side of observation x_i (if x_i is toward the end of the distribution, we use an unbalanced and smaller set of observations), and take the weighted average of the dependent variable among those observations. For weights, if $x_{i(\min)}$ is the minimum observation of x within the window of observations around x_i , and $x_{i(\max)}$ is the maximum observation of x within the window of observations around x_i , then the weight that we assign to each observation is based on Cleveland's tricube function: $w_j = (1 - (|x_j - x_i| / (\max(x_{i(\max)} - x_i, x_i - x_{i(\min)})))^3)^3$. At each point this places a lower weight on observations that are farther away (see Cleveland, 1979). The kernel regression output below uses $h = 30\%$, meaning that 30% of the observations are used to calculate the expected value of inflows at each point (although the weights decline rapidly away from that point).

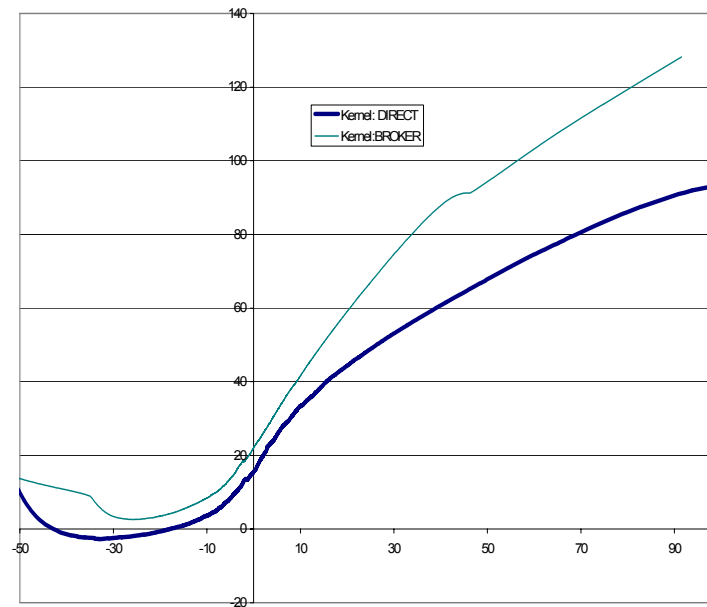
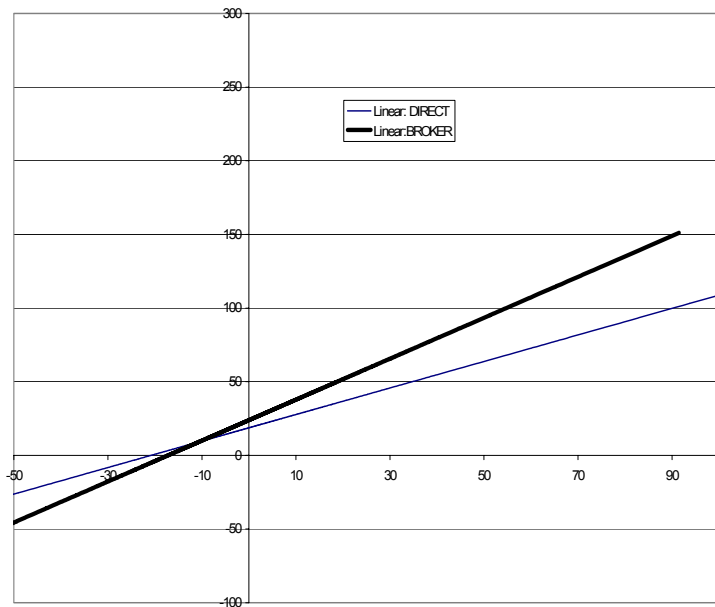


Table 1: Twenty-Five Largest Fund Share Classes in Direct and Broker Channels at Year-end 2002

This table presents the 25 largest fund share classes within the Direct and Broker channels. The channel categorization is based on classifications by Financial Research Corporation and Lipper classifications. The assets shown are for a particular share class, and may not include total assets for all classes.

Rank	Direct Channel Funds			Broker Channel Funds		
	Fund Name	Assets (\$ Million)	Morningstar Category/ Objective	Fund Name	Assets (\$ Million)	Morningstar Category Objective
1	Fdlty Magellan	60,873	Lrg, Blend/ Grth	Invst Co Amer	48,006	Lrg, Value/ G&I
2	Vngrd 500 Index	59,672	Lrg, Blend/ G&I	Wash Mutl Invs	44,159	Lrg, Value/ G&I
3	Fdlty Csh Rsv	57,096	MM: Taxable	OneGrp Inst Prm MM	31,248	MM: Taxable
4	Schwab MM Swp	50,790	MM: Taxable	Cma MM	25,031	MM: Taxable
5	Vngrd MM Rsv	50,272	MM: Taxable	ActveAst MnyYt	24,576	MM: Taxable
6	Schwab Val Advtge Mny	39,752	MM: Taxable	MS LiqAst	23,978	MM: Taxable
7	Fdlty Contrafund	27,963	Lrg, Blend/ Grth	SB Cash	23,508	MM: Taxable
8	Fdlty Gr & Inc	27,196	Lrg, Blend/ G&I	EuroPac Grth	23,439	Foreign Stock
9	Vngrd GNMA	21,387	Int, Govt,/ Mort	UBS PnWbbr RMA MM	22,504	MM: Taxable
10	Vngrd Wellngtn	20,007	Dom Hybrid/ Bal	Cntenl MM Trst	22,359	MM: Taxable
11	AmCnt Ultra	19,210	Lrg, Grth,/ Agg	Inc Fnd Amer	20,836	Dom Hyb/ Asset All
12	Fdlty Eq Inc	18,495	Lrg, Val/ Eq Inc	Fundamental Inv	15,961	Lrg, Value/ G&I
13	Vngrd Windsor II	18,494	Lrg, Value/ G&I	Putnm Gr & Inc	14,937	Lrg, Value/ G&I
14	Fdlty Puritan	18,468	Dom Hybrid/ Bal	Cmmnd MM	14,534	MM: Taxable
15	Fdlty Blue Chp Gr	17,730	Lrg, Grth	Frnkln CA TF Inc	13,330	Muni, CA
16	Janus Fund	17,001	Lrg, Grth	SSgA MM	12,801	MM: Taxable
17	Fdlty Gr Comp	16,411	Lrg, Grth	Allnc Captl Rsv	12,165	MM: Taxable
18	Vngrd Tot Bd Idx	16,201	Int, Corp/ Gen	Putnm Voygr	11,877	Lrg, Grth/ Agg
19	Fdlty Low-Priced Stk	15,540	Small, Blend	Tmpltn Grth	11,584	World Stock
20	Vngrd Tot Stk Idx	14,917	Lrg, Blend/ G&I	WlsFrg Sch Inv MM	10,948	MM: Taxable
21	Fdlty Dividend Gr	14,176	Lrg, Blend/ Grth	Cma TE	10,342	MM: Fed TF
22	Vngrd Hlth Care	14,115	Specialty Health	SsgA Prime MM	10,175	MM: Taxable
23	Vngrd PRIMECAP	14,054	Lrg, Blend/ Grth	Cap Wrld G&I	10,016	World Stock
24	DdgeCox Stck	13,859	Lrg, Value/ G&I	AXP New Dmnsn	9,597	Lrg, Blend/ Grth
25	Janus Wrldwide	13,793	World Stock	LrdAbt Affil	9,463	Lrg, Value/ G&I

Table 2: Number of Funds and Fund Asset Value by Distribution Channel Classification, 1996-2002

For the Direct and Broker channel we report below the number of funds, the number of share classes, and assets under management at two-year intervals. Our sample does not include (a) institutional funds, and (b) funds in which the FRC and Lipper channel classifications are both missing or are in disagreement. We classify a fund share class as “Direct” if both Lipper and FRC classify that fund as being sold primarily through the Direct channel. We classify a fund share class as belonging to the “Broker” channel if the FRC classification of the share class is “Captive Broker” and the Lipper classification is one of “Broker-Dealer”, “Captive”, or “Wirehouse”.

Year	All	Direct (D)	Broker (B)
Panel A: Number of Funds			
1996	4,731	1,404	3,327
1998	5,423	1,692	3,731
2000	5,535	1,745	3,790
2002	5,005	1,578	3,427
Panel B: Number of Share Classes			
1996	7,471	1,455	6,016
1998	9,295	1,795	7,500
2000	10,569	1,961	8,608
2002	10,415	1,952	8,463
Panel C: Assets (\$ Million)			
1996	2,551,093	1,030,399	1,520,694
1998	3,862,491	1,625,079	2,237,413
2000	4,899,340	2,184,198	2,715,143
2002	3,844,645	1,795,019	2,049,625

Table 3: Characteristics of Funds by Distribution Channel, 1996-2002

We characterize our sample funds along four dimensions, average fund size, average age in years, manager tenure in years, and whether the fund is covered by Morningstar. We report both equally-weighted and asset weighted averages, with the interpretation that equally weighted averages represent the product set offered by the channel and asset weighted results reflect investors' aggregate cumulative sales and purchase decisions. We also report the fraction of funds with various characteristics (fund size less than \$100 million indicating a relatively small fund or age under three years indicating a relatively young fund.) The final column shows the p-value from the test of the hypothesis that the means of the variable of interest is the same in the Broker channel as in the Direct channel.

Year	All	Direct (D)	Broker (B)	Hypothesis Test B=D
Panel A: Average Size of Funds (\$ Million)				
1996	589.3	744.1	524.0	[0.00]
1998	787.6	978.2	701.2	[0.00]
2000	977.7	1,279.7	838.7	[0.00]
2002	880.5	1,176.9	744.0	[0.00]
Panel B: Share of Funds with Assets Under Management of < \$100 Million				
1996	48.0%	49.4%	47.4%	[0.22]
1998	46.2%	49.9%	44.5%	[0.00]
2000	44.7%	46.1%	44.0%	[0.14]
2002	41.7%	44.0%	40.7%	[0.03]
Panel C: Average Age of Funds (years)				
Equally Weighted				
1996	7.7	8.2	7.4	[0.02]
1998	7.9	8.1	7.8	[0.23]
2000	8.9	9.3	8.8	[0.06]
2002	10.7	11.2	10.4	[0.00]
Asset Weighted				
1996	16.9	17.6	16.5	[0.01]
1998	18.3	18.6	18.2	[0.25]
2000	19.2	18.8	19.4	[0.15]
2002	19.7	19.9	19.6	[0.48]
Panel D: Share of Funds that are Young (<=3 Years Old)				
Equally Weighted				
1996	40.4%	39.3%	40.8%	[0.34]
1998	34.5%	37.4%	33.2%	[0.00]
2000	30.1%	29.4%	30.4%	[0.43]
2002	18.2%	14.8%	19.8%	[0.00]
Asset Weighted				
1996	9.7%	6.9%	11.5%	[0.00]
1998	8.0%	4.7%	10.1%	[0.00]
2000	7.3%	4.0%	9.7%	[0.00]
2002	4.4%	2.1%	6.1%	[0.00]

Table 3 (continued)

Year	All	Direct (D)	Broker (B)	Hypothesis Tests B=D
Panel E: Manager Tenure (years)				
Equally Weighted				
1996	4.328	4.584	4.199	[0.03]
1998	3.762	4.095	3.610	[0.00]
2000	3.961	4.192	3.849	[0.00]
2002	4.652	5.205	4.393	[0.00]
Asset Weighted				
1996	7.213	6.156	7.996	[0.00]
1998	5.227	5.734	4.897	[0.00]
2000	5.426	5.822	5.138	[0.00]
2002	6.733	7.201	6.384	[0.00]
Panel F: Percentage of Equity Funds without Morningstar Ratings				
Equally Weighted				
1996	38.6%	38.5%	38.6%	[0.98]
1998	40.9%	39.7%	41.6%	[0.43]
2000	32.7%	28.0%	35.5%	[0.00]
2002	29.0%	21.5%	33.3%	[0.00]
Asset Weighted				
1996	7.5%	3.2%	11.5%	[0.00]
1998	5.9%	2.9%	8.6%	[0.00]
2000	3.8%	1.9%	5.7%	[0.00]
2002	4.5%	1.8%	7.2%	[0.00]

Table 4: Portfolio Characteristics by Distribution Channel, 2002

Panels A-E present characteristics of the assets held by the funds in the Direct and Broker channels. Investment category definitions are based on the definitions reported in the Morningstar database. Panels B and C report on the market capitalization and style categories of equity funds, as assigned by Morningstar. Size categories are based on the median equity market capitalization among the stocks held in the fund portfolio. Large funds have median equity market capitalization in excess of \$5 Billion, Midcap \$1 - \$5 Billion, and Small less than \$1 Billion. Morningstar classifies funds as ‘value’, ‘blend’, and ‘growth’ based on computing the average P/E and Price/Book ratios for each fund, and for the S&P 500 index and then calculate the statistic $(P/E_{fund})/(P/E_{SP500}) + (P/B_{fund})/((P/B_{SP500}))$. Value funds are defined by values less than 1.75, Blend funds between 1.75 and 2.25, and growth funds greater than 2.25. Panel D reports the fraction of all equity funds that are explicitly identified by Morningstar as “index funds.” Panel E reports the factor loadings for equity funds using data from Ken French. Reported factor loadings in each year are based on coefficient estimates from a four-factor equity model, estimated on the prior 36 months of data. The four factors are the market return, the small firm factor, the value/growth factor, and a momentum factor. The final column shows the p-value from the test of the hypothesis that the means of the variable in a given row are the same in the Broker channel as in the Direct channel.

	All	Direct (D)	Broker (B)	Hypothesis Tests B=D
Panel A: Investment Categories – by share class				
Equally Weighted				
Money market (all)	7.3%	10.3%	6.6%	[0.00]
Muni money market	2.3%	4.1%	1.9%	[0.00]
Muni (all)	16.0%	12.1%	16.9%	[0.00]
Domestic bond	14.3%	12.1%	14.8%	[0.00]
Domestic hybrid or balanced	6.2%	5.9%	6.2%	[0.67]
Total domestic equity	45.2%	53.3%	43.3%	[0.00]
Domestic specialty equity	7.7%	11.2%	6.9%	[0.00]
Domestic broad equity	37.5%	42.1%	36.5%	[0.00]
Foreign	13.3%	10.4%	14.0%	[0.00]
Asset Weighted				
Money market (all)	26.3%	22.3%	29.9%	[0.00]
Muni money market	4.5%	4.9%	4.2%	[0.08]
Muni (all)	11.4%	10.0%	12.7%	[0.00]
Domestic bond	11.2%	10.7%	11.7%	[0.10]
Domestic hybrid or balanced	6.4%	7.8%	5.1%	[0.00]
Total domestic equity	42.6%	48.5%	37.4%	[0.00]
Domestic specialty equity	2.9%	3.3%	2.6%	[0.04]
Domestic broad equity	39.7%	45.3%	34.9%	[0.00]
Foreign	6.5%	5.5%	7.3%	[0.00]
Panel B: Composition of Broad Domestic Equity by Size Classification of Holdings				
Equally Weighted				
Total domestic broad equity	37.5%	42.1%	36.5%	[0.00]
Large	21.8%	21.7%	21.8%	[0.88]
Mid	8.2%	10.3%	7.8%	[0.00]
Small	7.1%	8.9%	6.7%	[0.00]
Asset Weighted				
Total domestic broad equity	39.7%	45.3%	34.9%	[0.00]
Large	31.4%	35.3%	27.9%	[0.00]
Mid	4.9%	5.6%	4.4%	[0.00]
Small	3.4%	4.3%	2.5%	[0.00]

Table 4 (continued)

	All	Direct (D)	Broker (B)	Hypothesis Tests B=D
Panel C: Composition of Broad Domestic Equity by Style Classification				
Equally Weighted				
Total domestic broad equity	37.5%	42.1%	36.5%	[0.00]
Value	8.9%	9.6%	8.8%	[0.27]
Blend	11.6%	14.9%	10.8%	[0.00]
Growth	17.0%	17.6%	16.8%	[0.42]
Asset Weighted				
Total domestic broad equity	39.7%	45.3%	34.9%	[0.00]
Value	11.4%	9.6%	13.0%	[0.00]
Blend	15.9%	21.9%	10.7%	[0.00]
Growth	12.4%	13.8%	11.1%	[0.00]
Panel D: Percentage of Equity Funds that are classified as “Index Funds” by FRC				
Equally Weighted				
1996	3.8%	6.2%	2.3%	[0.00]
1998	4.3%	6.4%	3.0%	[0.00]
2000	5.0%	7.6%	3.3%	[0.00]
2002	5.7%	7.3%	4.8%	[0.40]
Asset Weighted				
1996	5.1%	9.1%	1.0%	[0.00]
1998	8.0%	14.7%	1.8%	[0.00]
2000	9.6%	17.6%	2.0%	[0.00]
2002	10.7%	18.9%	2.4%	[0.00]
Panel E: Average Factor Loadings for Broad Equity Funds, in 2002				
Equally Weighted				
Market Beta	1.0	.972	1.012	[0.00]
Small minus Big	.154	.177	.147	[0.06]
Value minus Growth	.077	.090	.073	[0.33]
Momentum Factor	.069	.072	.068	[0.68]
Asset Weighted				
Market Beta	.945	.943	.947	[0.64]
Small minus Big	.013	.016	.008	[0.46]
Value minus Growth	.065	.053	.080	[0.35]
Momentum Factor	.033	.025	.042	[0.00]

Table 5: Average Fund Expense Ratios, Sales Charges and Back-end Loads

Panels A – G report fund fees and loads in various manners for fund share classes from 1996 to 2002, stratified by distribution channel and by broad fund objective. We report these results for all equities, the subclass of “broad equity” (which excludes specialty funds), money market funds and bond funds. The cells represent charges in percent. Non-distribution fees, calculated as the expense ratio less reported 12b-1 fees include the management fee, administration expenses, transfer agency expenses, custodial expenses, legal and audit expenses, board fees, etc. Total annual expenses is total expense ratio. Panels D-G report loads. We report maximum loads (front and back end) as well as an estimate of the annualized level of all distribution fees and operating expenses over an *ad hoc* five year holding period.

	ALL Channels	Direct (D)	Broker (B)	Hypothesis Test B=D
Panel A: Annual Non Distribution Expenses (Expense Ratio less 12b-1 Fees)				
Equally Weighted				
Equity	1.127	1.172	1.112	[0.00]
Broad Equity	1.100	1.133	1.089	[0.00]
Money Market	0.529	0.575	0.526	[0.55]
Bonds	0.816	0.743	0.830	[0.00]
Asset Weighted				
Equity	0.735	0.726	0.745	[0.00]
Broad Equity	0.715	0.709	0.720	[0.02]
Money Market	0.427	0.386	0.428	[0.71]
Bonds	0.658	0.510	0.739	[0.00]
Panel B: Annual Distribution Expenses (12b-1 Fees)				
Equally Weighted				
Equity	0.508	0.104	0.626	[0.00]
Broad Equity	0.503	0.096	0.618	[0.00]
Money Market	0.240	0.125	0.267	[0.00]
Bonds	0.486	0.073	0.565	[0.00]
Asset Weighted				
Equity	0.247	0.017	0.482	[0.00]
Broad Equity	0.240	0.017	0.472	[0.00]
Money Market	0.135	0.091	0.150	[0.00]
Bonds	0.288	0.009	0.442	[0.00]
Panel C: Total Annual Expenses				
Equally Weighted				
Equity	1.606	1.252	1.722	[0.00]
Broad Equity	1.575	1.215	1.692	[0.00]
Money Market	0.935	0.792	0.952	[0.14]
Bonds	1.291	0.805	1.387	[0.00]
Asset Weighted				
Equity	0.980	0.744	1.224	[0.00]
Broad Equity	0.953	0.726	1.190	[0.00]
Money Market	0.669	0.533	0.673	[0.30]
Bonds	0.952	0.518	1.187	[0.00]

Table 5 (continued)

	ALL Channels	Direct (D)	Broker (B)	Hypothesis Test B=D
Panel D: Maximum Front End Load				
Equally Weighted				
Equity	1.586	0.254	1.989	[0.00]
Broad Equity	1.583	0.172	1.995	[0.00]
Money Market	0.076	0.015	0.097	[0.00]
Bonds	1.398	0.055	1.659	[0.00]
Asset Weighted				
Equity	2.019	0.583	3.493	[0.00]
Broad Equity	2.040	0.559	3.578	[0.00]
Money Market	0.011	0.009	0.011	[0.62]
Bonds	1.588	0.023	2.435	[0.00]
Panel E: Maximum Back End Load				
Equally Weighted				
Equity	1.201	0.022	1.557	[0.00]
Broad Equity	1.199	0.020	1.544	[0.00]
Money Market	0.226	0.013	0.296	[0.00]
Bonds	1.175	0.019	1.399	[0.00]
Asset Weighted				
Equity	0.630	0.001	1.275	[0.00]
Broad Equity	0.596	0.001	1.215	[0.00]
Money Market	0.012	0.008	0.014	[0.30]
Bonds	0.876	0.000	1.350	[0.00]
Panel F: Total Sales Charge Annuitized over Five Year Holding Period				
Equally Weighted				
Equity	1.070	0.161	1.337	[0.00]
Broad Equity	1.065	0.136	1.328	[0.00]
Money Market	0.314	0.131	0.358	[0.00]
Bonds	1.004	0.088	1.178	[0.00]
Asset Weighted				
Equity	0.777	0.134	1.438	[0.00]
Broad Equity	0.768	0.129	1.432	[0.00]
Money Market	0.141	0.095	0.156	[0.00]
Bonds	0.789	0.013	1.215	[0.00]
Panel G: Total Annuitized Fees over Five Year Holding Period				
Equally Weighted				
Equity	2.168	1.312	2.450	[0.00]
Broad Equity	2.133	1.255	2.417	[0.00]
Money Market	1.176	0.792	1.221	[0.02]
Bonds	1.819	0.817	2.016	[0.00]
Asset Weighted				
Equity	1.511	0.861	2.184	[0.00]
Broad Equity	1.482	0.839	2.154	[0.00]
Money Market	0.684	0.533	0.688	[0.34]
Bonds	1.464	0.523	1.973	[0.00]

Table 6: Analysis of Non-Distribution fees as a function of fund and distribution characteristics

This table reports the analysis of the determinants of the non-distribution fees charged by fund share classes. Non-distribution fees, calculated as the expense ratio less reported 12b-1 fees would include the management fee, administration expenses, transfer agency expenses, custodial expenses, legal and audit expenses, board fees, etc. We estimate a panel regression from 1996 through 2002 to explain the levels of non-distribution fees. We use fund sponsor and channel characteristics as explanatory variables including fund size, complex size, fund age, category of the fund (not reported) and year dummies (not reported.) In addition, we include variables that indicate the size of the 12b-1 fee, the size of the maximum front-end and back end loads, and a dummy for the direct channel. We report standard errors below each parameter estimate and indicate levels of significance by (* is 5%) and (** is 1%) level. The unit of observation is the fund share class-year; to account for non-independence across year observations for a given fund share class, we correct the reported standard errors for share-class level ‘clustering’ using the Moulton (1990) correction. Reported standard errors, while sensitive to this clustering assumption, are not sensitive to the choice of whether to cluster at the level of the share class or at the level of the fund; results based on the fund-level clustering assumption are very similar to those below and are available from the authors upon request.

Variables	All Funds	Bonds	Equity	Money Market
Fund Size 50-200m	-0.150 (0.019)**	-0.041 (0.017)*	-0.304 (0.060)**	-0.067 (0.029)*
Fund Size 200-1000m	-0.239 (0.022)**	-0.085 (0.019)**	-0.415 (0.067)**	-0.096 (0.030)**
Fund Size > 1000m	-0.319 (0.027)**	-0.110 (0.022)**	-0.500 (0.074)**	-0.179 (0.033)**
Complex Size 10B – 50B	-0.055 (0.009)**	-0.009 (0.014)	-0.093 (0.020)**	0.035 (0.014)*
Complex Size 50B-100B	-0.076 (0.009)**	-0.038 (0.016)*	-0.124 (0.017)**	0.065 (0.018)**
Complex Size > 100B	-0.111 (0.010)**	-0.119 (0.019)**	-0.112 (0.019)**	0.013 (0.020)
Age > 5 <= 20	0.054 (0.012)**	0.096 (0.012)**	0.054 (0.029)	0.101 (0.017)**
Age > 20	0.048 (0.038)**	0.095 (0.018)**	0.044 (0.075)	0.218 (0.028)**
12b-1 fees	-0.083 (0.023)**	0.097 (0.030)**	-0.108 (0.061)	-0.291 (0.052)**
Front load	-0.007 (0.005)	-0.006 0.004	-0.010 (0.014)	0.002 (0.022)
Back load	0.015 (0.003)**	0.020 (0.005)**	0.012 (0.008)	0.072 (0.011)**
Minimum initial purchase < 25K	0.098 (0.023)**	0.039 (0.034)	0.102 (0.043)**	- -
Dummy =1 for direct channel funds	-0.050 (0.026)	-0.076 (0.030)*	-0.099 (0.077)	-0.009 (0.018)
Number of Observations	54,437	9,532	17,238	4,550
R-Squared	0.2984	0.2840	0.0940	0.1938

Table 7: Average fund returns, 1996-2002

We report equal and asset weighted average returns for sample equity funds (Panel A), bond funds (Panel B), and money market funds (panel C). We estimate average returns from data from 1996-2002. We report returns net of all annual expenses (gross returns less the reported expense ratio) and net of non-distribution expenses (i.e., net returns plus the 12b1 portion of the expense ratio.) Returns do not take into account front-end or back-end loads. We report average raw returns as well as benchmark-adjusted returns, where the benchmark used is the average return in that year of the mutual funds in our sample classified by Morningstar as belonging to the same investment category. We also report alphas using various models of factor adjustment. These alphas are calculated for the sample of funds for which CRSP mutual fund data are available because CRSP data are used for the monthly fund returns in the factor-adjustment model. For the equity funds, the one-factor alphas are computed using the value-weighted equity market as the lone factor. Factor loadings are computed using the 36 months of data prior to the current year. Alphas are estimated using these factor loadings, the contemporaneous return to the market portfolio, and the fund's own return. Three-factor alphas for the equity funds add a value/growth and small firm/large firm factors. The four-factor model adds to the three-factor model a 'momentum' factor. For the fixed-income funds, the reported two-factor model is based on a 10-year government bond return factor, and 10-year Moody's Aaa corporate bond portfolio return factor, using data from the Federal Reserve's interest rate library. www.federalreserve.gov/releases/h15/data.htm. The 'alpha h' market-adjusted return adds to the alpha2 model the monthly return to the Moody's 10-year Baa corporate bond portfolio. The final column shows the p-value from the test of the hypothesis that the means of the variable of interest are the same in the Broker channel as in the Direct channel.

	All	Direct (D)	Broker (B)	Hypothesis Test B=D	
Panel A: Equity Funds					
Equally Weighted					
Raw returns net of non-dist exp.	4.286	6.706	3.531	[0.00]	
Raw returns net of all exp	3.804	6.626	2.924	[0.00]	
Benchmark -adjusted net of non-dist exp	0.309	1.350	-0.016	[0.00]	
Benchmark - adjusted net of all exp	-0.173	1.270	-0.623	[0.00]	
<i>Including only funds for which alphas may be constructed</i>					
Alpha 1	Net of non-dist exp.	-0.313	0.817	-0.663	[0.00]
	Net of all exp.	-0.790	0.740	-1.264	[0.00]
Alpha 3	Net of non-dist exp.	-1.557	-0.461	-1.896	[0.00]
	Net of all exp.	-2.034	-0.537	-2.498	[0.00]
Alpha 4	Net of non-dist exp.	-2.366	-1.233	-2.717	[0.00]
	Net of all exp.	-2.844	-1.310	-3.319	[0.00]
Asset Weighted					
Raw returns net of non-dist exp.	1.631	1.668	1.593	[0.83]	
Raw returns net of all exp	1.394	1.651	1.125	[0.13]	
Benchmark -adjusted net of non-dist exp	0.223	0.310	0.132	[0.22]	
Benchmark - adjusted net of all exp	-0.014	0.294	-0.336	[0.00]	
<i>Including only funds for which alphas may be constructed</i>					
Alpha 1	Net of non-dist exp.	-0.877	-0.773	-0.987	[0.33]
	Net of all exp.	-1.108	-0.789	-1.449	[0.00]
Alpha 3	Net of non-dist exp.	-0.668	-0.221	-1.147	[0.00]
	Net of all exp.	-0.090	-0.237	-1.609	[0.00]
Alpha 4	Net of non-dist exp.	-1.424	-1.054	-1.821	[0.00]
	Net of all exp.	-1.656	-1.070	-2.282	[0.00]

Table 7 (continued)

		All	Direct (D)	Broker (B)	Hypothesis Test B=D
Panel B: Bond Funds					
Equally Weighted					
	Raw returns net of non-dist exp.	5.550	6.135	5.433	[0.00]
	Raw returns net of all exp	5.077	6.075	4.876	[0.00]
	Benchmark -adjusted net of non-dist exp	0.266	0.471	0.225	[0.02]
	Benchmark - adjusted net of all exp	-0.208	0.411	-0.332	[0.00]
<i>Including only funds for which alphas may be constructed</i>					
Alpha 2	Net of non-dist exp.	-0.312	0.252	-0.425	[0.00]
	Net of all exp.	-0.793	0.198	-0.992	[0.00]
Alpha h	Net of non-dist exp.	0.421	0.836	0.338	[0.09]
	Net of all exp.	-0.60	0.782	-0.228	[0.00]
Asset Weighted					
	Raw returns net of non-dist exp.	5.261	6.285	4.743	[0.00]
	Raw returns net of all exp	4.966	6.277	4.302	[0.00]
	Benchmark -adjusted net of non-dist exp	0.338	0.823	0.092	[0.00]
	Benchmark - adjusted net of all exp	0.042	0.815	-0.349	[0.00]
<i>Including only funds for which alphas may be constructed</i>					
Alpha 2	Net of non-dist exp.	-0.575	0.467	-1.1313	[0.00]
	Net of all exp.	-0.869	0.459	-1.577	[0.00]
Alpha h	Net of non-dist exp.	0.085	0.986	-0.396	[0.00]
	Net of all exp.	-0.209	0.978	-0.842	[0.00]
Panel C: Money Market Funds					
Equally Weighted					
	Raw returns net of non-dist exp.	3.809	3.570	3.895	[0.00]
	Raw returns net of all exp	3.638	3.504	3.687	[0.00]
	Benchmark -adjusted net of non-dist exp	0.035	0.020	0.041	[0.07]
	Benchmark - adjusted net of all exp	-0.136	-0.047	-0.168	[0.00]
<i>Including only funds for which alphas may be constructed</i>					
Alpha 2	Net of non-dist exp.	-0.495	-0.713	-0.411	[0.00]
	Net of all exp.	-0.707	-0.793	-0.674	[0.00]
Alpha h	Net of non-dist exp.	-0.466	-0.683	-0.383	[0.00]
	Net of all exp.	-0.678	-0.762	-0.646	[0.00]
Asset Weighted					
	Raw returns net of non-dist exp.	4.043	3.940	4.102	[0.00]
	Raw returns net of all exp	3.949	3.895	3.980	[0.07]
	Benchmark -adjusted net of non-dist exp	0.202	0.253	0.174	[0.00]
	Benchmark - adjusted net of all exp	0.108	0.208	0.051	[0.00]
<i>Including only funds for which alphas may be constructed</i>					
Alpha 2	Net of non-dist exp.	-0.082	-0.075	-0.085	[0.73]
	Net of all exp.	-0.188	-0.132	-0.222	[0.00]
Alpha h	Net of non-dist exp.	-0.049	-0.036	-0.057	[0.48]
	Net of all exp.	-0.156	-0.093	-0.193	[0.00]

Table 8. Predicting net inflows with fund share class returns and characteristics 1996-2002.

This table reports the analysis of the determinants of the net inflows to fund share classes. Two regressions are reported, one with linear terms for lagged benchmark-adjusted returns and one with five piecewise linear terms for lagged returns. The relation between flow and returns is estimated using interactive dummy variables for broker and direct channel funds in both regressions. Additional controls include fund size, complex size, fund age, manager tenure, 12b-1 fees, front loads, back loads, a dummy for minimum initial purchase, a dummy variable for funds sold through the broker channel, the category of the fund (not reported) and year dummies (not reported). We report standard errors below each parameter estimate in parentheses. Estimates that are more than two standard errors from zero are in bold. The unit of observation is the fund share class-year; to account for non-independence across year observations for a given fund share class, we correct the reported standard errors for share-class level ‘clustering’ using the Moulton (1990) correction. Reported standard errors, while sensitive to this clustering assumption, are not sensitive to the choice of whether to cluster at the level of the share class or at the level of the fund; results based on the fund-level clustering assumption are very similar to those below and are available from the authors upon request.

Table 8 (continued)

Explanatory Variable	Linear	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Benchmark Adj-Return x (Broker = 1)	1.366 (0.058)	-0.293 (0.138)	2.123 (0.364)	2.659 (0.550)	3.191 (0.422)	1.312 (0.135)
Benchmark Adj-Return x (Direct = 1)	0.887 (0.111)	0.012 (0.290)	1.56 (0.736)	1.331 (0.908)	5.93 (0.684)	0.368 (0.136)
Fund Size 50-200m	-9.555 (1.706)					-8.961 (1.673)
Fund Size 200-1,000m	-12.24 (1.798)					-11.657 (1.765)
Fund Size > 1,000m	-20.696 (2.047)					-19.682 (2.011)
Complex Size 10B – 50B	8.823 (1.479)					8.72 (1.458)
Complex Size 50B-100B	10.711 (1.784)					10.381 (1.748)
Complex Size > 100B	8.452 (1.739)					7.748 (1.718)
Age 5 – 20 years	-12.877 (1.286)					-12.616 (1.255)
Age > 20	-12.768 (1.670)					-12.291 (1.634)
Manager Tenure 1 Year	1.502 (2.395)					1.165 (2.366)
Manager Tenure 2-5 Years	7.707 (1.983)					7.891 (1.953)
Manager Tenure > 6 Years	1.372 (2.146)					0.359 (2.099)
Manager Tenure Missing	11.214 (10.343)					13.084 (10.820)
Expense Ratio	-1.292 (1.001)					-2.246 (0.963)
Dummy = 1 if Expense Ratio Missing	-5.907 (3.326)					-7.996 (3.316)
12b1 Fee	31.652 (2.353)					31.948 (2.315)
Sales Charge	1.093 (0.292)					1.04 (0.288)
Back Load	-1.503 (0.439)					-1.431 (0.431)
Dummy = 1 if Broker Channel	-11.158 (1.826)					-14.75 (5.045)
R-Squared	0.1637					0.1893
Number of Observations	14,949					14,949

Table 9: Fund Flow Velocity

This table presents an average fund reaction time to performance changes. We estimate the coefficient of the regression for each fund i and measurement interval m .

$$\text{Flow}_{i,t+m} = a_{i,m} + b_{i,m} \text{Return}_{i,t-m} + \text{COVARIATES (See Table 8)} + e_{i,m}$$

We then average the coefficients for the funds by distribution channel to come up with each distribution channels reaction time to performance changes. The estimates in (.) represent cross-sectional standard errors of the coefficient estimates. The estimates in [.] represent p-values of hypothesis tests that test whether the coefficients within the channels are equal as described in the headings of each column. The estimates in panel C surround by {.} represent p-values for the hypothesis test that the coefficients for the large and small funds within each channel are equal.

Coefficients by flow horizon	Direct (D)	Broker (B)	Test B = D
Panel A: Equally Weighted Average Velocity			
1 Month Horizon	0.07 (0.02)	0.28 (0.01)	[0.00]
2 Month Horizon	0.19 (0.02)	0.47 (0.02)	[0.00]
3 Month Horizon	0.37 (0.02)	0.61 (0.02)	[0.00]
6 Month Horizon	0.64 (0.04)	0.93 (0.03)	[0.00]
9 Month Horizon	0.67 (0.04)	0.96 (0.03)	[0.00]
12 Month Horizon	0.52 (0.04)	0.78 (0.03)	[0.00]
Panel B: Small funds (Assets < Median Funds Assets in Year t)			
1 Month Horizon	-0.01 (0.02)	0.33 (0.01)	[0.00]
2 Month Horizon	0.13 (0.03)	0.56 (0.02)	[0.00]
3 Month Horizon	0.40 (0.03)	0.76 (0.02)	[0.00]
6 Month Horizon	0.71 (0.05)	1.22 (0.03)	[0.00]
9 Month Horizon	0.87 (0.06)	1.30 (0.04)	[0.00]
12 Month Horizon	0.72 (0.07)	1.05 (0.04)	[0.00]

Coefficients by flow horizon	Direct (D)	Broker (B)	Test B = D
Panel C: Large funds (Assets > Median funds assets in year t)			
1 Month Horizon	0.12 (0.02)	0.23 (0.01)	[0.00]
2 Month Horizon	0.22 (0.02)	0.38 (0.02)	[0.00]
3 Month Horizon	0.36 (0.03)	0.47 (0.02)	[0.00]
6 Month Horizon	0.61 (0.04)	0.70 (0.03)	[0.03]
9 Month Horizon	0.63 (0.04)	0.75 (0.03)	[0.02]
12 Month Horizon	0.51 (0.05)	0.67 (0.04)	[0.00]
Hypothesis tests: coefficient among large funds equals coefficient among small funds			
1 Month Horizon	{0.000}	{0.000}	{0.000}
2 Month Horizon	{0.000}	{0.000}	{0.002}
3 Month Horizon	{0.000}	{0.000}	{0.291}
6 Month Horizon	{0.000}	{0.000}	{0.058}
9 Month Horizon	{0.000}	{0.000}	{0.000}
12 Month Horizon	{0.000}	{0.000}	{0.005}