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Abstract

Mutual fund investors not only voluntarily engage professional investment managers, but also many willingly engage and pay professional brokers or advisors. Compared with direct distribution, brokered distribution is labor-intensive and consequently more costly to consumers. Presumably, consumers must perceive that they receive incremental benefits from using a broker. In this paper, we analyze four possible benefits that consumers of brokered fund distribution might enjoy: (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; and (d) Attenuation of behavioral investor biases. Along these dimensions, it is 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 underperform compared to directly-placed funds. Furthermore, brokered clients demonstrate more performance sensitivity, responding much more strongly to very short term performance. While there may be benefits of being a brokerage customer, they are not easily captured by these tangible measures.

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1. Introduction

The neoclassical model that most financial economists accept, explicitly or implicitly, 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 prefer to buy funds directly, many voluntarily choose to pay substantial fees to engage the services of distribution professionals (brokers or advisors) that are another link in the intermediation chain. In aggregate, distributing funds 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, a sizeable amount compared to the \$23.8 billion paid in 2002 for investment management fees and other operational expenses.¹

Customers of brokers pay a considerable sum for the privilege of working with these licensed professionals. The question we pose in this paper is a simple one: What benefits do mutual fund consumers who use and pay brokers enjoy? While there has been substantial research on whether fund investors receive benefits commensurate with the costs of professional investment management, there has not been work on the whether consumers receive benefits from the distribution activities they pay for. We examine four potential and measurable benefits of engaging a distribution professional:

- (a) A distribution professional can assist consumers find funds with *high search or analysis costs*, i.e., those that would be otherwise difficult to find or evaluate;
- (b) A distribution professional can assist consumers to find funds with *lower non-distribution fees*;
- (c) A distribution professional can assist consumers to find *better performing* funds;
- (d) A distribution professional can assist consumers to *attenuate certain possibly-harmful 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."

In brief, we find some evidence that brokers seem to focus on smaller, younger funds that are not covered by major fund rating services. These funds seem *a priori* to be ones that would be otherwise harder for a consumer to find on her own. However, brokered funds do not charge lower non-distribution fees to offset the additional costs of distribution. Brokered funds do not perform better than directly distributed funds, even before the deduction of distribution expenses. To the contrary, they underperform directly distributed funds, even before the deduction of any distribution expenses. Finally, customers of brokers exhibit much stronger performance sensitivity, both for good and bad performance and are much more sensitive to very short-run performance than are investors of directly-distributed funds. While there has been debate about whether trend chasing is optimal or not, this behavior is most pronounced in the broker channel. In aggregate, our investigation of the benefits of using a broker for buying funds leaves us with more questions than answers, and little tangible evidence of clear benefits.

We acknowledge up-front that our search for broker benefits is incomplete. Distribution professionals (whom we will call “brokers” throughout the paper) may make consumers more comfortable with making financial decisions. Were there no brokers, some consumers might simply not save and invest as much, or possibly invest in ways far different than investing in mutual funds. Brokers could ensure that the consumer’s portfolio is more closely matched to their needs and preferences. Our study does not address these issues, which we acknowledge to be important. However, even so, we feel it is valuable to establish some hard evidence documenting the apparent benefits delivered by distribution professionals.

We believe that the study of fund distribution channels is long overdue on business, scholarly and public policy grounds. As we note above, from a business perspective, 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 world over the value-added by the “factory” (investment management) versus the “channel” (distribution or sales channel). In these debates, increasingly and sometimes begrudgingly, the importance of the channel is acknowledged as critical to success in asset management.

From a purely scholarly perspective, our profession has witnessed an explosion in behavioral-based research. While biases like overconfidence, mental accounting, and loss aversion characterize individuals, distribution professionals could act to attenuate—or accentuate—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, who legally act as fiduciaries of their customers (not of the funds they sell), have subverted their clients’ interests to their own and to those the operators of the funds they sell. 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 attention. Given the stakes, it is important that non-partisan researchers establish a few 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 basic statistics describing our data. Section 4 analyzes the question of whether brokers help consumers find funds that would require higher search costs, i.e., funds that would be hard to find or evaluate. Section 5 analyzes fees, i.e., whether brokers help consumers find funds with lower *non-distribution* fees. Section 6 analyzes the realized performance of funds in brokered and direct channels. We analyze performance net of non-distribution expenses to see if brokers deliver better funds before the extra costs of brokerage, as well as net of all annual expenses, the traditional measure of performance. 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 analyzes various investor “biases” and tests whether these biases are weaker or stronger for customers of brokers. Section 8 concludes the paper, describes our work in progress and suggests some puzzles for future research.

2. Distribution Channels in Mutual Funds

In this section, we will briefly describe the mutual fund business and the nature of its distribution channels. We will also motivate this work by discussing four simple hypotheses about how distribution channels might deliver benefits to correspond to their costs.

Distribution of Mutual Funds. Marketers sometimes speak of a “channel map” for businesses, which in this instance would trace out how funds and consumers come together through various sales channels. 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). At the outset, we acknowledge that categorizing distributions channels is a difficult task, in particular given the relatively poor disclosure of distribution activity in the fund industry (as compared with disclosure of performance data).

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, the board selects a set of service providers to serve the fund clients; these include the investment manager, the distributor, the fund administrator, fund counsel, fund auditors and others. Funds typically have no employees, but function by outsourcing 100% of their activities to the various service providers. Just as the board is free to replace fund counsel or fund auditors, it is legally free to replace the investment manager or distribution agent. In practice, boards rarely exercise their right to terminate the fund’s contract with the investment manager. As a result, consumers identify funds with the sponsor, i.e., Fidelity or Vanguard.

One of the key business decisions made by a fund is how it will be distributed or sold to consumers. The fund sponsor has a keen interest in sales and distribution, or more generally in the processes whereby it gathers assets. 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 (AUM). Asset-gathering strategies that increase AUM, or retain existing assets more effectively, 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, although this assertion has not been documented in academic research, because most investment managers are privately held.

Mutual funds can be sold to consumers through a variety of means. While it would seem simple to define the various channels through which funds are sold, in practice, the categorization of channels is quite complicated. As an example of this complexity, Figure 1 shows the distribution categories used by four different expert fund organizations, including three consultants (Lipper, Financial Research Corporation, Strategic Insight) and the industry trade association, the Investment Company Institute. They all use different labels and different levels of granularity to divide the universe of distribution methods. Their taxonomies differ because each one uses a slightly different set of dimensions to divide funds: by which organization the fund is sold; to which customers; and along with which ancillary services.

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 (either national or regional), affiliated with the fund itself (a so-called captive arrangement), or 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 agent (or representative) of 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 (sold to individuals who have a relationship with a member organization) or employee funds (sold to employees or retirees of an organization)

Some categorizations—like ICI’s—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 goes so far as to categorize this latter channel as part of direct sales to consumers. Even “direct” sales may involve an intermediary like a financial planner who advises clients on the purchase of

funds in return for receiving some sort of advisory fee (that is usually outside of the fund expenses or distribution costs.)

For this paper, we employ a high-level categorization of distribution methods, based on the FRC and Lipper definitions. In our high level taxonomy, funds may be *directly distributed* or *broker-distributed*. We combine bank, captive and wholesale channels into a single “brokered” channel. (For some of our work, we separately identify the captive brokered channel, where the sales force is affiliated with the fund.) For our analysis in this paper, we have chosen to exclude institutional fund sales, which presumably are driven by a different set of dynamics than are the retail fund sales we are attempting to study.² We also exclude fund shares for which Lipper and FRC do not have consistent definitions of the predominant mode of distribution.

The direct channel has reasonably 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, (so 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, which has led some funds without 12b-1 fees to market themselves as “*pure* no-loads.”

The academics’ image of the direct channel is represented by Vanguard, which obtains new customers through advertising and 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, made available through fund supermarkets like Schwab OneSource, or purchased as part of defined contribution retirement plans.³ 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.

² 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.

³ 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.

The broker channel involves more complex financial arrangements with both the mutual fund investor and the mutual fund's management company. From an investor perspective, the broker provides financial advisory services and can be paid in a number of ways.⁴ Explicit distribution fees including front-end loads, back-end loads, and annual 12b-1 fee collected from the investor's mutual fund investments directly. Brokers are also sometimes paid by indirect distribution fees, whereby management companies pay part of their management fee to brokers in the form of "revenue sharing agreements" that have recently received attention in the press.⁵ The result is a complex and poorly disclosed web of payments and incentives. In this paper, we sometimes analyze "non-distribution fees" by analyzing annual expenses excluding explicitly-identified charges for distribution; nevertheless we recognize that there may be distribution fees hidden in management fees (or even in returns) that we cannot explicitly measure.

To give the reader a sense of channel classifications, Table 1 provides a list of the 25 largest mutual fund share classes that are defined to operate in the Direct and Broker channels in 2002. The table identifies the largest share *classes*; sometimes the same fund may have separate classes sold through different channels and an analysis by class is appropriate if one wants to divide the industry by channel.

Why should the form of distribution matter? The sales force that sells a fund must be paid, and the expenses for distribution are material. As report later in the paper, 53% of all assets in our sample are held in the broker channel, and this channel levies fees that are over twice as large as those in the direct distribution channel. This revealed preference suggests that there must be benefits to having a broker assist in the selection of funds.

⁴ 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.

⁵ 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.

In this study, we seek to evaluate potential benefits that customers who use brokered distribution enjoy. Our list is surely not exhaustive, as we cannot measure the benefit of the consumer having greater confidence or comfort with their financial decision-making, nor can we measure whether certain individual investors have portfolios more closely tailored to their individual risk preferences. We can however measure the following potential benefits that the labor-intensive and expensive brokerage system might confer upon its clients:

1. Reduce search and analysis costs. Finding and selecting a mutual fund from among the thousands of possible choices is neither simple nor anxiety-free. The search and evaluation costs for some types of funds (and customers) may be greater than for others. “Harder to find funds” might include those that are younger and smaller. Funds not covered by Morningstar, which has evolved into the premier source of consumer mutual fund data, would probably be harder to find and analyze. In addition, some types of funds are harder to analyze than others. Money market funds and index funds are probably easier to understand than would be international funds or more specialized funds. 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.
2. Reduce non-distribution expenses. There is ample evidence that higher expenses systematically lead to lower performance.⁶ Many studies have tried to establish whether fund managers can earn enough pre-fee alpha to offset the drag caused by their fees. By definition, inserting a paid broker into the fund selection process will increase the costs to the consumer. Brokers cannot change the performance of a fund (they do not make portfolio decisions), but they could direct consumers to different types of funds. Perhaps brokers help the consumer find funds whose *non-distribution costs* (investment management, custody, legal, audit, etc.) are lower, offsetting some or all of the higher costs of distribution.

⁶ This is a large literature; for example, see Carhart (1997) or Wermers (2000) for evidence of the negative impact of expenses on performance.

3. Help consumers identify funds with 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 (have persistent positive alphas), but rather in a relative sense, i.e., compared with the alphas of direct sold funds, before or after the deduction of the various expenses of fund purchase and ownership.
4. Attenuate and exploit investor biases. Ample research shows that individual investors have certain behavior biases.⁷ These include myopia and extrapolation of historical results into the future. In the mutual fund industry, these biases reflect themselves in a variety of ways
 - a. Home bias: the tendency to underweight investments from distant locations.
 - b. Recency: the tendency to overweight most recent data (e.g., performance data) in evaluation. This might be less of a problem if the funds to which funds are directed exhibit stronger momentum effects.
 - c. Extrapolation: the tendency to extrapolate current trends, manifested in a strong relationship between past performance and current flows.
 - d. 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 insensitivity of flows to negative results is sometimes considered anomalous, although recent papers suggest otherwise.⁸

⁷ For a recent survey of work on behavioral finance, see the review piece by Barberis and Thaler (2003)

⁸ For a discussion of this issue, see Zheng (1999), Gruber (1996), 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.

While the jury may be out as to whether these biases are suboptimal or justified, one can ask whether the biases attributed to individual investors should more accurately be attributed to 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.

We acknowledge a few caveats with these predictions and more generally with our study. 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 satisfaction that consumers experience as a result of having their investments tailored to their individual needs and preferences. These can be real benefits that could be very highly valued by consumers.

Second, if there are differences between the brokered and direct channel, we cannot generally distinguish whether these are causal result of the brokerage channel or 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 could have different fee sensitivity, confidence in their own abilities, risk preferences, etc. We could observe different behavior by channel that reflected the sorting of consumers to the channel, rather than the “treatment” by the broker.

Finally, considerations of the agency problems inherent in the brokers’ role in delegated portfolio management could drive a more sinister set of predictions. Brokers could subjugate their role as fiduciaries (their legal status) to their own interests or to those of the management companies whose funds they sell. The exact implications would be highly dependent on the nature of the incentives faced by brokers, which we do not observe. However, generally, this agency-centered view of the brokerage relationship would predict that brokers might encourage their clients to buy products that simply

maximize the value of present and future fees and other benefits to the brokers. Unfortunately, we do not have broker-level sales incentives, so it is difficult to test this hypothesis with our data.

While we recognize these shortcomings, our empirical approach in this preliminary study is to first look for evidence of measurable benefits that would offset the surely high costs of using another layer of intermediation in the investing decision.

3. Data and Descriptive Statistics

Our dataset combines information from Financial Research Corporation (FRC), the CRSP “survivor-bias-free mutual fund database” and Morningstar. Financial Research Corporation is a firm that does research in the investment management industry, focusing on products and distribution.⁹ FRC provided us with industry snapshots in 1998, 2000, and 2002 that each provide some historical data, so we have information from 1996 through 2002. The critical piece of data provided by FRC is a distribution code for each fund, which characterizes the primary distribution channel for that fund. FRC also reports the distribution code assigned by Lipper, another major fund data provider. These codes are mostly static (i.e., they change rarely over the period).¹⁰

Coding a fund’s distribution channel shares many of the same problems as assigning a primary SIC to categorize firms—while the code may fairly represent the bulk of the activities of the firm, by its nature it is not terribly nuanced for multiproduct firms and it reflects some degree of judgment. We compare those codes to Lipper distribution channel codes provided in the FRC data and identify non-institutional funds that are distributed directly versus those which are distributed via some form of a brokered sales process. Where we find substantive differences in the manner in which Lipper and FRC code fund distribution methods, we exclude those funds from our sample. This occurs for 5.9% of the fund classes that represent 3.2% of the assets in our sample. We also exclude institutional funds.

⁹ 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.

¹⁰ These codes are defined by share class, rather than by share, allowing for greater granularity in our breakdown of funds by distribution type.

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. This could impart survivorship bias issues to the tests that use these data. We also collected additional fund data from Morningstar, including Morningstar ranking, manager tenure, etc.

To give the reader a sense of the data, **Table 1** reports the top 25 largest fund classes for our two broad distribution channels (direct and broker). While most mutual fund research focuses primarily on equity funds, note that money markets 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 sample. Panels 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, the division by broker and direct distribution, and within broker distribution, the breakdown by funds sold by a captive broker vs. a non-captive broker. We report data for 1996, 1998, 2000, and 2002.

In 2002, our sample covers 10,415 share classes in 5,005 funds representing assets of \$3.8 trillion.¹¹ Brokered distribution is the dominant form of distribution, representing 81% of all share classes, 68% of all funds and 53% of all assets in 2002, with direct distribution representing the remainder. Brokers account for a larger fraction of share classes than funds because brokered funds are more likely to set up multiple share classes, which differ by the structure of their fees. 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 years we study. Within the brokered channel, in 2002 funds sold by captive brokers (like Merrill Lynch) account for 16% of the fund classes, 17% of the funds, and 25% of the assets under management in this channel, and their relative share of assets have declined over the period we study.

¹¹ 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.

It is useful to have this aggregate data in mind when we look for differences between the channels. These channels represent trillions of dollars of household savings. While the line between “direct” and “brokered” distribution is not as clear-cut as one might like, professionals in the fund industry judge them to be different, and it is our self-assigned task to see the dimensions along which these differences exist.

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

Costly search is a real element of the mutual fund buying process. 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 over 5,000 funds.) Left to their own devices, we speculate that 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 full-time brokers is that they might help investors to locate and invest in funds that might otherwise be ignored. 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. (We also acknowledge that performance can play a role in the ease of identifying a fund, but we discuss this later in Section 6.) To operationalize whether channels help consumers find funds that would otherwise be harder to find, we look at the following measures of the visibility of a fund. These measures are characteristics of the fund (as compared with the characteristics of the portfolio held by the fund.):

- Average size of funds.
- Average age of the funds offered and sold.
- Percentage of funds offered and sold that are “young” (i.e., under 3 years old)
- Percentage 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 could help consumers analyze funds that would otherwise be hard to understand. To operationalize 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:

- “Easier” to evaluate funds would include money market funds, named index funds, and domestic funds, especially larger cap funds.
- “Harder” to evaluate funds would include international funds and smaller cap equity funds. Actively managed funds would be harder to evaluate than index funds. Finally, funds not covered by Morningstar would be harder to evaluate.

Tables 4 reports characteristics of funds by channel, and **Table 5** reports the composition of fund portfolios by channel. In the language above, we distinguish between the funds “offered” and “sold” by each channel. We report equal-weighted results, which capture the product set or menu *offered* by a channel. We also report asset-weighted figures, which represent what was actually *purchased* by consumers over time, reflecting a combination of consumer preferences and, in the case of brokered funds, broker advice.

From **Table 4**, Panel A, we can see that brokers offered funds that were considerably smaller than those offered in the direct channel.¹² For example, in 2002, funds sold by brokers were 37% smaller than those sold by the direct channel, with an average fund size of \$744 million versus \$1,177 million. This difference was even more pronounced in the non-captive broker channel, whose average fund is 40% smaller than those sold by the direct channel. This is consistent with the idea that one service provided by brokers is to 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 “small,” i.e., with assets of less than \$100 million, the menu proposed by brokers to their customers has fewer small funds.

¹² While our unit of analysis is normally a share class, for this analysis 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.

In Panel C we examine the age of funds offered and sold. Brokers *offer* products that are slightly younger in age as well, with an average age of 10.4 versus 11.2 years (in 2002), driven primarily by the younger products offered by the non-captive broker channel. However, these differences vanish once we look at the products actually sold (versus offered) in the asset-weighted results. But, in Panel D, we see that the funds sold by brokers (asset-weighted) are two or more times 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 and sell funds whose managers have been in place for a shorter period of time, which is consistent with them selling funds that are more likely to be young (under three years old).

Finally, Panel E 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. We find that brokers are more likely to offer unrated funds, and throughout 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.

Taken together, the information in **Table 3** suggests that funds that go through brokered distribution are somewhat smaller, younger, have managers with shorter tenure, and are less likely to be rated by Morningstar. These are the fund traits that we had guessed would make funds harder to identify and evaluate, and hence, the types of funds for which brokers might have a comparative advantage in selling.

Table 4 presents various characteristics of the portfolios of the funds in the direct and brokered channels. Our hypothesis is that brokers have a comparative expertise in assisting customers pick funds that were “hard to analyze.” There is no simple metric to identify the “degree of difficulty” in assessing a fund, so we report a variety of measures of fund portfolio characteristics. Our priors were that harder to evaluate portfolios would 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, like 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 may play a role in helping investors analyze “complicated” funds, Panel A shows that the brokerage channel offers and sells substantially more foreign funds than does the direct channel (14.0% vs. 10.4% in funds offered; 7.3% vs. 5.5% in funds actually sold.) Panel D shows that they offer and 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.

From Panel A it appears that brokers are less likely to offer and sell equities than is the direct channel, which seems inconsistent with the notion that they would specialize in helping clients with informationally-demanding investments. However, we need to combine this data with the information in Panel D to understand what is going on. Examining the 2002 asset-weighted figures, we can infer the amount of *actively-managed* equity sold by the two channels. 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%). As we might have suspected, brokers “specialize” in marketing funds that allegedly require greater analysis: actively managed domestic equities (and as we mentioned before, international securities.)

Yet at the same time, substantially more of the assets held in the most expensive distribution channel are those which would require the least assistance from a broker: money market funds. While brokers offer fewer money market products, 29.9% of all assets in brokered funds are in money market funds versus 22.3% in the direct channel. It is even more striking in the captive brokered channel, where 53.6% of all assets are in an asset class that seems to require the least help from a broker to select. 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 as to money market fund selection. This finding might

suggest that the brokered channel is not only a means by which investment advice is delivered, but also a means for handling transaction needs of customers.

Overall, this first investigation provides results broadly 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, especially the captive broker channel, offers and sells considerably more money market mutual funds. This is probably less due to the expert advice of brokers, 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 evidence unearthed by the vast academic literature into mutual funds is that expenses are a certain drag on performance.¹³ Yet, it is possible that the brokered channel finds and makes accessible to investors funds whose *non-distribution* charges are lower, either partially or fully offsetting the costs of the higher distribution charges.

To examine this concept, we measure the fees that fund investors pay for services other than distribution, equal to the annual expense ratio before the deduction of 12b-1 fees, which are “non-distribution expenses.” Non-distribution expenses include the management fee, as well as other costs including administration, custody, transfer agency, audit, legal and board fees. We acknowledge that some distribution charges can be hidden in what we label “non-distribution charges” if a management company were to engage in the practice of “revenue sharing” with brokers. We also report the components of distribution fees (annual 12b-1 fees, maximum front-end loads, maximum back-end loads¹⁴). We also report a measure of the annuitized level of all distribution fees, assuming a five year

¹³ For example, see Carhart (1997).

¹⁴ 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. We do not have information on the actual distribution fees paid.

holding period by investors, which is clearly an *ad hoc* assumption. **Table 5** reports the fee components by channel for the main classes of funds (equities, bonds and money markets) as well as the class of “broad equity” which excludes specialty equity funds (mostly sector funds.) **Table 6** is a multivariate analysis of non-distribution fees.

Distribution charges. Front-end and back-end loads and 12b-1 fees generate funds that are used to compensate brokers (and support other marketing activities.) **Table 5** shows the components of these expenses, reported on both equal weighted and asset weighed bases Obviously, 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 equity funds, smaller for bond funds and smallest for money market funds. Except for money markets, brokered distribution fee components are substantially larger—by a multiple of five or more—than for direct distribution.

Non-distribution charges. Not only are distribution charges for brokered funds higher, but also, non-distribution expenses for brokered funds are also slightly higher. Non-distribution expenses are 19 bp, 23 bp, and 4 bp higher for brokered funds in the equity, bond, and money market categories respectively. The first two of these are statistically significantly different from one another. Thus, this univariate result, to be confirmed in multivariate analysis below, fails to find any evidence that the higher fees paid to brokers are offset by lower non-distribution charges. Rather, investors in brokered funds tend to pay more for not only distribution, but also other services. Surely, it is possible that more is spent to achieve greater performance in the broker sold funds and that those expenses are recovered through the superior investment returns. We will return to this issue when we examine fund performance later in the paper.

Equal-weighted versus asset-weighted differences. The presence of either 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. For nondistribution charges and 12b-1 fees by both brokered and directly sold funds, and for all elements of fees in the direct sector, asset weighted expenses are considerably smaller than equal

weighted expenses. For example, non-distribution fees are 10 to 40% smaller on an asset-weighted basis than on an equal weighted basis.

One subtle and striking exception to this trend is for front-end loads among brokered funds. 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 to buy (or sell) those funds which generate larger up-front fees to support sales commissions. This is especially pronounced in the non-captive broker channel.

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 sizes. As a result, their costs may vary from those of directly-placed funds, and hence the univariates may fail to capture important differences. To test if there is a tradeoff between distribution and non-distribution fees, and to test for the presence of fee differences that are channel specific, **Table 6** reports on a multivariate analysis of non-distribution fees as a function of the size of the various distribution fees as well a fixed effect for whether the fund share class is distributed through the broker channel. Controls include complex size (to capture possible economies of scale), minimum initial investment amounts (to capture lower costs due to larger account size), investment objectives (which affect management fees) and year fixed effects. We show the results for all funds, as well as separate analyses for bond, equity, and money market funds.

The controls work as predicted. We see some evidence of economies of scale at the fund level, most pronounced for equity funds. We find some evidence of economies of scale at the complex level for bond and equity funds, but of the same order of magnitude across fund types. Younger funds (less than five years old) have lower non-distribution fees, perhaps reflecting a conscious strategy of management fee waivers. Finally, we see some evidence of account-level economies, with funds demanding larger initial minimums having lower fees.

If distribution charges and non-distribution charges acted as substitutes, then the coefficients on 12b-1 fees, front-end loads and back-end loads would be negative. Were they 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 -0.04 , suggesting that when 12b-1 fees are 100 bp higher, nondistribution charges are lower by 4 bp. The tradeoff, such as it is, hardly makes up for the increase in 12b-1 fees. 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 turn to an examination of the performance of mutual funds within the various distribution channels. From our first analysis, it appears that funds in the brokered channel are somewhat different: smaller, younger, and less likely covered by Morningstar. However, it is possible that brokers help their clients find funds that perform well in these more neglected areas of the market, and perhaps this reflects the value-added of brokers.

Table 7 presents data on the performance of funds in the three main investment sectors (equity, bonds, and money markets) segmented by the distribution channel used. We report average raw returns, benchmark-adjusted returns, and various measures of risk-adjusted performance, using relatively standard methodologies. We calculate returns in a traditional manner (net of all expenses, but before the deduction of front-end or back-end loads), but focus on *returns net of only non-distribution expenses*, as defined above. Our goal in reporting performance net of non-distribution expenses is to check if brokers have access to or sell better performing funds, at least 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 end of the return period.¹⁵

There are many numbers reported in **Table 7**, but the overall takeaway is clear. For bond and equity funds, there is no evidence whatsoever that funds sold by brokers outperform those sold through the direct channel. Even before deducting any distribution expenses, funds offered by and sold by brokers either perform on par with those sold directly, or quite commonly, underperform directly placed funds.

For example, consider the asset-weighted performance of equity funds. *Before deducting any distribution expenses*, brokered funds underperformed direct funds by 7.5 bp in absolute terms. They underperformed direct funds by 17.8 bp on a benchmark-adjusted basis. Using one, three, and four factor risk adjustment, they underperformed by 21.4, 92.6, and 76.7 bp respectively. These risk-adjusted return differentials using three and four factor models are not only economically large but also statistically significant. Before a single penny of distribution fees are charged to clients of brokers, purchasers of equity funds from brokers earn substantially lower returns than do purchasers of directly-placed funds. For bonds, the differences are approximately of the same order of magnitude, with the brokered funds underperforming by 53-68 bp on a risk-adjusted basis. All of these figures are *prior to deducting any 12b-1 charges, front-end loads, or back-end loads*.

For bond and equity funds, these results are more stark than we imagined. Surely, brokered funds would underperform direct funds when one subtracts out the additional distribution expenses. However, they underperform—substantially so—even before any distribution expenses are taken out. We wonder whether the extensive literature on underperformance would be sharpened by considering the distinctions due to distribution methods.

We acknowledge that the only exception to this pattern is in money market funds, where in some specifications, funds offered by brokers outperform those offered by the direct channel. This is a

¹⁵ Betas are estimated over years t-3 to t, abnormal returns are estimated from year t to t+1 and asset weights are calculated using asset values at time t.

potentially important finding which deserves additional research. We intend to investigate this finding in more detail.

While brokers may provide their customers with many benefits, this evidence is hard to square with the notion that brokers help clients find better performing funds, at least bond and equity funds. No matter what the risk preferences of consumers, it is hard to imagine a situation in which investors would prefer to own a fund that performs less well.

7. Do different channels exhibit different behavioral biases?

There is a large and growing literature documenting that investors exhibit various behavioral biases.¹⁶ Much of this literature implicitly attributes these biases to individual behavior. The brokered channel is one where investors receive advice in selecting funds, and this advice might either accentuate or attenuate the investor biases.

Home bias. There is extensive evidence that investors exhibit home bias, i.e., that they overweight investments that are nearby, underweighting foreign or even distant domestic, investments. We see home bias in our results in **Table 4**, where we note that the percentage of foreign funds offered is larger than the percentage of assets captured by those funds, in all channels.

However, we have already seen some evidence that brokers partially counteract home bias, encouraging their investors to diversify more 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. Furthermore, when this percentage is compared with the non-money-market investments, it is proportionally higher (10.2% of all non-money market investments vs. 7.1 % for the direct channel.) While investors in the direct channel may be holding their international investments elsewhere, this evidence is suggestive that brokers may play a role in countering home bias (perhaps due to the incentives they receive to sell international funds.) The international tilt to brokered funds comes mostly through the non-captive segment, where 8.7% of all

¹⁶ See Barberis and Thaler (2003) for a recent summary of this literature.

assets and 11.1% of non-money-market assets are held in international funds (versus 3.4% and 7.3% respectively for the captive channel.)

Performance sensitivity. While fund advertising acknowledges that current performance is not an indicator of future performance, there is ample evidence that investors are performance sensitive.¹⁷ This may reflect an extrapolation bias, where investors believe that the future will look like the past. Research on performance flow relationships 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 2** reports the results of a multivariate analysis of the performance flow relationship by channel. **Appendix A** summarizes the methodology we used for our calculations.

Figure 2 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 shows the first difference: brokered-funds are more sensitive to performance than direct funds, with a steeper relationship between performance and flow. The kernel regression shows a steeper performance-flow relationship for high performance.¹⁸

Table 8 reports a multivariate analysis of the relationship between flows and performance, using a piecewise relationship. In addition, we examine the relationship between the level of distribution fees (which may proxy for selling effort) and flows. As controls, we include variables to capture for year effects, objective categories, fund size, complex size, manager tenure, and fund age. We conduct this analysis only on equity funds. Our primary interest in this exercise is to determine: (a) whether the sensitivity of performance on flows is stronger 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.

¹⁷ See Sirri and Tufano (1998), Brown Harlow and Starks (1996) or Chevalier and Ellison (1997) for earlier studies of this phenomenon.

¹⁸ 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.

We find that the performance-flow relationship between brokered and direct funds is statistically the same for funds whose performance is in the bottom 60 percentiles. However, there are differences in performance-flow in the top 40 percentiles of performance. Briefly, this relationship is steeper for direct funds in the fourth quintile, but much stronger for brokered funds in the top quintile. Overall, we see more performance sensitivity among brokers, consistent with the finding of Neal (2004), who finds that funds that charge loads have incrementally steeper slopes between performance and flows. 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.

We find that the intensity of selling effort affects flows. 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 (sales charges) 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, as proxied by compensation to brokers through front loads and 12b-1 fees, is positively associated with reported net inflows at the fund share-class level. 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.

Some have argued that return chasing is suboptimal; others have posited that it is optimal in equilibrium.¹⁹ In either event, it seems that performance sensitivity is strongest in the brokered channel, although there seem to be nuances in the way that the channel markets performance, getting the most “bang for the buck” from extremely positive performance.

¹⁹ Berk and Green (2004) argue the latter point.

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 see if 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 react to changes in performance across channels.

In **Table 9** we measure this speed of adjustment to recent fund performance. Panel A presents the results for all funds, while Panels B and C report the results into small and large funds. The columns in each panel capture different channels. The rows represent the horizon over which returns and flows are being studied. In each case, we have included the same control variables used in **Table 8**.

For each horizon, three statistics are presented. The first number 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. However, it is instructive to compare the coefficients at each return horizon between brokered and direct channels. While the brokered channel coefficients are significantly larger for each and every horizon, they are about 50% larger for the longer horizons but 300% larger for the shortest 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 even more pronounced in the small funds.

If we combine this fact with the observation from Table 4 that brokered funds tend to be ones with a higher momentum loadings, then it is plausible that this strategy may be self-reinforcing. Either the sharp short-performance/flow relationship in the brokered segment may partially explain momentum loadings of the funds, or the momentum loadings on the funds justify the short-term focus of the brokered funds. This topic deserves additional investigation.

The results in Tables 8 and 9 seem more consistent with the idea that some of the behavioral biases exhibited by fund shareholders are stronger, rather than weaker, among brokerage customers. The broker channel exhibits greater return-chasing behavior. Whether this result is the product of selection (return-chasers find brokers) or salesmanship (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 put to work in a channel with higher impediments to trading (front-end and back-end loads) as well as higher expenses. Furthermore, given our performance results in the prior section, 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.

8. Conclusions and Future Work

Our study of mutual fund distribution channels attempts to understand how the various channels differ and the nature of relationship between channel and consumer behavior. We begin with an implicit hypothesis: because the brokered channel has survived, and because it is expensive, it must provide consumer with certain benefits.

Unfortunately, our study has come up with few, if any, of these benefits. We have some evidence that the brokered channel sells funds that broadly could be characterized as harder to find and analyze, with the exception of their sales of money market funds. We also have unearthed some evidence that home bias seems slightly less pronounced in funds sold in the brokered channel.

However, the bulk of the evidence we have uncovered is harder to square with the idea that the brokered channel provides tremendous tangible advantages to its users. 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 after expenses (ignoring loads), and fail to outperform direct-sold funds even before deductions of any expense ratios. With respect to behavioral biases, funds sold by brokers exhibit substantially greater trend-chasing behavior and emphasis on the shortest-term

performance. The flows of money into individual funds in the channel seem related to the amount available to pay the channel for asset gathering.

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 increases welfare. 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, it's likely that overall welfare is decreased.

We are far from done in looking for evidence of the benefits of the brokered channel. In our ongoing work, we are examining other possible benefits that brokered distribution might provide. In addition, we are collecting data to more finely examine various subsegments of the brokered channel, differentiated by proxies for broker quality.

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: Fund distribution channels identified by various fund consultants and experts

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

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).

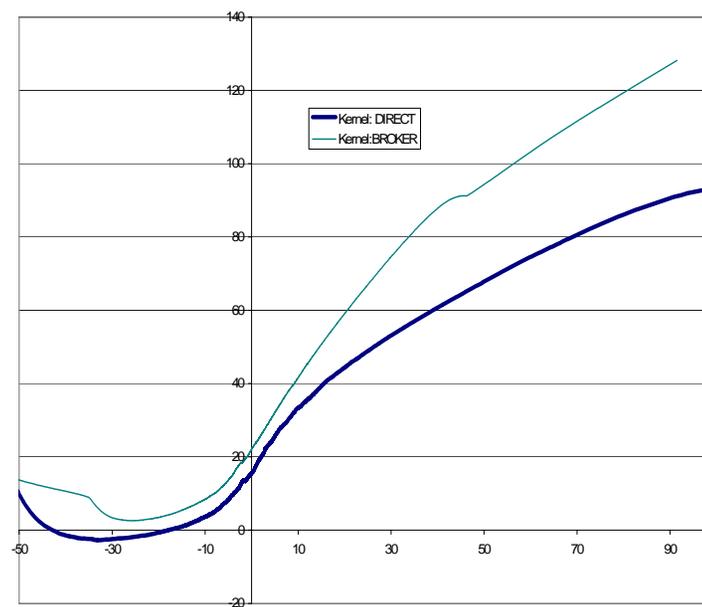
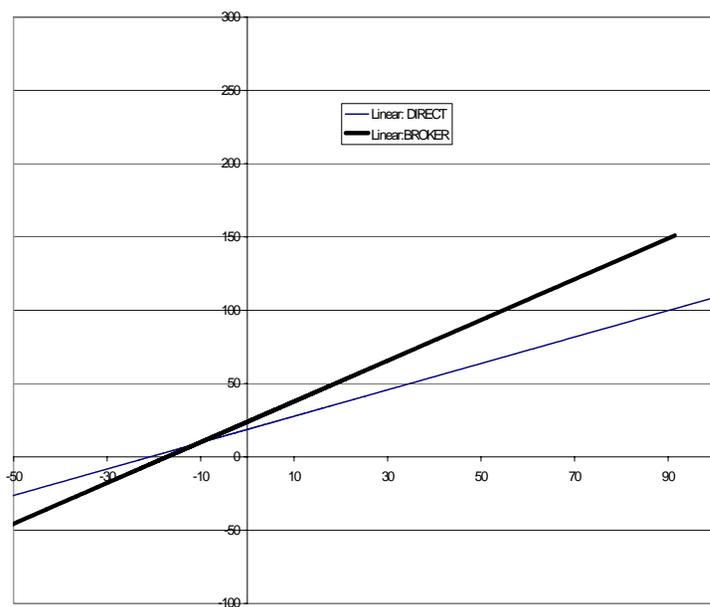


Table 1: Twenty-Five Largest Fund Share Classes in Broad Channels Year-end 2002 Including Money Market Funds

This table presents the 25 largest fund share classes within each broad channel. 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

The table below shows the number of funds, the number of share classes, and assets under management for the sample used in this paper. 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 1) The FRC classification of the share class is “Captive Broker” and the Lipper classification is one of “Broker-Dealer”, “Captive”, or “Wirehouse”. We also classify these funds as sold through the “Broker-Captive” subchannel. 2) The FRC classification of the share class is ‘Wholesale’ and the Lipper classification is either “Broker-Dealer” or “Dealer”. 3) The FRC classification of the share class is “Bank” and the Lipper classification is “Bank-Retail”. 4) The Lipper classification of the share class is “Insurance Channel”. Funds classified as being sold through the Broker channel, but not through the Captive Broker sub-channel, are classified as “Broker Non-Captive”.

Year	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non-captive (BNC)
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Panel A: Number of Funds

1996	4,731	1,404	3,327	633	2,694
1998	5,423	1,692	3,731	674	3,057
2000	5,535	1,745	3,790	673	3,117
2002	5,005	1,578	3,427	574	2,853

Panel B: Number of Share Classes

1996	7,471	1,455	6,016	1,162	4,854
1998	9,295	1,795	7,500	1,373	6,127
2000	10,569	1,961	8,608	1,582	7,026
2002	10,415	1,952	8,463	1,361	7,102

Panel C: Assets (\$ Million)

1996	2,551,093	1,030,399	1,520,694	475,560	1,045,134
1998	3,862,491	1,625,079	2,237,413	643,857	1,593,556
2000	4,899,340	2,184,198	2,715,143	695,227	2,019,916
2002	3,844,645	1,795,019	2,049,625	513,354	1,536,272

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

The table shows the characteristics of the funds in our sample, along four dimensions (size in dollars millions, age of the fund in years, manager tenure in years and whether the fund is covered by Morningstar.) Generally, 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 represent consumers' actual 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 two columns show the p-values from two hypothesis tests. The first is 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 (B=D). The second of the hypothesis tests is that the mean within the Broker Captive channel is the same as the mean within the Broker Noncaptive channel (BC=BNC).

Year	All	Direct	Broker	Broker Captive	Broker Non-captive	Hypothesis Tests	
		(D)	(B)	(BC)	(BNC)	B=D	BC=BNC

Panel A: Average Size of Funds (\$ Million)

1996	589.3	744.1	524.0	795.1	460.3	[0.00]	[0.00]
1998	787.6	978.2	701.2	1,023.8	630.0	[0.00]	[0.00]
2000	977.7	1,279.7	838.7	1,113.6	779.4	[0.00]	[0.05]
2002	880.5	1,176.9	744.0	966.9	699.1	[0.00]	[0.08]

Panel B: Share of Funds with Assets Under Management of < \$100 Million

1996	48.0%	49.4%	47.4%	38.7%	49.4%	[0.22]	[0.00]
1998	46.2%	49.9%	44.5%	35.3%	46.5%	[0.00]	[0.00]
2000	44.7%	46.1%	44.0%	37.3%	45.4%	[0.14]	[0.00]
2002	41.7%	44.0%	40.7%	30.3%	42.8%	[0.03]	[0.00]

Panel C: Average Age of Funds (years)

Equally Weighted							
1996	7.7	8.2	7.4	7.5	7.4	[0.02]	[0.87]
1998	7.9	8.1	7.8	8.5	7.7	[0.23]	[0.04]
2000	8.9	9.3	8.8	9.4	8.6	[0.06]	[0.06]
2002	10.7	11.2	10.4	11.4	10.2	[0.00]	[0.01]
Asset Weighted							
1996	16.9	17.6	16.5	14.4	17.3	[0.01]	[0.00]
1998	18.3	18.6	18.2	16.1	18.9	[0.25]	[0.00]
2000	19.2	18.8	19.4	18	19.8	[0.15]	[0.00]
2002	19.7	19.9	19.6	19.6	19.5	[0.48]	[0.88]

Year	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests	
						B=D	BC=BNC

Panel D: Share of Funds that are Young (<=3 Years Old)

Equally Weighted							
1996	40.4%	39.3%	40.8%	32.4%	42.8%	[0.34]	[0.00]
1998	34.5%	37.4%	33.2%	27.3%	34.5%	[0.00]	[0.00]
2000	30.1%	29.4%	30.4%	24.8%	31.7%	[0.43]	[0.00]
2002	18.2%	14.8%	19.8%	18.1%	20.1%	[0.00]	[0.26]
Asset Weighted							
1996	9.7%	6.9%	11.5%	6.3%	13.6%	[0.00]	[0.00]
1998	8.0%	4.7%	10.1%	6.7%	11.4%	[0.00]	[0.00]
2000	7.3%	4.0%	9.7%	7.2%	10.4%	[0.00]	[0.00]
2002	4.4%	2.1%	6.1%	3.6%	6.8%	[0.00]	[0.00]

Panel E: Manager Tenure (years)

Equally Weighted							
1996	4.328	4.584	4.199	4.399	4.154	[0.03]	[0.36]
1998	3.762	4.095	3.610	3.961	3.531	[0.00]	[0.01]
2000	3.961	4.192	3.849	3.858	3.858	[0.00]	[0.95]
2002	4.652	5.205	4.393	4.379	4.379	[0.00]	[0.94]
Asset Weighted							
1996	7.213	6.156	7.996	6.186	8.450	[0.00]	[0.00]
1998	5.227	5.734	4.897	3.932	5.242	[0.00]	[0.00]
2000	5.426	5.822	5.138	3.706	5.595	[0.00]	[0.00]
2002	6.733	7.201	6.384	3.496	7.216	[0.00]	[0.00]

Panel F: Percentage of Equity Funds without Morningstar Ratings

Equally Weighted							
1996	38.6%	38.5%	38.6%	34.4%	39.4%	[0.98]	[0.28]
1998	40.9%	39.7%	41.6%	31.2%	43.4%	[0.43]	[0.00]
2000	32.7%	28.0%	35.5%	38.1%	35.0%	[0.00]	[0.39]
2002	29.0%	21.5%	33.3%	34.3%	33.1%	[0.00]	[0.76]
Asset Weighted							
1996	7.5%	3.2%	11.5%	9.8%	12.0%	[0.00]	[0.38]
1998	5.9%	2.9%	8.6%	9.1%	8.4%	[0.00]	[0.72]
2000	3.8%	1.9%	5.7%	8.8%	5.0%	[0.00]	[0.02]
2002	4.5%	1.8%	7.2%	9.1%	6.8%	[0.00]	[0.19]

Table 4: Portfolio Characteristics by Distribution Channel, 2002

The panels below present information on the characteristics of the assets held by the funds offered by the various channels. Investment category definitions are based on the category definitions reported in the Morningstar database. Panels B and C specifically report on the market capitalization and style categories of equity funds, as assigned by Morningstar. 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. These factor loadings are calculated using a four-factor equity model, where the factors are the market return, the small firm factor, the value/growth factor, and a momentum factor. These factor returns come from Ken French’s data library: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html Reported factor loadings in each year are based on coefficient estimates from this four-factor equity model, estimated on the prior 36 months of data. The final two columns show the p-values from two hypothesis tests. The first is 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 (B=D). The second of the hypothesis tests is that the mean within the Broker Captive channel is the same as the mean within the Broker Noncaptive channel (BC=BNC).

	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests	
						B=D	BC=BNC

Panel A: Investment Categories – by share class

	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests	
						B=D	BC=BNC
Equally Weighted							
Money market (all)	7.3%	10.3%	6.6%	8.1%	6.4%	[0.00]	[0.03]
Muni money market	2.3%	4.1%	1.9%	2.6%	1.7%	[0.00]	[0.06]
Muni (all)	16.0%	12.1%	16.9%	17.3%	16.9%	[0.00]	[0.72]
Domestic bond	14.3%	12.1%	14.8%	13.8%	15.0%	[0.00]	[0.26]
Domestic hybrid or balanced	6.2%	5.9%	6.2%	5.7%	6.3%	[0.67]	[0.43]
Total domestic equity	45.2%	53.3%	43.3%	42.9%	43.4%	[0.00]	[0.75]
Domestic specialty equity	7.7%	11.2%	6.9%	7.7%	6.7%	[0.00]	[0.19]
Domestic broad equity	37.5%	42.1%	36.5%	35.2%	36.7%	[0.00]	[0.30]
Foreign	13.3%	10.4%	14.0%	14.8%	13.9%	[0.00]	[0.36]
Asset Weighted							
Money market (all)	26.3%	22.3%	29.9%	53.6%	21.9%	[0.00]	[0.00]
Muni money market	4.5%	4.9%	4.2%	8.6%	2.7%	[0.08]	[0.00]
Muni (all)	11.4%	10.0%	12.7%	13.4%	12.5%	[0.00]	[0.32]
Domestic bond	11.2%	10.7%	11.7%	8.2%	12.9%	[0.10]	[0.00]
Domestic hybrid or balanced	6.4%	7.8%	5.1%	2.6%	5.9%	[0.00]	[0.00]
Total domestic equity	42.6%	48.5%	37.4%	27.2%	40.8%	[0.00]	[0.00]
Domestic specialty equity	2.9%	3.3%	2.6%	2.4%	2.6%	[0.04]	[0.62]
Domestic broad equity	39.7%	45.3%	34.9%	24.9%	38.2%	[0.00]	[0.00]
Foreign	6.5%	5.5%	7.3%	3.4%	8.7%	[0.00]	[0.00]

	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests B=D BC=BNC	
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Panel B: Composition of Broad Domestic Equity by Size Classification of Holdings

	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests B=D BC=BNC	
Equally Weighted							
Total domestic broad equity	37.5%	42.1%	36.5%	35.2%	36.7%	[0.00]	[0.29]
Large ¹	21.8%	21.7%	21.8%	21.7%	21.9%	[0.88]	[0.88]
Mid	8.2%	10.3%	7.8%	6.8%	7.9%	[0.00]	[0.17]
Small	7.1%	8.9%	6.7%	6.6%	6.7%	[0.00]	[0.86]
Asset Weighted							
Total domestic broad equity	39.7%	45.3%	34.9%	24.9%	38.2%	[0.00]	[0.00]
Large	31.4%	35.3%	27.9%	20.1%	30.6%	[0.00]	[0.00]
Mid	4.9%	5.6%	4.4%	2.8%	4.9%	[0.00]	[0.00]
Small	3.4%	4.3%	2.5%	1.9%	2.8%	[0.00]	[0.11]

Panel C: Composition of Broad Domestic Equity by Style Classification

	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests B=D BC=BNC	
Equally Weighted							
Total domestic broad equity	37.5%	42.1%	36.5%	35.2%	36.7%	[0.00]	[0.20]
Value ²	8.9%	9.6%	8.8%	7.2%	9.1%	[0.27]	[0.02]
Blend	11.6%	14.9%	10.8%	12.5%	10.5%	[0.00]	[0.04]
Growth	17.0%	17.6%	16.8%	15.5%	17.1%	[0.42]	[0.16]
Asset Weighted							
Total domestic broad equity	39.7%	45.3%	34.9%	24.9%	38.2%	[0.00]	[0.00]
Value	11.4%	9.6%	13.0%	5.0%	15.7%	[0.00]	[0.00]
Blend	15.9%	21.9%	10.7%	12.7%	10.1%	[0.00]	[0.02]
Growth	12.4%	13.8%	11.1%	7.2%	12.4%	[0.00]	[0.00]

¹ Based on Morningstar definitions. These definitions are based on the median equity market capitalization among the stocks held in the fund portfolio. Large funds have a median equity market capitalization in excess of \$5 Billion. Midcap funds have a median market capitalization between \$1 and \$5 Billion. Small funds have a median market capitalization less than \$1 Billion.

² Based on Morningstar definitions. Morningstar classifies funds as 'value', 'blend' (now 'core'), and 'growth' based on computing the average P/E and Price/Book ratios for each fund, and for the S&P 500 index. With these numbers, they compute the statistic $(P/E_{\text{fund}})/(P/E_{\text{SP500}}) + (P/B_{\text{fund}})/(P/B_{\text{SP500}})$. Funds for which this statistic is less than 1.75 are called value funds. Blend (or 'core') funds are between 1.75 and 2.25, and growth funds are greater than 2.25.

	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests	
						B=D	BC=BNC

Panel D: Percentage of Equity Funds that are classified as “Index Funds” by FRC

	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests	
						B=D	BC=BNC
Equally Weighted							
1996	3.8%	6.2%	2.3%	0.0%	2.7%	[0.00]	[0.22]
1998	4.3%	6.4%	3.0%	3.9%	2.9%	[0.00]	[0.60]
2000	5.0%	7.6%	3.3%	5.2%	2.9%	[0.00]	[0.27]
2002	5.7%	7.3%	4.8%	4.7%	4.8%	[0.40]	[0.97]
Asset Weighted							
1996	5.1%	9.1%	1.0%	0.0%	1.2%	[0.00]	[0.65]
1998	8.0%	14.7%	1.8%	1.8%	1.8%	[0.00]	[0.99]
2000	9.6%	17.6%	2.0%	3.8%	1.7%	[0.00]	[0.43]
2002	10.7%	18.9%	2.4%	4.8%	1.9%	[0.00]	[0.29]

Panel E: Average Factor Loadings for Broad Equity Funds, in 2002³

	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests	
						B=D	BC=BNC
Equally Weighted							
Market Beta	1.0	.972	1.012	1.06	1.09	[0.00]	[0.43]
Small minus Big	.154	.177	.147	.131	.149	[0.06]	[0.40]
Value minus Growth	.077	.090	.073	.100	.069	[0.33]	[0.18]
Momentum Factor	.069	.072	.068	.050	.071	[0.68]	[0.06]
Asset Weighted							
Market Beta	.945	.943	.947	.949	.947	[0.64]	[0.90]
Small minus Big	.013	.016	.008	-.010	.012	[0.46]	[0.28]
Value minus Growth	.065	.053	.080	.051	.086	[0.35]	[0.16]
Momentum Factor	.033	.025	.042	.017	.047	[0.00]	[0.00]

³ Average Factor loadings for Diversified Equity funds: The equally weighted and asset weighted average factor loadings for all diversified equity funds with factor data from CRSP. We are constrained to use just the set of funds that we have crsp factor loading data for in this table and we have used the 2002 data to minimize the impact on these results from that survival restriction.

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

The table below reports the average fees 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 would include the management fee, administration expenses, transfer agency expenses, custodial expenses, legal and audit expenses, board fees, etc. These fees would not include explicitly-reported distribution fees. Annual distribution expenses represent 12b-1 fees. Total annual expenses is the sum of the non-distribution and annual distribution expenses. We also report maximum loads (front and back end) as well as a crude estimate of the annuitized level of all distribution fees and all fees, where we average the loads over an ad hoc five year holding period.

	ALL Channels	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests	
						B=D	BC=BNC
Panel A: Annual Non Distribution Expenses							
Equally Weighted							
Equity	1.127	1.172	1.112	1.004	1.133	[0.00]	[0.00]
Broad Equity	1.100	1.133	1.089	0.986	1.109	[0.00]	[0.00]
Money Market	0.529	0.575	0.526	0.554	0.523	[0.55]	[0.69]
Bonds	0.816	0.743	0.830	0.829	0.830	[0.00]	[0.92]
Asset Weighted							
Equity	0.735	0.726	0.745	0.758	0.741	[0.00]	[0.04]
Broad Equity	0.715	0.709	0.720	0.749	0.714	[0.02]	[0.00]
Money Market	0.427	0.386	0.428	0.451	0.400	[0.71]	[0.04]
Bonds	0.658	0.510	0.739	0.718	0.745	[0.00]	[0.00]
Panel B: Annual Distribution Expenses							
Equally Weighted							
Equity	0.508	0.104	0.626	0.644	0.623	[0.00]	[0.00]
Broad Equity	0.503	0.096	0.618	0.634	0.615	[0.00]	[0.01]
Money Market	0.240	0.125	0.267	0.199	0.286	[0.00]	[0.00]
Bonds	0.486	0.073	0.565	0.532	0.572	[0.00]	[0.00]
Asset Weighted							
Equity	0.247	0.017	0.482	0.561	0.464	[0.00]	[0.00]
Broad Equity	0.240	0.017	0.472	0.551	0.454	[0.00]	[0.00]
Money Market	0.135	0.091	0.150	0.117	0.187	[0.00]	[0.00]
Bonds	0.288	0.009	0.442	0.458	0.437	[0.00]	[0.01]
Panel C: Total Annual Expenses							
Equally Weighted							
Equity	1.606	1.252	1.722	1.633	1.740	[0.00]	[0.00]
Broad Equity	1.575	1.215	1.692	1.602	1.708	[0.00]	[0.00]
Money Market	0.935	0.792	0.952	0.856	0.959	[0.14]	[0.45]
Bonds	1.291	0.805	1.387	1.361	1.393	[0.00]	[0.02]
Asset Weighted							
Equity	0.980	0.744	1.224	1.313	1.204	[0.00]	[0.00]
Broad Equity	0.953	0.726	1.190	1.296	1.167	[0.00]	[0.00]
Money Market	0.669	0.533	0.673	0.822	0.547	[0.30]	[0.00]
Bonds	0.952	0.518	1.187	1.196	1.185	[0.00]	[0.32]

	ALL Channels	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- captive (BNC)	Hypothesis Tests B=D BC=BNC	
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Panel D: Maximum Front End Load

Equally Weighted							
Equity	1.586	0.254	1.989	1.763	2.035	[0.00]	[0.00]
Broad Equity	1.583	0.172	1.995	1.762	2.040	[0.00]	[0.00]
Money Market	0.076	0.015	0.097	0.069	0.104	[0.00]	[0.10]
Bonds	1.398	0.055	1.659	1.441	1.708	[0.00]	[0.00]
Asset Weighted							
Equity	2.019	0.583	3.493	2.333	3.765	[0.00]	[0.00]
Broad Equity	2.040	0.559	3.578	2.337	3.858	[0.00]	[0.00]
Money Market	0.011	0.009	0.011	0.012	0.011	[0.62]	[0.90]
Bonds	1.588	0.023	2.435	1.783	2.621	[0.00]	[0.00]

Panel E: Maximum Back End Load

Equally Weighted							
Equity	1.201	0.022	1.557	1.698	1.528	[0.00]	[0.00]
Broad Equity	1.199	0.020	1.544	1.672	1.519	[0.00]	[0.00]
Money Market	0.226	0.013	0.296	0.181	0.327	[0.00]	[0.00]
Bonds	1.175	0.019	1.399	1.485	1.380	[0.00]	[0.03]
Asset Weighted							
Equity	0.630	0.001	1.275	1.976	1.111	[0.00]	[0.00]
Broad Equity	0.596	0.001	1.215	1.921	1.055	[0.00]	[0.00]
Money Market	0.012	0.008	0.014	0.007	0.021	[0.30]	[0.06]
Bonds	0.876	0.000	1.350	2.129	1.128	[0.00]	[0.00]

Panel F: Total Sales Charge Annuitized over Five Year Holding Period

Equally Weighted							
Equity	1.070	0.161	1.337	1.343	1.336	[0.00]	[0.47]
Broad Equity	1.065	0.136	1.328	1.329	1.328	[0.00]	[0.93]
Money Market	0.314	0.131	0.358	0.256	0.385	[0.00]	[0.00]
Bonds	1.004	0.088	1.178	1.120	1.191	[0.00]	[0.00]
Asset Weighted							
Equity	0.777	0.134	1.438	1.426	1.440	[0.00]	[0.08]
Broad Equity	0.768	0.129	1.432	1.407	1.438	[0.00]	[0.00]
Money Market	0.141	0.095	0.156	0.122	0.195	[0.00]	[0.00]
Bonds	0.789	0.013	1.215	1.241	1.208	[0.00]	[0.00]

Panel G: Total Annuitized Fees over Five Year Holding Period

Equally Weighted							
Equity	2.168	1.312	2.450	2.341	2.471	[0.00]	[0.00]
Broad Equity	2.133	1.255	2.417	2.304	2.438	[0.00]	[0.00]
Money Market	1.176	0.792	1.221	0.856	1.249	[0.02]	[0.10]
Bonds	1.819	0.817	2.016	1.965	2.028	[0.00]	[0.00]
Asset Weighted							
Equity	1.511	0.861	2.184	2.181	2.184	[0.00]	[0.77]
Broad Equity	1.482	0.839	2.154	2.153	2.154	[0.00]	[0.92]
Money Market	0.684	0.533	0.688	0.822	0.574	[0.34]	[0.00]
Bonds	1.464	0.523	1.973	2.007	1.963	[0.00]	[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. These fees would not include explicitly-reported distribution fees. We regress a panel of fees from 1996 through 200s on a variety of fund, sponsor and channel characteristics. These include fund size, complex size, fund age, the 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 broker channel (the missing class is directly distributed funds.) We report standard errors below each parameter estimate and indicate levels of significance by * = significant at 95% level, and ** = significant at 99% 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

This table reports equal weighted and asset weighted average returns for our sample funds of that in three main categories (equities, bonds and money markets) for each year from 1996 through 2002. Returns are calculated net of non-distribution expenses (i.e., gross returns less the non-12b1 portion of the expense ratio) and net of all annual expenses (gross returns less the reported expense ratio.) Returns do not take into account front-end or back-end loads. We first report the 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 then 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 a market adjustment model, where the single factor is the value-weighted equity market return. Factor loadings are computed using the 36 months of data prior to the current year, and 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 use a market adjustment model that includes a value/growth factor and a small firm/large firm factor. 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 similar model, with the difference that the factors include only the monthly return to the 10-year government bond, and the monthly return to the Moody's 10-year Aaa corporate bond portfolio. Both returns are constructed based on data from the Federal Reserve's interest rate library:

<http://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 two columns show the p-values from two hypothesis tests. The first is 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 (B=D). The second of the hypothesis tests is that the mean within the Broker Captive channel is the same as the mean within the Broker Noncaptive channel (BC=BNC).

	All	Direct (D)	Broker (B)	Broker Captive (BC)	Broker Non- Captive (BNC)	Hypothesis Tests B=D BC=BNC	
Panel A: Equity Funds							
Equally Weighted							
Raw returns net of non-dist exp.	4.286	6.706	3.531	3.161	3.603	[0.00]	[0.45]
Raw returns net of all exp	3.804	6.626	2.924	2.538	2.999	[0.00]	[0.43]
Benchmark -adjusted net of non-dist exp	0.309	1.350	-0.016	0.262	-0.70	[0.00]	[0.28]
Benchmark - adjusted net of all exp	-0.173	1.270	-0.623	-0.360	-0.674	[0.00]	[0.31]
<i>Including only funds for which alphas may be constructed</i>							
Alpha 1							
Net of non 12b1 exp.	-0.313	0.817	-0.663	-0.283	-0.733	[0.00]	[0.30]
Net of all exp.	-0.790	0.740	-1.264	-0.889	-1.334	[0.00]	[0.31]
Alpha 3							
Net of non 12b1 exp.	-1.557	-0.461	-1.896	-1.171	-2.030	[0.00]	[0.02]
Net of all exp.	-2.034	-0.537	-2.498	-1.777	-2.631	[0.00]	[0.02]
Alpha 4							
Net of non 12b1 exp.	-2.366	-1.233	-2.717	-1.575	-2.928	[0.00]	[0.00]
Net of all exp.	-2.844	-1.310	-3.319	-2.181	-3.529	[0.00]	[0.00]
Asset Weighted							
Raw returns net of non-dist exp.	1.631	1.668	1.593	2.213	1.450	[0.83]	[0.23]
Raw returns net of all exp	1.394	1.651	1.125	1.666	1.001	[0.13]	[0.30]
Benchmark -adjusted net of non-dist exp	0.223	0.310	0.132	-0.343	0.241	[0.22]	[0.03]
Benchmark - adjusted net of all exp	-0.014	0.294	-0.336	-0.890	-0.208	[0.00]	[0.01]
<i>Including only funds for which alphas may be constructed</i>							
Alpha 1							
Net of non 12b1 exp.	-0.877	-0.773	-0.987	-1.192	-0.943	[0.33]	[0.55]
Net of all exp.	-1.108	-0.789	-1.449	-1.722	-1.389	[0.00]	[0.42]
Alpha 3							
Net of non 12b1 exp.	-0.668	-0.221	-1.147	-0.974	-1.184	[0.00]	[0.53]
Net of all exp.	-0.090	-0.237	-1.609	-1.504	-1.631	[0.00]	[0.71]
Alpha 4							
Net of non 12b1 exp.	-1.424	-1.054	-1.821	-1.362	-1.921	[0.00]	[0.13]
Net of all exp.	-1.656	-1.070	-2.282	-1.892	-2.367	[0.00]	[0.20]

	All	Direct	Broker	Broker	Broker Non-	Hypothesis Tests		
		(D)	(B)	Captive	Captive	B=D	BC=BNC	
				(BC)	(BNC)			
Panel B: Bond Funds								
Equally Weighted								
Raw returns net of non-dist exp.	5.550	6.135	5.433	5.153	5.498	[0.00]	[0.08]	
Raw returns net of all exp	5.077	6.075	4.876	4.630	4.933	[0.00]	[0.13]	
Benchmark -adjusted net of non-dist exp	0.266	0.471	0.225	-0.153	0.313	[0.02]	[0.00]	
Benchmark - adjusted net of all exp	-0.208	0.411	-0.332	-0.676	-0.252	[0.00]	[0.00]	
<i>Including only funds for which alphas may be constructed</i>								
Alpha 2	Net of non 12b1 exp.	-0.312	0.252	-0.425	-0.931	-0.306	[0.00]	[0.00]
	Net of all exp.	-0.793	0.198	-0.992	-1.466	-0.880	[0.00]	[0.01]
Alpha h	Net of non 12b1 exp.	0.421	0.836	0.338	-0.374	0.505	[0.09]	[0.00]
	Net of all exp.	-0.60	0.782	-0.228	-0.908	-0.069	[0.00]	[0.01]
Asset Weighted								
Raw returns net of non-dist exp.	5.261	6.285	4.743	4.314	4.878	[0.00]	[0.00]	
Raw returns net of all exp	4.966	6.277	4.302	3.826	4.452	[0.00]	[0.00]	
Benchmark -adjusted net of non-dist exp	0.338	0.823	0.092	-0.405	0.250	[0.00]	[0.00]	
Benchmark - adjusted net of all exp	0.042	0.815	-0.349	-0.894	-0.177	[0.00]	[0.00]	
<i>Including only funds for which alphas may be constructed</i>								
Alpha 2	Net of non 12b1 exp.	-0.575	0.467	-1.1313	-1.655	-0.973	[0.00]	[0.00]
	Net of all exp.	-0.869	0.459	-1.577	-2.161	-1.491	[0.00]	[0.00]
Alpha h	Net of non 12b1 exp.	0.085	0.986	-0.396	-0.903	-0.243	[0.00]	[0.00]
	Net of all exp.	-0.209	0.978	-0.842	-1.408	-0.671	[0.00]	[0.00]

	All	Direct	Broker	Broker	Broker Non-	Hypothesis Tests		
		(D)	(B)	Captive	Captive	B=D	BC=BNC	
				(BC)	(BNC)			
Panel C: Money Market Funds								
Equally Weighted								
Raw returns net of non-dist exp.	3.809	3.570	3.895	3.741	3.937	[0.00]	[0.00]	
Raw returns net of all exp	3.638	3.504	3.687	3.589	3.713	[0.00]	[0.04]	
Benchmark -adjusted net of non-dist exp	0.035	0.020	0.041	0.028	0.044	[0.07]	[0.24]	
Benchmark - adjusted net of all exp	-0.136	-0.047	-0.168	-0.124	-0.180	[0.00]	[0.00]	
<i>Including only funds for which alphas may be constructed</i>								
Alpha 2	Net of non 12b1 exp.	-0.495	-0.713	-0.411	-0.583	-0.365	[0.00]	[0.00]
	Net of all exp.	-0.707	-0.793	-0.674	-0.752	-0.653	[0.00]	[0.05]
Alpha h	Net of non 12b1 exp.	-0.466	-0.683	-0.383	-0.548	-0.339	[0.00]	[0.00]
	Net of all exp.	-0.678	-0.762	-0.646	-0.717	-0.627	[0.00]	[0.07]
Asset Weighted								
Raw returns net of non-dist exp.	4.043	3.940	4.102	4.238	3.940	[0.00]	[0.00]	
Raw returns net of all exp	3.949	3.895	3.980	4.137	3.792	[0.07]	[0.00]	
Benchmark -adjusted net of non-dist exp	0.202	0.253	0.174	0.198	0.145	[0.00]	[0.00]	
Benchmark - adjusted net of all exp	0.108	0.208	0.051	0.096	-0.003	[0.00]	[0.00]	
<i>Including only funds for which alphas may be constructed</i>								
Alpha 2	Net of non 12b1 exp.	-0.082	-0.075	-0.085	-0.061	-0.112	[0.73]	[0.16]
	Net of all exp.	-0.188	-0.132	-0.222	-0.167	-0.281	[0.00]	[0.00]
Alpha h	Net of non 12b1 exp.	-0.049	-0.036	-0.057	-0.030	-0.087	[0.48]	[0.12]
	Net of all exp.	-0.156	-0.093	-0.193	-0.136	-0.256	[0.00]	[0.00]

Table 8. Fund share class returns and characteristics and net inflows, 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 (separately for broker channel and direct channel funds), and one with spline terms for lagged returns. 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 and indicate levels of significance by * = significant at 95% level, and ** = significant at 99% 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	Linear regression		Spline regression	
Benchmark Adjusted Return	(Broker channel)	(Direct channel)		
	1.366	0.887		
	(.058)	(.111)		
Benchmark Adjusted Return Quintile 1			(Broker channel)	(Direct channel)
			-0.293	0.012
			(.138)	(.290)
Benchmark Adjusted Return Quintile 2			2.123	1.560
			(.364)	(.736)
Benchmark Adjusted Return Quintile 3			2.659	1.331
			(.550)	(.908)
Benchmark Adjusted Return Quintile 4			3.191	5.930
			(.422)	(.684)
Benchmark Adjusted Return Quintile 5			1.312	0.368
			(.135)	(.136)
Fund Size 50-200m		-9.555		-8.961
		(1.706)		(1.673)
Fund Size 200-1000m		-12.240		-11.657
		(1.798)		(1.765)
Fund Size > 1000m		-20.696		-19.682
		(2.047)		(2.011)
Complex Size 10B – 50B		8.823		8.720
		(1.479)		(1.458)
Complex Size 50B-100B		10.711		10.381
		(1.784)		(1.748)
Complex Size > 100B		8.452		7.748
		(1.739)		(1.718)
Age > 5 <= 20		-12.877		-12.616
		(1.286)		(1.255)

Variables	Linear Regrsson (continued)	Spline Regression (continued)
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 (.963)
Dummy = 1 if Expense Ration 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)	1.040 (.288)
Back Load	-1.503 (0.439)	-1.431 (.431)
Dummy = 1 if Broker Channel	-11.158 (1.826)	-14.750 (5.045)
Number of Observations	14,949	14,949
R-Squared	0.1637	0.1893

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}