

Fund Flows vs. Family Flows: Evidence from the Cross Section of Brokers

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Evidence that brokers influence the mutual-fund flows they intermediate suggests that funds' families make important choices about their use of brokerage. We address these choices by relating the flows in and out of funds to, on one hand, the involvement of brokers who are or aren't affiliated with the fund, and their revenue-sharing with the family, and on the other hand, the simultaneous flows of other funds in the same family. Among our findings are that affiliated brokers increase recapture of outflows but also cannibalization of inflows, and that consumer sentiment increases the market power of unaffiliated brokers.

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1. Introduction

Regulators focus increasingly on the value of brokers to consumers. A frequent concern is that brokers' advice is skewed by incentives – in particular, incentives that are difficult or impossible for consumers to detect - designed by the other side of the trade for its own benefit. One market where brokerage can potentially deliver considerable value, but can also extract considerable value, is the market for mutual funds, on which consumers increasingly rely for their savings. This paper addresses the incentives of the brokers they use, and the significance of these incentives for the fund families that design them.

A long literature addresses the flows in and out of mutual funds from different perspectives. From the consumers' perspective we learn how they play the market, use history and anticipate the future, react to prices, abuse other consumers, etc., and from the funds' perspective we learn how managers respond to a variety of incentives. We want to take the perspective of the funds' families, and the distinctive concern from this perspective is *intrafamily* flow: for example, whether the money flowing into one fund is money leaving another fund due to its performance, a recapture of outflows that benefits the family, or instead money that would otherwise have gone into another fund in the family, a cannibalization of inflows that does *not* benefit the family. What allows us to address these questions is a database that both distinguishes inflows from outflows *and* reports the payments made to different types of brokers.

The database is the universe of electronically-filed semiannual cash-flow reports, i.e. SEC forms N-SAR, by U.S. mutual funds. These disclose each fund's monthly investments and redemptions as well as the semiannual sales loads and continuing

charges (i.e. 12b-1 fees) arising from these flows, and also the fraction of this revenue the brokers keep. Furthermore, these reports distinguish between brokers affiliated with the family (captive brokers) and those at arms length (unaffiliated brokers). Thus, we can relate the simultaneous inflows and outflows of all the funds in a family and also see how this relation depends on what the family and the brokers got both for bringing in accounts and for keeping them invested, and also on the nature of the agency relationship between the broker and the family.

The potential influence of brokers' incentives on fund flows is wide and deep. The devolution of financial decisions to households has pushed more of them into money management, and the share of household financial assets held through mutual funds has almost tripled since 1990 (from 7.9% to 23.2%, ICI, 2007, figure 1.6). The large majority of these fund investors "tend to rely on professional financial advice (71%, ICI, 2007, figure 6.2). That this advice skews from the best choice is apparent in the significant *under*performance of investments through brokers, even before the fees they charge (Bergstresser, Chalmers and Tufano, 2007). So the brokers involved in a family's flows can influence those flows, and the exercise of this influence can reflect the financial incentives the family chooses.

Incentives bear on the choice between affiliated and unaffiliated brokers. A broker affiliated with a family presumably has more incentive to serve the family's interests, and would use his influence accordingly. However, offsetting this potential benefit from an affiliated broker is the potential cost of his limited order flow. That is, an *unaffiliated* broker is better positioned to bring in consumers who are not actively considering the family. By this intuition, affiliated brokers realize more value from

existing accounts, i.e. by their effect on redemptions, whereas unaffiliated brokers realize more value from potential accounts, i.e. by their effect on new investments.

Incentives can also drive revenue-sharing with brokers, a practice that has been criticized by the popular press and regulators as a subversion of brokers' advice. This sharing reflects the straightforward economics of encouraging inflows by sharing front loads, and discouraging redemptions by sharing 12b-1 fees, and likely reflects other dynamics as well. In particular, a broker likely cares whether his share covers his marginal cost of attracting or retaining an investor, and also hopes to extract rents from the family with his influence on the consumers he advises. These are dynamics we can explore with time series data on consumers.

The N-SAR filings cover the whole fund industry but they do not cover consumers. To capture their dynamics we use indices of economy-wide consumer confidence and sentiment that indicate when consumers are more or less enthusiastic about being in the market, and therefore more or less costly to attract or retain as investors. An important way to move in and out of the market is to move between equity and money funds, and we can address whether a family retains such flows because our database includes money funds.

We find significant family-level consequences for these incentives choices. We find that captive brokerage delivers greater recapture of outflows, but only into money market funds, and only when consumer confidence is low. Funds *without* brokers, we find, recapture flows *out* of money market funds when sentiment is *high*, which suggests how families bring in accounts without using broker incentives. The flip side of this recapture benefit is the cost of cannibalization, particularly when sentiment is high.

However, equity-fund flows do *not* suffer cannibalization, indicating a more fund-specific, and less commodity-like, demand for such funds.

Revenue sharing differs substantially between the affiliated and unaffiliated channels. Unaffiliated brokers get a much higher share, but perhaps more importantly, this share correlates positively with consumer sentiment, whereas the affiliated brokers share correlates negatively. As the cost of attracting accounts likely falls, not rises, as consumer sentiment improves, this is consistent with the market power of unaffiliated brokers increasing with sentiment. Affiliated brokers have a weaker threat to send flows elsewhere, and their share accordingly moves more with their costs. That revenue sharing has an effect on brokers is suggested by several fund-level results; for example, outflows through captive brokers are mitigated when the broker is paid a higher portion of the 12b1 fee.

The paper is divided into 5 sections. Section 2 covers the relevant background and literature, Section 3 describes the data sources, the database construction, and provides basic descriptive statistics, Section 4 contains the empirical tests and Section 5 concludes.

2. Background and Literature

The considerable body of empirical research on mutual funds has touched on several aspects of brokerage. The most frequent topic is relative performance: what do brokers' clients get for their payments? The most recent and comprehensive answer is Bergstresser, Chalmers and Tufano (2007) (see also Gruber, 1996, Carhart, 1997, Zheng, 1999, and Warther, Narayanan and Nanda, 2000), which finds worse performance among

brokered funds, gross of distribution costs, and no apparent compensating benefit in aggregate asset allocation. If brokers' customers get something for the extra costs, they conclude, it must be non-tangible.

As the papers on performance generally point out, the clientele of brokers appears to be less sophisticated, indicating the potential for both education and misdirection. Evidence of unsophistication is apparent not only in the poor performance but also in surveys (e.g. Capon, Fitzsimmons and Prince, 1996, Alexander, Jones and Nigro, 1998) showing less relevant knowledge among investors in brokered channels, compared to the no-load channel, and in demographics, such as the finding that "90% of fund shareholders with high school educations or less purchased fund shares from advisers, compared with 77% of fund owners with graduate degrees."¹ As others have suggested, this implies that brokerage costs are at least partly reimbursements of education expenses, not advance payments for superior performance.

Regarding the advice that brokers provide, O'Neal (2004) finds that brokered flows, both investments and redemptions, are more sensitive across time to past performance than are no-load flows, and interprets the difference as the potential influence of brokers, in particular, brokers using their influence to encourage more aggressive trading, and the trading costs that come with it.

Recently, a number of papers have examined the economics of mutual fund families. Nanda, Wang and Zheng (2004) examine the benefit to families of having a "star" fund. Gaspar, Massa and Matos (2006) explore how fund families deal with similar portfolios trading similar stocks and they find evidence consistent with family-level interests overriding fund-level interests. Khorana and Servaes (2007) examine how

¹ "Ownership of Mutual Funds Through Professional Advisers," ICI, April 2005, p. 3.

families respond when investors' desire to maximize risk-adjusted returns conflicts with the fund families desire to maximize total net assets under management. The general conclusion of these papers is that the economics of fund families are an important consideration in analyzing fund-level issues.

The choice between affiliated and unaffiliated agents has been analyzed theoretically, often with the insurance industry in mind. In Grossman and Hart (1986), whether agents or the insurer own the policy-renewal rights, corresponding roughly to independent or captive agency, hinges on whose relationship-specific investment dominates. The analysis of Sass and Gisser (1989) focuses instead on the spreading of the agent's effort across insurers, and in particular whether the agent's alternative to selling a cheap-to-sell policy from one firm is a cheap-to-sell policy from another, as with independent agency, or instead a not-so-cheap-to-sell policy from the same firm, as with captive agency. A number of empirical papers, dating back at least to Joskow (1973), document a higher cost for independent agency, compared to captive, and subsequent theory (e.g. Venezia, Galai and Shapira, 1999) considers whether this reflects asymmetric information about consumers' risk types, a consideration of less importance in the mutual-fund context of this paper.

3. Database Construction and Descriptive Analysis

3.A Construction

To assess the value of a channel to the fund family, we need data that separates investors' inflows from their outflows and that identifies the channel through which the money arrives. Account-level databases such as those employed by Barber, Odean and

Zheng (2005) and Johnson (2004) are possibilities but they contain limited, non-random samples of investors and funds. These data also end in the late 1990s when returns were at their peak, so they do not reveal investors' behavior in a market downturn. Instead, we use publicly available data from the SEC N-SAR electronic filings from the period 1996 to 2004. We match these filings to the CRSP database which gives us a majority of funds in this time period, including both the bull and bear markets. Reuter (2006) also matches CRSP with N-SAR files but does not analyze the disaggregated flow data we consider here. O'Neal (2004) analyzes purchases and redemptions of annual flows using data from the Form 485-B but he does not have information on the payments to broker channels and focuses on the 200 largest equity funds.

For this paper, we use the N-SAR semi-annual reports. In 1994, the SEC started to make this filing a requirement for a subsample of the funds and by 1996 the reporting was mandatory for all funds. In its report, each fund lists its individual monthly inflows and outflows over the previous six months along with answers to various other questions about the fund operations over the same period.² The other questions we focus on for this study concern the loads paid to brokers. Unlike other data sources, these files indicate the actual dollar value of loads paid by investors. In addition, if a front load is paid, we are able to determine how much is allocated to the principal underwriter (or management company) and how much is paid to a captive sales force or unaffiliated broker to distribute the fund. This type of data has not been used before and we exploit it in this paper to determine whether flows vary by the distribution channel. In particular, we are

² A description of the N-SAR file questionnaire is available at <http://www.sec.gov/about/forms/formn-sar.pdf>. The individual data on inflows and outflows is provided in Question 28 (A)-(H). The load data we use is in Questions 29-36 and the 12b-1 data is in Questions 40-43.

able to differentiate between captive and unaffiliated broker channels which have been aggregated together (see Bergstresser, Chalmers, and Tufano (2007) and O’Neal (2004)) even though the incentives of the two differ.

Because the N-SAR codes are not linked to CRSP, these two databases are matched by hand. This initial procedure correctly matches 82% of the funds by name. The matched database is then subjected to a number of filters. These filters are used to 1) double-check that the correct match with CRSP is made, 2) ensure at least one year of trailing data is available for the analysis, 3) remove data subject to entry-error and 4) ensure an exact match with CRSP by forcing the NAV reported in CRSP to match that reported in the N-SAR.³ The final sample contains 1795 funds. It is important to note that our definition of a fund aggregates across all shareclasses for that fund. In CRSP for this time period, there are 6607 individual funds by shareclasses listed. When aggregating across shareclasses, this reduces to 2946 separate funds, so we are reporting around 60% of the CRSP sample.

³ Three filters are applied to the sample: NAV matching, a one-year continuous reporting requirement and data-entry error filters for both flows and loads. First, NAV numbers reported in the SEC filing are compared to the NAV reported in CRSP. The N-SAR asks for NAV for two different share classes (without specifying which classes they report for) and we try to match these NAV numbers with those reported in CRSP. Matching names by hand and then matching NAV through an automated procedure leaves us with a sample where we are confident that CRSP and the N-SAR data have been matched exactly. Unfortunately it may also remove valid data points where the NAVs differ slightly. Second, most of the analysis requires at least 1 continuous year of historical information. As a result, funds that don’t survive for longer than one year and funds that miss filing an N-SAR for one period are removed from the sample. Third, the instructions for filing the N-SAR forms clearly indicate that fund families should report the flow and load data in thousands of dollars. However, comparing fund flows and loads with the size of the fund provided in the N-SAR it was clear that some funds fail to report this information correctly. To address the failure of some fund families to correctly scale their N-SAR responses, scaling filters are employed. If inflows, redemptions or net flows are greater than 50% of TNA then the observation is removed. Errors in scaling also arise with the reporting of dollar loads and 12b-1 fees collected. Dollar values of loads are observed where the calculated percentage loads is larger percent than the reported maximum load. Again this is a problem of reporting in the wrong units. To address this issue, we remove an observation if the percent collected in loads divided by the total dollars of inflows subject to a load is greater than the maximum load. In the case of back loads, we consider it as a percent of redemptions. The maximum load cutoffs are 8.5%, 6%, and 3% for front loads, back loads, and redemption fees and maximum 12b-1 cutoff is 1.25%.

The matched sample of data we are reporting on for most of the sample only includes funds that are classified as aggressive growth (AG), large-cap growth (LG), and growth and income (GI). Because we collect data as it is reported, this data does not suffer from survivorship bias as we capture all the funds that reported after 1996 even if they ceased to report in later periods. In Tables 9 to 12, we report flows into the entire complex and hence expand the sample to include all share classes. In this sample with all ICDI objective categories, there are 4518 separate funds of which 702 are international (including global bond, global equity and international equity), 417 are specialty funds (including precious metals, utilities, total return, and specialty funds), and the remaining 1604 are balanced, bond or money market funds. The average management complex for our sample has about 4.3 funds in it and the median is approximately 2 funds. In our analysis of complex flows, we condition on the fund having at least 7 funds in the family so for this sample the mean number of funds per complex is 14.5 and the median is 10. We also re-run the results for Tables 9 to 12 based on families with at least 3 funds in the family where we have data on 195 complexes (compared to 84) and the results are similar.

3.B Descriptive Analysis

Table 1 summarizes the filtered dataset of the growth funds with objective category AG, GI, or LG. The table reports the average across funds of investments, redemptions, reinvestments and net flows both in dollars and as a percent of the fund's total net assets. As an example of the information recovered by separating net flows into inflows and outflows, consider the evolution of assets under management since 2000.

The decreasing net flows from 2000 to 2002 might seem to imply increasing redemptions, but redemptions actually fell. So the shrinkage over this period was not high redemptions but rather low investment and reinvestment.

Table 2 summarizes investors' payments to their brokers. Note that their load payments bear little resemblance to the *maximum* loads that are widely reported and used in academic research. Only the smallest purchases incur the maximum loads, so the results here demonstrate the importance of volume discounting to the loads investors actually pay.⁴ Panel B shows correlations just over 50% between maximum and actual loads, and even lower correlations when no-load funds are removed. When we focus more precisely on the appropriate share class, i.e. A shares for front loads and B shares for back loads, correlations are lower still. So while maximum loads identify what small investors pay and which funds are no-load (see Nanda, Wang and Zheng (2004b), O'Neal (1999), and Livingston and O'Neal (1998)), they relate only weakly to the money actually being paid.

For a sense of the magnitude of volume discounting, note that the average maximum front-end load for funds that charge them, as reported by CRSP, is 3.23%, whereas for the same set of funds we fund an equal-weighted average of 2.9% and an asset-weighted average of 1.5%.

The division of these loads between the broker and the fund family is key to our tests below. What Table 2 shows is that, on average, unaffiliated brokers get about 59% of loads, captive brokers get only 15% and the 26% remaining goes to the underwriter.

⁴ "Typical breakpoint discounts apply to purchases at \$50,000, \$100,000, \$250,000, \$500,000 and \$1 million, although some funds provide a breakpoint at \$25,000." Quoted from the March 2003, Joint SEC/NASD/NYSE Report of Examinations of Broker-Dealers Regarding Discounts on Front-End Sales Charges on Mutual Funds <http://www.sec.gov/news/studies/breakpointrep.htm>.

The split of 12b-1 fees is less severe, with 39% going to unaffiliated vs. 29% to captive. Whether the different payments to unaffiliated vs. captive reflect differences in market power is a question we address in the next section.

For the tests below, we use the load payments to sort funds into three buckets: captive, unaffiliated and no-load. Strictly speaking, to accommodate the funds using a mixture of broker types, the categories are actually *mostly* captive, *mostly* unaffiliated and no-load: A fund is CAPTIVE if more than 50% of the load is paid to either the affiliated underwriter or captive broker, UNAFIL if more than 50% of the load is paid to unaffiliated brokers, and NOLOAD if no loads are paid at all and the 12b-1 payment noted in CRSP is less than 25bp. All remaining funds are categorized as OTHER which would include funds paying no front load but having a 12b-1 payment larger than 25 bp.⁵ This categorization treats payments to the underwriter as payments to captive brokers since these are still in the spirit of payments at less than arms length. Unreported results show that funds rarely switch categorizations over time.

A natural first place to apply our database is to the relation of flows to past performance, a relation frequently examined since Ippolito (1992), including Sirri and Tufano (1998) and others. We map the relation in our database, first for all funds together and then separated into categories. In O’Neal (2004), where net flows are separated into inflows and outflows, we see that both are relatively insensitive to past performance. But while that study of the 200 largest funds reflects most consumer dollars in equity funds, it reflects a small minority of funds. Our database of all funds better captures the funds’ perspective, and we plot the relations we find as Figure 1. One

⁵ Similar results hold when we used a stricter definition of captive and unaffiliated channels, where a fund is captive if it paid captive brokers but no unaffiliated brokers, and analogously for unaffiliated.

immediately apparent departure from earlier findings is that redemptions are U-shaped, decreasing as performance goes from worst to bad, but increasing as it goes from good to best, consistent with rebalancing or contrarian investing. This U-shape, combined with the generally increasing relation of inflows to performance, delivers the familiar convexity of net flows on performance.

In O'Neal (2004), the sensitivity of redemptions to performance is higher among load funds. We can similarly decompose the redemption relation in Figure 1 into the three categories; the result is plotted as Figure 2. It shows the sensitivities to be similar across categories, but it also shows the captive channel to be consistently lower than the others, by 5-10% of assets under management, implying that assets of funds using primarily captive brokers are this much less likely to leave in a given year.

4. Empirical Tests

We present our results in three groups. In the first group we address the relation of funds' flows to performance, and in particular, whether and how the relation varies with brokerage channel. We look first at the relation to past performance, and then to future performance. In the second group we relate flows to the sharing of revenue with brokers, and how that varies across channels. We also address the time-variation of revenue sharing, and in particular how it depends on the time-variation of investor sentiment. The third group of results covers family-level flow effects – how the inflows or outflows of one fund relate to the simultaneous flows elsewhere in the family.

Before beginning the tests, it is worth stating clearly the intuition about the three channels that motivates our test designs:

- *Captive (or Affiliated) Channel* – The bias imparted by affiliation with the family is toward its interests. This would involve routing inflows to the family, and keeping them from flowing back out either by suppressing redemptions or by recapturing redemptions back into the family as inflows elsewhere. Routing inflows to the family raises the possibility of cannibalization between funds, as the inflow to a fund is more likely to be at the expense of funds in the same family, rather than funds elsewhere.
- *Unaffiliated Channel* – Without the bias from affiliation, we expect, relative to captive, less suppression and recapture of outflows and less cannibalization of inflows.
- *No-Load Channel* – Investment decisions made without the influence of brokers, so we would not expect the biases of captive brokers in this channel either. The absence of broker influence also suggests more influence of other influences on the investor, such as confidence/sentiment about the economy.

In our tests, we allow the relations to vary across channels, and then ask whether this variation is significant evidence for or against these incentive effects.

4.A *Flows and Performance*

We cannot see all the inputs to consumers' investment decisions but we *can* see past performance, which is both intuitively and empirically a strong influence. Since we want to observe brokers' influence on investment decisions is it important to control for what we already know, so we begin with a test design that allows investment and redemption decisions to vary with past performance, and also allows this variance to be non-linear, and then detects how this relation to past performance changes as the channel changes.

Our ability to separate inflows from outflows means we can interpret the results in terms of the separate motivations to invest or redeem. In order to interpret the tests, it is worth listing the prime suspects for what these motives would be:

- *Chasing High Performance*: The performance-persistence literature documents high future performance of the recent top performers, and the fund-flow literature shows

these funds attracting net flows. This should be apparent as a positive sensitivity of inflows to recent performance in the region of high recent performance.

- *Abandoning the Worst Performers:* The performance-persistence literature also documents very low future performance of the recent bottom performers. However, the fund flow literature does not show large outflows from these funds. To the extent it occurs, it should be apparent as a negative sensitivity of redemptions in the region of low recent performance.
- *Rebalancing out of Winner Funds:* High performance moves investors' portfolio weights out of line, requiring the investors to redeem some to restore proper diversification. Such rebalancing would be apparent as a positive sensitivity of redemptions in the region of high recent performance.
- *Rebalancing into Loser Funds:* Similarly, low performance requires investors to invest more to restore proper diversification. This effect would be apparent as a negative sensitivity of inflows in the region of low recent performance.

These motives allow us to put some structure on how the variation in brokers' incentives would be detectable in the data.

The test design is a simple adaptation of the regressions in Ippolito (1992), Sirri and Tufano (1998) and similar studies, the difference being that we allow slopes and intercepts to vary across channels. The details are as follows. For each month, we calculate each fund's trailing one-year return, and within each fund category (AG, GI and LG) we convert returns to percentile ranks $Rkret$ from 0 to 1 (1 being the best). Since these flow decisions apply to different regions of past returns, we can allow for different slopes in the different regions. Thus, we separate $Rkret$ into three pieces: $Rkretlo$, which is $\min\{Rkret, 0.2\}$, $Rkrethi$, which is $\max\{Rkret-0.8, 0\}$, and $Rkretmed=Rkret-Rkretlo-Rkrethi$. With this specification, abandoning the worst funds appears as a negative coefficient of Redemptions on $Rkretlo$, and rebalancing out of winner funds appears as a positive coefficient on $Rkrethi$. We also include indicator variables for the channels. For each month and year, the cross section of percentage flows is regressed on the broker

dummies and the interaction between *Rkret* and broker dummies. For instance, *LoCaptive* represents the interaction term *Captive * Rkretlo*. In addition to controls for returns, we also include the log of the fund complex size, log of total net assets, total expenses, and an aggregate measure of category flows for each month and year. We average the monthly coefficients and calculate Newey-West standard errors with 5 lags (see Pontiff 1996). For difference tests in coefficients, we difference the coefficients from each monthly regression and calculate Newey-West standard errors with 5 lags for the differences. Results are in Table 3, with Redemptions, Inflows and Net Flows in separate columns.⁶

Starting with the new flow or inflow results, the propensity to chase performance is significantly higher in the no-load channel. This suggests that brokers influence investors away from such herding, but given the short horizon over which this strategy pays off (Carhart, 1997), it could also be that load-fund investors know it isn't worth the fixed cost they pay. Evidence for rebalancing into loser funds is also significantly stronger for the no-load channel. One possible cause is dollar-cost averaging caused by retirement savings plans: if a consumer has \$100 invested from each paycheck into a fund,⁷ then this will be a higher percentage after worse performance. If no-load investing is more prevalent in retirement accounts, this could also deliver our result.

In the redemption results, captive flows show the least sensitivity in the region of bad performance, consistent with captive brokers trying to keep that money in the family by influencing investors not to abandon such funds. There is weak evidence of a similar

⁶ It is important to note that Net Flows are not exactly Inflows minus Redemptions, due to reinvested dividends.

⁷ See, e.g., Madrian and Shea (2001) for evidence that retirement-plan allocations are significantly static over time.

effect in the region of good returns, with respect to no-load but not unaffiliated, but if the motive for such outflows is rebalancing then this weakness makes sense, in that the fund's family likely has another offering to rebalance into (e.g. bond fund, money fund, international fund). Another perspective on this same result is that no-load investors are showing some of the "disposition effect" of Shefrin and Statman (1985), leaving quickly after making money, potentially because they do not have brokers advising them not to. We return to the question of what motivates these redemptions in section 4.C, when we relate outflows to simultaneous inflows elsewhere in the family.

The question of how informed these inflows and outflows are can be addressed by relating them to the funds' future performance. Does performance increase with inflows and decrease with redemptions, and in particular, does this future performance vary with the form of intermediation? We investigate with an analogous set of regressions, where now future six-month excess return, i.e. return in excess of the average for the fund's category, is regressed on percentage flows interacted with the dummies for intermediation channel. Again, regressions are cross-sectional and monthly, and standard errors are adjusted for autocorrelation. Our sample period is somewhat short for inferences about expected returns, but it does contain both up and down markets. Results are in Table 4.

To interpret Table 4, bear in mind that a positive coefficient in the Net Flows and New Flows (inflows) columns indicates good news for investors, i.e. better future performance if more money came in, and a positive coefficient in the Redemptions column indicates bad news, i.e. better future performance if more money left. So what the first row of Panel B tells us is that inflows through captive brokers pan out

significantly better than those through unaffiliated brokers, whereas the reverse holds for redemptions. For net flows, both captive and no-load flows relate significantly to future returns, but the point estimates are similar across channels, with no significant difference. So while our short time series is somewhat limited in addressing this point, we do find evidence that among brokers, captive brokers add relatively more value on the way in and unaffiliated brokers add more value on the way out.

4.B Revenue Sharing

In this subsection we address families' revenue-sharing with brokers. There are two questions with respect to revenue-sharing: how does it affect the investments the brokers intermediate, and what determines how much the family shares? Families can share the sales loads arising from account originations, and the natural reason would be as an incentive to originate. They can also share the 12b-1 fees paid by the accounts until they are redeemed, and this would similarly be an incentive to defer redemption, though it could also be a way to share risk. That is, if the fund family pays brokers with loads and keeps the 12b-1 fees, then the family is more exposed to the fund's performance than if it paid with 12b-1 fees and kept the loads. Such risk sharing would intuitively be more important with unaffiliated brokers, rather than affiliated ones, since it is intuitively more effective to lay off a risk with an outsider than with an affiliate.

We start with 12b-1 fees. We can adapt our Table 3 analysis to address 12b-1-sharing by repeating the regressions on observations first with, and then without the broker receiving 12b-1 revenue, and then comparing. If we split the fund-level sample used in Table 3, into those fund/month observations where the broker does or doesn't receive 12b-1 fee revenue, we find 22,469 observations where they do and 42,978 where

they don't. Of these 42,978, we find 26,399 where there is simply no 12b-1 fee for anybody (90% of these are no-load funds) and 16,579 where the fund charges one but doesn't share it with its brokers. Thus, the observations are spread over a wide range of 12b-1 arrangements. Results are in Table 5.

In the captive channel, we see that revenue-sharing is associated with less sensitivity of redemptions to performance at both ends – money is less likely to leave as performance goes from bad to worst, or as it goes from good to best, indicating less incidence of abandoning the worst performers or rebalancing out of good performers, consistent with an increased incentive to keep money in the family. We do not see this in the unaffiliated channel, which is inconsistent with an incentive effect, but the intended effect of 12b-1-fee sharing in this channel could instead be risk sharing, a possibility we return to below in Table 8.

Where 12b-1-sharing focuses on the tenure and redemption of accounts, load-sharing likely focuses on the initial investment. To see how load sharing influences investments, we run a regression model with the same controls as before, but now we include both the load and the amount of the load paid to the broker as explanatory variables. We run separate regressions for the captive and unaffiliated funds, and then we combine the samples for one big regression. Results are in Table 6.

Table 6 shows a strong negative effect of loads on investments – both Front Load * Captive and Front Load * Unafil enter significantly negatively in all specifications. The effect on net flows is flat or even positive, but one should be careful interpreting the effect on redemptions, since a high load can affect the redemptions only on the select group of investors who chose to pay it in the first place. However, controlling for this,

the amount of the load that is shared with the broker comes in *positively* when the broker is unaffiliated. This is consistent with the concerns raised by regulators and others that revenue sharing influences the advice brokers impart⁸ (though it does not show that this influence does any harm).

We do not see a positive relation between load-sharing and inflows in the captive channel, suggesting that the role of load-sharing is different with captive brokers. The logical source of this difference, as suggested by the regulatory suspicion about load-sharing, is the unaffiliated broker's market power: the family must bid for the scarce favors the unaffiliated broker can hand out, but doesn't have this problem (or at least has less of it) with respect to its captive brokers. Without market power, the captive broker is more likely to be paid for his costs, so if new accounts take more time for some brokers than for others, we should expect to see those brokers getting more per account and (given the fixed number of customer-contact hours per day) bringing in fewer accounts.

We can pursue this idea, that unaffiliated brokers extract value with their market power while captive brokers get paid for their time, by looking at the determinants of revenue-sharing. One way to help relate revenue-sharing with the cost of initiating accounts is to see how revenue sharing changes as the cost changes. Since the cost of getting a consumer to invest appears from the empirical literature to be lower when consumer sentiment is higher,⁹ we can proxy for its variation with indices of consumer sentiment and confidence described in the previous section. We run two sets of regressions. In the first, we document the relation between sentiment and inflows and

⁸ For example, PIMCO's distributor (PA Distributor) recently settled with California's Attorney General for \$9 million. The legal suit alleged that PIMCO and the distributor engaged in a shelf-space arrangement whereby broker-dealers were required to "tout PIMCO mutual funds, via placement on intranet web sites or 'preferred' or 'recommended' lists" (<http://ag.ca.gov/newsalerts/2004/04-105.htm>).

⁹ Baker and Wurgler (2006)

outflows, and in the second we relate sentiment and other potential influences to load sharing.

The question is whether changes in sentiment produce changes in investment. To answer that question we take the regression model from Table 5 and add the first differences of consumer sentiment and confidence (and also, to save space, drop the piecewise coefficients on past performance). The results are in Table 7. What we see in the row labeled “Index” is that increases in sentiment coincide with increases in inflows and decreases in outflows. When we separately identify the effect of consumer confidence and sentiment by channel we see that it is consistently strong and significant in the no-load channel, somewhat less so in the unaffiliated channel and imperceptible in the captive channel. This is consistent with financial advisors, such as brokers, dampening the effect of sentiment on investment decisions, though we see in Panel B that the differences are not statistically significant.

Having seen that changes in sentiment relate to changes in investment, we now ask whether levels of sentiment relate to levels of revenue-sharing. We run two sets of regression models, the first with the revenue share to the captive broker as the dependent variable, the other with unaffiliated instead, and as the independent variables, recent performance, recent volatility, and current sentiment. Recent performance is there as a fund-specific measure of cost to the broker, which is presumably negative in performance, and recent volatility is there to capture the idea from above that sharing 12b-1 fees is a way to share risk, and should therefore vary with fund risk. Results for load-sharing are in Panel A of Table 8, and results for 12b-1-sharing are in Panel B.

In the load-sharing results we see that the share to the unaffiliated broker is consistently positive and significant in confidence and sentiment, even though higher sentiment signifies lower cost. Results for captive broker are mixed, ranging from insignificantly negative to marginally-significantly positive. By contrast, the share to the captive broker is strongly negative in past return, indicating a lower share after higher performance. Thus, by either measure, captive brokers appear to be compensated for their costs. The unaffiliated-broker results are consistent with such brokers having more market power in times of higher confidence, implying that the effect of sentiment on fund families is dampened by an offsetting effect of their brokers' market power.

In the 12b-1 results we again see that confidence and sentiment come in strongly positively for unaffiliated brokers but not captive brokers, consistent with unaffiliated brokers exercising market power over redemptions as well. The risk results are consistent with the results of Table 5 – higher risk corresponds to more 12b-1 sharing with unaffiliated brokers but not captive brokers, consistent with the idea that the 12b-1 sharing is motivated by risk sharing.

4.C Intrafamily Flows

We have seen evidence that brokers influence fund flows in ways that are significant to fund families, and that are consistent with the incentives imparted by their compensation. In this section we address the flows between the funds in a family, and again the questions are whether these flows are significant to fund families, and whether they are consistent with the brokers' incentives.

One of the main family-level concerns is the recapture of outflows. That is, when money flows out of one fund, does it flow into another? We can address this question by relating a fund's outflows to the rest of the family's inflows. However, we must be careful to account for expected flows. The precise question is whether, when one fund's circumstances predict an outflow, the rest of the family's funds get flows *beyond* what their circumstances predict. Such recapture would be a benefit to the family. If instead we included the unexpected outflows of the initial fund, we would be measuring flows that just move money around the family, rather than capture money that was predicted to leave. Similarly, including the expected inflows to the rest of the family runs the risk of misattributing flows predicted to come in anyway.

The strong influence of consumer sentiment, as seen above and in other studies, has potentially important implications for recapture. When low sentiment encourages investors to cash out of the market, families would like to capture that money with their money funds, which closely approximate bank accounts. By the same token, families can offer these funds to new investors at such times, hoping to capture their investment when sentiment improves in higher-margin products. Accordingly, our recapture tests separate flows to equity funds and flows to money funds.

A subset of recapture is rebalancing out of winners. As discussed above, investors may wish to tilt out of positions that have done well, to restore their target asset allocations. From the family's perspective this would also manifest as expected outflows becoming unexpected inflows, but it would be the special case where the outflows are from funds that have done well, and the inflows are to other asset classes.

The unfortunate byproduct of recapture is cannibalization. Cannibalization is the general retail problem of one of a firm's product lines poaching sales from another. In the context of mutual funds, we take this to mean that the unexpected inflows to a fund correlate negatively with unexpected inflows to the rest of the family.

The prospects for both recapture and cannibalization are likely better with captive brokers, due to the limited menu they offer. A captive broker's affiliation with the family makes it more likely that an outflow from a captive fund is more likely to end up back in the same family, and a captive broker's affiliation with the other funds in the family makes it more likely that an extra dollar for a fund would have otherwise been invested elsewhere in the family.

4.C.1 Recapture and Rebalancing

We first address recapture. To implement the test described above, i.e. whether expected outflows from one fund coincide with unexpected flows elsewhere in the family, we calculate expected and unexpected (i.e. excess) flows using the piecewise regression model of Table 3, with one change. The change is that we drop the contemporaneous flows of the category as a regressor, and this is because we want to see the effect of sentiment on our results, and the contemporaneous flows impute sentiment. The test design is as follows. For every month, we run a cross-sectional regression where the dependent variable is the percentage excess inflow into a family, omitting the fund of interest, and the independent variables are the channel dummies, alone and interacted with the predicted redemptions of the omitted fund. We also include log fund size and log complex size as controls, and we drop observations from families with fewer than 7

funds.¹⁰ We then average coefficients and adjust for autocorrelation as in the previous tables. One adjustment we had to make is that, because the subsamples of high and low sentiment times break up the time series, we cannot estimate using time series lags so we estimate using coefficient averages and standard deviations of these averages

There are several sets of regressions, reported in two tables. In Table 9, the first column reports recapture between all categories of funds. The second column reports recapture only of equity funds by money funds. The third and fourth columns break out the second-column regression by whether the equity fund's performance was high or low, the fifth and sixth columns by whether consumer sentiment was high or low, and the seventh and eighth by whether consumer confidence was high or low. Table 10 is the other way around: recapture of money-fund outflows by equity funds. The first column reports recapture from money funds to all equity funds, the second and third break out the first column by whether consumer sentiment was high or low, and the fourth and fifth by whether consumer confidence was high or low.

The results for recapture by all funds, in the first column of Table 9, shows no significant recapture in either brokered channel. Only the no-load channel comes in. However, when we narrow down to just recapture by money funds, we find that the captive channel shows significant recapture, as predicted, and significantly more than the other channels. The last four columns show that this recapture is stronger when sentiment/confidence is low, consistent with money funds recapture the cashing out that low sentiment provokes.

¹⁰ We also run the results of Table 9 to 12 with a sample 3 or more funds in it and the results are consistent with our current findings.

The second and third columns address rebalancing out of winners, and pick up some evidence of this. We see that recapture is statistically significant when the source fund has performed well, rather than badly, but the difference is not significant.

In the recapture of money fund outflows, reported in Table 10, standard errors are bigger so fewer differences are statistically significant. What stands out is the no-load channel, which shows significant recapture overall, and significantly more when sentiment/confidence is high. This suggests a business model where no-load families attract money in bad times with loss-leader money funds, and then recapture their outflows as inflows to profitable funds when times are better.

4.C.2 Cannibalization

We run two sets of tests for cannibalization. The first asks how the performance of a fund affects the unexpected inflows to the rest of the family. Cannibalization would appear as a negative relation. The second is a simple rearrangement of the tests for recapture, where we ask how the unexpected inflows to a fund relate to the unexpected inflows to the rest of the family. Again, cannibalization implies a negative relation.

Whether a fund's inflows are susceptible to cannibalization depends on the fund-specific demand. That is, its inflows interact with other funds' inflows only to the extent they serve as substitutes. Considering how much time families, the press and academics spend distinguishing equity funds from each other, and how little is spent distinguishing other types of funds, the threat of cannibalization is likely stronger among non-equity funds. Therefore, we split out the non-equity funds in our tests, to consider them separately.

The first set of regressions is in Table 11. In the first column we consider the dependence of family flows on the performance of all funds. In the second and third columns we break this out into equity and non-equity funds, in the fourth and fifth columns we break out the non-equity results into high and low sentiment, and in the sixth and seventh columns we use confidence instead of sentiment.

The principal result of Table 11 is that captive funds show consistently more cannibalization, by this measure, than unaffiliated funds. That is, when performance attracts money to a captive fund, that money has a higher propensity to come from the potential inflows of other funds in the family than if the fund's brokers were unaffiliated. In the equity/non-equity comparison between the second and third columns, we see that this is indeed concentrated in non-equity funds. We also see that this cannibalization in the captive channel is stronger when sentiment is higher, consistent with the conjecture above that the market power of unaffiliated brokers is higher at such times.

Table 12 is the same as Table 11, except that fund performance is replaced by fund unexpected inflows. The captive vs. unaffiliated results are analogous: captive consistently shows more cannibalization, and more when confidence/sentiment is high rather than low, and cannibalization appears to be concentrated in non-equity funds. Interestingly, we find both the unaffiliated and no-load channel to have significantly positive relations between surprise inflows. This would be expected given the "star phenomenon" documented by Nanda, Wang, and Zheng (2004) where positive inflows into one fund in the family positively affect the surprise inflows into other funds.

Thus, we conclude that the captive channel brings the benefits of recapture, particularly into money funds, and also the cost of cannibalization, particularly from non-

equity funds. So by separating inflows from outflows, and affiliated from captive, we can bring out the dynamics relevant to the family's decision how to sell their shares.

5. Conclusion

Distribution channels play an important role in the economics of mutual fund families. As fund families seek to increase their revenues by maximizing their total assets under management, the growth and stability of those assets are important concerns. Flows into and out of funds, however, are sensitive to sector-level and market-level conditions, making family-level profits volatile. Intermediated distribution channels may mitigate such volatility, but brokers have to balance the interests of their clients with the interests of the fund family.

In this paper, we examine the role of brokers in fund and family-level flows. A novel database of N-SAR fund filings enables us to identify brokered distribution and to separate fund flows into purchases and redemptions. To understand how the incentives designed by the family affect flows through the various channels, we collect additional data from the N-SARs on the load and 12b-1 fees paid to brokers.

In our tests, we separately analyze unaffiliated and captive brokers recognizing the potentially greater incentive alignment between captive brokers and the families they serve. Unaffiliated brokers, on the other hand, have potentially greater reach in accessing new investors. Market-wide measures of consumer confidence and sentiment are used as proxies for aggregate investor demand for funds. We also include no-load distributed funds in our tests as a benchmark for our brokered results.

We find that family-level flows benefit from captive intermediation. Captive brokered channels exhibit significant recapture of fund redemptions, especially when consumer sentiment is low. Consistent with the limited ability of captive brokers to attract new flows, however, captive intermediated flows also exhibit greater cannibalization than either the unaffiliated or no-load flows. Flows intermediated by unaffiliated brokers do not exhibit recapture and for equity fund flows, they do not exhibit cannibalization.

At a fund-level, we find that redemptions through the captive channel are relatively performance insensitive while fund purchases through the unaffiliated channel are strongly performance sensitive. Separating the flows by 12b-1 fees, we find that these results are most pronounced when brokers are receiving 12b-1 compensation from the fund family. This is consistent with the intuition that while captive brokers influence is limited to existing accounts; unaffiliated brokers have the ability to access new sources of investment. Analyzing the share of loads paid to the brokers, we find that unaffiliated brokers receive a larger share and that share is positively correlated with consumer sentiment, suggesting that they can be a profitable source of new investment flows when investor demand for these products is high. The share of loads paid to captive brokers is on average lower than that paid to unaffiliated advisors and negatively correlated with these measures.

Overall, our evidence suggests that brokers affect the flows they intermediate and that effect is influenced by the incentives offered by fund families. While no-load or direct channels are an increasingly important source of flows, intermediated channels offer potentially important advantages relative to direct distribution. Captive brokers

have limited access to new investors but their incentives are strongly aligned with the fund family. Unaffiliated brokers have greater access to investors but require greater incentives in terms of load and 12b-1 payments to deliver for the fund family. All of this suggests that it is important to control for distribution channel and broker incentives in analyzing investor decision-making.

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Table 1. Descriptive Statistics

This table provides descriptive statistics of our matched sample of CRSP and N-SAR files from 1996 to 2004. Between 1996-2004, there are 1795 equity funds and 2723 non-equity. The descriptive data below includes 1795 equity funds classified as either AG, LG, or GI according to the ICDI objective categories in CRSP where one fund observation groups all shareclasses together. The purchases, redemptions, and reinvestments are based on information from Question 28 (a) – (h) in the NSAR file. Panel A provides the annual summary statistics while Panel B provides the monthly statistics for the same time horizon. All values are fund averages.

Variables	Units	1996	1997	1998	1999	2000	2001	2002	2003	2004
Purchases	(\$ '000)	27001.87	32245.05	33764.48	37531.52	48320.72	32951.36	24914.69	20359.70	25744.36
Redemptions	(\$ '000)	19518.05	24621.59	28715.89	32905.45	39971.80	28927.98	23151.48	17271.73	22917.40
Reinvestments	(\$ '000)	6357.00	7758.54	6470.63	8601.28	10319.46	1782.28	673.40	739.59	2042.68
Net flows	(\$ '000)	13845.46	15398.12	11647.24	13231.64	18675.77	6878.31	2439.03	3860.22	4873.88
Purchases	% TNA	3.96	4.28	4.12	3.98	4.06	3.85	3.68	2.99	2.34
Redemptions	% TNA	2.78	3.12	3.61	3.97	3.64	3.29	3.43	2.64	2.37
Reinvestments	% TNA	0.62	0.68	0.48	0.55	0.70	0.15	0.07	0.07	0.15
Net flows	% TNA	1.80	1.85	1.02	0.57	1.14	0.75	0.32	0.43	0.13
TNA	\$ millions	815.24	1071.87	1153.43	1262.84	1532.13	1263.60	975.21	953.67	1305.31
Expenses	%	1.29	1.28	1.29	1.26	1.24	1.23	1.31	1.39	1.53
Month/Fund Obs		7085	7719	8468	9079	9630	9837	8607	7060	5957

Table 2. Summary statistics on actual loads paid

This table provides descriptive statistics of our matched sample of CRSP and N-SAR files from 1996 to 2004. The statistics below only include equity funds classified as either AG, LG, or GI according to the ICDI objective categories in CRSP where one fund observation groups all shareclasses together. The load information and its allocation by sales force is based on information from Question 28-38 in the NSAR file. Panel A provides the annual summary statistics while Panel B provides correlation between the actual loads collected that are reported on the N-SAR files and the maximum load charged which are reported in CRSP. Percent of inflows subject to a load is the percent of total dollars arriving into a fund subject to a load (Q28(h)) divided by the total dollars arriving into the fund (Q28(g)). The percent of inflows collected in front loads is the total dollars collected in front loads Q30(a) divided by Q28(g). The percent of inflows paid to the underwriter is the total dollars paid to an underwriter (Q31a) divided by the total inflows (Q28(g)). The percent of inflows paid to the unaffiliated broker is Q32 divided by Q28(g) while the percent of inflows to a captive sales force is Q33 divided by Q28(g). The percent of outflows subject to back loads is Q35 divided by the total outflows for the six month period given as part of the response to Q28(g). The percent received by brokers in a specific channel for a fund is the percent of dollars received in either the captive (Q33) or unaffiliated channel (Q32) divided by the dollars coming to that fund which are subject to a load (Q28(h)). The percent paid by individuals is the total front load dollars collected (Q30(a)) divided by the total inflows subject to a load, Q28(h). The proportion of 12b-1 fees paid to brokers is reported in Q42(d). The conditional correlations condition on the front load, back load, and redemption fee being positive as reported in CRSP. The last two rows condition on the fund being over 80% of A shareclass and over 80% of B shareclass. Note that CRSP refers to a deferred contingent sales charge or back load as a rear load. CRSP also calls the redemption fee imposed on investors who trade within a short time frame as a deferred load.

Panel A: Load Information	1996	1997	1998	1999	2000	2001	2002	2003	2004
Percent of inflows subject to loads	15.21	13.38	11.34	10.91	10.86	12.28	11.13	8.68	9.72
Percent of inflows collected in front loads	0.36	0.34	0.25	0.24	0.20	0.21	0.21	0.18	0.21
Allocated to underwriter (% inflow)	0.13	0.10	0.08	0.07	0.24	0.06	0.06	0.05	0.06
Allocated to captive salesforce (% inflow)	0.11	0.10	0.06	0.05	0.03	0.03	0.05	0.06	0.07
Allocated to unaffiliated broker (% inflow)	0.18	0.18	0.16	0.16	0.13	0.14	0.12	0.09	0.11
Percent of outflows collected in back loads	0.05	0.05	0.06	0.06	0.07	0.08	0.06	0.05	0.07
Percent of front loads allocated to									
Underwriter (% front load collected)	27.29	30.19	27.83	24.65	25.83	25.97	27.40	22.46	21.24
Captive Salesforce (% front load collected)	18.13	17.43	16.22	16.41	17.41	10.41	11.53	13.61	14.31
Unaffiliated broker (% front load collected)	56.38	52.49	56.96	58.80	62.69	63.86	61.07	64.11	64.32
Average load received by brokers									
Captive	1.38	1.33	1.07	1.35	0.89	0.80	1.07	1.78	1.78
Unaffiliated	2.46	2.49	2.37	2.51	2.51	2.20	2.42	2.42	2.38
Average load paid by investors									
Captive	3.26	3.32	2.64	2.96	2.60	2.61	2.87	3.80	3.63
Unaffiliated	2.84	2.92	2.75	2.88	2.69	2.51	2.75	2.76	2.62
Portion 12b1 paid to brokers									
Captive	24.16	30.36	29.01	28.45	26.71	31.50	38.25	30.29	51.18
Unaffiliated	34.28	41.28	43.49	46.67	44.65	42.33	39.61	28.19	36.03
Panel B: Correlation between NSAR Actual Loads and CRSP Maximum Loads									
	Front Load			Back Load			Redemption Fee		
Unconditional	0.5646			0.5125			0.0867		
Positive Load	0.3235			0.414			-0.0714		
Positive Load and >80% in A Class	0.113								
Positive Load and >80% in B Class				0.3442					

Table 3. Convexity in fund flows

This table provides regressions of redemptions, inflows, and net flows on ranked returns of the fund allowing for low, medium and high performance funds. These only include equity funds classified as either AG, LG, or GI according to the ICDI objective categories in CRSP where one fund observation groups all shareclasses together. OUT are the dollar value of redemptions leaving a funds in a given month divided by the current total net assets. NEW are the total dollar value of new money coming into a fund in a given month divided by TNA. NET FLOWS are the dollar inflows plus reinvestments less redemptions in a given month for a fund divided by its TNA. NOLOAD represents funds that are not subject to a load and pay a 12b-1 fee less than 25 bp. CAPTIVE is defined as a fund paying a front load where a larger percent of the load is allocated to either the underwriter or captive sales force than the unaffiliated broker. UNAFFILIATED is one if a larger portion of the front load is paid to the unaffiliated broker but not to the captive sales force or underwriter. RKRETLO is the $\min(\text{RKRET}, 0.2)$ where RKRET is the ranked return of the fund over the past 12 months. Ranking is done for every month/year and compares all the funds in the sample for that month ranking them from 0 to 1. RKRETHI is $\max(\text{RKRET} - 0.8, 0)$ and RKRETMED is the $\min(\text{RKRET} - \text{RKRETLO}, 0.6)$. RKRETLO is interacted with the three broker channel dummies to give LOCAPTIVE, LOUNAFIL, and LONOLOAD. Similarly variables are defined for RKRETMED AND RKRETHI. To adjust for autocorrelation in the panel, we repeat this regression separately for each month and year between 1996-2004. We report the estimated intercept from regressing the individual coefficients on a constant and report the t-statistic (in italics) of this regression using Newey-West standard errors with 5 lags.

	Regressions				Tests		
	Out	New	Net		Out	New	Net
LoCaptive	-0.06	0.04	0.10	LoCaptive less LoUnafil	0.06	0.07	0.01
	<i>-4.42</i>	<i>2.60</i>	<i>5.48</i>		<i>2.42</i>	<i>2.24</i>	<i>0.30</i>
LoUnafil	-0.12	-0.02	0.10	LoCaptive less LoNoload	0.06	0.08	0.02
	<i>-5.11</i>	<i>-0.98</i>	<i>6.57</i>		<i>4.72</i>	<i>5.04</i>	<i>1.01</i>
LoNoload	-0.12	-0.04	0.08	LoUnafil less LoNoload	1.95E-03	1.17E-02	1.38E-02
	<i>-9.83</i>	<i>-3.90</i>	<i>8.47</i>		<i>0.09</i>	<i>0.47</i>	<i>0.91</i>
MedCaptive	-0.01	0.01	0.02	HiCaptive less LoCaptive	0.08	0.07	-2.37E-03
	<i>-3.35</i>	<i>1.57</i>	<i>3.69</i>		<i>3.25</i>	<i>2.49</i>	<i>-0.08</i>
MedUnafil	-0.01	0.01	0.02	HiUnafil less LoUnafil	0.14	0.18	0.03
	<i>-1.90</i>	<i>3.09</i>	<i>5.70</i>		<i>5.34</i>	<i>8.26</i>	<i>1.77</i>
MedNoload	-0.01	0.02	0.03	HiNoload less LoNoload	0.19	0.26	0.07
	<i>-3.49</i>	<i>5.62</i>	<i>8.33</i>		<i>14.08</i>	<i>16.95</i>	<i>4.18</i>
HiCaptive	0.02	0.11	0.10	HiCaptive less HiUnafil	-2.53E-03	-0.05	-0.03
	<i>1.25</i>	<i>4.65</i>	<i>4.49</i>		<i>-0.09</i>	<i>-1.45</i>	<i>-1.26</i>
HiUnafil	0.03	0.16	0.13	HiCaptive less HiNoload	-0.044	-0.11	-0.05
	<i>1.23</i>	<i>7.21</i>	<i>10.04</i>		<i>-1.72</i>	<i>-3.74</i>	<i>-1.79</i>
HiNoload	0.07	0.22	0.16	HiUnafil less HiNoload	-0.04	-0.06	-0.02
	<i>4.26</i>	<i>13.10</i>	<i>10.40</i>		<i>-1.71</i>	<i>-2.24</i>	<i>-1.28</i>
Log Complex Size	2.09E-03	2.30E-03	2.35E-04				
	<i>6.99</i>	<i>5.92</i>	<i>1.03</i>				
Log Fund Size	-1.37E-03	-1.75E-03	-3.64E-04				
	<i>-6.01</i>	<i>-5.38</i>	<i>-1.04</i>				
Captive	-1.37E-03	-2.41E-02	-2.45E-02	Captive less Unafil	-0.01	-0.01	-8.84E-04
	<i>-0.50</i>	<i>-8.85</i>	<i>-5.95</i>		<i>-3.22</i>	<i>-3.19</i>	<i>-0.31</i>
Unafil	1.18E-02	-9.78E-03	-2.36E-02	Captive less Noload	-0.018	-0.02	-4.09E-04
	<i>3.28</i>	<i>-1.85</i>	<i>-5.75</i>		<i>-6.56</i>	<i>-8.68</i>	<i>-0.14</i>
Noload	1.64E-02	-6.59E-03	-2.41E-02	Unafil less Noload	-4.58E-03	-3.20E-03	4.75E-04
	<i>6.42</i>	<i>-2.04</i>	<i>-8.70</i>		<i>-1.26</i>	<i>-0.66</i>	<i>0.16</i>
12b1 Fees	1.06	1.67	0.51				
	<i>6.08</i>	<i>7.51</i>	<i>3.42</i>				
Expenses less 12b1	0.23	0.18	-0.08				
	<i>2.68</i>	<i>2.59</i>	<i>-1.17</i>				
ICDI Category Flows	1.15	1.01	0.61				
	<i>12.79</i>	<i>10.97</i>	<i>5.99</i>				

Table 4. Future returns as a function of flows and distribution channel

This table provides regressions of the average future six month excess return on today's redemptions, purchases, and net flows into a fund. These only include equity funds classified as either AG, LG, or GI according to the ICDI objective categories in CRSP where one fund observation groups all shareclasses together. OUT is the dollar value of redemptions leaving a fund in a given month divided by the total net assets of the fund. NEW is the total dollar value of new money coming into a fund in a given month divided by the total net assets of the fund. NET is the dollar inflows plus reinvestments less redemptions in a given month for a fund divided by its total net assets. NOLOAD represents funds that are not subject to a load and maintain a 12b-1 fee less than 25 bp. CAPTIVE is defined as a fund paying a front load where a larger percent of the load is allocated to either the underwriter or captive sales force than the unaffiliated broker. UNAFFILIATED is one if a larger portion of the front load is paid to the unaffiliated broker but not to the captive sales force or underwriter. 12b-1 refers the portion of the 12b-1 allocated to a broker. XSRET6M (in bp) is the six month excess return for the six months after the current period where a fund's monthly excess return is the difference between the fund's return and the equally weighted index for that month/year. To adjust for autocorrelation in the panel, we repeat this regression separately for each month and year between 1995-2004. We report the estimated intercept from regressing the individual coefficients on a constant and report the t-statistic (in italics) of this regression using Newey-West standard errors with 5 lags.

Panel A			
	FLOWS		
	Out	New	Net
Flows*Captive	0.07 <i>1.09</i>	0.16 <i>2.79</i>	0.14 <i>2.39</i>
Flows*Unafil	-0.12 <i>-2.30</i>	-0.01 <i>-0.12</i>	0.09 <i>1.42</i>
Flows*Noload	-0.05 <i>-1.10</i>	0.04 <i>0.71</i>	0.07 <i>1.85</i>
Log Fund Size	-3.08E-04 <i>-0.27</i>	-2.79E-04 <i>-0.25</i>	-3.12E-04 <i>-0.28</i>
Captive	-1.97E-03 <i>-0.29</i>	-3.52E-03 <i>-0.50</i>	-2.64E-04 <i>-0.04</i>
Unafil	2.45E-03 <i>0.35</i>	-6.75E-04 <i>-0.08</i>	-9.87E-04 <i>-0.15</i>
Noload	3.49E-03 <i>0.44</i>	5.91E-04 <i>0.07</i>	1.80E-03 <i>0.25</i>
Panel B: Tests of differences in coefficients of flows and broker channel			
Captive less Unafil	0.19 <i>2.62</i>	0.17 <i>2.25</i>	0.04 <i>0.54</i>
Captive less Noload	0.12 <i>1.61</i>	0.11 <i>1.68</i>	0.06 <i>1.06</i>
Unafil less Noload	-0.07 <i>-1.90</i>	-0.05 <i>-1.24</i>	0.02 <i>0.54</i>

Table 5. Fund Flows and 12b-1 Payments to the Broker

This table provides regressions of percent of TNA in redemptions, inflows, and net flows on ranked returns of the fund allowing for low, medium and high performance funds. These only include equity funds classified as either AG, LG, or GI according to the ICDI objective categories in CRSP where one fund observation groups all shareclasses together. OUT are the dollar value of redemptions leaving a funds in a given month divided by the current total net assets. NEW are the total dollar value of new money coming into a fund in a given month divided by TNA. NET is the dollar inflows plus reinvestments less redemptions in a given month for a fund divided by its TNA. NOLOAD represents funds that are not subject to a load and do not pay a 12b-1 fee less than 25 bp. CAPTIVE is defined as a fund paying a front load where a larger percent of the load is allocated to either the underwriter or captive sales force than the unaffiliated broker. UNAFFILIATED is one if a larger portion of the front load is paid to the unaffiliated broker but not to the captive sales force or underwriter. RKRETLO is the min(RKRET, 0.2) where RKRET is the ranked return of the fund over the past 12 months. Ranking is done for every month/year and compares all the funds in the sample for that month ranking them from 0 to 1. RKRETHI is max(RKRET-0.8, 0) and RKRETMED is the min(RKRET-RKRETLO,0.6). RKRETLO is interacted with the three broker channel dummies to give LOCAPTIVE, LOUNAFIL, and LONOLOAD. Similarly variables are defined for RKRETMED AND RKRETHI. The table is broken into two panels where PORTION PAID FROM 12b-1>0 implies the brokers receives a positive payment from the 12b-1 fee and PORTION PAID FROM 12b-1=0 implies the broker receives no payment from the 12b-1 fee. To adjust for autocorrelation in the panel, we repeat this regression separately for each month and year between 1995-2004. We report the estimated intercept from regressing the individual coefficients on a constant and report the t-statistic (in italics) of this regression using Newey-West standard errors with 5 lags.

	Portion Paid from 12b1>0			Portion Paid from 12b1=0			Difference in Coefficients		
	Out	New	Net	Out	New	Net	Out	New	Net
LoCaptive	0.008 <i>0.28</i>	0.104 <i>3.28</i>	0.122 <i>3.58</i>	-0.085 <i>-4.17</i>	0.007 <i>0.43</i>	0.090 <i>3.94</i>	0.093 <i>2.28</i>	0.098 <i>2.71</i>	0.033 <i>0.83</i>
LoUnafil	-0.115 <i>-3.06</i>	-0.027 <i>-0.80</i>	0.098 <i>3.77</i>	-0.098 <i>-3.40</i>	-0.006 <i>-0.26</i>	0.089 <i>3.66</i>	-0.017 <i>-0.33</i>	-0.021 <i>-0.55</i>	0.009 <i>0.23</i>
LoNoload	-0.177 <i>-6.66</i>	-0.086 <i>-4.04</i>	0.087 <i>4.98</i>	-0.097 <i>-7.19</i>	-0.007 <i>-0.63</i>	0.084 <i>7.42</i>	-0.080 <i>-2.56</i>	-0.079 <i>-3.11</i>	0.003 <i>0.16</i>
MedCaptive	-0.020 <i>-3.51</i>	-0.006 <i>-0.80</i>	0.013 <i>1.55</i>	-0.006 <i>-1.39</i>	0.014 <i>3.34</i>	0.022 <i>4.36</i>			
MedUnafil	-0.008 <i>-1.29</i>	0.012 <i>1.50</i>	0.022 <i>2.93</i>	-0.009 <i>-1.65</i>	0.016 <i>2.62</i>	0.026 <i>5.52</i>			
MedNoload	-0.001 <i>-0.17</i>	0.025 <i>4.25</i>	0.025 <i>4.82</i>	-0.011 <i>-4.38</i>	0.014 <i>4.88</i>	0.026 <i>9.33</i>			
HiCaptive	-0.019 <i>-0.46</i>	0.140 <i>4.15</i>	0.169 <i>3.12</i>	0.040 <i>2.24</i>	0.106 <i>3.27</i>	0.084 <i>3.42</i>	-0.059 <i>-1.17</i>	0.034 <i>0.90</i>	0.085 <i>1.90</i>
HiUnafil	0.039 <i>0.88</i>	0.213 <i>4.87</i>	0.165 <i>5.72</i>	0.021 <i>1.41</i>	0.100 <i>5.02</i>	0.091 <i>5.26</i>	0.017 <i>0.38</i>	0.113 <i>2.42</i>	0.074 <i>2.00</i>
HiNoload	0.077 <i>2.69</i>	0.236 <i>9.15</i>	0.162 <i>5.74</i>	0.044 <i>5.67</i>	0.201 <i>12.62</i>	0.159 <i>10.51</i>	0.033 <i>1.08</i>	0.035 <i>1.28</i>	0.003 <i>0.09</i>
Log Complex Size	2.56E-03 <i>4.11</i>	2.79E-03 <i>3.96</i>	5.87E-05 <i>0.17</i>	2.15E-03 <i>9.90</i>	2.19E-03 <i>6.84</i>	1.30E-04 <i>0.50</i>			
Log Fund Size	-1.49E-03 <i>-2.93</i>	-1.55E-03 <i>-1.81</i>	1.69E-04 <i>0.23</i>	-1.44E-03 <i>-4.93</i>	-1.94E-03 <i>-6.91</i>	-5.26E-04 <i>-2.00</i>			
Captive	-0.019 <i>-3.89</i>	-0.039 <i>-9.35</i>	-0.031 <i>-5.24</i>	0.004 <i>1.03</i>	-0.016 <i>-3.68</i>	-0.020 <i>-3.45</i>			
Unafil	4.78E-03 <i>0.76</i>	-0.02 <i>-2.32</i>	-0.03 <i>-5.43</i>	0.01 <i>1.62</i>	-0.01 <i>-1.77</i>	-0.02 <i>-3.28</i>			
Noload	0.022 <i>6.07</i>	-0.002 <i>-0.39</i>	-0.029 <i>-7.71</i>	0.013 <i>3.89</i>	-0.009 <i>-2.44</i>	-0.021 <i>-4.90</i>			
12b1	1.504 <i>3.61</i>	2.427 <i>5.70</i>	0.890 <i>3.15</i>	0.742 <i>5.23</i>	1.115 <i>4.30</i>	0.264 <i>1.57</i>			
Expenses less 12b1	0.441 <i>2.79</i>	0.681 <i>7.94</i>	0.286 <i>1.76</i>	0.234 <i>2.64</i>	0.011 <i>0.11</i>	-0.265 <i>-3.11</i>			
ICDI Category Flows	1.175 <i>6.50</i>	0.874 <i>6.13</i>	0.609 <i>3.35</i>	1.098 <i>13.06</i>	1.037 <i>11.45</i>	0.546 <i>5.34</i>			

Table 6. Predicting Fund Flows with Load Payments

This table includes equity funds classified as either AG, LG, or GI according to the ICDI objective categories in CRSP where one fund observation groups all shareclasses together. NEW are the total dollar value of new money coming into a fund in a given month divided by TNA. NET is the dollar inflows plus reinvestments less redemptions in a given month for a fund divided by its total net assets. NOLOAD represents funds that are not subject to a load and pays a 12b-1 fee less than 25 bp. CAPTIVE is defined as a fund paying a front load where a larger percent of the load is allocated to either the underwriter or captive sales force than the unaffiliated broker. UNAFFILIATED is one if a larger portion of the front load is paid to the unaffiliated broker but not to the captive sales force or underwriter. PERCENT PAID TO BROKER is the percent of inflows paid to the broker from the front load. FRONT LOAD is the total amount collected as a front load as a percent of inflows subject to a load. RANKED RETURN is the ranked return of the fund over the past 12 months compared to all funds in the category and ranges between 0 and 1. LOG COMPLEX SIZE is the log of the complex size of the family. LOG FUND SIZE is the log of the size of the fund. 12b-1 is the 12b-1 fee reported in CRSP. EXPENSES LESS 12b-1 are the expenses reported in CRSP less 12b-1 fees. ICDI FLOWS are total new inflows into an icdi category for a month and year divided by the TNA of all funds in that ICDI category for that month and year. To adjust for autocorrelation in the panel, we repeat this regression separately for each month and year between 1995-2004. We report the estimated intercept from regressing the individual coefficients on a constant and report the t-statistic (in italics) of this regression using Newey-West standard errors with 5 lags.

	Captive		Unafil		Both	
	New	Net	New	Net	New	Net
Front Load Paid to Captive	-0.33 <i>-3.18</i>	-0.26 <i>-2.37</i>			-0.09 <i>-0.47</i>	-0.17 <i>-0.95</i>
Front Load Paid to Unaffiliated			0.19 <i>2.00</i>	0.16 <i>1.95</i>	0.69 <i>2.51</i>	-0.25 <i>-0.74</i>
Front Load*Captive	-0.37 <i>-4.07</i>	0.24 <i>3.96</i>			-0.61 <i>-5.35</i>	0.14 <i>1.08</i>
Front Load*Unafil			-0.61 <i>-12.36</i>	0.07 <i>1.59</i>	-1.08 <i>-4.49</i>	0.42 <i>1.43</i>
Ranked Return	0.03 <i>8.08</i>	0.04 <i>13.10</i>	0.03 <i>7.82</i>	0.04 <i>12.01</i>	0.03 <i>7.84</i>	0.04 <i>12.16</i>
Log Complex Size	1.60E-03 <i>4.51</i>	1.30E-03 <i>3.74</i>	1.67E-03 <i>4.31</i>	1.11E-03 <i>2.87</i>	1.56E-03 <i>3.81</i>	1.04E-03 <i>2.41</i>
Log Fund Size	-2.85E-03 <i>-6.15</i>	-1.57E-03 <i>-3.84</i>	-2.95E-03 <i>-6.36</i>	-1.74E-03 <i>-4.33</i>	-3.08E-03 <i>-6.66</i>	-1.84E-03 <i>-4.54</i>
12b1	2.52 <i>7.39</i>	0.92 <i>4.82</i>	2.61 <i>8.81</i>	0.85 <i>4.44</i>	2.59 <i>8.52</i>	0.83 <i>4.16</i>
Expenses Less 12b1	0.03 <i>0.19</i>	-0.17 <i>-1.14</i>	0.02 <i>0.15</i>	-0.12 <i>-0.85</i>	-0.02 <i>-0.10</i>	-0.20 <i>-1.31</i>
ICDI Flows	1.00 <i>11.03</i>	0.65 <i>3.22</i>	1.01 <i>10.99</i>	0.58 <i>2.73</i>	0.99 <i>11.03</i>	0.57 <i>2.41</i>
Captive	-3.41E-04 <i>-0.08</i>	3.37E-03 <i>0.91</i>	3.36E-04 <i>0.08</i>	1.89E-03 <i>0.60</i>	4.49E-03 <i>0.98</i>	3.25E-03 <i>0.95</i>
Unafil	2.54E-03 <i>0.69</i>	4.04E-03 <i>1.31</i>	3.79E-03 <i>0.99</i>	3.30E-03 <i>1.25</i>	7.72E-03 <i>1.95</i>	3.77E-03 <i>1.29</i>
Intercept	-0.011 <i>-1.85</i>	-0.032 <i>-3.70</i>	-0.013 <i>-2.19</i>	-0.029 <i>-3.44</i>	-0.014 <i>-2.12</i>	-0.028 <i>-3.09</i>

Table 7. Fund Flows and Sentiment

This table includes equity funds classified as either AG, LG, or GI according to the ICDI objective categories in CRSP where one fund observation groups all shareclasses together. OUT are the dollar value of redemptions leaving a funds in a given month divided by the current total net assets. NEW are the total dollar value of new money coming into a fund in a given month divided by TNA. NOLOAD represents funds that are not subject to a load and pay a 12b-1 fee less than 25 bp. CAPTIVE is defined as a fund paying a front load where a larger percent of the load is allocated to either the underwriter or captive sales force than the unaffiliated broker. UNAFFILIATED is one if a larger portion of the front load is paid to the unaffiliated broker but not to the captive sales force or underwriter. RKRET is the ranked return of the fund over the past 12 months. Ranking is done for every month/year and compares all the funds in the sample for that month ranking them from 0 to 1. CONFIDENCE is the monthly consumer confidence index reported by the conference board divided by 1000. SENTIMENT is the monthly University of Michigan's Consumer Sentiment Index (divided by 1000). Changes in sentiment are the change in these indices between last month and the current month. The reported t-stastics control for clustering by each fund.

	Index=Change in Sentiment				Index=Change in Confidence			
	Out		New		Out		New	
Rkret*Captive	-0.01	-0.01	0.03	0.03	-0.01	-0.01	0.03	0.03
	-2.55	-2.54	6.48	6.47	-2.55	-2.55	6.48	6.48
Rkret*Unafil	-0.02	-0.02	0.03	0.03	-0.02	-0.02	0.03	0.03
	-5.00	-5.00	7.55	7.55	-5.01	-5.01	7.55	7.56
Rkret*No-load	-0.01	-0.01	0.03	0.03	-0.01	-0.01	0.03	0.03
	-7.33	-7.33	13.50	13.50	-7.34	-7.35	13.50	13.50
Log Complex Size	2.33E-03	2.33E-03	2.81E-03	2.81E-03	2.33E-03	2.33E-03	2.81E-03	2.81E-03
	5.92	5.92	6.14	6.14	5.92	5.92	6.14	6.14
Log Fund Size	-1.62E-03	-1.62E-03	-1.91E-03	-1.91E-03	-1.61E-03	-1.61E-03	-1.91E-03	-1.91E-03
	-3.07	-3.07	-3.16	-3.16	-3.06	-3.06	-3.16	-3.16
Captive	0.018	0.018	0.000	0.000	0.018	0.018	0.000	0.000
	3.69	3.69	0.06	0.06	3.68	3.67	0.06	0.06
Unafil	0.024	0.024	0.005	0.005	0.024	0.024	0.005	0.005
	4.69	4.69	0.97	0.98	4.68	4.68	0.98	0.98
No-load	0.027	0.027	0.004	0.004	0.027	0.027	0.004	0.004
	7.00	6.99	0.85	0.85	6.98	6.97	0.86	0.86
12b1	0.48	0.48	0.56	0.56	0.48	0.48	0.56	0.56
	2.72	2.72	2.59	2.59	2.72	2.72	2.59	2.59
Expenses less 12b1	0.49	0.49	0.57	0.57	0.49	0.49	0.57	0.57
	2.79	2.79	2.64	2.64	2.79	2.79	2.64	2.64
Index	-0.19		0.18		-0.15		0.09	
	-4.33		4.07		-5.88		3.20	
Index*Captive		-0.10		0.01		-0.05		0.12
		-0.98		0.10		-0.75		1.53
Index*Unafil		-0.14		0.15		-0.10		0.12
		-1.87		1.82		-2.22		2.10
Index*No-load		-0.23		0.22		-0.18		0.08
		-3.82		3.73		-5.43		2.20
Panel B: Testing the difference in coefficients on changes in sentiment and confidence								
Captive less Unafil		0.04		-0.14		0.04		0.00
		0.33		0.93		0.56		0.00
Captive less No-load		0.13		-0.20		0.13		0.04
		1.13		1.52		1.71		0.44
Unafil less No-load		0.09		-0.06		0.09		0.04
		0.96		0.60		1.58		0.56

Table 8. Predicting Broker Payments with Sentiment

This table includes all funds types. One fund observation groups all shareclasses together. CAPTIVE is defined as a fund paying a front load where a larger percent of the load is allocated to either the underwriter or captive sales force than the unaffiliated broker. UNAFFILIATED is one if a larger portion of the front load is paid to the unaffiliated broker but not to the captive sales force or underwriter. PORTION OF LOAD PAID TO BROKER is the fraction of the total load paid (ranging from zero to one) which is allocated to the broker. PORTION OF 12b-1 PAYMENTS PAID TO BROKERS is the portion of total 12b-1 payments which are allocated to brokers (ranging from zero to one). CONFIDENCE is the monthly consumer confidence index reported by the conference board (divided by 1000). SENTIMENT is the monthly University of Michigan's Consumer Sentiment Index (divided by 1000). SIX MONTH STDEV is the standard deviation of excess fund retruns (in excess of the market). RKRET is the ranked return of the fund over the past 12 months. Ranking is done for every month/year and compares all the funds in the sample for that month ranking them from 0 to 1. The difference tests report the difference in coefficients for each variable for the regressions reported on the left of the tests. The reported t-stastics control for clustering by each fund.

Panel A: Load Payments and Sentiment										
	Portion of Load Paid to Captive Broker					Portion of Load Paid to Unaffiliated Broker				
Confidence	-0.46			0.43		0.16			0.27	
	-1.20			1.03		1.89			3.01	
Sentiment		-1.58E-03			1.67		0.49			0.68
		0.00			1.91		2.54			3.46
6 month volatility			-2.17	-2.16	-2.18			-0.24	-0.27	-0.26
			-5.45	-5.12	-5.32			-3.13	-3.44	-3.38
RkRet	-0.08	-0.08	-0.06	-0.07	-0.07	0.005	0.005	0.004	0.005	0.005
	-2.62	-2.65	-2.31	-2.58	-2.58	0.84	0.84	0.67	0.88	0.88
Intercept	0.43	0.38	0.46	0.41	0.30	0.82	0.79	0.85	0.81	0.78
	9.38	4.63	17.62	8.99	3.64	73.17	40.28	176.08	73.03	39.82
Panel B: 12B1 Payments to Brokers and Sentiment										
	Portion of 12B1 paid to brokers									
	Difference					Difference				
	Test					Test				
Confidence*Captive	-0.53					-0.59				
	-1.07					-1.19				
Confidence*Unafil	1.30				1.83	1.16	1.75			
	3.72				3.04	3.36	2.93			
Sentiment*Captive		-1.06						-1.15		
		-1.00						-1.09		
Sentiment*Unafil		1.79			2.85			1.62	2.76	
		2.54			2.25			2.30	2.20	
6 month StDev*Captive			0.25			0.32		0.29		
			0.53			0.66		0.61		
6 month StDev*Unafil			0.81		0.56	0.75	0.43	0.81	0.52	
			2.10		0.94	1.93	0.71	2.11	0.87	
RkRet*Captive				-0.04		-0.03		-0.03		
				-1.28		-0.94		-0.96		
RkRet*Unafil				-0.0008	0.0427	0.0024	0.0358	0.0023	0.0363	
				-0.03	1.00	0.09	0.82	0.08	0.83	
Captive	0.31	0.36	0.24	0.27		0.32		0.37		
	5.21	3.38	9.45	10.31		4.99		3.40		
Unafil	0.20	0.17	0.32	0.35		0.18	-0.14	0.16	-0.21	
	5.09	2.56	15.20	17.93		4.17	1.81	2.20	1.66	

Table 9. Recapture: Predicting surprise inflows to money funds with predicted outflows from equity

This table provides regressions of the predicted redemptions from a fund in the complex on the surprise inflows into all other funds in the complex. The first column considers flows between all fund categories while the remaining columns only consider flows from equity to money market funds. Funds are removed if there are six or fewer funds in the complex. The residual and predicted percent flows are estimated using the fund level flow specification in Table 3 except we do not include the aggregate category flows as a regressor in the first stage. The residual dollar flows into the complex are calculated by multiplying the residuals of the regression model by TNA and then summing these dollar residuals across the complex (excluding the current fund's residual flows). Dollar flows to the complex are then divided by the total net assets of the complex (excluding the current fund's TNA) to get the percent. NOLOAD represents funds that are not subject to a load and pay a 12b-1 fee less than 25bp. CAPTIVE is defined as a fund paying a front load where a larger percent of the load is allocated to either the underwriter or captive sales force than the unaffiliated broker. UNAFFILIATED is one if a larger portion of the front load is paid to the unaffiliated broker but not to the captive sales force or underwriter. High (Low) Performance is defined as 1 if a fund is above (below) the median performance for all funds in the same objective category in that month and year. High (Low) Sentiment is defined as those months where the sentiment index is above (below) the median reported in the period 1995-2004. High (Low) Confidence is defined as those months where the confidence index is above (below) the median reported in the period 1995-2004. To adjust for autocorrelation in the panel, we repeat this regression separately for each month and year between 1995-2004. We report the estimated intercept from regressing the individual coefficients on a constant and report the t-statistic of this regression using Newey-West standard errors with 5 lags. In the regressions dividing the sample into high and low sentiment times, we simply report the mean and standard deviation of the coefficients estimated in the year/months that are classified as high or low sentiment periods.

Panel A: Regressions of surprise inflows to money market on predicted redemptions from equity								
	All	Equity to Money Mkt	Performance		Sentiment		Confidence	
			High	Low	High	Low	High	Low
Predicted Pctred Captive	0.11 <i>0.40</i>	1.87 <i>2.19</i>	4.09 <i>2.18</i>	1.02 <i>1.48</i>	0.61 <i>0.74</i>	3.02 <i>4.98</i>	1.38 <i>1.78</i>	2.35 <i>3.47</i>
Predicted Pctred Unafil	0.07 <i>0.94</i>	-1.55 <i>-4.81</i>	-2.91 <i>-3.57</i>	-2.86 <i>-4.74</i>	-2.40 <i>-10.13</i>	-0.78 <i>-1.99</i>	-2.22 <i>-7.77</i>	-0.91 <i>-2.39</i>
Predicted Pctred Noload	0.27 <i>5.02</i>	0.06 <i>0.16</i>	0.76 <i>0.75</i>	1.61 <i>3.37</i>	0.15 <i>0.80</i>	-0.02 <i>-0.06</i>	0.17 <i>1.16</i>	-0.05 <i>-0.15</i>
Log Complex Size	-4.53E-03 <i>-6.37</i>	-5.25E-03 <i>-1.67</i>	-8.83E-03 <i>-1.52</i>	-8.05E-03 <i>-2.53</i>	3.84E-03 <i>1.53</i>	-1.35E-02 <i>-4.62</i>	1.88E-03 <i>0.81</i>	-1.22E-02 <i>-3.78</i>
Log Fund Size	-1.30E-03 <i>-3.45</i>	-2.66E-03 <i>-2.05</i>	-1.47E-03 <i>-0.79</i>	-3.96E-03 <i>-2.68</i>	-2.92E-03 <i>-2.83</i>	-2.43E-03 <i>-2.52</i>	-3.39E-03 <i>-3.80</i>	-1.96E-03 <i>-1.82</i>
Captive	0.001 <i>0.10</i>	-0.077 <i>-3.20</i>	-0.133 <i>-2.74</i>	-0.091 <i>-2.73</i>	-0.073 <i>-2.41</i>	-0.081 <i>-3.20</i>	-0.070 <i>-2.60</i>	-0.084 <i>-2.97</i>
Unafil	-0.005 <i>-1.13</i>	0.049 <i>2.13</i>	0.113 <i>2.99</i>	0.076 <i>4.59</i>	0.017 <i>1.00</i>	0.078 <i>3.48</i>	0.051 <i>2.37</i>	0.047 <i>2.39</i>
Noload	-0.010 <i>-1.45</i>	-0.002 <i>-0.06</i>	-0.005 <i>-0.07</i>	-0.164 <i>-4.13</i>	-0.076 <i>-3.36</i>	0.064 <i>2.16</i>	-0.045 <i>-1.97</i>	0.039 <i>1.25</i>
Panel B: Tests of differences on coefficients of predicted percent redemptions								
Captive less Unafil	0.05 <i>0.19</i>	3.43 <i>4.17</i>	7.01 <i>4.20</i>	3.88 <i>4.43</i>	3.01 <i>3.59</i>	3.80 <i>4.88</i>	3.60 <i>4.50</i>	3.26 <i>3.98</i>
Captive less Noload	-0.16 <i>-0.56</i>	1.82 <i>1.99</i>	3.33 <i>1.69</i>	-0.59 <i>-0.89</i>	0.46 <i>0.56</i>	3.04 <i>4.65</i>	1.21 <i>1.55</i>	2.40 <i>3.32</i>
Unafil less Noload	-0.21 <i>-2.29</i>	-1.61 <i>-3.00</i>	-3.67 <i>-3.35</i>	-4.47 <i>-6.58</i>	-2.55 <i>-8.03</i>	-0.76 <i>-1.48</i>	-2.39 <i>-6.98</i>	-0.85 <i>-1.65</i>
Captive High less Low			3.07 <i>1.59</i>		-2.41 <i>-2.39</i>		-0.97 <i>-0.94</i>	
Unafil High less Low			-0.06 <i>-0.06</i>		-1.62 <i>-3.46</i>		-1.31 <i>-2.75</i>	
Noload High less Low			-0.85 <i>-0.77</i>		0.17 <i>0.43</i>		0.23 <i>0.58</i>	

Table 10. Recapture: Predicting surprise inflows to equity with predicted outflows from money market

This table provides regressions of the predicted redemptions from a money market fund in the complex on the surprise inflows into all equity funds in the complex. Funds are removed if there are six or fewer funds in the complex. The residual and predicted percent flows are estimated using the fund level flow specification in Table 3 except we do not include the aggregate category flows as a regressor in the first stage. The residual dollar flows into the complex are calculated by multiplying the residuals of the regression model by TNA and then summing these dollar residuals across the complex (excluding the current fund's residual flows). Dollar flows to the complex are then divided by the total net assets of the complex (excluding the current fund's TNA) to get the percent. NOLOAD represents funds that are not subject to a load and pay a 12b-1 fee less than 25bp. CAPTIVE is defined as a fund paying a front load where a larger percent of the load is allocated to either the underwriter or captive sales force than the unaffiliated broker. UNAFFILIATED is one if a larger portion of the front load is paid to the unaffiliated broker but not to the captive sales force or underwriter. High (Low) Sentiment is defined as those months where the Michigan sentiment index is above (below) the median reported in the period 1995-2004. High (Low) Confidence is defined as those months where the consumer confidence index is above (below) the median reported in the period 1995-2004. To adjust for autocorrelation in the panel, we repeat this regression separately for each month and year between 1995-2004. We report the estimated intercept from regressing the individual coefficients on a constant and report the t-statistic of this regression using Newey-West standard errors with 5 lags. In the regressions dividing the sample into high and low sentiment times, we simply report the mean and standard deviation of the coefficients estimated in the year/months that are classified as high or low sentiment periods.

Panel A: Regressions of surprise inflows to equity on predicted redemptions from money market					
	Money Mkt to Equity	Sentiment		Confidence	
		High	Low	High	Low
Predicted Pctred Captive	0.93 <i>0.60</i>	2.70 <i>0.86</i>	-0.67 <i>-0.78</i>	2.91 <i>0.99</i>	-0.98 <i>-0.89</i>
Predicted Pctred Unafil	-10.84 <i>-1.28</i>	-5.11 <i>-1.18</i>	-16.02 <i>-1.02</i>	-1.18 <i>-4.18</i>	-20.18 <i>-1.21</i>
Predicted Pctred Noload	1.03 <i>5.56</i>	1.60 <i>11.49</i>	0.50 <i>1.60</i>	1.58 <i>15.74</i>	0.48 <i>1.44</i>
Log Complex Size	2.30E-03 <i>1.09</i>	-7.28E-04 <i>-0.31</i>	5.05E-03 <i>1.48</i>	-3.09E-03 <i>-4.58</i>	7.53E-03 <i>1.87</i>
Log Fund Size	1.89E-03 <i>2.04</i>	3.96E-03 <i>4.41</i>	1.22E-05 <i>0.01</i>	3.93E-03 <i>6.74</i>	-8.28E-05 <i>-0.05</i>
Captive	-0.24 <i>-1.15</i>	-0.09 <i>-1.07</i>	-0.37 <i>-0.96</i>	-0.01 <i>-0.50</i>	-0.45 <i>-1.12</i>
Unafil	0.07 <i>1.30</i>	0.16 <i>1.56</i>	-0.02 <i>-0.59</i>	0.16 <i>1.57</i>	-0.02 <i>-0.61</i>
Noload	-0.24 <i>-1.15</i>	-0.05 <i>-0.40</i>	-0.42 <i>-1.08</i>	0.02 <i>0.18</i>	-0.50 <i>-1.22</i>
Panel B: Tests of differences on coefficients of predicted percent redemptions					
Captive less Unafil	<i>11.77</i>	<i>7.81</i>	<i>15.36</i>	<i>4.09</i>	<i>19.20</i>
	<i>1.41</i>	<i>1.66</i>	<i>1.00</i>	<i>1.35</i>	<i>1.18</i>
Captive less Noload	-0.09 <i>-0.06</i>	1.10 <i>0.35</i>	-1.17 <i>-1.22</i>	1.32 <i>0.45</i>	-1.46 <i>-1.27</i>
Unafil less Noload	-11.87 <i>-1.41</i>	-6.71 <i>-1.58</i>	-16.53 <i>-1.06</i>	-2.77 <i>-9.42</i>	-20.67 <i>-1.25</i>
Captive High less Low		3.37 <i>1.08</i>		3.89 <i>1.25</i>	
Unafil High less Low		10.91 <i>-0.64</i>		19.00 <i>1.12</i>	
Noload High less Low		1.10 <i>3.08</i>		1.10 <i>3.09</i>	

Table 11. Predicting Surprise Inflows to the Complex with Relative Performance of a Fund
(Cannibalization)

This table provides regressions of the performance of a fund in the complex on the surprise inflows into all other funds in the complex. The first column considers surprise inflows to all funds in the complex. The second column only considers the ranked return of equity funds as it affects the flows into non-equity funds in the complex. The remaining columns measure how ranked returns of non-equity funds affect the flows into other non-equity funds in the complex. Funds are removed if there are six or fewer funds in the complex. The residual percent flows are estimated using the fund level flow specification in Table 3 except we do not include the aggregate category flows as a regressor in the first stage. The residual dollar flows into the complex are calculated by multiplying the residuals of the regression model by TNA and then summing these dollar residuals across the complex (excluding the current fund's residual flows). Dollar flows to the complex are then divided by the total net assets of the complex (excluding the current fund's TNA) to get the percent. NOLOAD represents funds that are not subject to a load and pay a 12b-1 fee less than 25bp. CAPTIVE is defined as a fund paying a front load where a larger percent of the load is allocated to either the underwriter or captive sales force than the unaffiliated broker. UNAFFILIATED is one if a larger portion of the front load is paid to the unaffiliated broker but not to the captive sales force or underwriter. Equity takes the value 1 if the ICDI Objective Category is either AG, GI, or LG. High (Low) Sentiment is defined as those months where the sentiment index (defined by the University of Michigan) is above (below) the median reported in the period 1995-2004. High (Low) Confidence is defined as those months where the confidence index (defined by the Conference Board) is above (below) the median reported in the period 1995-2004. To adjust for autocorrelation in the panel, we repeat this regression separately for each month and year between 1995-2004. We report the estimated intercept from regressing the individual coefficients on a constant and report the t-statistic of this regression using Newey-West standard errors with 5 lags. In the regressions dividing the sample into high and low sentiment times, we simply report the mean and standard deviation of the coefficients estimated in the year/months that are classified as high or low sentiment periods.

Panel A: Regressions of surprise complex inflows on ranked returns							
	All	Equity	Non-equity	Sentiment		Confidence	
				High	Low	High	Low
Rkret*Captive	-0.021 <i>-2.36</i>	-0.005 <i>-0.67</i>	-0.032 <i>-3.13</i>	-0.047 <i>-5.21</i>	-0.019 <i>-7.69</i>	-0.047 <i>-5.42</i>	-0.018 <i>-6.82</i>
Rkret*Unafil	-0.005 <i>-2.85</i>	-0.003 <i>-1.35</i>	-0.007 <i>-3.04</i>	-0.005 <i>-3.23</i>	-0.008 <i>-5.31</i>	-0.006 <i>-3.47</i>	-0.008 <i>-5.09</i>
Rkret*NoLoad	-0.002 <i>-0.63</i>	0.006 <i>1.37</i>	-0.009 <i>-2.46</i>	-0.018 <i>-13.58</i>	-0.001 <i>-0.16</i>	-0.018 <i>-15.23</i>	0.000 <i>0.01</i>
Log Complex Size	-3.89E-03 <i>-5.01</i>	-3.37E-03 <i>-3.55</i>	-4.09E-03 <i>-5.15</i>	-2.60E-03 <i>-5.06</i>	-5.44E-03 <i>-11.28</i>	-2.88E-03 <i>-5.91</i>	-5.26E-03 <i>-10.02</i>
Log Fund Size	-1.29E-03 <i>-3.55</i>	-2.38E-03 <i>-4.53</i>	-5.05E-04 <i>-0.96</i>	-1.25E-03 <i>-3.40</i>	1.71E-04 <i>0.59</i>	-1.49E-03 <i>-5.12</i>	4.51E-04 <i>1.33</i>
Captive	0.0056 <i>1.17</i>	0.0062 <i>0.90</i>	0.0111 <i>1.70</i>	0.0206 <i>3.10</i>	0.0025 <i>0.91</i>	0.0233 <i>3.63</i>	-0.0007 <i>-0.27</i>
Unafil	-0.0104 <i>-2.32</i>	0.0004 <i>0.21</i>	-0.0114 <i>-2.92</i>	-0.0181 <i>-3.73</i>	-0.0054 <i>-2.40</i>	-0.0148 <i>-3.18</i>	-0.0081 <i>-3.18</i>
NoLoad	-0.0026 <i>-0.68</i>	-0.0021 <i>-0.92</i>	0.0027 <i>0.89</i>	-0.0007 <i>-0.15</i>	0.0057 <i>3.27</i>	0.0005 <i>0.11</i>	0.0048 <i>2.27</i>
Panel B: Tests of differences in coefficients on RKRET							
Captive less Unafil	-0.016 <i>-1.70</i>	-0.002 <i>-0.20</i>	-0.026 <i>-2.29</i>	-0.042 <i>-4.39</i>	-0.011 <i>-3.56</i>	-0.041 <i>-4.53</i>	-0.010 <i>-3.10</i>
Captive less NoLoad	-0.019 <i>-2.15</i>	-0.011 <i>-1.35</i>	-0.024 <i>-2.37</i>	-0.029 <i>-3.30</i>	-0.019 <i>-5.02</i>	-0.029 <i>-3.42</i>	-0.018 <i>-4.67</i>
Unafil less NoLoad	-0.003 <i>-0.91</i>	-0.010 <i>-2.38</i>	0.002 <i>0.45</i>	0.012 <i>5.78</i>	-0.008 <i>-2.17</i>	0.012 <i>6.11</i>	-0.008 <i>-2.20</i>
Captive High less Low				-0.028 <i>-3.12</i>		-0.029 <i>-3.22</i>	
Unafil High less Low				0.003 <i>1.32</i>		0.003 <i>1.11</i>	
NoLoad High less Low				-0.006 <i>-3.00</i>		-0.004 <i>-4.47</i>	

Table 12. Predicting Surprise Inflows to the Complex with Surprise Inflows to a Fund
(Cannibalization)

This table provides regressions of the surprise inflows into a fund in the complex on the surprise inflows into all other funds in the complex. The first column considers surprise inflows to all funds in the complex. The second column relates the surprise inflows of individual non-equity funds as they affect surprise inflows to all equity funds in the complex. The remaining columns relate the surprise inflows of individual non-equity funds as they affect surprise inflows to all other non-equity funds in the complex. The sample includes all fund classes and one fund observation groups all shareclasses together. Funds are removed if there are six or fewer funds in the complex. The residual percent flows are estimated using the fund level flow specification in Table 3 except we do not include the aggregate category flows as a regressor in the first stage. The residual dollar flows into the complex are calculated by multiplying the residuals of the regression model by TNA and then summing these dollar residuals across the complex (excluding the current fund's residual flows). Dollar flows to the complex are then divided by the total net assets of the complex (excluding the current fund's TNA) to get the percent. NOLOAD represents funds that are not subject to a load and charge a 12b-1 fee less than 25bp. CAPTIVE is defined as a fund paying a front load where a larger percent of the load is allocated to the underwriter and captive sales force than the unaffiliated broker. UNAFFILIATED is one if a larger portion of the front load is paid to the unaffiliated broker but not to the captive sales force or underwriter. Equity takes the value 1 if the ICDI Objective Category is either AG, GI, or LG. High (Low) Sentiment is defined as those months where the University of Michigan sentiment index is above (below) the median reported in the period 1995-2004. High (Low) Confidence is defined as those months where the consumer confidence index is above (below) the median reported in the period 1995-2004. To adjust for autocorrelation in the panel, we repeat this regression separately for each month and year between 1995-2004. We report the estimated intercept from regressing the individual coefficients on a constant and report the t-statistic of this regression using Newey-West standard errors with 5 lags. In the regressions dividing the sample into high and low sentiment times, we simply report the mean and standard deviation of the coefficients estimated in the year/months that are classified as high or low sentiment periods.

Panel A: Regressions of surprise complex inflows on surprise fund inflows							
	All	Equity	Non-equity	Sentiment		Confidence	
				High	Low	High	Low
Residual Pctnew*Captive	-0.028 <i>-1.11</i>	0.048 <i>2.23</i>	-0.008 <i>-0.17</i>	-0.097 <i>-3.09</i>	0.073 <i>2.19</i>	-0.118 <i>-4.76</i>	0.099 <i>2.74</i>
Residual Pctnew*Unafil	0.075 <i>3.71</i>	0.109 <i>3.28</i>	0.144 <i>5.78</i>	0.121 <i>7.65</i>	0.166 <i>7.10</i>	0.106 <i>11.50</i>	0.182 <i>6.92</i>
Residual Pctnew*Noload	0.109 <i>9.05</i>	0.047 <i>7.38</i>	0.294 <i>24.11</i>	0.285 <i>35.62</i>	0.303 <i>25.78</i>	0.282 <i>43.82</i>	0.306 <i>23.99</i>
Log Complex Size	-3.45E-03 <i>-4.52</i>	-3.52E-03 <i>-4.33</i>	-3.91E-03 <i>-4.07</i>	-1.29E-03 <i>-1.91</i>	-6.27E-03 <i>-10.05</i>	-1.94E-03 <i>-3.36</i>	-5.81E-03 <i>-7.60</i>
Log Fund Size	-1.45E-03 <i>-3.42</i>	-3.90E-04 <i>-1.48</i>	-9.51E-04 <i>-1.43</i>	-2.62E-03 <i>-7.21</i>	5.63E-04 <i>1.31</i>	-2.60E-03 <i>-7.87</i>	6.41E-04 <i>1.41</i>
Captive	-0.0002 <i>-0.07</i>	-0.0020 <i>-1.16</i>	-0.0020 <i>-0.29</i>	0.0083 <i>2.15</i>	-0.0113 <i>-2.36</i>	0.0122 <i>3.67</i>	-0.0157 <i>-3.21</i>
Unafil	-0.0078 <i>-2.84</i>	0.0034 <i>2.03</i>	-0.0138 <i>-2.76</i>	-0.0133 <i>-4.22</i>	-0.0143 <i>-3.61</i>	-0.0089 <i>-3.52</i>	-0.0186 <i>-4.31</i>
Noload	0.0007 <i>0.31</i>	-0.0103 <i>-6.43</i>	0.0124 <i>4.72</i>	0.0099 <i>3.84</i>	0.0147 <i>5.92</i>	0.0111 <i>4.75</i>	0.0137 <i>5.04</i>
Panel B: Tests of differences in coefficients on RESIDUAL PCTNEW							
Captive less Unafil	-0.103 <i>-3.56</i>	-0.061 <i>-1.65</i>	-0.152 <i>-3.30</i>	-0.218 <i>-6.72</i>	-0.093 <i>-2.41</i>	-0.224 <i>-8.44</i>	-0.083 <i>-1.95</i>
Captive less Noload	-0.136 <i>-3.96</i>	0.001 <i>0.03</i>	-0.302 <i>-7.08</i>	-0.381 <i>-11.89</i>	-0.230 <i>-7.33</i>	-0.400 <i>-14.77</i>	-0.207 <i>-6.12</i>
Unafil less Noload	-0.034 <i>-1.34</i>	0.062 <i>1.95</i>	-0.150 <i>-6.69</i>	-0.164 <i>-10.65</i>	-0.138 <i>-5.45</i>	-0.177 <i>-15.28</i>	-0.124 <i>-4.55</i>
Captive High less Low				-0.169 <i>-28.68</i>		-0.217 <i>-4.92</i>	
Unafil High less Low				-0.044 <i>-1.55</i>		-0.076 <i>-2.69</i>	
Noload High less Low				-0.018 <i>-1.27</i>		-0.024 <i>-1.63</i>	

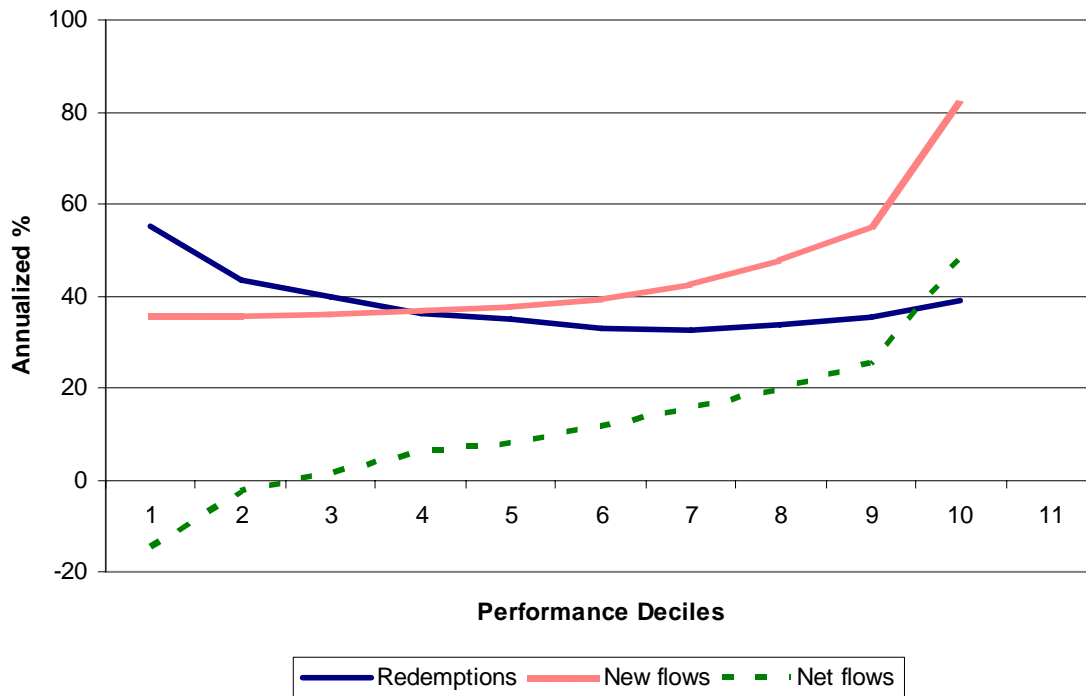


Figure 1. Percentage redemptions, new flows and netflows. This graph plots annualized monthly new inflows, redemptions, and reinvestments as a percent of total net assets by the performance decile. Performance is evaluated over the year prior to the monthly flows and ranked by objective category.

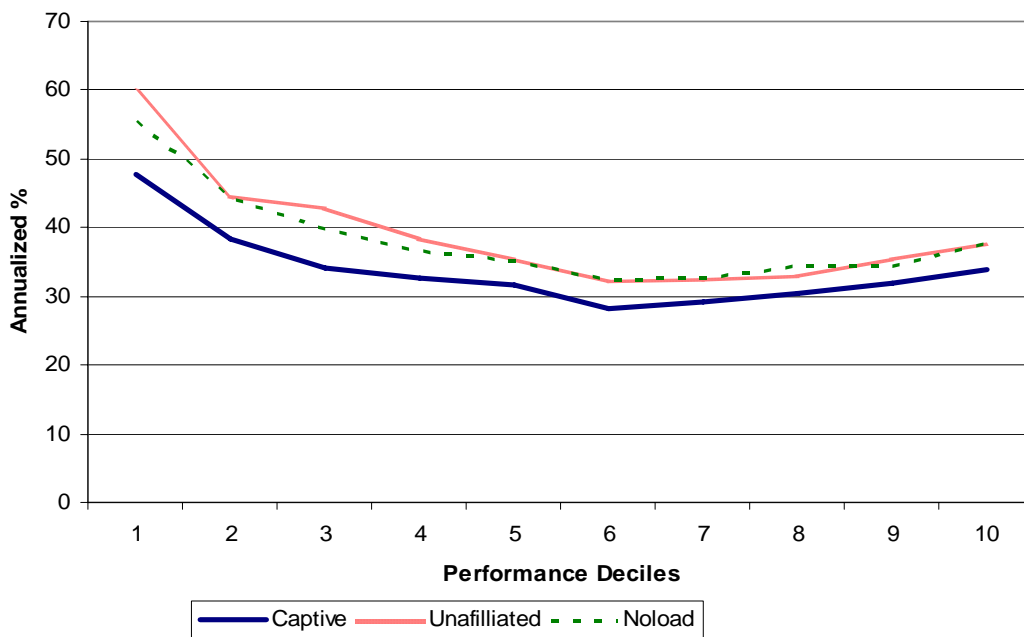


Figure 2. Percent redemptions and current performance. This graph plots annualized monthly redemptions as a percent of total net assets by the performance decile. Performance is evaluated over the year prior to the monthly flows and ranked by objective category. Redemptions are plotted for the captive, unaffiliated, and noload channels.

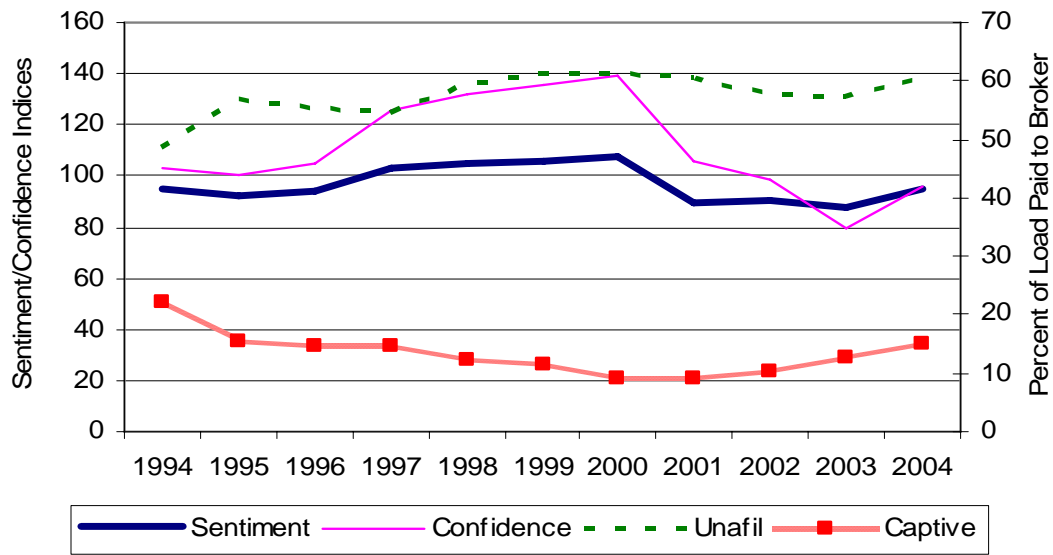


Figure 3. Load Payments to brokers and Sentiment. The left axis measures both the sentiment and confidence indices and both are plotted between 1994 and 2004. The right axis measures the percent paid to brokers for all fund types (equity and non-equity) from the 12b-1 fees through time and this is plotted for both captive and unaffiliated brokers through time.

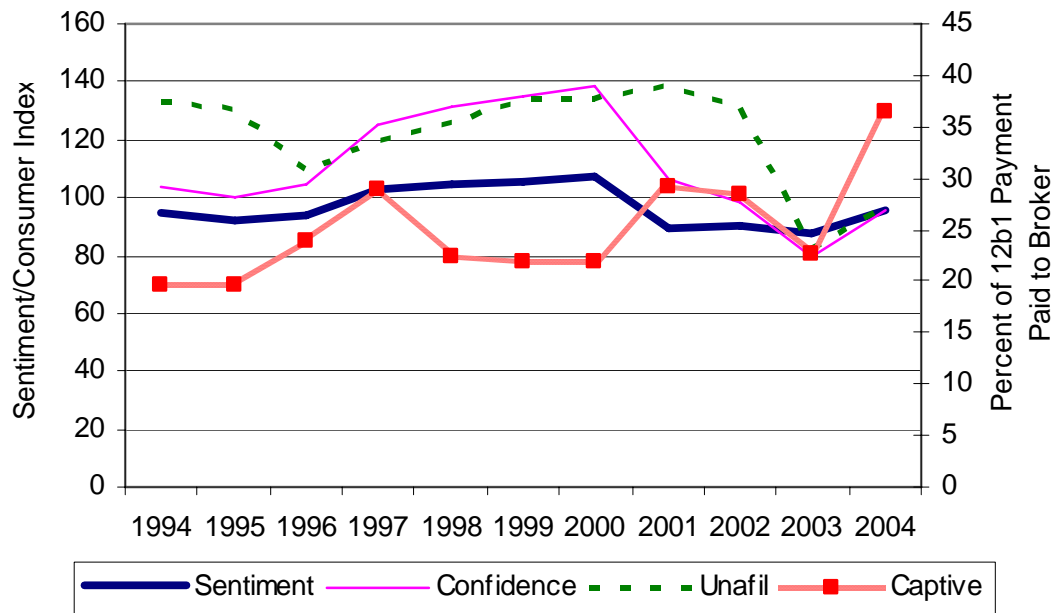


Figure 4. 12b-1 Payments to brokers and Sentiment. The left axis measures both the sentiment and confidence indices and both are plotted between 1994 and 2004. The right axis measures the percent paid to brokers for all fund types (equity and non-equity) from the 12b-1 fees through time and this is plotted for both captive and unaffiliated brokers through time.