



# Investor monitoring and differences in mutual fund performance <sup>☆</sup>

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## Abstract

A number of mutual funds cater exclusively to institutional investors. Although institutional funds might be a natural place to look for “smart money”, agency costs associated with delegated monitoring may lead to less monitoring and worse overall performance. We split institutional funds based on proxies for the degree of investor oversight, and we find that institutional funds with low initial investment requirements and funds with retail mates perform significantly worse than other institutional funds both before and after adjusting for risk and expenses. Tracking error is especially important in the flow-performance relationship of institutional funds with high minimum investment requirements.

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## 1. Introduction

Studies of portfolio choice and investor behavior typically distinguish between individual investors and large institutional investors. For example, studies of mutual fund selection often assume that individual investors face significant search and information costs. This may explain why individual investors select funds on the basis of past performance even though historical results may not accurately predict future fund performance.<sup>1</sup> On the other hand, institutional investors and large private investors are generally assumed to be better informed than smaller “retail” investors, reflecting economies of scale in information production and their continued presence in the market place. Lower search costs of institutional investors should lead to different and presumably more sophisticated investment selection criteria. However, as [Lakonishok et al. \(1992\)](#) point out, investment decisions by some institutional investors (pension funds, foundations, fiduciaries and corporate investors) are influenced by several layers of agency conflicts. Specifically, pension fund sponsors, corporate treasurers and trustees may delegate money management to outside managers in order to avoid responsibility for poor performance. This can lead to the selection of money managers based on prior performance – similar to the way retail customers appear to select mutual funds.<sup>2</sup>

Since the early 1990s, a number of mutual funds have emerged that cater exclusively to institutional investors.<sup>3</sup> Morningstar classifies mutual funds as retail or institutional, and defines institutional funds as those with minimum initial investment requirements of at least \$100,000 or funds that designate themselves as institutional. Given the large initial investment required (often greater than \$500,000 or \$1 million), institutional mutual funds compete with other institutional money managers including limited partnerships, hedge funds and direct money managers.

Using Morningstar’s classification, we find that the size of the institutional segment of the mutual fund market has grown dramatically in recent years, both in the number of funds and assets under management. For example, in 1986 there were only 22 open-end stock and bond funds classified as institutional. By the end of 1998, the number of institutional funds grew to 873 (a 40-fold increase). Assets under management increased from \$3.2 billion in 1986 to over \$302 billion by the end of 1998.

Information on the performance and flows into institutional mutual funds provides a unique opportunity to examine the factors influencing the investment decisions of institutional investors. For example, do institutional funds display superior performance relative to retail funds after controlling for differences in expenses and risk? Does fund performance vary with the degree of investor oversight? Is the institutional mutual fund industry best thought of as somewhat monolithic where all funds compete for the same types of

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<sup>1</sup> For example, see [Sirri and Tufano \(1998\)](#), [Chevalier and Ellison \(1997\)](#), [Goetzmann and Peles \(1997\)](#) on the relationship between fund inflows and past performance. Examples of studies on the persistence in fund returns include [Carhart \(1997\)](#), [Brown and Goetzmann \(1995\)](#), [Grinblatt and Titman \(1992\)](#), [Gruber \(1996\)](#).

<sup>2</sup> For a discussion of how principal-agent problems can trigger herding behavior, including chasing “hot” stocks or mutual funds, see [Devenow and Welch \(1996\)](#).

<sup>3</sup> [Khorana and Servaes \(1999\)](#) examine the decision by mutual fund families to open new mutual funds. They find that certain characteristics of the fund family such as past family performance, fees, and number of funds initiated in the prior year have a significant effect on mutual fund initiations.

customers, or are there important differences among institutional funds where different types of funds target different clienteles?

In this paper, we examine these questions by comparing the performance of retail mutual funds to mutual funds that cater exclusively to institutional investors and by examining cross-sectional differences in the performance of institutional funds. We find that, despite significantly lower management expenses, the average return on institutional funds is no better than the average return on retail funds. Even on a risk-adjusted basis, institutional fund performance is similar to retail fund performance.

We also explore differences in performance among institutional funds. Specifically, if agency conflicts between institutional investors and their clients affect fund performance, we would expect performance among institutional funds to vary with the degree of investor oversight or monitoring. While investor oversight is not directly observable, we consider three potential proxies – the minimum initial investment requirement, whether the fund is affiliated with a bank, and whether the institutional fund is offered by a fund complex that also offers the identical fund to retail investors. We argue that investor oversight tends to be lower for funds with low minimum initial investment requirements, for bank-sponsored funds, and for funds that have an identical retail fund.

A review of offering prospectuses for funds in our sample reveals that mutual funds with large minimum initial investment requirements, for example, over \$500,000 (what we call “big institutional” funds) are typically offered to large pension funds, foundations, corporate accounts and high net worth individuals. These funds may attract a more sophisticated clientele (or a clientele less subject to agency conflicts) than funds with relatively low initial minimum investments requirements (what we call “small institutional” funds). Moreover, given the size of each account in big institutional funds, one would expect greater monitoring on the part of the beneficiaries of these investments.

In contrast, institutional funds with low minimum denominations are most often offered to trust, custodial accounts, insurance agents, or through “for-fee” financial advisors. In essence, these funds are offered to intermediaries who in turn offer them to their retail clients. For example, the Neuberger and Berman fund family offers a number of institutional funds to life insurance companies to serve as investment vehicles under their variable annuity and variable life insurance contracts which themselves charge management fees.

We refer to institutional funds associated with a retail fund with identical portfolios as “institutional funds with retail mates”. While the institutional and retail funds hold the same portfolio, the institutional and retail shares are claims on separate asset pools or trusts. This structure is used because Section 18f-3 of the Investment Company Act of 1940 requires different classes of shares of the same fund to have the same return before distribution expenses.<sup>4</sup> Institutional funds with retail mates may draw investors attracted to the brand name of the fund or fund complex. This clientele may be either less sophisticated or more subject to agency conflicts. Thus, small institutional funds with retail mates are likely to be funds where agency conflicts are particularly acute.

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<sup>4</sup> While institutional and retail funds are frequently referred to as different share classes, technically they are claims on different trusts. The reason for this structure is because institutional funds require different services from the fund manager. For example, Fidelity Advisor shares are offered through 403b plans and investment advisors. Since the plan sponsor provides bookkeeping services and transacts with Fidelity through an omnibus account, management fees are lower for these plans than Fidelity funds purchased through the retail channel. The institutional fund and the retail mate file separate prospectuses.

If monitoring affects performance, we would expect big institutional funds and funds without retail mates to outperform small institutional funds and funds with retail mates. We also expect flows into and out of small institutional funds and funds with mates to be significantly less sensitive to historical performance than flows into and out of big institutional funds and funds without mates.

Overall, we find that institutional funds with larger minimum investment requirements and those without retail mates significantly outperform other institutional funds, and this difference in returns cannot be explained by differences in fees. For example, the average return on big institutional funds exceeds the return on small institutional funds with mates by more than 200 basis points per year. However, only 17 basis points of this return difference is due to lower expenses. The differences in returns persist after controlling for differences in investment styles and risk characteristics. This finding is consistent with the argument that greater investor monitoring improves performance.

We also find that, although institutional fund flows are significantly less sensitive to past fund raw returns than retail fund flows, institutional fund flows are more sensitive to risk-adjusted measures of performance than retail fund flows. Moreover, this heightened risk-adjusted flow-performance sensitivity for institutional funds results entirely from the higher sensitivity of big institutional funds. The sensitivity of cash flows to risk-adjusted returns is more than twice as high for big institutional funds as it is for small institutional or retail funds.

While the poor performance of small institutional funds coupled with the superior performance of big institutional funds is consistent with the hypothesis that increased monitoring improves performance, it is puzzling why small institutional funds with retail mates perform so poorly. In particular, if managers of these funds are exploiting a complacent clientele of investors, then one would expect the poorer performance of these funds to be explained solely by higher management expenses. However, higher reported expenses explain only a fraction of the lower returns earned by small institutional funds.

One potential explanation is that institutional funds with retail mates are forced to engage in more liquidity-based trading which, as [Edelen \(1999\)](#) explains, can adversely affect performance. Alternatively, the poorer relative performance of small institutional funds with retail mates may arise from higher undisclosed costs or other activities that adversely affect performance. For example, less monitoring may result in smaller funds being exposed to more so called market timing trades or late trading (see [Zitzewitz, 2003](#)). Another possibility is that small institutional fund performance is adversely affected because of higher brokerage costs (or poorer trade execution) for these funds relative to big institutional funds. Brokerage costs are capitalized into the purchase price of the securities and are not reported in fund expense ratios. Higher brokerage costs arising from so called soft dollar brokerage may be particularly important for institutional funds with retail mates. Soft dollar brokerage refers to the bundling of research costs and in some cases the cost of distribution into a single commission for the brokerage client.<sup>5</sup>

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<sup>5</sup> Soft dollar brokerage is not necessarily illegal. Concern that investment managers might be held liable for breach of fiduciary duty if they failed to obtain the lowest possible commission (regardless of execution quality and the value of research received) led to the passage of Section 28(e) of the Securities and Exchange Act. The current debate over soft dollar brokerage focuses on the lack of disclosure concerning brokerage commissions and the use of brokerage commissions to pay securities firms to sell, distribute or promote funds. See [Johnsen \(2000\)](#) for a discussion of the law and economics of soft dollar brokerage.

Unfortunately, it is difficult to empirically test these explanations because neither market timing agreements nor soft money arrangements are reported in the fund's prospectus. Since the funds in our sample are all domestic equity funds and performance differences do not vary by fund objective, market timing seems an unlikely explanation for the differences in performance. Soft dollar arrangements are also not directly observable. However, the net cost or benefit of these arrangements can be measured for the sub-sample of institutional and retail funds that have mates. Specifically, how managers allocate the costs of these arrangements between the institutional fund and the retail mate will affect the performance of the institutional fund relative to its retail mate. Since the two funds hold identical portfolios and have identical turnover rates, once portfolio returns have been grossed up for expenses, the only source of performance differences will be the allocation of soft money costs and benefits. We find a small but statistically significant difference (10 basis points annually) between the expense-adjusted return for institutional funds compared to their retail mates. More important, the difference in performance is significantly greater for institutional funds with high initial minimum investment requirements and low portfolio turnover rates. These results are consistent with at least a portion of the poorer relative performance of small institutional funds with mates being due to higher soft money expenses.

Del Guercio and Tkac (2002) find that investors use different selection criteria to select managers in the retail mutual fund and pension fund segments of the market. They show that pension fund clients rely more heavily on sophisticated performance criteria such as Jensen's alpha than do investors in retail mutual funds. On the contrary, retail investors focus more on past returns and fund rankings. Our results support the notion that performance criteria differ across retail and institutional investors. In addition, our results suggest that differences in agency problems among institutional investors influence performance and flow performance relationships.<sup>6</sup>

The remainder of the paper is organized as follows. Section II describes the data used in our study and the market for institutional mutual funds. Section III examines the flow performance characteristics of institutional and retail mutual funds. We also examine differences in expenses and returns for retail and institutional funds. We conclude with a brief discussion of the implications of our findings for the market for institutional money.

## 2. Data and methodology

### 2.1. Data

Data on open-end equity funds are collected from the CRSP mutual fund database. To distinguish between institutional and retail mutual funds, we match CRSP with the November 1996 edition of the Morningstar Principia database. Funds are categorized as institutional if Morningstar designates them as such or if Morningstar reports a minimum initial purchase requirement of \$100,000 or more. Our sample includes the four main Morningstar objective categories for equity mutual funds: aggressive growth, growth, growth and income, and equity income.

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<sup>6</sup> One explanation for differences in selection criteria in Del Guercio and Tkac (2002) is that pension fund sponsors contract with pension fund managers for a fixed period of time (generally three years). There is no such contractual constraint for mutual fund investors. By comparing the selection criteria of institutional and retail investors for open-end mutual funds, we avoid this potential problem.

Some of the institutional funds in our data set have a no-load retail counterpart or “mate” while others do not. A retail mate is an equity fund with the same name and fund advisor as the institutional fund, but with a different share class. We verify that these two funds hold the same equity portfolio and have identical fractional cash balances. In all but a few cases, the institutional fund and its retail mate also have identical turnover rates. Since these funds hold identical portfolios, differences in their returns can only be due to differences in expenses and brokerage commissions paid.

Lipper Analytical Services identifies bank-sponsored mutual funds. Specifically, Lipper provided us a list of commercial bank proprietary open-end mutual funds as of year-end 1999. Lipper defines bank proprietary as “banks with their own fund families and for which the majority of sales are attributable to bank distribution”. All other data items besides institutional designation, the retail mate identifier, bank proprietary fund designation, minimum initial purchase requirement, and investment objective are from CRSP.

## 2.2. Description of the institutional mutual fund market

Table 1 provides the number of funds and total net assets for retail and institutional funds in our sample. Using Morningstar’s institutional fund classification and information on minimum initial investment requirements, we identify 977 institutional mutual funds in 1996 with a full year of returns data available on CRSP. Of these, 23% by number and 52% net assets are in the four main Morningstar investment categories for equity funds. We follow the funds identified in Morningstar forward in time through 2001 and as a result, the sample from 1996 onward is free of survivorship bias. We also follow institutional funds back to 1990, but for this time period there is the potential for survivorship bias.<sup>7</sup> There are relatively few institutional funds in our sample before the mid-1990s. Because of this, we focus on performance and flow performance characteristics of funds from 1995 onward (although our results are similar when we start in 1990).

Mutual funds do not publish information on the specific identity of their shareholders. As a proxy for the client base of institutional funds, we use the fund’s minimum initial investment requirement. We classify funds as big institutional funds if they require an initial investment of at least \$500,000, and all other institutional funds are classified as small.

To examine whether big institutional funds target a different type of investor than small institutional funds, we read the offering prospectuses for all of the big institutional funds and 75 randomly selected small institutional funds in our sample. Mutual fund prospectuses include a section describing how to purchase shares that often contains a discussion of investors the fund is targeting as well as restrictions on share purchases. Details provided in the offering prospectus concerning each fund’s clients vary widely. Some funds simply state that shares are offered to institutional investors while other prospectuses provide a comprehensive list of the types of institutional investors that may invest in the fund. Other institutional funds are offered only to fiduciary or custodial account holders of a particular financial institution (most frequently commercial bank trust clients). Some institutional funds are limited

<sup>7</sup> See Elton et al. (2001) for a discussion of survivorship-bias problems with the CRSP mutual fund database.

Table 1  
Number and average size of retail and institutional equity mutual funds 1990–2001

Year	Retail funds		No load retail funds		Institutional funds		Big institutional funds	
	Number	Year-end total net assets (\$ millions)	Number	Year-end total net assets (\$ millions)	Number	Year-end total net assets (\$ millions)	Number	Year-end total net assets (\$ millions)
1990	368	157,269	179	64,170	10	2503	0	0
1991	368	223,981	175	96,856	12	4628	0	0
1992	386	280,115	145	102,721	22	9107	3	1851
1993	524	395,306	219	156,703	64	20,301	17	7722
1994	648	455,907	267	189,990	88	24,859	23	8939
1995	828	690,743	323	286,398	138	45,230	39	18,370
1996	1032	931,390	384	397,913	183	69,313	51	27,576
1997	1189	1267,699	411	548,070	229	107,100	58	37,469
1998	1254	1,617,381	418	720,345	241	141,159	55	49,648
1999	1225	2,076,731	411	939,778	234	160,746	54	57,967
2000	1168	1,904,046	390	840,861	223	148,978	54	54,568
2001	1128	1,617,804	376	707,146	216	128,762	53	45,950

The sample includes open-end mutual funds with investment objectives of aggressive growth, growth and income, growth, or equity income, as classified by Morningstar. Funds are required to have the following valid data from the CRSP Mutual Fund Database: total net assets at the beginning and end of the year, monthly returns for the current and prior years, and expense ratios and total loads for the current and prior years. Funds are also required to have valid minimum initial purchase requirements from the November 1996 Morningstar Principia database. Funds are designated as institutional if they have a minimum initial purchase requirement of at least \$100,000 or are categorized as institutional by Morningstar (using Principia data item “Purchase Constraints”). “Big institutional” funds have a minimum purchase requirement of at least \$500,000.

to members of particular professional associations (e.g., the AHA Diversified fund is open only to members of the American Hospital Association).<sup>8</sup>

Our review of prospectuses suggests that big institutional funds cater more frequently to endowments, foundations and corporate pension and benefit plans than small institutional funds. The targeted clients of small institutional funds are more frequently fee-based financial planners and trust accounts. Clients of institutional funds also appear to differ by whether or not the institutional fund has a retail mate. Funds with retail mates typically state that their clients consist of trusts and for-fee financial advisors and do not mention corporate benefit plans, endowments or foundations as part of their clientele.

Table 2 reports the fraction of institutional funds separated according to minimum initial investment, whether the fund has a retail mate, and whether the fund is bank-sponsored. As shown in Table 2, about 25% of institutional funds in our sample are big institutional funds, and 51% of institutional funds have retail mates. Not surprisingly, bank sponsored institutional funds are more likely to have a retail mate (71%) than non-bank sponsored funds (35%), reflecting the fact that bank institutional funds are frequently marketed to trust and custodial accounts.

<sup>8</sup> Descriptions of the investment restrictions as given in the prospectus for a sample of funds are available from the authors upon request.

Table 2

Distribution of institutional funds by minimum initial investment, affiliation with a retail fund and bank affiliation

Fund type	All institutional funds ( $N = 268$ ) (%)	Bank sponsored funds ( $N = 92$ ) (%)	Non-bank sponsored funds ( $N = 176$ ) (%)
Big institutional	24.6	22.8	25.6
Institutional funds with mate	51.1	70.7	35.2
Big Institutional without mate	13.8	7.6	19.3
Small Institutional with mate	40.3	55.4	29.0
Bank sponsored	34.3	100	0

The sample includes all institutional and retail funds from Table 1. “Big institutional” funds have a minimum purchase requirement of at least \$500,000. An institutional fund has a retail mate if the November 1996 Morningstar Principia database reports a retail fund with the same fund name, advisor and portfolio holdings. Identified by Lipper Analytical Services, bank sponsored funds have bank fund families and more than half of their sales come from bank distribution. Fund characteristics are taken from the last year of available data for each fund.

### 2.3. Definition of flows, performance and fees

To remain consistent with prior research, we follow Sirri and Tufano’s (1998) variable definitions of flows, relative performance, and fees. Annual net new cash flow into fund  $i$  during year  $t$  is calculated as

$$\text{FLOW}_{i,t} = \frac{\text{TNA}_{i,t} - (1 + R_{i,t}) * \text{TNA}_{i,t-1}}{\text{TNA}_{i,t-1}}, \quad (1)$$

where  $\text{TNA}_{i,t}$  is fund  $i$ ’s ending total net assets for year  $t$ , and  $R_{i,t}$  is fund  $i$ ’s annual rate of return during year  $t$ .

We are also interested in how institutional funds perform relative to their retail counterparts. Performance differences may be explained by institutional funds following different, perhaps less risky, investment strategies. To investigate this issue, we measure risk-adjusted performance using a 5-factor model similar to the one used in Carhart (1997) with an additional international equities factor. The market factor is proxied by the CRSP value-weighted return of all NYSE, Amex, and NASDAQ stocks in excess of the one-month T-bill return. Our 5-factor model includes the excess return on a value-weighted market proxy, the return on the EAFE (Europe, Australasia, Far East) index, and factor mimicking portfolios for size, book to market (HML<sub>t</sub>) and one-year momentum in stock returns.<sup>9</sup> We include the EAFE index to identify international equity exposures across mutual funds.

To examine the performance of retail and various types of institutional funds, we form equally-weighted portfolios based on fund type – retail funds, no-load retail funds, institutional funds, big institutional funds and institutional funds with retail mates. Next, we estimate 5-factor models of stock returns for each portfolio of funds. The intercept measures risk- or factor-adjusted performance.

<sup>9</sup> Factor realizations are retrieved from Ken French’s website, and EAFE returns are retrieved from Morgan Stanley Capital International’s website at [www.msci.com](http://www.msci.com). The EAFE index has been used as a control for international stock returns in prior work on mutual funds (see Kao et al., 1998).

The definition of fees amortizes a fund's total load over a seven-year holding period and is given by

$$\text{FEES}_{i,t} = \text{EXPENSES}_{i,t} + 1/7 * \text{TOTLOAD}_{i,t}, \quad (2)$$

where  $\text{EXPENSES}_{i,t}$  is the expense ratio of fund  $i$  for year  $t$  and  $\text{TOTLOAD}_{i,t}$  is the total load (both front-end and back-end loads) for the fund in year  $t$ .

For institutional funds with retail mates, we compute the annual difference in returns between the institutional fund and its retail mate and add to this the difference between the expense ratio of the retail and institutional fund. This provides us with a return difference grossed up for expenses. When making institutional fund to retail mate comparisons, we exclude the few funds that do not have identical portfolio turnover rates.<sup>10</sup>

#### 2.4. Summary statistics

Table 3 contains summary statistics for our sample of mutual funds at year-end 1995 and 2001. Both the number and the average size of institutional funds grew at a faster pace than retail funds, with the number of institutional funds increasing 57% (from 138 to 216 funds) and the average size of the fund increasing 81% (from \$330 million to \$596 million). The number of retail funds increased 36% and the average size of a retail fund increased 72% from \$834 million to about \$1.4 billion. The differences in growth arise in part from less shrinkage in the average size of institutional funds from 1999 to 2001.

As shown in Table 4, the average institutional fund is significantly smaller than the average retail fund. Pooling across years 1995 to 2001, the average institutional fund had \$547 million under management versus \$1.292 billion for the average retail fund. However, the larger average size for retail funds is the result of a few very large retail funds. For example, the largest five retail funds had net assets ranging from \$54 to \$84 billion. In contrast, the largest institutional fund in our sample had assets of only \$22 billion.

Institutional funds have significantly lower expenses than retail funds. As shown in Table 4, the average (median) annual expense ratio for institutional funds is 0.86 (0.91) percent, while the average (median) annual expense ratio for retail funds is 46 (20) basis points higher. However, despite lower expenses, the average return for institutional funds (14.44%) is about the same as the average return for retail funds (14.22%). While the similarity in returns is suggestive of poorer performance for the underlying portfolios of institutional funds, performance differences may be explained by differences in risk or investment objectives of institutional funds.

The results in Table 4 reveal economically significant differences in expenses and performance across disparate types of institutional funds. For example, small institutional funds and institutional funds with retail mates have higher expenses and lower average returns than big institutional funds or institutional funds without mates. Average expenses for big institutional funds are about 15 basis points lower than for small institutional funds and

<sup>10</sup> Institutional fund turnover did not match the retail fund turnover in 44 four out of 880 fund-year matches. The mismatches do not appear to be systematic. For example, 21 of the mismatches occurred with institutional funds having higher turnover rates than their retail mates. Moreover, mismatches were not concentrated in a few fund families. Our results are similar when we include these observations in our sample.

Table 3

Summary statistics of retail and institutional equity mutual funds in 1995 and 2001

	1995			2001		
	Mean	Median	Standard deviation	Mean	Median	Standard deviation
<i>Panel A: all equity funds</i>						
Assets managed (\$ millions)	763	139	2606	1300	179	4668
<i>Panel B: retail funds</i>						
Assets managed (\$ millions)	834	135	2796	1434	188	5004
Minimum initial purchase (\$)	1745	1000	3338	1916	1000	3780
Portfolio turnover (%)	81.8	62.0	76.9	93.1	75.0	81.7
Expense ratio (%)	1.37	1.25	0.62	1.11	1.00	0.56
Total fees (%)	1.76	1.75	0.74	1.52	1.63	0.68
Monthly standard deviation (%)	3.15	3.03	0.73	6.39	5.33	3.04
<i>Panel C: institutional funds</i>						
Assets managed (\$ millions)	328	147	681	596	134	2058
Minimum initial purchase (\$)	568,341	5000	1,402,137	656,073	17,500	2,654,272
Portfolio turnover (%)	70.5	51.0	65.7	83.4	73.0	67.2
Expense ratio (%)	0.83	0.90	0.31	0.85	0.93	0.31
Total fees (%)	0.85	0.90	0.34	0.87	0.93	0.34
Monthly standard deviation (%)	3.07	3.03	0.48	5.79	5.01	2.31

The sample includes all retail and institutional funds from Table 1. Minimum initial purchase requirement is from the 1996 Morningstar Principia database, and all other data is from the CRSP mutual fund database. Total fees are calculated as the expense ratio plus amortized total load, where the load is amortized over seven years. Monthly standard deviation is the standard deviation of the twelve monthly returns during the year. Funds are designated as institutional if they have a minimum initial purchase requirement of at least \$100,000 or are categorized as institutional by Morningstar (using Principia data item "Purchase Constraints"). All equity funds include 966 funds in 1995 and 1344 funds in 2001. Retail funds include 828 funds in 1995 and 1128 funds in 2001. Institutional funds include 138 funds in 1995 and 216 funds in 2001.

institutional funds with retail mates. Moreover, the average return difference between big institutional funds and other institutional funds are larger than the differences in expenses. Performance differences are even larger between big institutional funds without retail mates and small institutional funds with mates. Big institutional funds without mates earned on average 238 basis points more per year than did small institutional funds without mates. The differences are similar when performance is measured relative to funds with the same Morningstar investment objective. In contrast, small institutional funds with retail mates underperform funds with the same investment objective. Thus, both the level of the minimum initial purchase requirement and the presence of a retail mate are useful in explaining cross-sectional patterns in expenses and performance among institutional funds.

One potential explanation for the superior performance of big institutional funds is perhaps they have lower portfolio turnover resulting in lower transactions costs. However, Table 4 shows that turnover is higher for big institutional funds than it is for small institutional funds. While turnover may be a noisy measure of transactions costs (see Wermers, 2000), these results do not suggest that the return differences result from a greater propensity by small institutional funds to trade.

Table 4  
Differences in performance and expenses of retail and institutional mutual funds 1995–2001

	Mean	Median	Standard deviation	Mean	Median	Standard deviation
	All retail funds (7824 fund-years)			All institutional funds (1464 fund-years)		
Assets managed (\$ millions)	1292	156	4807	547	166	1796
Annual return (%)	14.22	17.20	20.37	14.44	17.81	18.03
Annual return—CRSP VW return (%)	-1.16	-2.17	15.24	-0.62	-0.94	12.57
Annual return—EW objective return (%)	-0.26	-0.28	13.62	0.25	0.60	11.25
Monthly standard deviation (%)	4.62	4.17	2.26	4.40	4.14	1.95
Expense ratio (%)	1.32	1.11	0.74	0.86	0.91	0.29
Portfolio turnover (%)	87.0	67.1	106.2	77.5	65.7	64.1
	Big institutional funds (364 fund-years)			Small institutional funds (1100 fund-years)		
Assets managed (\$ millions)	801	181	2866	463	165	1246
Annual return (%)	15.26	20.03	18.44	14.16	17.22	17.89
Annual return—CRSP VW return (%)	-0.14	-0.18	11.14	-0.78	-1.27	13.01
Annual return—EW objective return (%)	0.65	1.64	10.02	0.13	0.30	11.63
Monthly standard deviation (%)	4.39	4.23	1.90	4.40	4.11	1.97
Expense ratio (%)	0.75	0.82	0.32	0.90	0.93	0.27
Portfolio turnover (%)	80.9	71.0	71.1	76.4	64.0	61.6
	Institutional funds with mates (742 fund-years)			Institutional funds without mates (722 fund-years)		
Assets managed (\$ millions)	422	224	603	676	116	2478
Annual return (%)	13.75	16.75	17.49	15.14	18.78	18.55
Annual return—CRSP VW return (%)	-1.30	-1.38	12.40	0.07	-0.24	12.71
Annual return—EW objective return (%)	-0.46	0.28	11.03	0.99	1.01	11.43
Monthly standard deviation (%)	4.37	4.07	1.93	4.43	4.18	1.97
Expense ratio (%)	0.91	0.94	0.26	0.82	0.85	0.31
Portfolio turnover (%)	74.8	64.0	60.4	80.3	66.3	67.6
	Big institutional funds with mates (150 fund-years)			Big institutional funds without mates (214 fund-years)		
Assets managed (\$ millions)	464	248	565	1037	137	3694
Annual return (%)	14.18	18.84	17.73	16.02	20.28	18.92
Annual return—CRSP VW return (%)	-1.75	-1.02	10.40	0.97	0.97	11.52
Annual return—EW objective return (%)	-0.92	0.89	10.24	1.75	1.89	9.73
Monthly standard deviation (%)	4.20	3.94	1.73	4.53	4.35	2.01
Expense ratio (%)	0.85	0.95	0.29	0.68	0.66	0.33
Portfolio turnover (%)	69.7	58.1	64.4	88.7	77.0	74.5
	Small institutional funds with mates (592 fund-years)			Small Institutional Funds without Mates (508 fund-years)		
Assets managed (\$ millions)	412	220	612	524	101	1710
Annual return (%)	13.64	16.43	17.44	14.77	17.95	18.40
Annual return—CRSP VW return (%)	-1.18	-1.47	12.87	-0.31	-0.71	13.18
Annual return—EW objective return (%)	-0.34	0.10	11.23	0.67	0.43	12.06

(continued on next page)

Table 4 (continued)

	Mean	Median	Standard deviation	Mean	Median	Standard deviation
	All retail funds (7824 fund-years)			All institutional funds (1464 fund-years)		
Monthly standard deviation (%)	4.41	4.10	1.97	4.39	4.13	1.96
Expense ratio (%)	0.92	0.94	0.25	0.87	0.90	0.29
Portfolio turnover (%)	76.1	66.7	59.3	76.7	59.5	64.2

The sample includes open-end mutual funds with investment objectives of aggressive growth, growth and income, growth, or equity income, as classified by Morningstar. Statistics are reported for the pooled time-series cross-section of all fund-years available for each fund type. Funds are designated as institutional if they have a minimum initial purchase requirement of at least \$100,000 or are categorized as institutional by Morningstar. “Big institutional” funds have a minimum purchase requirement of at least \$500,000, and all other institutional funds are classified as “small institutional” funds. A retail mate is a fund with the same name and fund advisor as the institutional fund, but with a different share class. The CRSP value-weighted return includes all NYSE, Amex, and Nasdaq stocks on the CRSP database. EW Objective Return is the equally weighted annual return for all funds within the investment objective.

### 3. Empirical results

#### 3.1. Performance differences

Although the average return of institutional funds and retail funds are similar despite substantial differences in expense ratios, this may be explained by institutional funds following less risky investment strategies. To investigate this issue, we estimate risk-adjusted performance using a 5-factor model.

Table 5 provides excess returns and estimates of the 5-factor model for each portfolio of mutual funds. On average, excess returns and risk-adjusted returns are slightly higher for institutional funds than for retail funds, but the differences are close to the differences in expenses. For example, the average excess return and 5-factor alpha for institutional funds are 5 and 4.1 basis points higher per month than the averages for retail funds, while the expense difference averages about four basis points per month.

The results in Table 5 reveal differences in performance among different types of institutional funds as well. Big institutional funds without mates earned an average monthly excess return of 0.929% while institutional funds with mates had the lowest average excess return of 0.751%. The annual difference in returns between these two groups of funds is 213 basis points, which is well in excess of the difference in average annual expenses (approximately 16 basis points). The difference in average returns is not the result of one year of particularly good performance by big institutional funds or a single year of unusually poor performance by institutional funds with mates.

The 5-factor models do not explain the superior performance of big institutional funds relative to affiliated institutional funds or retail funds. The alphas from these models are larger for big institutional funds than for retail funds or small institutional funds with retail mates. The differences in alphas are not trivial. For instance, the difference in the 5-factor alphas between big institutional funds without retail mates and small institutional funds with retail mates is over 13 basis points per month or about 156 basis points per year

Table 5  
Risk-adjusted performance for retail and institutional mutual funds from 1995–2001

5-Factor model									
Fund type	Monthly excess return (%)	Monthly standard deviation (%)	Alpha (%)	RMRF	SMB	HML	UMD	EAFE	Adjusted $R^2$
Retail	0.748	4.48	−0.120 (−1.58)	0.917 (37.1)	0.079 (3.94)	0.043 (1.58)	0.030 (1.52)	0.044 (1.76)	0.982
No-load retail	0.759	4.49	−0.082 (−1.23)	0.895 (41.6)	0.070 (4.04)	0.039 (1.64)	0.022 (1.32)	0.045 (2.07)	0.986
Institutional	0.798	4.33	−0.079 (−0.99)	0.923 (35.5)	0.016 (0.75)	0.112 (3.88)	0.038 (1.86)	0.045 (1.70)	0.979
Big institutional	0.848	4.38	−0.032 (−0.42)	0.951 (39.0)	−0.003 (−0.17)	0.078 (2.86)	0.019 (0.99)	0.035 (1.41)	0.983
Institutional with mate	0.751	4.27	−0.115 (−1.37)	0.920 (33.8)	0.015 (0.67)	0.109 (3.59)	0.030 (1.40)	0.043 (1.54)	0.977
Big institutional without mate	0.929	4.42	0.018 (0.22)	0.964 (36.6)	0.044 (2.05)	0.081 (2.75)	0.034 (1.61)	0.040 (1.51)	0.980
Small institutional with mate	0.761	4.28	−0.113 (−1.29)	0.918 (32.1)	0.038 (1.64)	0.117 (3.69)	0.038 (1.67)	0.046 (1.60)	0.975

Average monthly returns in excess of the riskfree rate and 5-factor alphas are computed for equity fund types from 1995 to 2001. The sample includes open-end mutual funds with investment objectives of aggressive growth, growth and income, growth, and equity income as classified by Morningstar. Funds are designated as institutional if they have a minimum initial purchase requirement of at least \$100,000 or are categorized as institutional by Morningstar. “Big institutional” funds have a minimum purchase requirement of at least \$500,000. An institutional fund has a mate if the November 1996 Morningstar Principia database reports a no-load retail fund with the same fund name, advisor and portfolio holdings. Portfolio returns are equally weighted each month. RMRF is the excess return on the CRSP value-weighted market index. SMB, HML and UMD are factor-mimicking portfolios for size, book to market, and momentum obtained from Ken French’s website. EAFE is the return on the EAFE index obtained through Morgan Stanley Capital International Inc.’s website at [www.msci.com](http://www.msci.com). *T*-statistics are in parentheses.

(this difference is statistically significant at the 10% level). Because small institutional funds are typically offered to trusts and through for-fee investment advisors who assess additional fees, the relative performance of these funds to their ultimate investors is even worse than reported in Table 5.

To test whether the performance differences among funds is statistically significant, we regress the estimated alphas for individual funds on a set of variables representing our various fund categories and fund characteristics including the minimum initial investment requirement and whether the fund has a retail (or institutional) mate. Alphas are estimated via the 5-factor model using all monthly returns available from the CRSP mutual fund database from 1995 to 2001, and we require a fund to have at least 24 months of returns to be included in the sample.

Panel A of Table 6 provides regression results comparing the performance of institutional and retail funds. To highlight differences in performance arising from fund manager

Table 6  
Performance differences among retail and institutional mutual funds

	(1)	(2)	(3)	(4)	(5)		
Constant	0.269 (14.6)	0.176 (3.85)	0.284 (15.3)	0.207 (4.30)	0.283 (14.6)		
INST	-0.043 (-1.11)						
LOG (MINIMUM INITIAL PURCHASE)		0.0120 (2.02)		0.0106 (1.76)			
MATE			-0.128 (-3.53)	-0.123 (-3.33)			
BANK							-0.102 (-3.10)
<i>N</i>	1601	1601	1601	1601	1601		1601
Adjusted <i>R</i> <sup>2</sup>	0.0006	0.0016	0.0055	0.0072	0.0049		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	0.300 (5.47)	0.230 (5.85)	0.264 (5.58)	0.207 (5.64)	0.113 (2.10)	0.194 (2.41)	0.264 (5.48)
INST WITH MATE	-0.139 (-2.00)					-0.099 (-1.80)	
BIG INST		0.016 (0.19)					
SMALL INST WITH MATE			-0.097 (-1.43)				
BIG INST WITHOUT MATE				0.136 (1.27)			
LOG (MINIMUM INITIAL PURCHASE)					0.0136 (2.22)	0.0102 (1.81)	
BANK							-0.110 (-1.75)
<i>N</i>	272	272	272	272	272	272	272
Adjusted <i>R</i> <sup>2</sup>	0.0149	0.0001	0.0069	0.0063	0.0163	0.0228	0.0084

The dependent variable is the estimated intercept (alpha) of monthly percentage returns plus one-twelfth of the annual expense ratio from a five-factor pricing model that includes the Fama and French (1993) three factors, a factor-mimicking portfolio for one-year momentum, and the return on the EAFE index as a proxy for international equities. Alpha is estimated for individual mutual funds over a 84-month period, 1995 through 2001. The sample includes only funds with at least 24 months of returns over the seven-year period. Each fund is also required to have a valid expense ratio from the CRSP Mutual Fund database and a valid minimum initial purchase requirement from the November 1996 Morningstar Principia database. LOG(MINIMUM INITIAL PURCHASE) is the natural log of one plus the minimum initial purchase requirement measured in dollars. INST equals one if the fund is classified as an institutional fund, and is zero otherwise. MATE equals one for institutional (retail) funds with a no-load retail (institutional) fund with the same fund name, advisor and portfolio holdings from 1995 to 2001, and is zero otherwise. INST WITH MATE equals one if the fund is classified as an institutional fund and has a no-load retail mate, and is zero otherwise. BANK equals one if the fund is a bank sponsored fund as classified by Lipper, and is zero otherwise. Standard errors are computed using White's heteroskedasticity consistent covariance estimator.

stock picking ability, we add back monthly expenses (computed as 1/12 of the most recent annual expense ratio) to individual fund alphas.<sup>11</sup>

As shown in Column 1 of Table 6, the risk-adjusted performance of institutional funds is statistically indistinguishable from the performance of retail funds. Column 2 reveals a positive and significant (at the 10% level) relation between fund performance and the size of the initial investment requirement. This finding is consistent with increased investor monitoring of fund performance for funds with larger initial investment requirements. To estimate economic significance, the 90th (10th) percentile for minimum initial investment requirement for institutional funds is \$2.25 million (\$1000), so the coefficient of 0.012 on LOG (MINIMUM INITIAL PURCHASE) in Column 3 means that the performance difference between these two funds is about 111 basis points per year. From the same regression model in Table 6, mutual funds with mates underperform funds offered on a stand-alone basis by 154 basis points per year.

Results (unreported) are similar for our two proxies for investor oversight when we include only retail funds in the regression models. For retail funds only, funds with institutional mates (which comprises 10% of the sample) underperform those without mates by 158 basis points per year. For retail funds, the 90th (10th) percentile for minimum initial investment requirement is \$5000 (\$500), and the coefficient on LOG MINIMUM INITIAL PURCHASE is 0.0157 when only retail funds are included in the model. Consequently, the 10th percentile retail fund underperforms the 90th percentile retail fund by about 43 basis points per year.

Panel B of Table 6 compares the performance of various types of institutional funds. Institutional funds with mates underperform other institutional funds by an average of about 167 basis points per year as shown in Column 2. The average annual risk-adjusted return for big institutional funds without mates (shown in Column 4) exceeds the return on other institutional funds by about 163 basis points per year.<sup>12</sup> Finally as shown in Column 5, alphas are increasing in the minimum required investment.

Overall, the results in Table 6 indicate that big institutional funds outperform small institutional funds and that institutional funds with retail mates are especially poor performers relative to retail funds and other institutional funds. Moreover, while higher expenses explain some of the performance differences, the results in Table 6 indicate that the poor performance of small institutional funds (and the superior performance of big institutional funds without mates) arises from differences in performance in the stocks these funds invest in. Assuming the 5-factor model is well-specified, the poor relative performance of small institutional funds

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<sup>11</sup> To determine whether certain fund managers show superior ability relative to other fund managers, other papers in the literature have added back expenses to standard multi-factor alphas. For example, Elton et al. (2003) utilize expense-adjusted alphas to determine that funds with performance-based incentive fees employ more skillful managers than funds without an incentive fee structure.

<sup>12</sup> We also explored whether risk differences not accounted for by our 5-factor models explain performance differences. Specifically, we examined whether performance among institutional funds varies due to differences in cash holdings. We find no significant difference among institutional funds in terms of the proportion of cash to total assets in their portfolios. In addition, when each fund's ratio of average cash holdings to total assets is included in Table 6's cross sectional regressions, the size and significance of coefficient estimates are virtually unchanged. In addition to cash holdings, approximately 14% of our equity funds report holding some amount of fixed income securities in their portfolios. To ensure that our results are not driven by bond market exposures, we replicated Tables 5–7 including only mutual funds that reported exactly zero bond holdings. None of our main results were affected by making this change.

suggests that managers of these funds are either consistently selecting underperforming stocks or engaging in value destruction through excessive transactions costs.

To investigate further whether high transactions costs through soft dollar brokerage explains why institutional funds with mates perform so poorly, we examine performance of institutional funds with mates relative to the performance of their retail counterpart. Since the institutional fund and its retail mate by design hold identical portfolios and almost always have identical portfolio turnover, the only reason their returns (grossed up for expenses) will be different is because of differences in brokerage commissions paid net of any benefits from revenue sharing arrangements. Even if fund managers allocate brokerage costs on a prorated basis between the retail and institutional fund, unless the benefits are also allocated on a prorated basis, performance differences will arise. For example, if retail distribution costs are reimbursed through higher brokerage fees, and brokerage costs are allocated on a prorated basis, then institutional clients will subsidize the distributional costs associated with retail clients. If monitoring of fund performance is related to the size of the minimum initial investment required, we expect more net benefits will be allocated to funds with higher initial investment requirements.

We measure the performance differences between institutional funds and their retail mates by taking the annual difference in returns and adding the difference in the expense ratio of between the retail fund and the institutional mate. This provides a measure of the difference in portfolio returns adjusted for difference in reported expenses. Our sample contains 158 institutional and retail pairs and 880 fund-year observations over the 1995 through 2001 period.

On average, institutional funds outperformed their retail mates by 11 basis points per year. The median difference is five basis points. While the mean difference is small, it is statistically significant at the 1% level. Institutional funds outperformed their retail mate in 75% of fund years. Performance differences increase with the size of the initial purchase requirement. For example, approximately 75% of the institutional funds with retail mates had minimum purchase requirements in excess of \$100,000. For these funds, the average performance difference was 13 basis points per year. In contrast, for institutional funds with no minimum investment requirement, the performance difference was four basis points per year. The difference in performance is significant at the 1% level.

To examine whether the performance difference varies with the size of the initial investment and portfolio turnover (a proxy for the importance of soft dollar brokerage), we regressed the difference in the annual return plus expenses between the institutional fund and its retail mate against the natural log of the minimum initial purchase requirement for the institutional fund and the annual turnover rate. Consistent with the hypothesis that higher minimum purchase requirements result in more intensive monitoring, the coefficient on the minimum purchase requirement is positive and statistically significant at the 5% level. The positive and statistically significant coefficient on turnover is consistent with argument that the return difference arises from soft dollar brokerage allocations, and suggests that the higher the minimum initial purchase requirement, the more soft dollars are allocated to the retail fund, not the institutional fund.

### *3.2. Flow performance relationships*

If the clientele of small institutional funds do not monitor fund performance closely, then we expect the poor relative performance of these funds to be accompanied by cash

inflows and outflows that are less sensitive to fund performance than retail or big institutional funds. We investigate this issue by examining whether institutional investors select funds using the same criteria that retail customers use and whether, for a given performance criteria, retail fund cash flows are more sensitive to performance than flows into institutional funds. We address these issues in two ways. First, following Sirri and Tufano (1998), we examine the cross-sectional relationship between fund flows and the fund's performance rank at the end of the prior year. Second, we examine the pooled cross-section time series relationship between flows and various returns measures.

Table 7 provides regression results relating fund flows to relative performance, return volatility, and expenses. Each fund's relative annual performance is calculated by comparing the return of the fund against all other funds with the same investment objective. Following Sirri and Tufano (1998), flow performance regressions are estimated for each year, and coefficients and standard errors are computed from the annual coefficients as described in Fama and MacBeth (1973). As a starting point, we estimate the regression using data from 1990 onward. Column A of Table 7 presents results for all funds in the sample, and Columns B through D provide estimates for subsamples consisting of retail funds and institutional funds.

Consistent with Sirri and Tufano (1998), Column A reports a significant positive relationship between fund flows and relative performance for the top performance quintile. While the flow performance relationship is strongest in the top performance quintile, we find a positive and statistically significant relationship between flows and performance in the lowest and middle performance quintiles as well.

The positive flow performance relationship reported in Column A is due entirely to the positive flow performance relationship among retail funds. In particular, we do not find any significant relationship between inflows and relative performance for the institutional funds in our sample. As shown in Column E, for the highest performance quintile, the sensitivity of the flow performance relationship for institutional funds is statistically lower than for retail funds. Although we report the Fama-MacBeth *t*-statistics in Table 7, there is one cross-sectional regression model for each year and a *t*-statistic associated with each of the explanatory variables in each model. In each year from 1990 to 2001, the cross-sectional *t*-statistic for the rank of the highest performance quintile (PERF5) is positive and statistically significant for all retail funds but is never positive and statistically significant for all institutional funds. Overall, these results suggest that investors in institutional funds do not chase returns in the same way as their retail counterparts.

Given the small number of institutional funds in the early 1990s, we estimate the flow performance relationship using data from 1995 onward. With only seven annual observations, the Fama-MacBeth technique lacks power in this case. To account for potential dependence in the annual observations, we estimate the model using Generalized Least Squares (GLS) to correct for first order autocorrelations in the individual fund flows. The results (not shown) are similar to those reported in Table 7. Specifically, we find a positive and statistically significant flow performance relationship only for retail funds. The lack of a flow performance relationship for institutional funds suggests that either institutional investors use a different (perhaps more sophisticated) performance measure in selecting funds or that institutional investors do not chase past performance in the same way retail investors do.

A potential explanation for the lack of a flow performance relationship for institutional funds is that institutional investors also chase returns, but they base their decisions on

Table 7

Flow-performance relationships for retail and institutional funds 1990–2001

	(A) all funds	(B) all retail funds	(C) No-load retail funds	(D) institutional funds	(E) all funds
Intercept	0.054 (0.61)	0.046 (0.50)	−0.048 (−0.28)	0.928 (1.54)	0.078 (0.89)
LNTNA	−0.090 (−7.94)	−0.089 (−8.92)	−0.058 (−4.47)	−0.185 (−3.51)	−0.092 (−8.27)
FLOWCAT	1.170 (5.47)	1.233 (4.82)	1.015 (2.60)	0.906 (2.00)	1.194 (5.30)
MSDT	2.339 (1.25)	2.469 (1.28)	3.133 (1.20)	0.321 (0.11)	2.301 (1.25)
FEES	1.492 (1.26)	0.679 (0.72)	−0.329 (−0.07)	−3.636 (−0.75)	0.525 (0.54)
PERF1	1.138 (5.44)	1.200 (5.16)	1.246 (2.19)	−1.295 (−0.61)	1.158 (5.23)
PERF2	0.313 (1.98)	0.279 (1.57)	−0.026 (−0.05)	1.561 (1.52)	0.294 (1.66)
PERF3	0.736 (3.76)	0.746 (3.40)	0.551 (2.12)	0.676 (1.54)	0.741 (3.40)
PERF4	0.446 (1.98)	0.444 (1.73)	0.334 (1.47)	0.536 (0.76)	0.447 (1.73)
PERF5	2.841 (7.76)	3.106 (8.17)	3.184 (5.82)	0.495 (0.50)	3.106 (8.16)
INST*PERF1					−0.004 (−0.02)
INST*PERF2					−0.528 (−0.65)
INST*PERF3					0.651 (0.81)
INST*PERF4					0.330 (0.46)
INST*PERF5					−2.770 (−3.22)
Number of observations	11,778	10,118	3698	1650	11,778
Adjusted $R^2$	0.17	0.18	0.16	0.11	0.18

The sample includes open-end mutual funds with investment objectives of aggressive growth, growth and income, growth, and equity income as classified by Morningstar. Cross-sectional regressions are run year by year, and  $t$  statistics are calculated from the annual coefficients as in Fama and MacBeth (1973). All regressions use the growth rates of net new cash flow as the dependent variable. The independent variables are the natural log of the fund's total net assets at the end of the prior year (LNTNA), the growth rate of net new cash flow to all funds with the same investment objective in the same year (FLOWCAT), the standard deviation of monthly returns in the prior year (MSDT), total fees in the prior year (FEES) calculated as expense ratio plus amortized load, where the load is amortized over seven years and the fractional performance rank relative to other funds in the same investment category in the prior year (PERF). INST equals one if the fund is classified as an institutional fund, and is zero otherwise. Funds are designated as institutional if they have a minimum initial investment requirement of at least \$100,000 or are categorized as institutional by Morningstar.  $T$ -statistics are reported in parentheses.

different performance criteria than retail investors. For example, [Del Guercio and Tkac \(2002\)](#) argue that pension fund sponsors are more quantitatively sophisticated than retail mutual fund investors. As a result, pension funds rely more on risk-adjusted measures than on raw returns when assessing performance. If this argument applies to investors in institutional funds, we would expect flows into institutional funds to be more sensitive to risk-adjusted measures of performance and less sensitive to raw returns than flows into retail funds.

Table 8  
Flow-performance relationships for retail and institutional funds 1995–2001

	(A) No-load retail funds	(B) Institutional funds	(C) Big institutional funds	(D) Small institutional funds	(E) Institutional funds with mates	(F) Retail funds with mates
Intercept	0.553 (7.14)	0.800 (6.29)	0.609 (2.76)	0.876 (5.64)	1.143 (5.77)	1.230 (6.23)
LNTNA	-0.086 (-8.70)	-0.106 (-7.42)	-0.068 (-2.75)	-0.120 (-6.91)	-0.146 (-6.60)	-0.160 (-8.33)
FLOWCAT	0.907 (4.58)	0.736 (2.79)	0.363 (0.74)	0.841 (2.70)	0.601 (1.62)	0.076 (0.17)
MSDT	-0.125 (-0.15)	-2.461 (-2.19)	-4.135 (-1.99)	-2.269 (-1.70)	-3.059 (-1.87)	-0.181 (-0.09)
FEES	-6.06 (-2.59)	-11.28 (-1.48)	-8.71 (-0.70)	-12.04 (-1.24)	-13.71 (-1.14)	-17.97 (-1.98)
LAGGED RETURNS	0.337 (5.05)	0.332 (2.99)	0.249 (1.23)	0.361 (2.76)	0.262 (1.52)	0.859 (4.12)
ALPHA	16.96 (6.25)	28.62 (6.28)	29.04 (3.41)	27.73 (5.07)	28.14 (4.22)	28.03 (3.35)
TRACKING ERROR	0.559 (0.40)	-3.019 (-1.64)	-1.183 (-2.81)	-2.573 (-1.07)	-2.640 (-0.90)	-2.398 (-0.68)
Number of observations	2490	1308	325	983	669	643
Chi-square (9 df)	184.8	162.3	29.7	112.8	84.4	115.0

The sample includes open-end mutual funds with investment objectives of aggressive growth, growth and income, growth, and equity income as classified by Morningstar. The table reports pooled time-series cross-sectional GLS coefficient estimates using the growth rates of net new cash flow as the dependent variable. The GLS estimation is based on an AR(1) error structure over time. The independent variables are the log of the fund's total net assets at the end of the prior year (LNTNA), the growth rate of net new cash flow to all funds with the same investment objective in the same year (FLOWCAT), the standard deviation of monthly returns in the prior year (MSDT), total fees in the prior year (FEES) calculated as expense ratio plus amortized load, where the load is amortized over seven years, the realized return for the fund in the prior year (LAGGED RETURN), and the five-factor alpha estimated over the prior 24 months (ALPHA), and the standard deviation of the difference between fund returns and the CRSP value weighted index over the prior 24 months (TRACKING ERROR). Funds are designated as institutional if they have a minimum initial purchase requirement of at least \$100,000 or are categorized as institutional by Morningstar. "Big institutional" funds have a minimum purchase requirement of at least \$500,000, and all other institutional funds are classified as "small institutional" funds. An institutional (retail) fund has a mate if the November 1996 Morningstar Principia database reports a retail (institutional) fund with the same fund name, advisor and portfolio holdings. Z-statistics are reported in parentheses, and the chi-square test for goodness of fit has nine degrees of freedom.

We test for differences in flow performance relationships between retail and institutional investors by relating flows to lagged fund returns, 5-factor alphas, and tracking error volatility (the standard deviation of the return difference between the fund and the market as proxied by the CRSP value weighted index). We include tracking error volatility based on Del Guercio and Tkac's (2002) discovery of a significant relation between performance and tracking error for pension funds. Our tracking error variable and the 5-factor alpha are estimated using monthly returns over the prior 24 months. To account for potential dependence in the annual observations, we estimate the regression using GLS to correct for first order autocorrelation in individual fund flows. However, the results are virtually identical when using OLS with fixed fund effects and a lagged flow variable.

Table 8 presents estimates of the flow performance relationship for mutual funds grouped by clientele. Consistent with the idea that clients of institutional funds employ more sophisticated performance criteria, institutional fund flows are more sensitive to risk-adjusted performance as measured by 5-factor alpha than are retail fund flows (although the difference is statistically significant at only the 10% level). In contrast to no-load retail fund flows, institutional fund flows are negatively and significantly related to return volatility in returns (as measured by the standard deviation in the prior year) and tracking error volatility.

The differences in the flow performance relationships among different types of institutional funds are particularly illuminating. Lagged raw returns are associated with higher cash flows for small institutional funds, just as they are for no-load retail funds. However, there is much less of a relationship between lagged raw returns and inflows into big institutional funds, and lagged returns are less important for institutional funds with retail mates. Moreover, flows into big institutional funds appear quite sensitive to risk-adjusted performance as measured by 5-factor alpha. This heightened sensitivity of institutional funds to risk-adjusted returns is almost entirely driven by big institutional funds. Compared to small institutional fund flows, big institutional fund flows are significantly *less* sensitive to lagged returns and *more* sensitive to risk-adjusted returns than small institutional funds.

Overall, our results suggest that clients of big institutional funds employ more sophisticated performance criteria than do investors in small institutional funds. Moreover, the poor relative performance of small institutional funds, particularly for those with retail mates, coupled with the less sensitive flow performance relationship for these funds is consistent with the capture hypothesis for these funds.

#### 4. Summary and conclusions

A large and growing segment of the mutual fund market is targeted towards institutional clients. Institutional funds cater to a wide variety of customers, from corporate benefit plans to trust accounts. These funds provide a unique opportunity to compare the performance and fund selection criteria of institutional investors to retail investors. We find evidence that institutional investors do not chase returns in the same way that retail investors do. There is no significant relationship between fund inflows and past relative performance in the institutional segment of the market, and the flow performance relationship of top performing institutional funds is statistically different from top performing retail funds. However, our results suggest that at least for big institutional funds, the lack

of a significant flow performance relationship is because investors in these funds employ more sophisticated performance measures than do retail investors.

We examine performance differences between retail and institutional funds and between different types of institutional funds. Institutional funds earn average returns close to those for retail funds despite having substantially lower expenses. The lower pre-expense returns for institutional funds can be explained by unusually poor performance of small institutional funds and institutional funds with retail mates. Not only do these funds have higher expenses than other institutional funds, but also their average return is significantly lower than the average return on other types of institutional funds as well as retail funds. One explanation for the lack of a significant relationship between fund inflows and past performance and the consistently poor performance of these small institutional funds is the lack of monitoring by investors in these funds. Consistent with this explanation, we find that small institutional funds are offered primarily to trust accounts and through for-fee financial advisors.

The institutional mutual fund industry exhibits important heterogeneity in performance and flow performance sensitivity along dimensions related to agency conflicts as proxied by the fund's minimum initial investment requirement, whether the fund is affiliated with a commercial bank, and whether the fund has a mate (an identical fund offered to retail customers). In particular, investors in small institutional funds with retail mates behave as if they are captured. This capture is reflected in higher fund expenses, lower overall returns and the significantly lower sensitivity of fund inflows or outflows to overall performance.

The poor performance of these small institutional funds remains somewhat puzzling. In particular, if managers of these funds are exploiting investor capture, one would expect that the poorer performance of these funds would be explained entirely by the higher fees managers of these funds charge. However, higher management fees explain only a portion of the lower average return for these funds.

Hidden fees through soft dollar brokerage payments appear to play a role in this performance difference. Because soft dollar payments are not explicitly reported, it is difficult to directly analyze their effect on mutual fund performance. We use the performance difference between the institutional fund and its retail mate as a proxy for how soft dollar payments made by the fund are allocated to the no-load retail fund versus the institutional class of the fund. We find that as turnover and the minimum initial purchase requirement of the institutional fund increase, the performance difference between the two funds also increases. This suggests that more intensive monitoring by institutional investors, as indicated by higher minimum initial purchase requirements, induces funds to allocate more soft dollar expenses to the retail fund and less to the institutional fund.

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