A Dissection of Mutual Fund Fees, Flows, and Performance

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Abstract

This paper provides a dissection of both mutual fund fees and flows into several categories, and presents evidence that relates specific components of fees to flows, and fees and flows to performance. For stand-alone funds that cannot be purchased directly from fund managers, fees that compensate fund advisors when investors maintain their portfolio positions, and fees that penalize investors for early withdrawal, have a much flatter flow-performance relationship ("flow-performance slope"), and higher flows regardless of past performance ("flow-performance intercept"). Further, the data indicate that flow-performance intercept and slope are significantly negatively and positively, respectively, related to future risk-adjusted performance, which is consistent with the view that flow-performance provides a strong incentive to generate future returns. These findings are quite stable over time, and robust to numerous sensitivity checks. We find some consistency in the evidence but less robust statistical significance amongst the subsamples of direct purchased funds, and among fund-of-funds.

Keywords: Mutual Funds, Management Expense Ratio (MER), Trailer Fees, 12b-1s

JEL Codes: G23, G30

1. Introduction

Compensation in the mutual fund industry has long been a popular topic rife with controversy. John Bogle, the founder of the Vanguard index mutual fund, has long argued that a majority of mutual fund managers in the United States (U.S.) do not earn returns that account for their fees (see, e.g., Bogle, 2006). Other countries like Australia and the United Kingdom have recently engaged in mutual fund fee reforms, including a ban on embedded commissions in 2012. These reforms have inspired other jurisdictions such as Canada to consider whether or not there are any conflicts of interest in the ways in which mutual fund managers are compensated (CSA, 2012), and if so, exactly how do these conflicts affect the mutual fund industry and its investors.

One potential conflict of interest in mutual fund compensation structures is that investment advisors may have incentives to recommend products to investors for reasons that are not strictly based on the expected risk-adjusted performance ("alpha") of the investment. This conflict may arise when fees compensate advisors and managers regardless of performance. If such a conflict of interest exists, we would observe a market in which flows of investor capital into mutual funds were less sensitive to past performance, and possibly towards funds that have lower risk adjusted performance. To test this proposition, in the first part of this paper we examine the relationship between past alpha and future fund flows (which we label the "flow-performance slope"), and examine fund flows that are obtained regardless of past alpha (which we label the "flow-performance intercept"). We empirically consider whether or not flow-performance intercept and slope are moderated by the structure of fund fees. Higher flow-performance slope means that fund managers are rewarded with additional AUM when past performance is strong, while lower flow-performance slope means that fund managers are

relatively more insulated from losses of AUM when past performance is weak. Large positive values of flow-performance intercept means that fund managers obtain new capital flows each month regardless of past performance. Higher flow-performance slope incentivizes fund managers to achieve higher alpha, while large positive values of flow-performance intercept mitigate strong incentives to achieve higher alpha.

In the second part of this paper, we empirically examine whether or not fund fee structures and flow-performance intercept and slope have any systematic effect on future alphas. That is, if fund managers have less incentive to generate alpha to attract capital inflows and mitigate capital outflows then they may in fact achieve lower alphas. Such effects would benefit some mutual funds at the expense of other mutual funds, and have a detrimental impact on the mutual fund industry overall, and a detrimental effect on its investors. While there has been much discussion of these possibilities in news media,[1] whether or not such effects actually exist is unknown without examining data.

A major challenge in the analysis of mutual fund fees and their effect on investors involves access to data. Publicly available data from Morningstar, Bloomberg and other related sources have estimated information on fund flows based on reported net asset values (NAVs), and coarse information on fees that does not enable an accurate analysis of fee structures. Mutual fund fee structures in some countries like Canada are extremely detailed and complicated. For example, apart from the publicly available management expense ratios (MERs), there are trading expense ratios (TERs), trailer fees (equivalent to 12b-1s in the U.S.),

[1] For example, see http://cawidgets.morningstar.ca/ArticleTemplate/ArticleGL.aspx?id=348207 or http://www.bnn.ca/News/2014/11/5/Trailing-fees-What-your-mutual-fund-advisor-now-has-to-tell-you.aspx, among numerous other stories over the past few years.

deferred sales charges, front end commissions, switch fees, performance fees, negotiated management fees, and other payments to broker dealers (other payments that do not qualify as trailer fees, DSC sales commissions or referral fees and that are tied to fund series/purchase type inflows or AUM held in each fund series/purchase type), and some of these items may change over the life of a fund. Similarly, fund flows cannot be accurately assessed from an examination of NAVs, since total inflows and outflows are comprised of not merely new flows from retail investors but also pre-authorized contributions (PAC), systematic withdrawal plans (SWP), switches, reinvestments, distributions, affiliated dealer flows, and affiliated investment fund flows. Furthermore, publicly available fund flow information is not available at the FundSERV fund code level.[2]

This paper presents proprietary data obtained directly from mutual funds in Canada that relate detailed mutual fund fee structures to specific types of fund flows, and to performance.[3] The Canadian context is particularly interesting as there is a very wide array of different components of fees, effectively no competition from foreign funds, and the overall magnitude of fees in Canada has been noted to be rather high relative to other parts of the world (Ruckman, 2003; Khorna et al., 2014). We examine data that comprises the period 2003-2014, covering 43 fund families, 18,102 stand-alone funds FundSERV codes and 4018 fund-of-funds FundSERV

[2] Monthly fund flow information is not available publicly (but is shared among fund companies through IFIC and Investor Economics) and fund flow information by series / purchase option is not available at all. FundSERV is an online hub that electronically connects fund companies, distributors and intermediaries, enabling them to buy, sell and transfer investment funds amongst each other. A unique FundSERV code is provided for each fund series/purchase option combination. See www.FundSERV.com

[3] The mutual fund data for this research was obtained further to a data request sent to all Canadian fund managers offering conventional mutual funds to the public under prospectus. Canadian fund managers' participation in the research was voluntary. The data request questionnaire may be accessed here: https://www.securities-administrators.ca/uploadedFiles/General/pdfs/Mutual%20Fund%20Fees%20Research%20Data%20Request.pdf

codes, and $746 billion of AUM (of an estimated total of $1.1 trillion) or 66.7% of the market, as well as $152 billion in AUM or 48.6% of the market for fund-of-funds.

The data exhibit a number of insights into flow-performance sensitivity, and how this relationship between prior alpha and future fund flows is moderated by fund fees. For stand-alone funds that cannot be purchased directly, the data indicate that funds with higher prior alpha experience higher flows in the next month, such that a 1-standard deviation improvement in past alpha increases subsequent flow by 18.6% relative to the average monthly flow in the sample. Fee-based fund purchase options exhibit significantly higher flow-performance sensitivity, while front-end purchase options, deferred sales charge purchase options, and no load purchase options exhibit significantly lower flow performance slope. The data indicate that a 1-standard deviation increase in trailer fees reduces flow-performance sensitivity by 15.4%. The data indicate that a 1-standard deviation increase in deferred sales charges reduces flow-performance sensitivity by 14.6%.

Further, the data provide a number of insights into the relationship between flow-performance sensitivity, fee structures, and future performance as measured by gross-of-fees alpha. For stand-alone funds that cannot be purchased directly, the data indicate that 2.5% of funds increased their trailer fees in the sample period, and the comparison of gross alphas pre and post trailer fee change shows that alpha dropped by 32.4% on average. Similarly, the data indicate that 0.6% of funds decreased their trailer fees in the sample period, with the comparison of gross alphas pre and post trailer fee change showing an increase of 87.9% on average. In the full sample comparing across both funds and time, the data indicate that flow-performance sensitivity is significantly positively related to future risk-adjusted performance, whereby a 1-standard deviation increase in flow-performance sensitivity is associated with an increase in

alpha of 4.9% on average. A 1-standard deviation increase in trailer fees and deferred sales charges is associated with a reduction in future alpha of 5.2% and 2.4%, respectively, on average due to the effect on the flow-performance intercept and slope.

For stand-alone funds that can be purchased directly[4], and for fund-of-funds, the results are in part consistent with the above results, but with some differences in terms of the statistical significance and the size of the effects. Those details, among others, are not summarized here but are reported in the body of this paper.

This paper is related to a number of other papers in the academic literature on mutual fund flows in general (Del Guercio and Tkac, 2002; Christofferson et al., 2014), and in particular flows that are related to fee structures.[5] Prior work has shown that option-like incentive contracts can exacerbate risk taking by fund managers (Starks, 1987). By contrast, fulcrum fees, or fees that encourage managers to just beat a benchmark lead managers to just buy the benchmark (Admati & Pfleiderer 1997), reduce the reward for good performance or 'flow-performance sensitivity' (Heinkel & Stoughton 1994). Hence, fulcrum fees are rare (Golec, 1992; Elton et al., 2003). More generally, prior work is consistent with the view that fixed fees and incentive fees significantly vary with fund flows and performance (Warner and Wu, 2011; Deli, 2002; Kuhnen, 2004; Cumming et al., 2015). The present paper adds to the important stream of literature by providing specific information on different components of fee structures that has not previously been possible with prior datasets, and relating fee structure details to

[4] Funds that can be purchased directly from the fund company include all those FundSERV codes for which the manager answered "yes" to the following question in the data request questionnaire: "Can this series/purchase option combination be purchased directly from the fund company."

[5] Related literature on hedge funds has addressed similar issues on fund flows in relation to fee structures and regulation, among other things. See Cumming and Dai (2009).

specific types of fund flows that are not estimated from publicly available sources. To this end, we provide an empirical assessment of the possible and often debated conflicts of interest in respect of different types of fee structures in the mutual fund industry.

This paper is organized as follows. Section 2 briefly describes the institutional structure of the Canadian mutual fund industry in terms of fees and flows. Section 3 introduces the data and provides summary statistics. Section 4 presents empirical tests. Conclusions follow in Section 5.

2. Institutional Structure of Mutual Funds Purchase Options, Fees, and Flows in Canada

Mutual funds in Canada comprise fund families, which are groups of funds, and within each fund there are numerous series and purchase option types available, each identified by their FundSERV fund code. Much publicly available information on mutual fund data from Canada is not available at the series/purchase option type level. Likewise, specific details on fees and flows are not publicly available or are not publicly available in an easily downloadable form from data vendors.

Mutual funds can be purchased in one of four primary options. The No Load (NL) purchase option does not include a front end commission nor can it attract deferred sales charges but it does pay a trailer fee to the fund dealer. The Deferred Sales Charge (DSC) purchase option (which includes low load purchase options) requires the investor to pay a redemption fee to the fund company if the units are sold before a predetermined period has elapsed. The fund dealer receives an upfront commission directly from the fund company under this option as well as a trailer fee. The Front End (FE) or initial sales charge purchase option allows the fund dealer the option of charging a negotiable front end commission directly upon initial sale and the fund

dealer also receives a trailer fee. The Fee Based (FB) purchase option does not allow for a front end commission to be charged, and it cannot attract deferred sales charges and there are no trailer fees paid to the dealer. Instead, the dealer charges fees directly to the investor's account. High net worth or institutional series/purchase options where there is no front end commission, deferred sales charge or trailer fee paid are also reported as fee-based.

Mutual fund fees in Canada encompass more than just the publicly available management expense ratios (MERs). Fees also comprise trading expenses, trailer fees, deferred sales charges, front end commissions, switch fees, performance fees, negotiated management fees, and other payments to dealers. Some of these items change over the life of a fund. The stated purpose of trailer fees is to compensate the advisor's dealer firm each year for the ongoing investment services and advice they provide to investors.[6] Trailer fees are paid at the same rate in perpetuity among some funds, and sometimes either increase or decrease over time among different funds. Switch fees are fees that apply to investors when they switch from one fund to another within the same fund family.

Publicly available data on Canadian mutual fund flows from Morningstar and Bloomberg are estimated based on changes in NAVs. However, there are many components of flow that vary widely and have little to do with direct retail investor incentives. In many cases, there are pre-authorized contributions (PAC) from investor and employer accounts, just as there are systematic withdrawal plans (SWP). Many flows are merely switches within the same fund

[6] In practice, trailer fees pay for many things not associated with advice. There is currently no legal requirement to provide advice in order to receive a trailer fee. For example, discount brokerages receive trailer fees without providing any advice. Trailer fees are often paid quarterly as long as clients hold investments in the fund manager's mutual funds. Each dealer then pays out a portion of those trailer fees to its advisors according to the firm's own compensation grid. Generally, under this compensation grid, the more commission or fee revenue the advisor generates for the firm, the greater the portion of that revenue the advisor gets to keep.

family. Changes in NAV may likewise be attributable to fund reinvestments or distributions to unit holders. Finally, there are flows that are specific to affiliated dealers, and affiliated investment funds.

Some mutual funds in Canada must be purchased through an advisor or intermediary, while others may be purchased directly from the fund company (although when buying directly, the person the investor deals with would still be considered an advisor). The advice provided may significantly influence flows.

3. Data and Summary Statistics

3.1 Description of the Data

The data were collected on behalf of the Canadian Securities Administrators (CSA) with the assistance of the Ontario Securities Commission (OSC) in 2015.[7] The sample comprises the period 2003-2014, including 43 fund families of 113 in total in Canada or 38.1% of the market, and covering $746 billion of AUM (of an estimated total of $1.1 trillion) or 66.7% of the market,[8] as well as $152 billion in AUM for fund-of-funds or 51.5% of the $295 billion market at the end of 2014 (estimated by Investor Economics). More specifically, the sample comprises 18,102 FundSERV codes[9] for stand-alone funds and 4018 fund-of-funds FundSERV codes, or 22,077 FundSERV codes in total, compared to the 16,752 FundSERV codes from fundlibrary.com[10] and 12,300 FundSERV codes from fundata.com,[11] both of which state they

[7] See footnote 4.

[8] https://www.ific.ca/en/info/stats-and-facts/

[9] A unique FundSERV code is assigned to each fund series/purchase option combination

[10] http://www.fundlibrary.com/funds/companies.asp

[11] http://www.fundata.com/productsservices/Indices.aspx

have the most comprehensive mutual fund datasets in Canada. In total, the sample comprises more than 1 million monthly FundSERV code observations on fees, flows, and performance, where a FundSERV code is used to identify a fund series/purchase option combination. We treat fund-of-funds separately, as it is possible that their flows, fee structures, management structures, operations and managerial incentives are significantly different relative to stand-alone mutual funds that make direct investments into companies. We carried out some comparison tests with publicly available data for the representativeness of the respondent fund families by examining publicly available data such as location and ratings, and did not find any statistically significant differences. For reasons of confidentiality and to make sure no fund identity can be reverse engineered, we do not present specific information on fund families.

Table 1 defines the main variables from the data. The first key variable in Table 1 is the fund flows net of pre-authorized contributions (PAC), systematic withdrawal plans (SWP), switches, reinvestments, distributions, affiliated dealer flows, and affiliated investment fund flows [hereafter referred to as 'net retail flow']. The net retail flow variable is measured over each FundSERV code – monthly observation in the data, and as a percentage of the prior month's FundSERV AUM, in order to make comparative assessments of flow across funds and over time. Table 1 indicates that the FundSERV code monthly observation shows an average net retail flow for stand-alone funds of -1.87%, with a median of 0.00%, and standard deviation of 8.64%, and an average net flow for fund-of-funds of -6.30% with a median of -0.35% and standard deviation of 13.49%. Including all types of inflows and outflows, the average monthly flow for stand-alone funds was -0.50%, median -0.02%, and standard deviation 7.99%, and average fund-of-funds was -2.73%, median -0.14%, and standard deviation 11.08%. The average flows attributable to PAC and SWP for stand-alone funds (fund-of-funds) were 0.03%

Table 1. Variable Definitions and Summary Statistics

This table provides defines the main variables in the dataset and provides summary statistics for the number of fund-month observations (Obs.) between January 2003 and December 2014, and means, medians, and standard deviations (Std. Dev.).

		Stand-alone funds				Fund of Funds			
Variable	**Definition**	**Obs.**	**Mean**	**Median**	**Std. Dev.**	**Obs.**	**Mean**	**Median**	**Std. Dev.**
Fund Flow and Performance Variables									
Flows Net of PAC, SWP, Switches, Reinvestments, Distributions, and Affiliated Dealer and Affiliated Investment Funds	Total monthly flows net of total monthly pre-authorized contribution (PAC) inflows, total monthly systematic withdrawal plan (SWP) outflows, switches in and switches out, reinvested distributions and distributions to unit holders, and affiliated dealer and affiliated investment funds inflows and outflows) / assets under management at start of month	1102377	-0.0187	0	0.0864	294232	-0.0630	-0.0035	0.1349
All Inflows - All Outflows	(Total monthly inflows - total month outflows) / assets under management at start of month	1102377	-0.005	-0.0002	0.0799	294232	-0.0273	-0.0014	0.1108
PAC Inflows - SWP Outflows	(Total monthly pre-authorized contribution (PAC) inflows - total monthly systematic withdrawal plan (SWP) outflows) / assets under management at start of month	1102377	0.0003	0	0.001	294232	0.0002	0	0.0008
Switches In - Switches Out	(Total monthly switches in - total monthly switches out) / assets under management at start of the month	1102377	0.0022	0	0.0159	294232	0.0037	0	0.0181
Reinvested Distributions - Paid Distributions	(Total reinvested distributions - distributions to unit holders) / assets under management at start of month	1102377	-0.0002	0	0.0013	294232	0.0012	0	0.0033
Affiliated Dealer Inflows - Outflows	(Total affiliated dealer inflows - total affiliated dealer outflows) / assets under management at start of month	1102377	0.0018	0	0.0069	294232	0.0029	0.0001	0.0092
Affiliated Investment Funds Inflows - Outflows	(Total affiliated investment fund inflows - total affiliated investment fund outflows) / assets under management at start of month	1102377	0.0057	0	0.0398	294232	0.0159	0	0.0609
Alpha	Alpha is calculated based on monthly gross return and Fama-French North America 4 factors. Monthly gross returns are winsorized at 1% level; Fama-French 4 factors (market, SMB, HML and WML) and risk-free rate come from Kenneth R. French - Data Library.	1010575	0.2502	0.2492	0.7433	264199	0.1321	0.001	0.5666
Purchase Option Variables									
Purchase Option Deferred Sales Charge	A dummy variable equal to 1 if the purchase option requires the investor to pay a redemption fee if the units are sold before a predetermined period has elapsed.	1209285	0.4579	0	0.4975	308336	0.3690	0	0.4567
Purchase Option Front End	A dummy variable equal to 1 for fund series that charge a front end (FE) or initial sales charge - the purchase option allows the fund dealer the option of charging a negotiable front end commission directly upon initial sale.	1209285	0.3956	0	0.4874	308336	0.2501	0	0.4007
Purchase Option Fee Based	A dummy variable equal to 1 for feed based (FB) if the purchase option does not allow for a front end commission to be charged, it cannot attract deferred sales charges and there are no trailer fees paid to the dealer. Fee based options where there is a default trailer fee triggered (also sometimes termed a service fee) if the investor does not opt out are reported as no load. High net worth or institutional series/purchase options where there is no front end commission, deferred sales charge or trailer fee paid are also reported as fee-based.	1209285	0.0835	0	0.2743	308336	0.2288	0	0.3873
Purchase Option No Load	A dummy variable equal to 1 for no load (NL) when the purchase option does not include a front end commission nor can it attract deferred sales charges but it does pay a trailer fee to the fund dealer. Do-it-yourself or discount brokerage ("D series") purchase options are also be reported as a no load purchase option if they pay a trailer fee but do not pay a front end commission nor charge a deferred sales charge.	1209285	0.0629	0	0.2408	308336	0.1521	0	0.3275

Table 1 (Continued)

Variable	Definition	Stand-alone funds				Fund of Funds			
		Obs.	**Mean**	**Median**	**Std. Dev.**	**Obs.**	**Mean**	**Median**	**Std. Dev.**
Minimum Purchase Amount	The minimum initial investment amount in dollars for the series/purchase option as reported in the simplified prospectus at the time of purchase.	1209285	78970	500	460110.84	308336	10335	500	130544.94
Fund Expense Variables									
Deferred Sales Charge Year 1	The deferred sales charge rate, as reported in the simplified prospectus at the time of purchase, that applied if the units/shares were subsequently redeemed during year 1.	1209285	4.7928	5.5	1.5246	308336	4.2111	5.5	2.0585
Deferred Sales Charge Slope	The average of the percentage change in deferred sales charges from one period to the next.	868685	-0.186	-0.1831	0.0486	299778	-0.1488	-0.2031	0.0939
Sales Commission for Deferred Sales Charge	The sales commission rate paid by the fund company to the fund dealer as reported in the simplified prospectus at the time of purchase.	1209285	1.6704	0	2.1481	308336	0.4838	0	1.3345
Maximum Front End Commission	The maximum front end commission rate as reported in the simplified prospectus at the time of purchase.	1209285	1.7338	0	2.3883	308336	0.9815	0	2.0542
Front End Commissions Paid	The total amount of front end commissions paid each month divided by assets under management at the start of the month.	1102377	0.0196	0	0.0871	294232	0.1065	0.0037	0.176
Maximum Posted Switch Fee	The maximum switch fee rate as reported in the simplified prospectus at the time of purchase.	1209285	1.9964	2	0.083	308336	1.6108	2	0.7918
Performance Fee	The percentage incentive fee charged by the fund manager to the fund.	1209285	0.0845	0	0.561	308336	0	0	0
Negotiated Management Fees Paid	Where the management fees of a particular fund series/purchase option are typically negotiated, the total amount of management fees received each month, divided by assets under management at the start of the month. This amount includes any payments made to the fund and any payments made directly to the fund company (or an affiliate) for fund management.	1102377	0.0244	0	0.0909	294232	0.0861	0	0.1655
Management Expense Ratio	The management expense ratio (MER) after waivers and absorptions as reported in the management report of fund performance (or the financial statements before 2006) at the time of purchase. Please refer to National Instrument 81-106 part 15 for the calculation.	1110152	2.0736	2.1604	0.6552	251669	1.9686	2.0258	0.5988
Trading Expense Ratio	The trading expense ratio (%) for the fund series/purchase option as reported in the management report of fund performance at the time of purchase. For periods before 2006, please calculate (estimates are acceptable) and report the TER as outlined in National Instrument 81-106F1.	1209285	1.3137	0.2467	2.3835	308336	0.6946	0.25	1.6239
Maximum Posted Initial Trailer	For "FE", "DSC", or "NL" as the purchase option type, the maximum trailer fee annualized rate that applied to assets held during the period reported.	1110152	0.5823	0.5	0.3628	251669	0.689	0.75	0.3302
Trailer Slope	The average of the percentage change in the trailer fee from one period to the next.	1074741	0.0664	0	0.1644	251360	-0.049	0	0.3601
Other Payments to Dealer-Brokers	The total amount of payments made each month to dealer-brokers that do not qualify as trailer fees, DSC sales commissions or referral fees and that are tied to fund series/purchase type inflows or assets under management held in each fund series/purchase type, divided by assets under management at the start of each period.	1102377	0	0	0.0001	294232	0	0	0

(0.02%), average flows attributable to switches were 0.22% (0.37%), attributable to reinvestments and distributions were -0.02% (0.12%), affiliated dealer flows were 0.18% (0.29%), and affiliated investment fund flows were 0.57% (1.59%).

Table 1 further indicates that the average 12-month Fama-French 4-factor alpha in the sample is 0.25% for stand-alone funds (and 0.13% for fund-of-funds), with a median of 0.25% (0.001% for fund of funds), and standard deviation of 0.74% (0.57% for fund of funds).[12] To the best of our ability and fund companies' ability to provide the data, we have created a survivorship bias free dataset by including live and defunct FundSERV codes.[13] For robustness, Appendix III provides 3-year alphas, and shows all of the regression results with 3-year alphas.

A total of 45.8% of the monthly observations in the sample comprise funds purchased under deferred sales charges for stand-alone funds (36.9% for fund-of-funds), while 39.7% (25.0% for fund-of-funds) were purchased under front end, 8.4% (22.9% for fund of funds) purchased under fee based, and 6.3% (15.2% for fund of funds) purchased under no load.

[12] See Fama and French (2014). Fama and French introduce a 5 factor model, and discuss the fact that for the purpose of calculating alpha, their new 4 factor model is the appropriate model, improving on models such as Carhart (1997). As a result, they have updated the Kenneth R. French Data library. Our factors are directly from the Kenneth French library http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/f-f_developed.html. We considered robustness to considering separately funds that are and are not North American focused, as well as other fund categories, and the flow-performance results are quite stable. We use a homogenous set of factors to calculate alpha as we do not have information to warrant picking different factors for different funds. Also, our findings are robust to other specifications such as a single factor model based on market conditions for example.

[13] It is possible that some fund managers had problems gathering the data for all funds closed and merged over the sample period and in some cases, it was not possible to gather data on fund companies that had ceased operations over the period, but we did not identify any gaps in the data from what we could ascertain from publicly available information.

Table 1 provides definitions and summary statistics for fee variables. The summary statistics for the fee variables in Table 1 are indicated for the full sample of monthly fund observations across all purchase options. For stand-alone funds (fund-of-funds), the average maximum posted initial trailer for the entire sample of month-year observations is 0.58% (0.69%), with a median of 0.50% (0.75%) and a standard deviation of 0.36% (0.33%). Appendix I provides the information across each purchase option. Appendix I Table I.1 shows that for stand-alone funds (Panel A), the average maximum posted initial trailer fee was 0.45% for deferred sales charge purchase options, 0.72% for front-end load, and 0.65% for no load. Subsequent trailer fees on average are higher for deferred sales charge purchase options and front-end purchase options, and lower for no load purchase options, as indicated by the trailer slope variable. Among the fund-of-funds (Panel B), the average maximum posted initial trailer fee is 0.53% for deferred sales charge purchase options, 0.81% for front-end load, and 0.85% for no load, and subsequent trailers are lower for these funds.

Table 1 shows that for stand-alone funds (fund-of-funds), the average initial deferred sales charge for the entire sample of month-year observations is 4.79% (4.21%), with a median of 5.50% (5.50%) and a standard deviation of 1.52% (2.06%). The data indicate subsequent years deferred sales charges are lower (as indicated by the deferred sales charge slope variable).

Table 1 shows that for stand-alone funds (fund-of-funds), the average MER in the -monthly observations in the sample is 2.07% (1.97%), with a median of 2.16% (2.02%), and a

standard deviation of 0.66% (0.60%).[14] A number of other details pertaining to fees are summarized in Table 1 and in Appendix I.

3.2. Comparison Tests across All Fund Months

While comparison tests do not enable conclusive statements (they do not control for other things being equal), we present some comparison of means and medians tests in Table 2 to show some patterns in the data. The comparisons are across all fund-month observations in the dataset, and hence the comparisons are crude and inconclusive. Net flows and alphas for each purchase option are compared to net flows and alphas for the rest of the sample. Similarly, we group the sample into above and below median along each fee variable and then net flows and alphas are compared. The more formal econometric tests are provided in the next subsection.

Amongst the stand-alone funds that cannot be purchased directly from the fund company (Table 2 Panel A), the data indicate deferred sales charges have significantly lower flows, and the average flow is significantly lower at the 10% level, while the median flow is significantly lower at the 5% level of significance.[15] Funds with higher trading expense ratios, higher maximum posted initial trailers, and higher deferred sales charges have higher median and average flows, and these differences are significant at the 1% level. Funds with increasing subsequent trailer fees, and funds with higher minimum purchase amounts have lower average and median flows, and these differences are significant at the 1% level.

[14] In the summary statistics we report the full MER to show the totals. In the regression analyses we exclude from MER trailer fees and sales charges to avoid double counting and correlation across variables.

[15] The 10%, 5%, and 1% levels of significance mean that the data are consistent with the view that there is a 10%, 5%, and 1% chance of making an incorrect inference, respectively.

Table 2. Comparison of Means and Medians Tests for New Flows and Alpha

This table presents comparison of means and medians for Alphas and inflows Net of PAC, SWP, Switches, Reinvestments, Distributions, and Affiliated Dealer and Affiliated Investment Funds. Alpha is calculated based on monthly gross return and Fama-French North America 4 factors. Monthly gross returns are winsorized at 1% level; Fama-French 4 factors (market, SMB, HML and WML) and risk-free rate come from Kenneth R. French - Data Library. Average/median net flows and alpha are first calculated at individual fund level then averaged out across the whole data-set. Fund of funds are excluded in this table.. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively. N/A is used when at least one of the comparison pairs has insufficient observations.

Panel A. Stand-Alone Funds where series cannot be purchased directly from the fund company.

	Average Net Flows With This Purchase Option, or Above Median for Fee Levels	Average Net Flows Without This Purchase Option, or Below Median for Fee Levels	Comparison of Means	Median Net Flows With This Purchase Option, or Above Median for Fee Levels	Median Net Flows Without This Purchase Option, or Below Median for Fee Levels	Comparison of Medians	Average Alpha With This Purchase Option, or Above Median for Fee Levels	Average Alpha Without This Purchase Option, or Below Median for Fee Levels	Comparison of Means	Median Alpha With This Purchase Option, or Above Median for Fee Levels	Median Alpha Without This Purchase Option, or Below Median for Fee Levels	Comparison of Medians
Purchase Option Deferred Sales Charge	-0.034	-0.015	-1.870*	-0.034	-0.014	-1.990**	0.235	0.225	0.320	0.220	0.230	-0.350
Purchase Option Front End	-0.013	-0.029	1.470	-0.012	-0.029	1.550	0.204	0.243	-1.280	0.222	0.228	-0.200
Purchase Option Fee Based	-0.029	-0.023	-0.360	-0.029	-0.022	-0.390	0.235	0.229	0.130	0.221	0.226	-0.110
Purchase Option No Load	-0.012	-0.024	0.440	-0.011	-0.023	0.470	0.429	0.222	2.730***	0.410	0.219	2.550**
Management Expense Ratio	-0.030	-0.033	0.490	-0.027	-0.029	0.290	0.181	0.194	-0.980	0.182	0.207	-1.960**
Trading Expense Ratio	-0.011	-0.047	6.330***	-0.006	-0.047	7.350***	0.157	0.188	-2.610***	0.145	0.206	-4.950***
Maximum Posted Initial Trailer	-0.003	-0.055	3.420***	-0.003	-0.056	3.460***	0.237	0.266	-0.790	0.238	0.257	-0.510
Trailer Slope	-0.016	0.009	-3.080***	-0.016	0.006	-2.900***	0.229	0.235	-0.190	0.229	0.245	-0.520
Deferred Sales Charge Year 1	-0.005	-0.046	3.840***	-0.004	-0.046	4.030***	0.241	0.205	1.270	0.244	0.194	1.780*
Deferred Sales Charge Slope	-0.038	-0.012	-1.520	-0.037	-0.008	-1.760*	0.223	0.236	-0.280	0.212	0.239	-0.600
Sales Commission for Deferred Sales Charge	-0.034	0.000	N/A	-0.033	0.000	N/A	0.229	0.000	N/A	0.218	0.000	N/A
Maximum Front End Commission	-0.014	0.000	N/A	-0.013	0.000	N/A	0.194	0.000	N/A	0.211	0.000	N/A
Maximum Posted Switch Fee	0.000	-0.007	N/A	0.000	-0.006	N/A	0.000	0.009	N/A	0.000	-0.011	N/A
Other Payments to Dealer-Brokers	-0.007	0.000	N/A	-0.007	0.000	N/A	0.249	0.000	N/A	0.192	0.000	N/A
Front End Commissions Paid	-0.018	0.000	N/A	-0.013	0.000	N/A	0.267	0.000	N/A	0.323	0.000	N/A
Performance Fee	0.000	0.000	N/A	0.000	0.000	N/A	0.000	0.000	N/A	0.000	0.000	N/A
Negotiated Management Fees Paid	-0.035	0.000	N/A	-0.035	0.000	N/A	0.306	0.000	N/A	0.219	0.000	N/A
Minimum Purchase Amount	-0.046	0.007	-5.550***	-0.045	0.008	-5.580***	0.180	0.304	-4.440***	0.174	0.295	-4.440***

Table 2 (Continued)
Panel B. Stand-Alone Funds where series can be purchased directly from the fund company.

	Average Net Flows With This Purchase Option, or Above Median for Fee Levels	Average Net Flows Without This Purchase Option, or Below Median for Fee Levels	Comparison of Means	Median Net Flows With This Purchase Option, or Above Median for Fee Levels	Median Net Flows Without This Purchase Option, or Below Median for Fee Levels	Comparison of Medians	Average Alpha With This Purchase Option, or Above Median for Fee Levels	Average Alpha Without This Purchase Option, or Below Median for Fee Levels	Comparison of Means	Median Alpha With This Purchase Option, or Above Median for Fee Levels	Median Alpha Without This Purchase Option, or Below Median for Fee Levels	Comparison of Medians
Purchase Option Deferred Sales Charge	0.000	-0.001	N/A	0.000	-0.004	N/A	0.000	0.118	N/A	0.000	0.109	N/A
Purchase Option Front End	0.005	-0.002	0.650	-0.001	-0.005	-0.170	0.142	0.113	0.280	0.103	0.111	-0.070
Purchase Option Fee Based	0.000	-0.001	N/A	0.000	-0.004	N/A	0.000	0.118	N/A	0.000	0.109	N/A
Purchase Option No Load	-0.008	0.006	-0.710	-0.008	-0.001	-0.490	0.095	0.140	-0.600	0.099	0.120	-0.290
Management Expense Ratio	0.009	-0.002	1.120	0.000	-0.002	0.530	0.150	0.138	0.270	0.140	0.161	-0.460
Trading Expense Ratio	0.006	0.005	0.100	0.004	-0.002	0.980	0.214	0.178	0.610	0.241	0.130	2.050**
Maximum Posted Initial Trailer	-0.006	-0.007	0.030	-0.002	-0.009	0.210	0.034	0.061	-0.320	0.062	0.058	0.040
Trailer Slope	-0.001	0.023	-0.420	-0.004	0.034	-0.520	0.133	0.357	-0.920	0.130	0.390	-1.040
Deferred Sales Charge Year 1	0.000	0.005	N/A	0.000	0.000	N/A	0.000	0.160	N/A	0.000	0.155	N/A
Deferred Sales Charge Slope	0.004	-0.013	0.690	0.000	-0.012	0.380	0.112	0.010	1.480	0.087	0.027	0.830
Sales Commission for Deferred Sales Charge	0.000	0.000	N/A	0.000	0.000	N/A	0.000	0.000	N/A	0.000	0.000	N/A
Maximum Front End Commission	0.005	0.000	N/A	-0.001	0.000	N/A	0.142	0.000	N/A	0.103	0.000	N/A
Maximum Posted Switch Fee	0.000	0.000	N/A	0.000	0.000	N/A	0.000	0.000	N/A	0.000	0.000	N/A
Other Payments to Dealer-Brokers	0.000	0.000	N/A	0.000	0.000	N/A	0.000	0.000	N/A	0.000	0.000	N/A
Front End Commissions Paid	0.004	0.000	N/A	-0.001	0.000	N/A	0.245	0.000	N/A	0.193	0.000	N/A
Performance Fee	0.000	0.000	N/A	0.000	0.000	N/A	0.000	0.000	N/A	0.000	0.000	N/A
Negotiated Management Fees Paid	-0.007	-0.008	0.040	-0.023	-0.005	-0.530	0.537	0.039	3.820***	0.701	0.047	4.560***
Minimum Purchase Amount	-0.001	0.000	N/A	-0.002	0.000	N/A	0.134	0.000	N/A	0.219	0.000	N/A

Table 2 (Continued)
Panel C. Fund of funds where series cannot be purchased directly from the fund company.

	Average Net Flows With This Purchase Option, or Above Median for Fee Levels	Average Net Flows Without This Purchase Option, or Below Median for Fee Levels	Comparison of Means	Median Net Flows With This Purchase Option, or Above Median for Fee Levels	Median Net Flows Without This Purchase Option, or Below Median for Fee Levels	Comparison of Medians	Average Alpha With This Purchase Option, or Above Median for Fee Levels	Average Alpha Without This Purchase Option, or Below Median for Fee Levels	Comparison of Means	Median Alpha With This Purchase Option, or Above Median for Fee Levels	Median Alpha Without This Purchase Option, or Below Median for Fee Levels	Comparison of Medians
Purchase Option Deferred Sales Charge	-0.0040	-0.0056	4.51***	0.0000	0.0000	-0.0200	0.2949	0.2993	-1.86*	0.2548	0.2539	0.3900
Purchase Option Front End	-0.0025	-0.0063	10.17***	0.0000	0.0000	-1.0800	0.3126	0.2900	9.28***	0.2816	0.2537	11.88***
Purchase Option Fee Based	-0.0139	-0.0035	-20.48***	0.0000	0.0000	-0.1600	0.2948	0.2981	-1.00	0.2336	0.2545	-6.65***
Purchase Option No Load	-0.0058	-0.0049	- 1.65*	0.0000	0.0000	0.6200	0.2906	0.2985	-2.16**	0.2539	0.2543	0.1300
Management Expense Ratio	-0.0062	-0.0033	- 8.19***	0.0000	0.0000	-0.9200	0.2866	0.3127	-11.17***	0.2524	0.2551	-1.2100
Trading Expense Ratio	-0.0048	-0.0058	2.87***	0.0000	0.0000	-1.4900	0.3137	0.2870	11.39***	0.2558	0.2510	2.16**
Maximum Posted Initial Trailer	-0.0072	0.0031	-28.85***	0.0000	0.0000	-0.8400	0.2902	0.3062	-4.92***	0.2523	0.2561	-1.20
Trailer Slope	-0.0052	-0.0005	-4.62 ***	0.0000	-0.0001	1.14	0.3099	0.0244	43.25***	0.2561	-0.0025	41.47***
Deferred Sales Charge Year 1	-0.0190	-0.0121	-6.71***	0.0000	-0.0001	1.38	0.2265	0.2856	-15.17***	0.1144	0.2539	-38.29***
Deferred Sales Charge Slope	-0.0074	-0.0020	-13.21***	-0.0001	0.0009	-9.80***	0.3186	0.3298	-4.34 ***	0.2576	0.2598	-0.88
Sales Commission for Deferred Sales Charge	-0.0030	0.0000	N/A	0.0000	0.0000	N/A	0.2982	0.0000	N/A	0.2545	0.0000	N/A
Maximum Front End Commission	-0.0046	0.0000	N/A	0.0000	0.0000	N/A	0.2897	0.0000	N/A	0.2467	0.0000	N/A
Maximum Posted Switch Fee	0.0000	0.0500	N/A	0.0000	0.0355	N/A	0.0000	0.0020	N/A	0.0000	0.0025	N/A
Other Payments to Dealer-Brokers	-0.0197	0.0000	N/A	0.0000	0.0000	N/A	0.3490	0.0000	N/A	0.3519	0.0000	N/A
Front End Commissions Paid	-0.0191	0.0000	N/A	0.0000	0.0000	N/A	0.2500	0.0000	N/A	0.1433	0.0000	N/A
Performance Fee	-0.0123	0.0000	N/A	-0.0085	0.0000	N/A	0.3204	0.0000	N/A	0.2996	0.0000	N/A
Negotiated Management Fees Paid	-0.0192	0.0000	N/A	0.0000	0.0000	N/A	0.3534	0.0000	N/A	0.3758	0.0000	N/A
Minimum Purchase Amount	-0.0061	0.0011	-22.27***	0.0000	0.0001	-3.34***	0.1936	0.4155	-85.05***	0.1788	0.4073	-88.67***

Table 2 (Continued)
Panel D. Fund of funds where series can be purchased directly from the fund company.

	Average Net Flows With This Purchase Option, or Above Median for Fee Levels	Average Net Flows Without This Purchase Option, or Below Median for Fee Levels	Comparison of Means	Median Net Flows With This Purchase Option, or Above Median for Fee Levels	Median Net Flows Without This Purchase Option, or Below Median for Fee Levels	Comparison of Medians	Average Alpha With This Purchase Option, or Above Median for Fee Levels	Average Alpha Without This Purchase Option, or Below Median for Fee Levels	Comparison of Means	Median Alpha With This Purchase Option, or Above Median for Fee Levels	Median Alpha Without This Purchase Option, or Below Median for Fee Levels	Comparison of Medians
Purchase Option Deferred Sales Charge	0.0142	-0.0053	35.25***	0.0031	-0.0003	14.69 ***	0.1632	0.2728	-43.71 ***	0.0046	0.2849	-126.58***
Purchase Option Front End	0.0062	0.0021	11.10 ***	0.0004	0.0002	2.00**	0.1848	0.2430	-21.60 ***	0.0533	0.1472	-45.11 ***
Purchase Option Fee Based	-0.0140	0.0072	-21.19 ***	-0.0034	0.0014	-10.01***	0.4431	0.1739	84.04 ***	0.6166	0.0089	242.45 ***
Purchase Option No Load	-0.0428	0.0061	-17.58***	-0.0064	0.0005	-6.43***	0.1071	0.2314	-22.50***	0.0006	0.1312	-29.91***
Management Expense Ratio	0.0000	0.0142	-29.96***	0.0000	0.0040	-15.82 ***	0.2883	0.1178	64.35 ***	0.3350	0.0001	130.30***
Trading Expense Ratio	0.0054	0.0326	-19.02***	0.0009	0.0121	-12.97 ***	0.3659	0.0817	85.16 ***	0.4028	-0.0015	141.39***
Maximum Posted Initial Trailer	-0.0057	0.0212	-38.27***	-0.0001	0.0041	-15.12 ***	0.2755	0.1581	44.04 ***	0.2878	0.0027	121.68***
Deferred Sales Charge Year 1	0.0216	0.0289	-3.84***	0.0028	0.0097	-6.47***	0.3403	0.0650	76.70***	0.3702	-0.0019	136.35 ***
Deferred Sales Charge Slope	0.0279	-0.0223	53.32 ***	0.0072	-0.0062	27.33 ***	0.1031	0.3353	-93.47***	-0.0001	0.4552	-180.90***
Sales Commission for Deferred Sales Charge	0.0139	0000	N/A	0.0040	0000	N/A	0.1415	0000	N/A	0.0009	0000	N/A
Maximum Front End Commission	0.0062	0000	N/A	0.0004	0000	N/A	0.1848	0000	N/A	0.0533	0000	N/A
Maximum Posted Switch Fee	0000	-0.0152	N/A	0000	-0.0155	N/A	0000	0.0592	N/A	0000	0.0172	N/A
Other Payments to Dealer-Brokers	0000	0000	N/A	0000	0000	N/A	0000	0000	N/A	0000	0000	N/A
Front End Commissions Paid	-0.0077	0.0313	N/A	-0.0007	0.0098	N/A	0.2330	0.1032	N/A	0.2468	-0.0004	N/A
Negotiated Management Fees Paid	0.0408	0000	N/A	0.0190	0000	N/A	0.0620	0000	N/A	-0.0018	0000	N/A
Minimum Purchase Amount	0.0179	0.0236	-5.62***	0.0040	0.0060	-4.00***	0.3293	0.1327	65.57***	0.3456	0.0016	127.97***

Stand-alone funds that cannot be purchased directly (Table 2 Panel A) with lower trading expense ratios, and funds with lower minimum initial purchase amounts have significantly higher average and median alphas (significant at the 1% level). Funds with a no load purchase option have higher average and median alphas (significant at the 1% and 5% levels, respectively).

Amongst the fund series that can be purchased directly from the fund company (Table 2 Panel B), funds with a higher trading expense ratio have higher median alphas (significant at the 5% level) and funds with higher negotiated management fees paid have higher alphas. The other differences in Panel B are not statistically significant.

Table 2 Panel C shows higher average monthly fund flows for deferred sales charges, front end purchase options, and funds with higher trading expense ratios, and lower average monthly flows for fee based and no load purchase options, as well as for funds with higher management expense ratios, higher initial trailers, higher subsequent trailers, funds with higher initial deferred sales charges, funds with increasing subsequent deferred sales charges, and funds with lower minimum purchase amounts; however, these differences are only significant in medians for increasing deferred sales charges and for funds with higher minimum purchase amounts.

Table 2 Panel C shows fund-of-funds that cannot be purchased directly have higher alphas among funds with front end purchase options, lower management expense ratios, higher trading expense ratios, lower maximum posted initial trailer fees, increasing subsequent trailers, lower initial deferred sales charges, lower subsequent deferred sales charges, and lower initial purchase amounts. Average alphas are lower among fund-of-funds with no load purchase

options and deferred sales charge options Median alphas are higher amongst fund-of-funds with front end purchase options. Median alphas are lower among fund-of-funds with fee based purchase options, and funds with higher minimum purchase amounts.

Table 2 Panel D shows fund-of-funds that can be purchased directly have higher average and median monthly flows when they have deferred sales purchase options, front end purchase options, higher subsequent deferred sales charges, and lower minimum purchase amounts. Fund-of-funds with fee-based and no load purchase options, higher management expense ratios, trading expense ratios, higher maximum posted initial trailers, and higher initial deferred sales charges have lower average and median monthly flows. Table 2 Panel D further shows fund-of-funds that can be purchased directly have higher average and median alphas when they have fee based purchase options, higher management expense ratios, higher trading expense ratios, higher maximum posted initial trailers, higher initial deferred sales charges, lower subsequent deferred sales charges, and higher minimum purchase amounts. Fund-of-funds that can be purchased directly with no-load, deferred sales charge, and front end purchase options have lower average and median alphas.

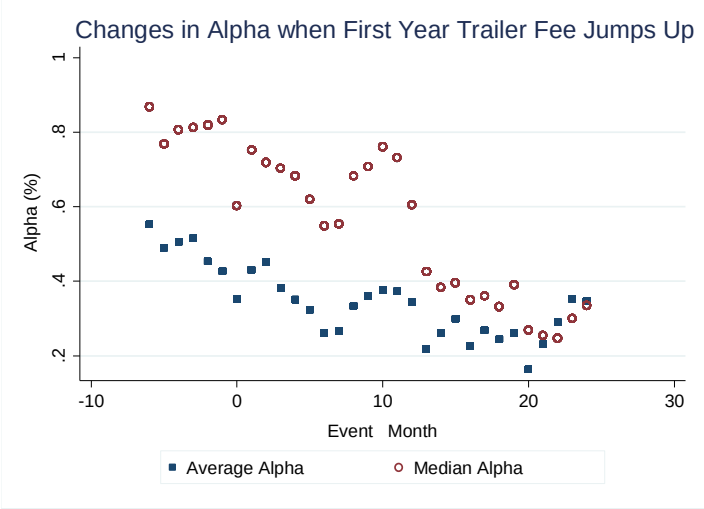
As mentioned, it is important to keep in mind that these tests in Table 2 are not presented to be conclusive, as they do not control for other things being equal. The Table 2 tests simply compare averages and medians of all monthly-fund observations in the data, and show some general patterns. In section 4, we provide regression evidence to make a more accurate assessment of the patterns in the data. But first, in subsection 3 we examine comparison tests for a subset of the funds that made permanent changes to fees over time.

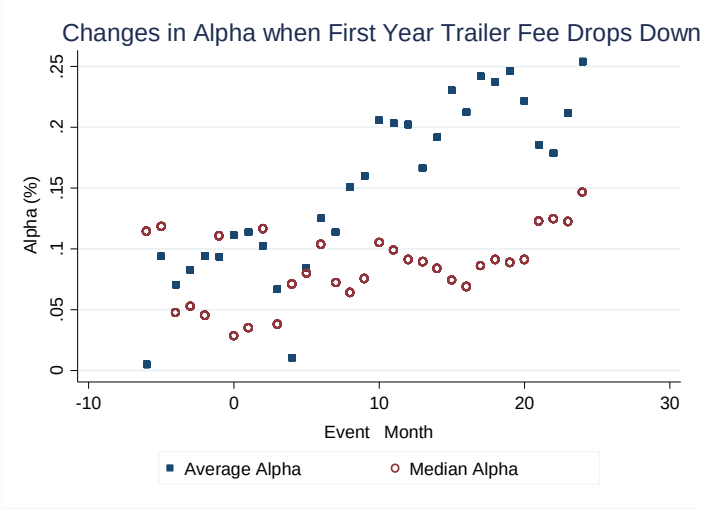
3.3. Comparison Tests for the Subset of Funds that Permanently Changed Trailer Fees

More precise comparison tests are provided in Figure 1. Comparison tests in Figure 1 are more precise than those in Table 2 because Figure 1 focuses on the narrow same set of funds that changed their trailer fees over time (and hence fund characteristics are kept constant because we examine the same funds at different points in time), while Table 2 did not keep other fund characteristics constant. The data in Figure 1 indicate that 2.5% of funds permanently increased their trailer fees in the sample period, and fees increased from an average of 0.39% to 0.78%. Comparison tests of the alphas for these funds from the 6-month prior fee change period to the 24 month post fee change period show alpha dropped by 32.4% on average and this difference is statistically significant at the 1% level. The data in Figure 1 further indicate that 0.6% of funds permanently decreased their trailer fees in the sample period from an average of 0.43% to 0.27%. Comparison tests of the alphas for these funds from the 6-month prior fee change period to the 24 month post fee change period show alpha increased by 88.4% on average, and this difference is statistically significant at the 1% level.

Figure 1. Abnormal return associated with permanent first year trailer fee jumps (drops)

We analyzed the funds that changed trailer fee in Year 1 over the sample horizon. The total sample contains 22077 different funds; among which, 559 or 2.5% of funds have increased their trailer fee in year 1; 123 or around 0.6% of funds have reduced their trailer fee in year 1. We tracked the fund performance before and after trailer fee changes. In the following two graphs, the horizontal axes show the event month, where the trailer fee change happens in month 0. The vertical axes show the average (median) alpha by each event month for the funds that changed their trailer fees in Year 1. We restrict the sample to funds that have both at least 6 month observations before the event month and at least 24 month observations after the event month.





	Average Alpha (%)	Median Alpha (%)	Average Trailer Fee (%)	Median Trailer Fee (%)	Number of Observations
Before Trailer Fee Jumps Up	0.4574964	0.6386917	0.3915385	0.25	390
After Trailer Fee Jumps Up	0.3090701	0.3325039	0.7830769	0.75	1560
Before Trailer Fee Drops Down	0.0910279	0.0479736	0.4266667	0.5	162
After Trailer Fee Drops Down	0.1714698	0.0893781	0.2736566	0.25	648

	Alpha Standard Deviation	Alpha Standard Error	T Statistics (P Value)[16]	Rank Sum	Expected	Z Statistics (P Value)[17]
Before Trailer Fee Jumps Up	0.5100784	0.0258288	5.0412 (0000)	451021	380445	7.096 (0000)
After Trailer Fee Jumps Up	0.5582225	0.0141333		1451204	1521780	
Before Trailer Fee Drops Down	0.4195134	0.0329601	-2.2196 (0.0274)	57408	65691	-3.11 (0.0019)
After Trailer Fee Drops Down	0.3836185	0.015070		271047	262764	

16 Two-sample t test with unequal variances; H_0: The mean of alpha after trailer fee jumps up (drops down) is the same as that before the jump (drop).

17 Two-sample Wilcoxon rank-sum (Mann-Whitney) test; H_0: The size of alpha after trailer fee jumps up (drops down) is comparable to that before the jump (drop).

4. Regression Analyses

This section first presents flow-performance regressions of monthly flows in subsection 4.1. Thereafter subsection 4.2 presents regression analyses of yearly alphas.

4.1. Flow-Performance Regression Analyses

Table 3 presents regression analyses of fund flows relative to past performance for all of the funds in the data. The basic model specification is as follows:

$$\text{Flow}_{t+1} = \text{Constant} + \beta_1 * \text{Alpha}_t + \beta_2 * \text{Alpha}^2_t + \beta_3 * \text{Purchase Option Dummy} + \beta_4 * \text{Purchase Option Dummy} * \text{Alpha}_t + \beta_5 * \text{controls} + \text{residuals}$$

The regression is estimated as a panel model with random effects across each fund series/purchase option (FundSERV code) and month.[18] Random effects are used in Table 3 and not fixed effects because some of the right-hand-side variables are time invariant. Standard errors are clustered by FundSERV code (Petersen, 2009).[19] The results are robust to not clustering or clustering on different variables. The dependent variable in Table 3 is the total monthly inflows minus outflows, net of total monthly pre-authorized contribution (PAC) inflows, total monthly systematic withdrawal plan (SWP) outflows, switches in and switches out, reinvested distributions and distributions to unit holders, and affiliated dealer and affiliated

[18] Fund characteristics that can affect flow may be related to market sentiment, risk preferences, demographics, investor preferences and needs, investor financial literacy, fund product awareness and recognition of benefits. These characteristics are identified in a recent report by Investor Economics (2015). Because Investor Economics does not use panel data regressions and/or information at the FundSERV code level, among other things, they cannot make statistical claims about the relationship between fund fees and fund flows.

[19] Note that with panel data methods, R^2 is not directly comparable to time series regressions. It is quite normal for R^2 to be low in a panel setting because the same variables are used to explain differences in outcomes for different FundSERV codes, and not only the same FundSERV code at different points in time. For a detailed explanation, see for example http://www.stata.com/statalist/archive/2003-05/msg00336.html.

investment fund inflows and outflows, and divided by AUM at start of month. Models 1-5 in Table 3 are presented for the subset of funds that cannot be purchased directly from the fund company, and Models 6-7 are presented for the subset of funds that can be purchased directly from the fund company. The different models include different right-hand-side variables to show robustness to different specifications and possible collinearity effects. We do not present all purchase options together in the same model since that would create perfect collinearity problems. The excluded purchase option variable(s) in each model means that the coefficients are estimating the impact of the included variables relative to the excluded purchase option variables. Models 6-7 do not include the more complete set of all variables as in Model 5 because there are fewer observations for the purchase option directly from the fund company less variation amongst the sample to enable including all of the other variables.

The data in Table 3 indicate the following. First, prior performance in terms of alpha is positively related to future flow: higher alpha increases future flow, while lower alpha reduces future flow. A 1-standard deviation increase in prior alpha causes a 10.0% increase in future flow (based on Model 5, and this effect is most conservatively estimated at 4.2% in Model 2 and least conservatively estimated as 16.7% in Model 6), and this effect is statistically significant at the 1% level in all models. Each of the models includes a squared alpha term to account for possible non-linearity in flow. Prior work on mutual fund flows (Del Guerci and Tkac, 2002) shows that flow is convex (retail investors are quick to rush to invest into funds that have had recent prior success, but slow to withdraw capital from funds that have had poor recent performance). The regressions in Table 3 indicate that flow is not convex when the series cannot be purchased directly from the fund company, but is convex when the series can be purchased directly from the fund company.

Table 3. Regression Analysis of Flow For All Purchase Options

This table presents unbalanced FundSERV random effects panel regressions of the determinants of the percentage fund net flow (one period ahead). The dependent variable is Flows Net of PAC, SWP, Switches, Reinvestments, Distributions, and Affiliated Dealer and Affiliated Investment Funds. Explanatory variables include alphas, purchase options (deferred sales charge, front end, fee based and no load), and interaction terms with purchase options and lagged alphas. Variables are as defined in Table 1. Standard errors are clustered by FundSERV code. T-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A. Stand-Alone Funds

	Series Cannot be Purchased Directly from the fund company (Models 1 - 5)					Series Can be Purchased Directly from the fund company (Models 6 - 7)	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Alpha Lagged	0.00148***	0.00103***	0.00107***	0.00119***	0.00250***	0.00370***	0.00354***
	(14.66)	(10.66)	(13.80)	(15.49)	(10.80)	(12.36)	(7.68)
Alpha Lagged ^2	-0.0000172	-0.0000109	-0.0000152	-0.00000403	-0.00000486	0.000685***	0.000608***
	(-0.43)	(-0.27)	(-0.38)	(-0.10)	(-0.12)	(4.17)	(3.70)
Purchase Option Deferred Sales Charge	-0.00355***				-0.00411**		0.106***
	(-3.42)				(-2.41)		(20.46)
Alpha Lagged * Purchase Option Deferred Sales Charge	-0.000719***				-0.00174***		0.000873
	(-4.86)				(-6.82)		(1.27)
Purchase Option Front End		0.00114			-0.00144		0.105***
		(1.07)			(-0.83)		(17.57)
Alpha Lagged * Purchase Option Front End		0.000309**			-0.00116***		0.00156**
		(2.05)			(-4.50)		(2.28)
Purchase Option Fee Based			-0.00178			0.0681***	
			(-0.96)			(11.77)	
Alpha Lagged * Purchase Option Fee Based			0.00143***			0.00127*	
			(4.60)			(1.65)	
Purchase Option No Load				0.00629***	0.00363		0.0968***
				(2.91)	(1.39)		(17.54)
Alpha Lagged * Purchase Option No Load				-0.000825**	-0.00214***		-0.00341***
				(-2.27)	(-5.05)		(-3.50)
Constant	-0.00362***	-0.00562***	-0.00504***	-0.00555***	-0.00301*	-0.0669***	-0.107***
	(-5.08)	(-8.05)	(-8.88)	(-9.80)	(-1.93)	(-28.45)	(-38.63)
Number of Observations	802078	802078	802078	802078	802078	164078	164078
Number of Groups	14357	14357	14357	14357	14357	2407	2407
R^2 within	0.0003	0.0003	0.0003	0.0003	0.0004	0.0015	0.0015
R^2 between	0.0013	0.0006	0.0009	0.0006	0.0014	0.0562	0.2343
R^2 overall	0.0002	0.0003	0.0004	0.0003	0.0001	0.048	0.1385
Wald Chi^2	280.55***	249.26***	265.36***	256.44***	316.29***	398.55***	992.81***

Table 3. (Continued)
Panel B. Fund-of-Funds

	Series Cannot be Purchased Directly from the fund company (Models 1 - 5)					Series Can be Purchased Directly from the fund company (Models 6 - 7)	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Alpha Lagged	0.00272***	0.00262***	0.00145***	0.00200***	0.00356***	0.00188***	0.00206***
	(7.39)	(6.98)	(4.04)	(6.21)	(6.48)	(4.96)	(2.60)
Alpha Lagged ^2	-0.000347*	-0.000343*	-0.000300	-0.000370*	-0.000313	0.000566**	0.000533**
	(-1.69)	(-1.67)	(-1.45)	(-1.80)	(-1.52)	(2.51)	(2.36)
Purchase Option Deferred Sales Charge	-0.00438*				0.00467		0.0321***
	(-1.78)				(1.33)		(6.21)
Alpha Lagged * Purchase Option Deferred Sales Charge	-0.00161***				-0.00246***		-0.00116
	(-2.59)				(-3.29)		(-1.23)
Purchase Option Front End		0.00565**			0.0110***		0.0268***
		(2.40)			(3.24)		(4.91)
Alpha Lagged * Purchase Option Front End		-0.00116*			-0.00211***		0.00115
		(-1.92)			(-2.89)		(1.19)
Purchase Option Fee Based			-0.00928***			-0.0259***	
			(-2.79)			(-5.07)	
Alpha Lagged * Purchase Option Fee Based			0.00297***			0.00109	
			(4.46)			(1.17)	
Purchase Option No Load				0.00735**	0.0139***		-0.0311***
				(2.10)	(3.17)		(-3.72)
Alpha Lagged * Purchase Option No Load				0.00401***	0.00242*		0.00517*
				(3.27)	(1.85)		(1.66)
Constant	-0.000786	-0.00442***	-0.00110	-0.00342***	-0.00984***	0.00785***	-0.0176***
	(-0.53)	(-3.03)	(-0.88)	(-2.71)	(-3.37)	(3.87)	(-3.94)
Number of Observations	125618	125618	125618	125618	125618	89024	89024
Number of groups	2370	2370	2370	2370	2370	1551	1551
R^2 within	0.0005	0.0005	0.0006	0.0005	0.0007	0.0006	0.0007
R^2 between	0.0031	0.0019	0.0008	0.0025	0.0048	0.011	0.0482
R^2 overall	0.0004	0.0003	0.0023	0.0001	0.0008	0.0047	0.031
Wald Chi^2	62.40***	60.33***	77.83***	68.87***	92.61***	70.60***	151.49***

For funds that cannot be purchased directly from the fund company, the data indicate that deferred sales charges lower the level of flow regardless of prior performance. This effect is significant at the 5% level in Model 5, and at the 1% level in Models 1 and 7. The other intercept effects in Table 3 Panel A are not statistically robust. Model 5 also indicates that funds with deferred sales charges, front-end purchase options, and no load purchase options also flatten the flow-performance relationship. These effects are all statistically significant at the 1% level in Model 5. Model 2 indicates that front end purchase options have a higher flow-performance slope, but that is measured relative to the average non-front end fund in Model 2; likewise, Figure 2 shows that the negative impact on the slope of flow-performance for front end purchase options is less pronounced than for deferred sales charge, and no load purchase options. By contrast, the impact of fee based purchase options (without deferred sales charges, commissions and trailer fees) has a steeper flow-performance line and a higher flow regardless of performance, and these effects are both statistically significant at the 1% level in Model 3. The economic significance of these effects is shown in Figure 2. A fund that moves from the top quartile to the bottom performance quartile, for example, experiences a drop in flow relative to AUM by 0.32% under fee based purchase options, but only 0.26% under front end purchase options, 0.19% under no load purchase options, and 0.13% under deferred sales charge purchase options, controlling for other things being equal.

For funds that can be purchased directly from the fund company (Models 6 and 7 in Table 3), the data do not enable an accurate assessment of the interaction effects with prior performance and purchase option types due to the smaller degree of variation in the sample. Nevertheless, for the interaction terms that can be included, they are positive and significant, meaning that the effect is more pronounced relative to the excluded interactions, and generally

consistent with the evidence in Models 1-5. Likewise, similar evidence is observed for fund-of-funds in Table 3 Panel B, with the exception that no-load purchase options do not appear to flatten the flow-performance line for fund-of-funds, unlike that for stand-alone funds.

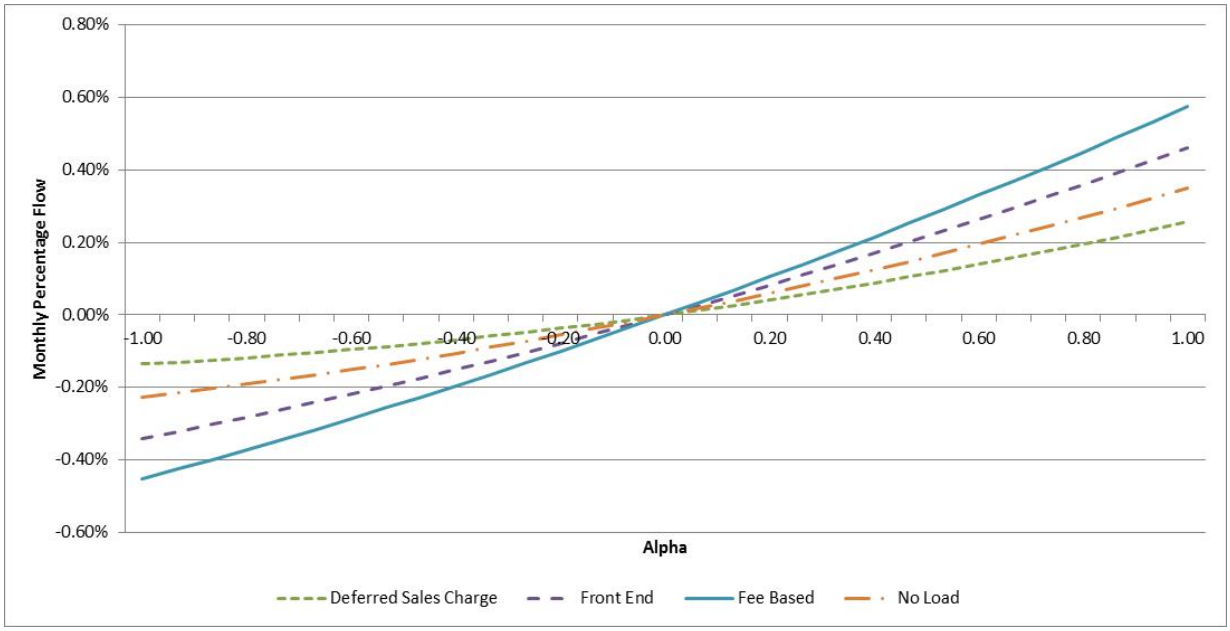
Table 4 presents regression analyses of fund flows relative to past performance for the subset of funds that do not allow for fee based purchase options (i.e., only including funds that allow for deferred sales charges, commissions and trailer fees). The basic model specification is as follows:

$$Flow_{t+1} = Constant + \beta_1 * Alpha_t + \beta_2 * Alpha^2_t + \beta_3 * MER_t + \beta_4 * MER_t * Alpha_t + \beta_5 * Alpha^2_t * MER_t + \beta_6 * Trailer\ Fee_t + \beta_7 * Trailer\ Fee_t * Alpha_t + \beta_8 * Alpha^2_t * Trailer\ Fee_t + \beta_9 * Other\ Types\ of\ Fee_t + \beta_{10} * Other\ Types\ of\ Fee_t * Alpha_t + \beta_{11} * controls + residuals$$

Table 4 presents six different specifications to show robustness. Fund fixed effects are used in Table 4 because the right-hand-side variables are time variant, and because the Hausmann (1978) confirmed the validity of the random effects specification. There is a change in fees in 8.52% of the sample months (some of which are permanent, and others transitory or temporary and subsequently reversed), and hence there is sufficient variation to not warrant any adjustments to the fixed effects estimation procedure suggested by Plumper and Troeger (2007), for example. Standard errors are clustered by FundSERV Code (Petersen, 2009). The results are robust to not clustering or clustering on different variables. Table 4 examines the subset of funds that do not include the fee-based purchase option because those funds do not allow for trailer fees. In Appendix II we present a very large number of additional specifications to assess robustness, including different sets of variables, different variables, and different subsets of the data such as

Figure 2. Purchase Options and Flow-Performance Intercept and Slope

This figure shows the impact of different purchase options on the flow-performance diagram. Estimates are based on Table 3 coefficient estimates. The first figure shows the change in slope, and the second figure shows the intercept change.



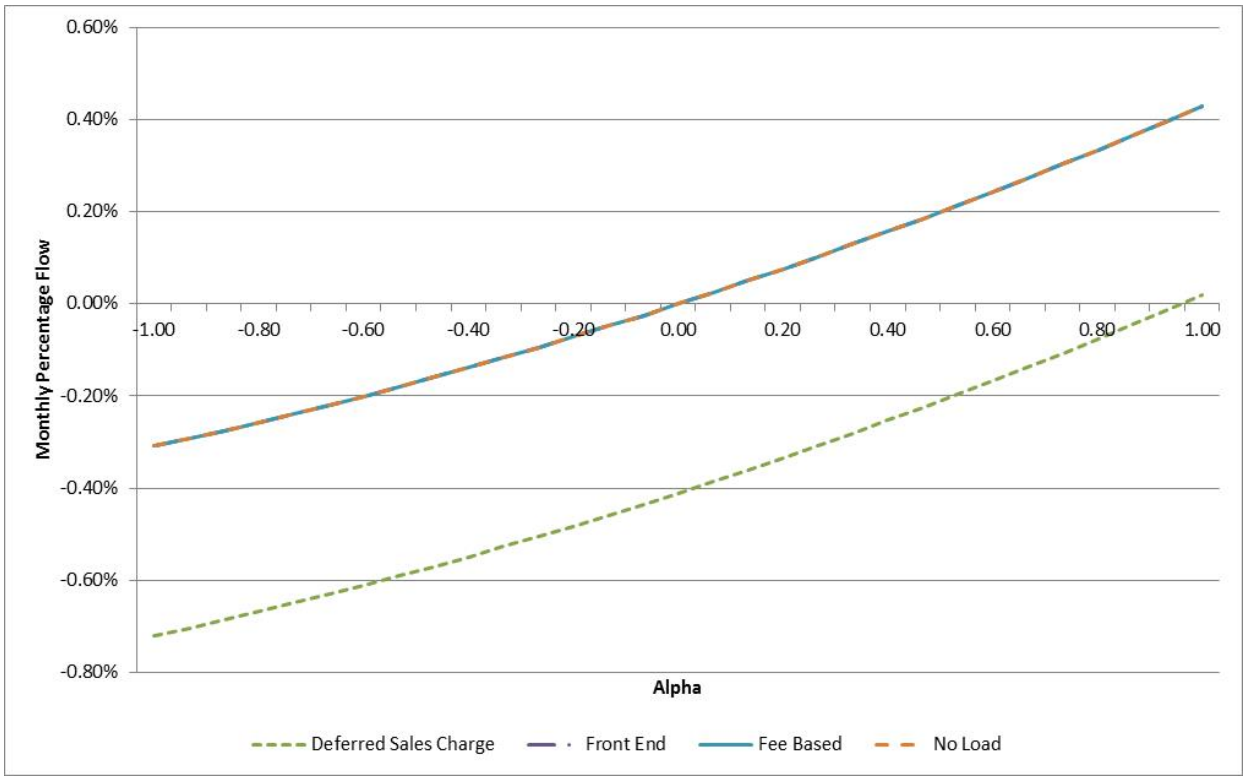


Table 4. Flow Sensitivity Analysis for Subsample Excluding Fee-Based

This table presents monthly FundSERV code fixed effects panel regressions of the determinants of the percentage flow as a function of prior month's alpha, fee variables, interaction terms between fees and alphas, and control variables. The dependent variable is Flows Net of PAC, SWP, Switches, Reinvestments, Distributions, and Affiliated Dealer and Affiliated Investment Funds. Variables are as defined in Table 1. Standard errors are clustered by FundSERV code. T-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A. Stand-Alone Funds, cannot be directly purchased from fund manager

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Alpha Lagged	0.00563**	0.00371	0.00402*	0.00568**	0.00376	0.00420*
	(2.48)	(1.62)	(1.74)	(2.50)	(1.64)	(1.81)
Management Expense Ratio (MER) %	0.000836**	0.000820**	0.000710*	0.00104***	0.00102***	0.000905**
	(2.27)	(2.23)	(1.91)	(2.80)	(2.75)	(2.42)
Alpha Lagged * Management Expense Ratio	-0.000441***	-0.000394**	-0.000425**	-0.000253	-0.000211	-0.000235
	(-2.67)	(-2.39)	(-2.54)	(-1.48)	(-1.24)	(-1.36)
Trading Expense Ratio (TER) %	0.0000772**	0.0000738**	0.0000747**	0.0000756**	0.0000876**	0.0000885**
	(2.15)	(2.05)	(2.08)	(2.10)	(2.37)	(2.40)
Alpha Lagged * Trading Expense Ratio	-0.00000204	0.00000107	0.000000533	-0.000000124	0.0000243	0.0000229
	(-0.06)	(0.03)	(0.02)	(-0.00)	(0.70)	(0.66)
Maximum Posted Initial Trailer Fee (%)	0.00385**	0.00354**	0.00368**	0.00329*	0.00305*	0.00296*
	(2.24)	(2.06)	(2.14)	(1.91)	(1.77)	(1.68)
Alpha Lagged *Maximum Posted Initial Trailer Fee	-0.00206***	-0.00166***	-0.00184***	-0.00220***	-0.00179***	-0.00208***
	(-6.59)	(-5.19)	(-5.37)	(-7.04)	(-5.57)	(-5.65)
Trailer Slope	0.00972***	0.00959***	0.00970***	0.00977***	0.00968***	0.00977***
	(6.57)	(6.49)	(6.54)	(6.61)	(6.54)	(6.58)
Alpha Lagged * Trailer Slope	0.00246***	0.00235***	0.00238***	0.00237***	0.00226***	0.00227***
	(3.45)	(3.29)	(3.13)	(3.32)	(3.16)	(2.99)
Deferred Sales Charge Year 1 (%)	-0.00904	-0.0107	0.000291	-0.00852	-0.0101	0.000759
	(-0.93)	(-1.10)	(0.02)	(-0.88)	(-1.04)	(0.06)
Alpha Lagged *Deferred Sales Charge Year 1	-0.00115***	-0.00100***	-0.000993***	-0.00115***	-0.00101***	-0.001000***
	(-7.00)	(-6.03)	(-5.66)	(-7.04)	(-6.06)	(-5.70)
Deferred Sales Charge Slope	-0.188***	-0.188***	-0.191***	-0.188***	-0.188***	-0.191***
	(-12.35)	(-12.32)	(-12.36)	(-12.35)	(-12.32)	(-12.36)
Alpha Lagged *Deferred Sales Charge Slope	0.00329	0.00436	0.00429	0.00382	0.00503*	0.00495*
	(1.20)	(1.58)	(1.54)	(1.39)	(1.82)	(1.77)
Front End Commission Paid for DSC purchases (%)	-0.000487	-0.000469	-0.000366	-0.000572	-0.000547	-0.000474
	(-0.75)	(-0.72)	(-0.56)	(-0.88)	(-0.84)	(-0.72)
Alpha Lagged *Sales Commission Paid for DSC	-0.000378***	-0.000332***	-0.000302***	-0.000390***	-0.000342***	-0.000308***
	(-7.37)	(-6.38)	(-5.11)	(-7.58)	(-6.57)	(-5.21)
Maximum Front End Commission (%)			0.00196			0.00193
			(1.29)			(1.27)
Alpha Lagged * Maximum Front End Commission			0.0000610			0.0000722
			(1.13)			(1.33)
Maximum Posted Switch Fee (%)	-0.00129	-0.000615	-0.000652	-0.00121	-0.000487	-0.000475
	(-0.06)	(-0.03)	(-0.03)	(-0.06)	(-0.02)	(-0.02)

Table 4. Panel A. (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Alpha Lagged * Maximum Posted Switch Fee	0.00236**	0.00277**	0.00258**	0.00230**	0.00269**	0.00246**
	(2.04)	(2.38)	(2.20)	(1.98)	(2.32)	(2.10)
Other payment to Dealer and Broker (%)	-29.24***	7.890*	7.599	-29.23***	7.860*	7.570
	(-6.47)	(1.66)	(1.60)	(-6.46)	(1.65)	(1.59)
Alpha Lagged*Other payment to Dealer and Broker	9.014***	2.580	2.397	8.962***	2.559	2.394
	(2.60)	(0.71)	(0.66)	(2.59)	(0.71)	(0.66)
Front End Commission Paid (%)	-0.0377***	-0.0376***	-0.0376***	-0.0377***	-0.0376***	-0.0376***
	(-33.33)	(-33.26)	(-33.23)	(-33.34)	(-33.27)	(-33.24)
Alpha Lagged * Front End Commission Paid	-0.00162*	-0.00148*	-0.00157*	-0.00155*	-0.00139*	-0.00149*
	(-1.95)	(-1.78)	(-1.88)	(-1.87)	(-1.68)	(-1.79)
Performance Fee (%)			0.00637			0.00637
			(0.93)			(0.93)
Alpha Lagged*Performance Fee			0.0000940			0.000107
			(0.40)			(0.46)
Negotiated Management Fee (%)		-0.0394***	-0.0391***		-0.0394***	-0.0391***
		(-25.16)	(-24.90)		(-25.16)	(-24.90)
Alpha Lagged * Negotiated Management Fee		0.00638***	0.00659***		0.00641***	0.00662***
		(5.40)	(5.51)		(5.43)	(5.53)
Minimum Purchase Amount ($)			5.94e-10***			5.89e-10**
			(2.59)			(2.57)
Alpha Lagged * Minimum Purchase Amount			-1.30e-10			-1.22e-10
			(-0.87)			(-0.81)
Alpha Lagged^2				0.000458***	0.000487***	0.000415***
				(3.97)	(4.17)	(2.65)
Alpha Lagged^2 * Management Expense Ratio				-0.000321***	-0.000314***	-0.000308***
				(-4.72)	(-4.62)	(-4.44)
Alpha Lagged^2 * Trading Expense Ratio					-0.0000269*	-0.0000267*
					(-1.86)	(-1.84)
Alpha Lagged^2 *Maximum Posted Initial Trailer Fee						0.000108
						(0.75)
Constant	0.0121	0.0206	-0.0458	0.00928	0.0171	-0.0483
	(0.18)	(0.31)	(-0.55)	(0.14)	(0.26)	(-0.58)
Number of Observations	508121	508121	508121	508121	508121	508121
Number of Groups	9595	9595	9595	9595	9595	9595
R^2 within	0.0034	0.0047	0.0047	0.0035	0.0047	0.0047
R^2 between	0.0138	0.016	0.0072	0.0134	0.0157	0.0069
R^2 overall	0.0067	0.0093	0.006	0.0065	0.009	0.0058
F	81.14***	101.7***	81.05***	75.09***	90.98***	72.04***

Table 4 (Continued)
Panel B. Stand-Alone Funds, can be directly purchased from fund manager

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Alpha Lagged	0.00368***	0.00181**	0.00266***	0.00266***	0.00266***	0.00254***
	(11.85)	(2.04)	(2.93)	(2.93)	(2.85)	(2.72)
Alpha Lagged^2	0.000819***	0.000900***	0.000882***	0.000898***	0.000908	-0.00352***
	(4.51)	(4.61)	(4.52)	(4.60)	(1.57)	(-3.64)
Trading Expense Ratio (TER) %	-0.000505***	-0.000511***	-0.000513***	-0.000513***	-0.000513***	-0.000480***
	(-3.85)	(-3.74)	(-3.76)	(-3.76)	(-3.76)	(-3.52)
Alpha Lagged * Trading Expense Ratio	0.000248*	0.000348**	0.000379**	0.000374**	0.000374**	0.000381**
	(1.72)	(2.29)	(2.50)	(2.46)	(2.46)	(2.51)
Alpha Lagged^2 * Trading Expense Ratio	-0.000250***	-0.000284***	-0.000286***	-0.000287***	-0.000287***	-0.000363***
	(-2.72)	(-2.92)	(-2.94)	(-2.95)	(-2.94)	(-3.70)
Maximum Posted Initial Trailer Fee (%)		-0.0544***	-0.0548***	-0.0539***	-0.0539***	-0.0540***
		(-9.08)	(-9.15)	(-8.88)	(-8.88)	(-8.90)
Alpha Lagged *Maximum Posted Initial Trailer Fee		0.00199*	-0.000471	-0.000419	-0.000414	-0.000262
		(1.80)	(-0.38)	(-0.34)	(-0.33)	(-0.21)
Maximum Front End Commission (%)			-282.1	-228.5	-228.7	-261.0
			(-0.01)	(-0.01)	(-0.01)	(-0.01)
Alpha Lagged * Maximum Front End Commission			0.000601***	0.000591***	0.000591***	0.000594***
			(4.66)	(4.54)	(4.54)	(4.43)
Minimum Purchase Amount ($)				-0.000000126***	-0.000000126***	-0.000000125***
				(-8.70)	(-8.70)	(-8.61)
Alpha Lagged * Minimum Purchase Amount				-4.37e-09	-4.37e-09	6.96e-10
				(-1.17)	(-1.17)	(0.18)
Management Expense Ratio (MER) %				0.00131	0.00131	0.00102
				(1.09)	(1.09)	(0.84)
Alpha Lagged^2 *Maximum Posted Initial Trailer Fee					-0.0000120	0.00113
					(-0.02)	(1.41)
Alpha Lagged^2 * Management Expense Ratio						0.00223***
						(5.85)
Alpha Lagged^2 * Maximum Front End Commission						0.0000426
						(0.55)
Constant	-0.0426***	-0.0172***	231.8	187.8	188.0	214.5
	(-258.08)	(-4.28)	(0.01)	(0.01)	(0.01)	(0.01)
Number of Observations	164078	134505	134505	134505	134505	134505
Number of Groups	2407	2010	2010	2010	2010	2010
R^2 within	0.0017	0.0023	0.0025	0.0031	0.0031	0.0033
R^2 between	0.0098	0.004	0.0655	0.0655	0.0655	0.0655
R^2 overall	0.0036	0.002	0.0372	0.0372	0.0372	0.0372
F	54.14***	43.71***	36.41***	33.78***	31.18***	29.32***

Table 4 (Continued)
Panel C. Fund of Funds, cannot be directly purchased from fund manager

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Alpha Lagged	0.00309**	0.00297**	0.00580**	0.0119***	2.550	2.552
	(2.44)	(2.31)	(2.53)	(3.00)	(0.24)	(0.24)
Management Expense Ratio(MER)%	0.00265***	0.00264***	0.00328***	0.00315***	0.00296***	0.00284***
	(3.86)	(3.85)	(4.54)	(4.35)	(4.08)	(3.90)
Alpha Lagged * Management Expense Ratio	-0.000365	-0.000327	-0.00146**	-0.00260***	-0.00194**	-0.00231***
	(-0.68)	(-0.60)	(-2.00)	(-3.26)	(-2.40)	(-2.79)
Trading Expense Ratio (TER) %	0.0000999	0.0000901	0.000219**	0.000160	0.000144	0.000144
	(1.16)	(1.03)	(2.00)	(1.47)	(1.32)	(1.32)
Alpha Lagged * Trading Expense Ratio	-0.0000589	-0.0000701	-0.00000491	0.000111	0.000184	0.000185
	(-0.46)	(-0.53)	(-0.03)	(0.70)	(1.15)	(1.16)
Maximum Posted Initial Trailer Fee (%)	0.000912	0.000920	0.000197	-0.0000921	-0.00120	-0.00136
	(0.36)	(0.36)	(0.05)	(-0.02)	(-0.29)	(-0.33)
Alpha Lagged *Maximum Posted Initial Trailer Fee	-0.00168*	-0.00169*	0.000398	0.000262	0.00436***	0.00210
	(-1.74)	(-1.75)	(0.33)	(0.21)	(3.03)	(1.25)
Trailer Slope	-0.00308	-0.00308	-0.000820	-0.00263	-0.00213	-0.00200
	(-1.34)	(-1.34)	(-0.28)	(-0.90)	(-0.72)	(-0.68)
Alpha Lagged *Trailer Slope	-0.00553***	-0.00552***	-0.00302	-0.00195	-0.00361	-0.00401
	(-3.39)	(-3.38)	(-1.25)	(-0.81)	(-1.48)	(-1.64)
Alpha Lagged*Performance Fee	0.00247***	0.00247***	0.00219***	0.00195***	0.00232***	0.00232***
	(6.68)	(6.63)	(5.26)	(4.11)	(4.85)	(4.84)
Negotiated Management Fee (%)	-0.0246***	-0.0247***	-0.0210***	-0.0209***	-0.0194***	-0.0193***
	(-7.18)	(-7.18)	(-5.90)	(-5.90)	(-5.46)	(-5.44)
Alpha Lagged * Negotiated Management Fee	-0.00141	-0.00138	-0.00559	-0.00501	-0.00936**	-0.00972**
	(-0.37)	(-0.36)	(-1.30)	(-1.17)	(-2.15)	(-2.23)
Alpha Lagged^2		0.0000660	0.000415	-0.00137	-0.00147	-0.00484***
		(0.24)	(1.17)	(-1.39)	(-1.49)	(-3.08)
Alpha Lagged^2 * Trading Expense Ratio		0.0000502	-0.0000982	-0.000189*	-0.000238**	-0.000235**
		(0.60)	(-1.05)	(-1.89)	(-2.38)	(-2.33)
Deferred Sales Charge Slope			-0.142**	-0.138**	-0.135**	-0.136**
			(-2.50)	(-2.44)	(-2.32)	(-2.33)

Table 4. Panel C. (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Alpha Lagged * DSC Slope			0.0102	0.00378	0.00332	0.00356
			(1.31)	(0.48)	(0.42)	(0.44)
Front End Commission paid for DSC purchases (%)			-0.000446	0.000911	0.00179	0.00179
			(-0.20)	(0.39)	(0.76)	(0.76)
Alpha Lagged *Sales Commission paid for DSC			-0.000278	-0.000145	-0.000941***	-0.000885***
			(-1.26)	(-0.65)	(-3.52)	(-3.30)
Alpha Lagged^2* Management Expense Ratio				0.00104**	0.00114**	0.00179***
				(2.02)	(2.21)	(3.16)
Deferred Sales Charge Year 1				-0.0218**	-0.0214*	-0.0212*
				(-2.25)	(-1.79)	(-1.78)
Alpha Lagged *DSC Amount Year 1 (%)				-0.00111*	-0.000423	-0.000563
				(-1.70)	(-0.64)	(-0.85)
Front End Commission Paid (%)				-0.0873***	-0.0876***	-0.0877***
				(-28.62)	(-28.71)	(-28.75)
Alpha Lagged * Front End Commission paid				-0.00641*	-0.00561	-0.00542
				(-1.68)	(-1.47)	(-1.42)
Maximum Front End Commission for FE purchases (%)					-0.000823	-0.000592
					(-0.08)	(-0.06)
Alpha Lagged * Maximum Front End Commission (%)					-0.00142***	-0.00139***
					(-5.40)	(-5.29)
Alpha Lagged * Maximum Posted Switch Fee					-1.270	-1.270
					(-0.23)	(-0.23)
Alpha Lagged^2 *Maximum Posted Initial Trailer Fee						0.00336***
						(2.78)
Minimum Purchase Amount($)						-9.97e-10
						(-0.68)
Alpha Lagged * Minimum Purchase Amount						9.40e-10
						(0.51)
Constant	-0.00958***	-0.00958***	-0.0383***	0.0831	0.0825	0.0815
	(-4.25)	(-4.25)	(-3.04)	(1.55)	(1.49)	(1.47)
Number of Observations	105089	105089	73611	73611	73611	73611
Number of Groups	2027	2027	1468	1468	1468	1468
R^2 within	0.0015	0.0015	0.0021	0.0147	0.0151	0.0152
R^2 between	0.0001	0.0001	0.0006	0.0315	0.02	0.0215
R^2 overall	0.0013	0.0012	0.0012	0.0466	0.035	0.0363
F	12.72***	10.96***	8.471***	46.66***	42.42***	38.32***

Table 4 (Continued)
Panel D. Fund-of-Funds, can be directly purchased from fund manager

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Alpha Lagged	0.0516	0.0499	0.385	0.0512	0.0493	0.579
	(1.36)	(1.32)	(0.57)	(1.35)	(1.30)	(0.85)
Management Expense Ratio (MER) %	0.00384**	0.00443***	0.00444***	0.00389***	0.00444***	0.00443***
	(2.55)	(2.94)	(2.95)	(2.58)	(2.95)	(2.94)
Alpha Lagged * Management Expense Ratio	0.00267*	0.00357**	0.00353**	0.00284**	0.00384***	0.00365**
	(1.89)	(2.51)	(2.48)	(1.99)	(2.67)	(2.51)
Trading Expense Ratio (TER) %	-0.000528**	-0.000667***	-0.000680***	-0.000523**	-0.000633***	-0.000641***
	(-2.24)	(-2.83)	(-2.87)	(-2.22)	(-2.68)	(-2.70)
Alpha Lagged * Trading Expense Ratio	0.000106	0.000370	0.000388	0.0000895	0.000647*	0.000713**
	(0.36)	(1.24)	(1.27)	(0.30)	(1.88)	(1.99)
Maximum Posted Initial Trailer Fee (%)	0.0446	0.0453	0.0507	0.0445	0.0454	0.0507
	(1.29)	(1.31)	(1.47)	(1.29)	(1.31)	(1.47)
Alpha Lagged *Maximum Posted Initial Trailer Fee	0.00768***	0.00659***	0.00699***	0.00775***	0.00679***	0.00677***
	(3.41)	(2.92)	(3.10)	(3.43)	(3.01)	(2.90)
Trailer Slope	0.0129***	0.0134***	0.0134***	0.0130***	0.0135***	0.0135***
	(11.29)	(11.76)	(11.76)	(11.35)	(11.85)	(11.85)
Alpha Lagged * Trailer Slope	-0.00127	-0.000986	-0.00117	-0.00143	-0.00113	-0.00135
	(-1.11)	(-0.86)	(-1.01)	(-1.25)	(-0.99)	(-1.16)
Alpha Lagged *Deferred Sales Charge Year 1	0.00109***	0.00138***	0.00154***	0.00109***	0.00131***	0.00153***
	(2.60)	(3.23)	(2.94)	(2.59)	(3.05)	(2.92)
Front End Commission Paid for DSC purchases (%)	-0.00441	-0.00437	-0.00281	-0.00411	-0.00398	-0.00236
	(-0.33)	(-0.33)	(-0.21)	(-0.31)	(-0.30)	(-0.18)
Alpha Lagged *Sales Commission Paid for DSC	-0.000135	-0.000386	-0.000385	-0.000158	-0.000403	-0.000429
	(-0.48)	(-1.37)	(-1.33)	(-0.56)	(-1.43)	(-1.48)
Alpha Lagged * Maximum Posted Switch Fee	-0.0321*	-0.0314*	-0.199	-0.0322*	-0.0314*	-0.296
	(-1.70)	(-1.66)	(-0.59)	(-1.70)	(-1.66)	(-0.87)
Front End Commission Paid (%)	-0.0835***	-0.0854***	-0.0848***	-0.0835***	-0.0854***	-0.0847***
	(-41.04)	(-42.00)	(-41.60)	(-41.02)	(-41.99)	(-41.58)
Alpha Lagged * Front End Commission Paid	0.00762***	0.00665***	0.00650***	0.00766***	0.00686***	0.00664***
	(4.50)	(3.92)	(3.80)	(4.52)	(4.04)	(3.88)
Negotiated Management Fee (%)		0.0681***	0.0677***		0.0681***	0.0677***
		(17.38)	(17.15)		(17.39)	(17.14)
Alpha Lagged * Negotiated Management Fee		-0.0318***	-0.0302***		-0.0323***	-0.0301***
		(-6.25)	(-5.26)		(-6.33)	(-5.24)

Table 4. Panel D. (Continued)

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Minimum Purchase Amount ($)			-0.00270***			-0.00270***
			(-5.98)			(-5.98)
Alpha Lagged * Minimum Purchase Amount			-0.00000223			-0.00000353
			(-0.50)			(-0.78)
Alpha Lagged^2				0.00198*	0.00137	-0.000578
				(1.67)	(1.14)	(-0.21)
Alpha Lagged^2 * Management Expense Ratio				-0.00103	-0.000481	0.000275
				(-1.24)	(-0.56)	(0.22)
Alpha Lagged^2 * Trading Expense Ratio					-0.000313*	-0.000370**
					(-1.79)	(-2.02)
Alpha Lagged^2 *Maximum Posted Initial Trailer Fee						0.00125
						(0.78)
Constant	-0.0167	-0.0272	0.627***	-0.0171	-0.0279	0.625***
	(-0.46)	(-0.75)	(5.44)	(-0.47)	(-0.77)	(5.43)
Number of Observations	72081	72081	72081	72081	72081	72081
Number of Groups	1304	1304	1304	1304	1304	1304
R^2 within	0.0618	0.0923	0.1164	0.1172	0.1341	0.1457
R^2 between	0.0525	0.0622	0.0786	0.0978	0.1134	0.1244
R^2 overall	0.052	0.0535	0.0641	0.0843	0.1032	0.1233
F	127.4***	131.1***	119.2***	112.8***	111.9***	98.97***

those that exclude various purchase option types. The main findings from the data are quite robust across different specifications, with some differences that are noted therein.

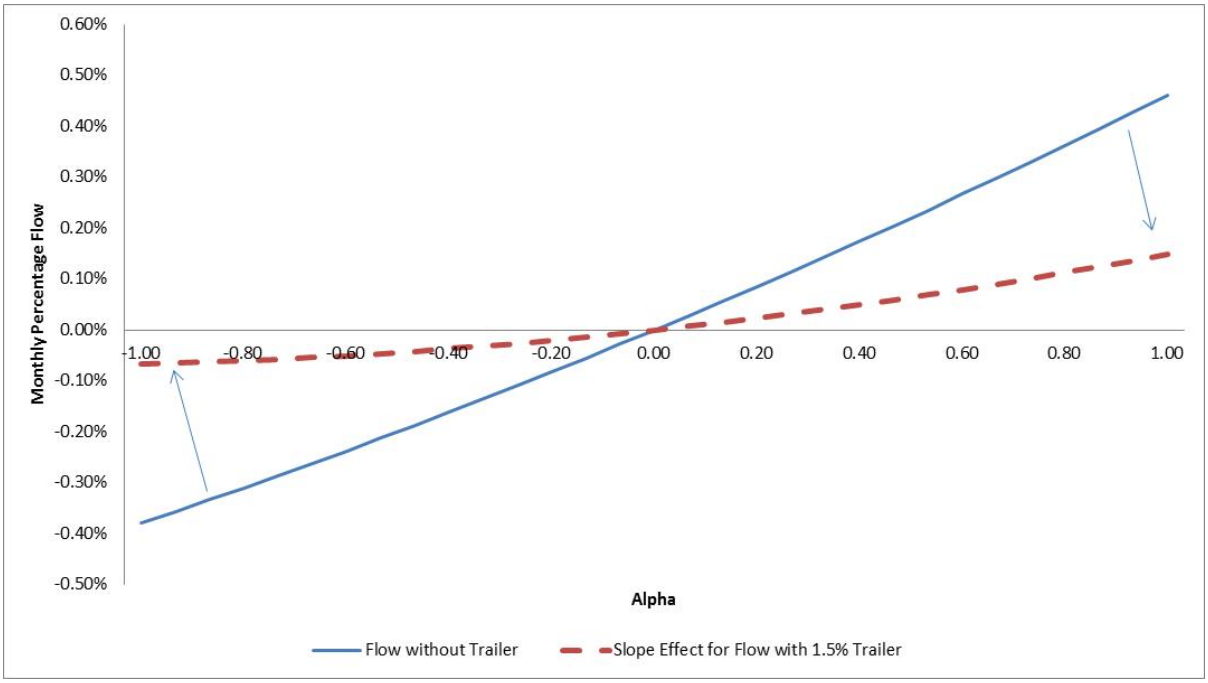
In Table 4, the data exhibit a number of insights into flow-performance sensitivity, and how this relationship prior alpha and future fund flows is moderated by fund fees. Table 4 Panel A shows the results for stand-alone funds that cannot be purchased directly. The data indicate that funds with higher prior alpha experience higher flows in the next month, and this effect is statistically significant at the 5% level in Models 1 and 4, the 10% level in Models 3 and 6. Similarly, the data indicate that the coefficient on alpha^2 is positive and statistically significant in Models 4-6, which means that the flow-performance relationship is convex (investors rush to funds that have had strong past performance, but are very reluctant to withdraw from funds that have had weak prior performance, consistent with prior work such as Del Guercio and Tkac (2002), among others. Accounting for the nonlinearity, the economic significance is such that a 1-standard deviation improvement in past alpha increases subsequent flow by 18.6% relative to the average monthly flow in the sample.

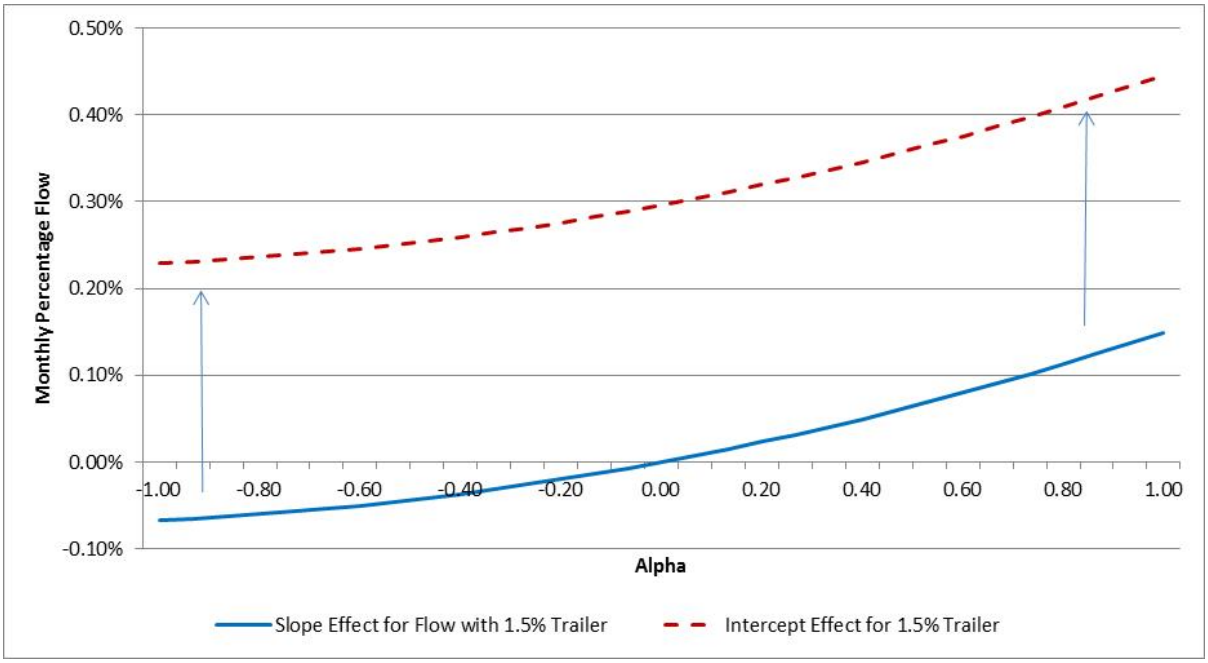
Table 4 Panel A further indicates that various fee variables affect flow-performance sensitivity for stand-alone funds that cannot be purchased directly from a fund manager. In particular, the data indicate that a 1-standard deviation increase in trailer fees reduces flow-performance sensitivity by 15.4%,[20] and this effect is statistically significant at the 1% level in each of the six models in Table 4. This effect is graphically shown in the first part of Figure 3. Furthermore, the data do indicate that higher subsequent trailers have a positive effect on flow(i.e., more capital is directed to funds with higher fees, regardless of past performance): a 1-

[20] The economic significance of the interaction terms are calculated at the average level of monthly alpha in the sample.

Figure 3. Trailer Fees and Flow-Performance Intercept and Slope

This figure shows the impact of a 1.5% trailer fee on the flow-performance diagram for stand-alone funds that cannot be purchased directly. Estimates are based on Table 4 coefficient estimates. The first figure shows the change in slope, and the second figure shows the intercept change.





standard deviation increase in trailer slope is associated with a 5.7% increase in flow relative to the average monthly flow, which is surprising but implies that capital is directed to funds with higher trailer fees regardless of past performance. This effect is graphically shown in the second part of Figure 3. Further, funds with higher subsequent trailers have higher flows regardless of past performance: a 1-standard deviation increase in the rate of change in trailers is associated with a 14.9% increase in flow irrespective of past performance. The rate of increase in trailers in the future makes current flow more sensitive to past performance: a 1-standard deviation increase in subsequent trailers increases current flow by 3.7% relative to the average flow-sensitivity.

The data in Table 4 Panel A indicate that a 1-standard deviation increase in deferred sales charges reduces flow-performance sensitivity by 14.6%. If the rate of subsequent deferred sales charge reductions decreases by 1-standard deviation then current flow to the fund regardless of past performance reduces by 46.6%. Further, if sales commission paid for DSC increases by 1-standard deviation then flow-performance sensitivity reduces by 7.3%.

Some of the other results in Table 4 are as follows. MER and TER are related to flow in an inverse-U shaped way: they are positively related to flow for low levels of MER and TER but this effect is diminishing for larger levels of MER and TER, and it is negatively related to flow for high levels of MER and TER. Other payments to dealers and brokers reduce flow but increase flow performance slope, while front end commissions paid reduce both flow and flow-performance slope.

Consistent with the above evidence that higher trailer fees increase flow regardless of past performance for stand-alone funds not purchased directly from a fund manager, so do higher

MERs and TERs. An increase in MER (TER) by 1-standard deviation is associated with an increase in flow by 6.9% (1.1%) relative to average monthly flow, regardless of past performance. Table 4 Panel A also shows that an increase in MER lowers flow-performance sensitivity, but that effect is only significant in Models 1-3 and not robust to the specifications in Models 4-6.

There are some differences in the flow-performance regression results for stand-alone funds that can be purchased directly from the fund company, as indicated in Table 4 Panel B. Some of the differences may be attributable to the different sample size, and the inability to contemporaneously control for the same complete set of variables as in Panel A due to collinearity. Consistent with Panel A for funds not purchased directly from the fund company, the data indicate that flow is higher for funds that have had better past performance, but the economic significance is smaller whereby a 1-standard deviation increase in past alpha increases future flow by 7.4%. Flow is lower regardless of past performance when TER, trailer fees, and minimum purchase amounts are higher: a 1-standard deviation increase in TER reduces flow by 4.2%, while a 1-standard deviation increase in trailer fees reduces flow by 236%, and a 1-standard deviation increase in minimum purchase amounts reduce flow by 109%. Flow-performance sensitivity shows great convexity at higher trading expense ratios, meaning an increase in TER is associated with higher flow-sensitivity at a diminishing rate, and the economic significance is small whereby a 1-standard deviation change is associated with a change in flow around 1-2%. The maximum front end commission increases future flow, but again the economic significance is small such that a 1-standard deviation increase in maximum front end commissions increases sensitivity by less than 0.001%.

One additional item to note from Tables 3 and 4 is that the data indicate that funds with fee-based purchase options exhibit significantly higher flow-performance sensitivity, while funds with front-end purchase options, deferred sales charge purchase options, and no load purchase options exhibit significantly lower flow performance slope. This evidence is consistent with the inferences from Table 4 that large fees such as trailer fees reduce flow-performance sensitivity. Appendix II provides a number of additional robustness checks for Tables 3 and 4. Overall, the results are quite consistent with that reported in Tables 3 and 4. These details are provided in Appendix II.

There are some differences in the size of the effects for fund-of-funds that cannot be purchased directly (Table 4 Panel C), but the sign and statistical significance is similar to that discussed above for Table 4 Panels A and B. A 1-standard deviation increase in alphas is associated with a 5.2% (10.7%) [2.7%] increase in flow relative to average monthly flow in Model 3 (Model 4) [Model 7] in Table 3 Panel C, but this effect is not significant in Models 5 and 6. A 1-standard deviation increase in MER reduces flow regardless of past performance by 2.9% relative to average month flow, and reduces flow-performance sensitivity by 0.7% (based on the Model 4 estimates). Higher initial deferred sales charges and slow rates of reduction in subsequent deferred sales charges, higher negotiated management fees, and higher front end commissions paid are all negatively associated with flow regardless of past performance; a 1-standard deviation increase in each causes a respective percentage drop in flow by 61.6%, 13.8%, 5.1%, and 11.5%. Higher performance fees by 1-standard deviation are associated with higher flow-performance sensitivity by 4.0%. Trailer fees, by contrast, are not statistically significant in Table 3 Panel C.

Further differences in the results are seen for fund-of-funds that can be purchased directly (Table 4 Panel D). Flow levels are higher regardless of past performance when MERs are higher (for a 1-standard deviation change, there is a 4.0% increase), subsequent trailer fees increase at higher rates (for a 1-standard deviation change, there is a 9.9% increase), negotiated management fees are higher (9.3%), front-end commissions are lower (221.8%), TERs are lower (1.6%), and minimum purchase amounts are lower (187.9%). Higher trailer fees, initial deferred sales charges, front end commissions paid, and higher trading expense ratios increase flow-performance sensitivity, but the sizes of these effects are very small (the marginal effects are 0.04%, 0.06%, 0.2%, and 0.02%, respectively).

4.2. Alpha Regression Analyses

In order to complement the flow-performance analysis, in this section we investigate whether or not there are any systematic differences in alphas earned by the funds (gross of fees) in relation to the fee structures and flow-performance sensitivity. The regressions are presented in Table 5. The regressions have the following structure:

$$\text{Alpha}_{t+1} = \text{Constant} + \beta_1 * \text{Flow-Performance Intercept}_t + \beta_2 * \text{Flow-Performance Slope}_t + \text{residuals}$$

Because alphas are calculated over a 12-month window, we use 12 month lags in the independent variables.[21] In all of the regressions, standard errors are clustered by FundSERV code (Petersen, 2009), and results are robust to not clustering or clustering on different variables.

[21] Also, we considered regressions based on annual panels (instead of monthly) and the findings were not materially different.

The data in Table 5 Panel A for the subset of stand-alone funds that cannot be purchased directly from the fund company clearly indicate the following. First, the flow-performance intercept is negatively related to future alpha, and this effect is statistically significant at the 1% level in Models 1 and 3. The economic significance is such that a 1-standard deviation increase in the flow-performance intercept is associated with a 2.22% (Model 3) to 3.87% (Model 1) decrease in future alpha, relative to the average monthly alpha in the data. Referring back to Table 4, we note that the flow-performance intercept is positively affected by trailer fees. Table 5 therefore implies that a 1% increase in trailer fees is associated with a 0.23% (Model 3) to 0.39% (Model 1) decrease in future alpha through the intercept effect.

Figure 4 provides further insight into this effect in the data by showing the histogram of the flow-performance intercept variable. The data in the first part of Figure 4 indicate that for stand-alone funds that cannot be purchased directly from a fund manager, flow is on average strongly positive regardless of past performance. Additional flow irrespective of how well a fund does in terms of risk-adjusted performance highlights the fact that on average, fund managers receive capital for reasons other than performance, including the fee structure. We know from Table 4 that the flow-performance intercept is larger when there are more favorable compensation arrangements for agents, such as larger trailer fees, which serves to make the conflicts of interest more pronounced in view of the already positive average level of flow irrespective of past performance. As such, it is not surprising that for stand-alone funds that cannot be purchased directly from the fund company, the data indicate a strong statistically and economically significant negative relation between the flow-performance intercept and future alpha.

Table 5. Relation between Flow Intercept, Flow Slope and Future Alpha, on subsample excluding Fee based
This table presents FundSERV code fixed effects panel data estimates of the relationship between the flow intercept, flow slope, and 1-year lead future alphas. Flow intercept and slope are calculated based on Models 6 and 12 of Table 4 for each of the respective categories: stand-alone funds, not purchased direct, stand-alone funds purchased direct, fund of funds not purchased direct, and fund of funds purchased direct. Flow intercept refers to the level of flow in a given month irrespective of past alpha, while flow slope refers to the sensitivity of capital flows that the fund receives as a result of changes in monthly alpha. Standard errors are clustered by FundSERV code. t-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A. Stand-Alone Funds

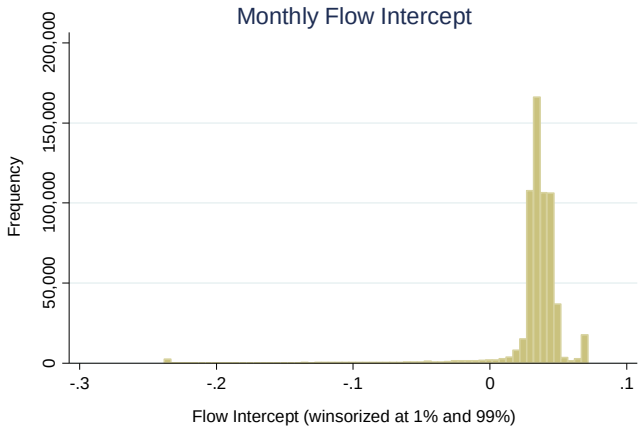
	Cannot be Purchased Directly			Can be Purchased Directly		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Flow Intercept	-0.324***		-0.185***	1.721***		1.555***
	(-5.79)		(-2.70)	(10.93)		(6.62)
Flow Slope		6.126***	5.767***		2.935***	1.367***
		(6.61)	(6.16)		(9.57)	(3.53)
Constant	0.263***	0.257***	0.263***	0.106***	0.0194***	0.0897***
	(126.83)	(175.90)	(94.47)	(17.74)	(10.65)	(8.33)
Observations	492088	412300	412300	132101	107782	107782
Number of groups	9192	8229	8229	1981	1703	1703
R^2 within	0.0194	0.0271	0.0366	0.0158	0.0176	0.0281
R^2 between	0.0232	0.0215	0.0284	0.0195	0.0162	0.0233
R^2 overall	0.0197	0.0204	0.023	0.0142	0.0151	0.021
F	33.47***	43.75***	25.51***	119.4***	91.61***	67.76***

Table 5 (Continued)
Panel B. Fund-of-Funds

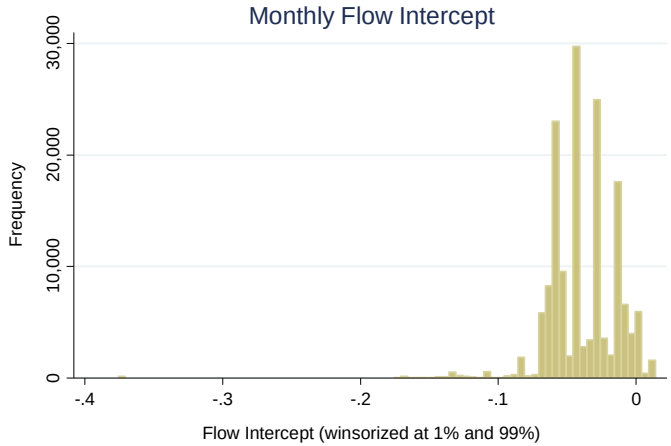
	Cannot be Purchased Directly			Can be Purchased Directly		
	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Flow Intercept	0.360***		0.145*	-0.0458***		-0.0291**
	(5.97)		(1.91)	(-5.02)		(-2.37)
Flow Slope		6.897***	2.541**		0.331***	0.184**
		(6.33)	(2.12)		(4.95)	(2.04)
Constant	0.348***	0.359***	0.359***	0.181***	0.189***	0.184***
	(59.73)	(42.85)	(32.18)	(106.64)	(181.75)	(83.74)
Observations	73356	86145	59974	69842	70019	69842
Number of groups	1448	1840	1301	1280	1283	1280
R^2 within	0.0257	0.0272	0.0313	0.0232	0.0192	0.0311
R^2 between	0.0365	0.0228	0.0391	0.0273	0.0245	0.0271
R^2 overall	0.0224	0.0211	0.0289	0.0176	0.0183	0.0254
F	35.64***	40.07***	4.884***	25.18***	24.51***	14.68***

Figure 4. Histograms for Flow Intercept

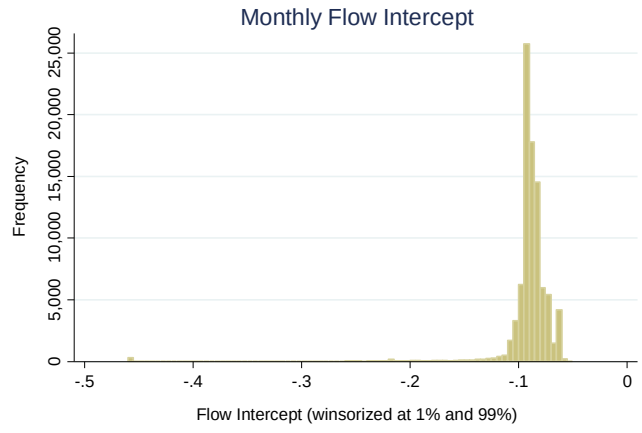
This chart shows the distribution of variable "Flow Intercept" by each fund category. Variable "Flow Intercept" is created by regressing the aggregate monthly fund flow on lagged alpha, fee variables and a series of interacting variables, based on the most complete models in Table 3. The resulting coefficients before the fee variables are recorded; these coefficients are multiplied by the according fee variables and then added together to construct the "Flow Intercept", which shows that given the fund performance unchanged, how the fees affect the total fund flow directly.



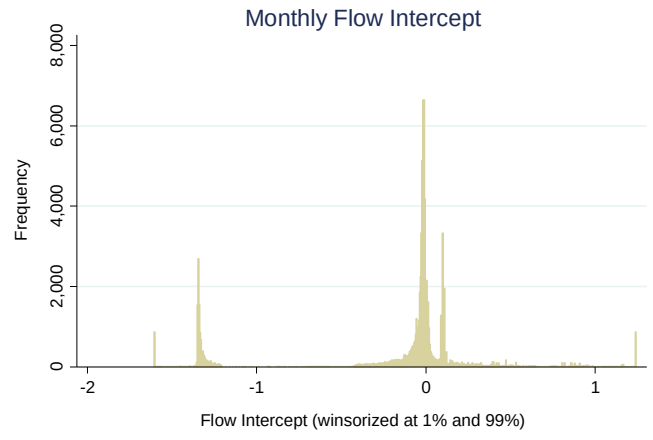
Category 1: direct managed funds, series cannot be purchased directly from fund manager.



Category 2: direct managed funds, series can be purchased directly from fund manager.



Category 3: fund of funds, series cannot be purchased directly from fund manager.



Category 4: fund of funds, series cann be purchased directly from fund manager.

But the flow-performance intercept effect is not the complete picture because there is a slope effect as well. Table 5 shows that flow-performance slope is positively related to future alpha, and this effect is statistically significant at the 1% level. A 1-standard deviation increase in flow-performance slope is associated with a 4.89% (Model 3) to 5.19% (Model 2) increase in future alpha. Referring back to Table 4, recall that the flow-performance slope is negatively related to trailer fees. As such, a 1% increase in trailer fees is associated with a 1.20% (Model 3) to 1.27% (Model 2) reduction in future alpha. Adding the slope and intercept effects together, a 1-standard deviation increase in trailer fees is conservatively associated with a 1.43% (Model 3) decrease in future alpha. Similar evidence is seen with deferred sales charges. A 1% increase in deferred sales charges raises the flow-performance intercept in Table 4 Panel A (although this effect is statistically insignificant), which in turn results in a 0.06% drop in future alpha. A 1% increase in deferred sales charges lowers the flow-performance slope (and this effect is statistically significant in Table 4 Panel A), which in turn causes a 0.58% reduction in future alpha. Overall, for the subset of directly managed funds that cannot be purchased directly, the data are consistent with the view that fees impact flow-performance intercept and slope, and flow-performance intercept and slope in turn impacts future alpha.

Table 5 provides the same evidence for stand-alone funds that can be directly purchased from a fund manager. The evidence here is in part analogous to that for stand-alone funds that cannot be purchased directly from a fund manager insofar as the flow-performance slope is positive and statistically significant. The data indicate that a 1-standard deviation increase in flow-performance slope is associated with a 5.65% (Model 3) to 12.14% (Model 2) increase in future alpha. Referring back to Table 4 Panel B, a 1% increase in trailer fees lowers flow-performance slope (although this effect is not statistically significant in Table 3 Panel B Model

6), and in Table 5 we see that the associated impact of the flattened slope is a 0.23% (Model 3) to 0.50% (Model 2) reduction in future alpha.

Table 5 indicates a flow-performance intercept effect for stand-alone funds that can be directly purchased is positive and significant, which is different from the counterpart funds that cannot be directly purchased where the coefficient is negative and significant. The most compelling reason for this difference is evident in Figure 4. For funds that cannot be purchased directly, the flow-performance intercept is strongly positive for over 95% of the funds (investor capital is allocated to funds regardless of past performance), while for funds that can be purchased directly, the flow-performance intercept is strongly negative for over 95% of the funds (investor capital does not flow to funds unless there is evidence of past performance). This evidence means that when investing directly, investors are sensitive to fees: when a fund charges more, investors are less likely to invest and invest less. Among the funds that can be purchased directly, those that charge higher trailer fees have lower flow-performance intercepts (Table 4 Panel B), and in turn lower performance (Table 5). A 1-standard deviation increase in flow-performance intercept causes a 48.37% (Model 3) to 53.53% (Model 1) increase in future alpha, and a 1% increase in trailer fees causes a 108.34% (Model 3) to 119.91% (Model 1) decrease in future alpha, and each of these effects are significant at the 1% level of significance.

Table 5 provides further analyses of fund-of-funds. First, referring back to Figure 4, among fund-of-funds that cannot be purchased directly, monthly flow-performance intercepts are virtually always less than zero, implying no significant conflicts of interest.[22] Table 5 shows that, consistent with the evidence for stand-alone funds that can be purchased directly, there is a

[22] Fund-of-funds flows from affiliated dealers are pretty insensitive to past performance generally and that this relative insensitivity is quite a bit more impactful to flow than the effects of trailer fees.

positive effect of flow-performance intercept and future alpha. The economic significance is such that a 1-standard deviation increase in flow-performance intercept causes a 1.87% (Model 3) to 4.63% (Model 1) increase in future alpha. Referring back to Table 4, we see a negative (but statistically insignificant) effect of trailers on flow-performance intercept, which in turn implies trailers negatively affect future alpha (but this effect is not statistically robust); a 1% increase in trailers is associated with a 0.06% (Model 3) to 0.17% (Model 1) reduction in future alpha. Similarly, a 1% increase in deferred sales charges causes a 1.03% reduction in future alpha, and this effect is statistically significant.

Consistent with the evidence for stand-alone funds that both can and cannot be purchased directly, the evidence in Table 5 Panel B for fund of funds that cannot be purchased directly shows a positive and statistically significant impact of flow-performance slope on future alpha.[23] A 1-standard deviation increase in flow-performance slope causes a 3.01% (Model 3) to 8.18% (Model 2) increase in future alpha. Referring back to Table 4 Panel C, the data show that a 1% increase in trailer fees results in a 0.05% (Model 3) to 0.15% (Model 2) reduction in future alpha, but this effect is not statistically robust in Table 4; similarly, a 1% increase in deferred sales charges causes a 0.14% (Model 3) to 0.39% (Model 2) reduction in future alpha, but again this effect is not statistically robust in Table 4.

Finally, Table 5 provides evidence for fund-of-funds that can be directly purchased. To interpret the flow-performance intercept evidence, we begin again by referring to Figure 4 which shows a significant proportion (roughly half) of monthly flows is positive regardless of past

[23] In view of the convexity of flow-performance slope, the level of alpha affects the slope. Hence, if we include past alpha in the regression then we would introduce collinearity into the regression specifications. We considered specifications with past alpha and found evidence of negative performance persistence on average from year-to-year alphas.

performance. Table 5 shows that for these funds, there is negative relationship between flow-performance intercept and future alpha. A 1-standard deviation increase in flow-performance intercept is associated with a 5.14% (Model 3) to 8.10% reduction in future alpha. Referring back to Table 4, a 1% increase in trailer fees causes a 0.50% (Model 1) to 0.78% (Model 2) reduction in future alpha, but this effect of raising the flow-performance intercept through higher trailer fees is statistically insignificant in Table 4. Note that this evidence is distinct from that found for stand-alone funds that cannot be purchased directly.

For fund-of-funds that can be purchased directly, there is a positive effect of flow-performance slope on future alpha. A 1-standard deviation increase in flow-performance slope causes a 2.76% (Table 4, Model 3) to 4.96% (Model 2) increase in future alpha. Referring back to Table 4, there is a positive effect of trailers on flow-performance, although the economic significance is small; in turn, the effect on alpha is not pronounced such that a 1-standard deviation increase in trailers is associated with a 0.13% increase in future alpha.

We considered other robustness checks to the use of a more parsimonious model for generating flow-performance intercept and flow-performance slope, instead of those in Table 4. The findings are not different to those reported in Table 5. We considered other robustness checks to the use of the full sample of all of the different purchase option types and inclusion of additional right-hand-side variables, including different purchase option types and different fee variables. In those regressions, the data again indicated that alpha is higher with a higher flow-performance slope, consistent with Table 5, highlighting the importance of incentives to generate alpha with a higher slope.

Also, we considered additional regressions on other subsamples of the data as well as with other right-hand-side variables, including for example variables with different combinations of fees on the right-hand-side. The challenge with different specifications with numerous explanatory variables is that they tend to become overly correlated with the flow-performance slope and intercept variables, because those variables already account for fee structures. As well, controlling for different fees and not others makes missing variables problematic. By contrast, the flow-performance slope and intercept variables jointly capture the different net incentive effects of how the overall fee structure affects returns, as described above.

Further, we considered regressions for which flow-performance variables are estimated with data from a pre-period, such as 2003-2006, and performance is assessed for post-period, such as 2007. We considered these 'rolling' regressions for each of the 2004-2007, 2005-2008, 2006-2009, etc., flow periods and 2008, 2009, 2010, etc. alpha regression results. Instead of showing a very large number of tables, we present instead in Figures 5 and 6 the marginal effects of a 1-standard deviation change in flow-slope for each of the time periods for flow-performance slope and intercept, respectively. There is some variation in the marginal effects over time, with the largest effects for stand-alone funds in 2011 and the largest effects for fund-of-funds in 2007 for flow performance slope, and in 2007 for flow-performance intercept for all fund categories except stand-alone funds purchased directly from the fund company which shows the largest effect in 2010. Some differences over time could be attributable to the financial crisis period roughly from August 2007 – 2010, but overall the evidence is consistent with the results discussed above for the full sample period.

We provide an additional robustness check in Table 6 with the use of an additional right-hand-side variable for affiliated dealer flows. In Appendix II, we provide evidence that affiliated

Table 6. Relation between Affiliated Dealer Flow and Future Alpha, on subsample excluding Fee based

This table presents fixed effects panel data estimates of the relationship between the flow intercept, flow slope, affiliated dealer flows and 1-year lead future alphas. Flow intercept and slope are calculated based on Models 6 and 12 of Table 4 for each of the respective categories: stand-alone funds, not purchased direct, stand-alone funds purchased direct, fund of funds not purchased direct, and fund of funds purchased direct. Affiliated Dealer flow refers to the aggregate monthly money fund flow from affiliated dealers divided by the concurrent period AUM. Flow intercept refers to the level of flow in a given month irrespective of past alpha, while flow slope refers to the sensitivity of capital flows that the fund receives as a result of changes in monthly alpha. Standard errors are clustered by FundSERV code. t-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A: Stand-Alone Funds

	Cannot be Purchased Directly (Model 1-3)			Can be Purchased Directly (Model 4-6)		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Flow Intercept	-0.345***		-0.196***	1.337***		1.672***
	(-6.10)		(-2.83)	(9.79)		(7.88)
Affiliated Dealer Inflows - Outflows	-1.082***	-0.845***	-0.881***	-0.529***	-0.423***	-0.423***
	(-5.41)	(-3.64)	(-3.79)	(-7.75)	(-5.30)	(-5.31)
Flow Slope		5.969***	5.590***		1.562***	0.169*
		(6.62)	(6.13)		(7.62)	(1.82)
Constant	0.266***	0.258***	0.265***	0.0985***	0.0438***	0.106***
	(124.24)	(171.34)	(93.02)	(23.41)	(29.48)	(13.23)
Observations	492088	412300	412300	161058	133250	133250
Number of Groups	9192	8229	8229	2377	2067	2067
R^2 within	0.0001	0.0001	0.0002	0.0009	0.0006	0.0011
R^2 between	0.0007	0.0023	0.0019	0.0043	0.0025	0.0032
R^2 overall	0.0005	0.0006	0.0007	0.005	0.0045	0.0032
F	31.17	28.84	21.91	75.21	41.85	48.60

Table 6 (Continued)
Panel B: Fund of Funds

	Cannot be Purchased Directly (Model 1-3)			Can be Purchased Directly (Model 4-6)		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Flow Intercept	0.299***		0.119	-0.0476***		-0.0376***
	(4.93)		(1.56)	(-5.22)		(-3.05)
Affiliated Dealer Inflows - Outflows	-2.110***	-1.388***	-1.009***	-1.335***	-1.251***	-1.304***
	(-8.28)	(-6.24)	(-3.46)	(-6.69)	(-6.26)	(-6.48)
Flow Slope		6.913***	2.628**		0.301***	0.110
		(6.35)	(2.19)		(4.48)	(1.21)
Constant	0.349***	0.363***	0.360***	0.182***	0.190***	0.184***
	(59.86)	(43.21)	(32.26)	(106.66)	(178.21)	(83.88)
Observations	73356	86145	59974	69842	70019	69842
Number of Groups	1448	1840	1301	1280	1283	1280
R^2 within	0.0014	0.0009	0.0004	0.001	0.0009	0.001
R^2 between	0.0006	0.0019	0.0063	0.1568	0.184	0.2004
R^2 overall	0.0002	0.0003	0.0014	0.0631	0.0773	0.0799
F	52.14	39.52	7.247	34.95	31.83	23.79

Figure 5. Marginal Effects for Flow-Performance Slope in Alpha Regressions in Rolling Subsample Years, based on Table 5

This figure presents the marginal effects of the regression models in Table 5 for flow analyses 2003-2005 and alpha in 2006, flow models 2004-2006 and alpha in 2007, flow models 2005-2007 and alpha regressions in 2008, etc. The marginal effects are for a 1-standard deviation change in flow-slope on alpha, as per Table 5.

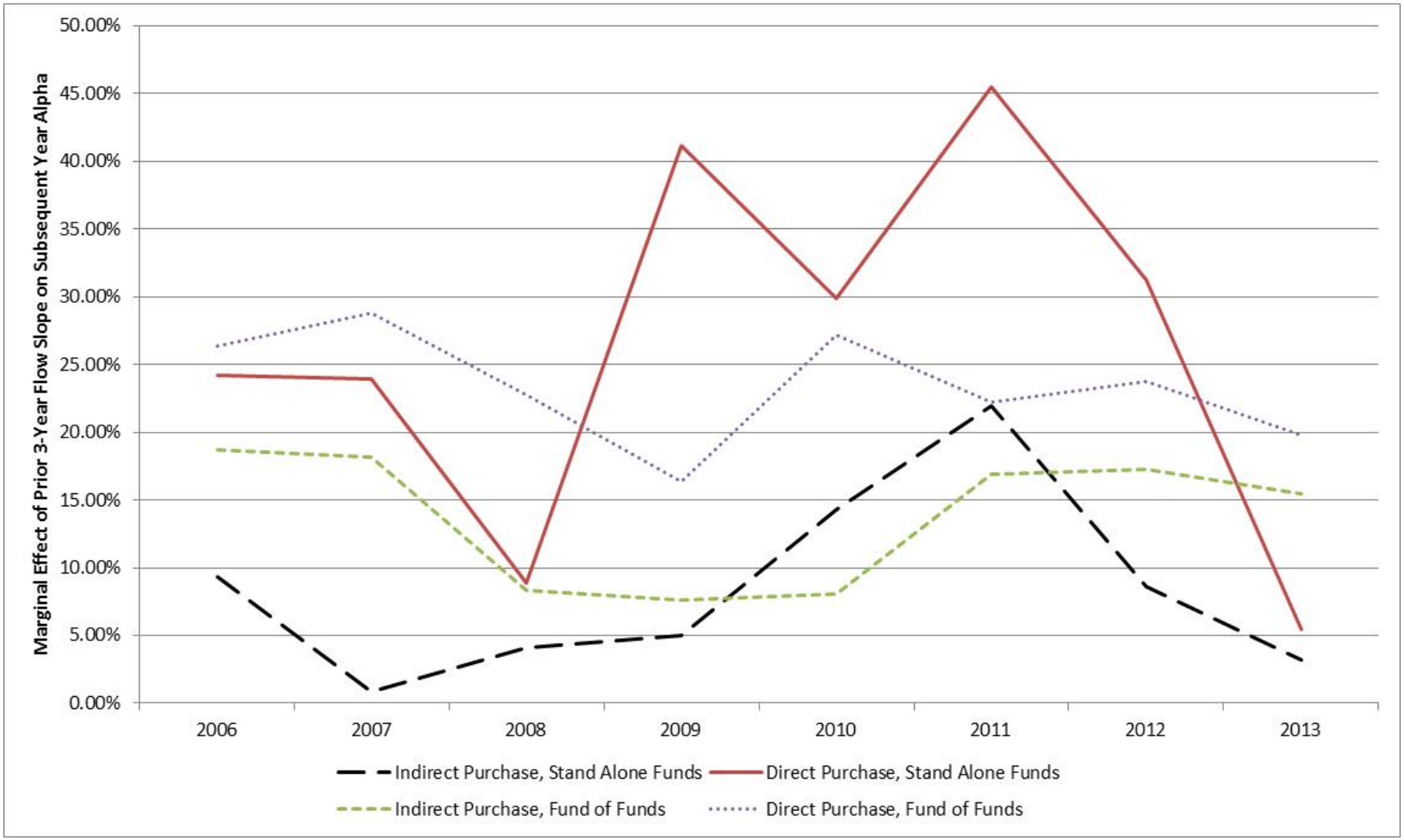


Figure 6. Marginal Effects for Flow-Performance Intercept in Alpha Regressions in Rolling Subsample Years, based on Table 5

This figure presents the marginal effects of the regression models in Table 5 for flow performance intercept flow analyses 2003-2005 and alpha in 2006, flow models 2004-2006 and alpha in 2007, flow models 2005-2007 and alpha regressions in 2008, etc. The marginal effects are for a 1-standard deviation change in flow-performance intercept on alpha, as per Table 5.

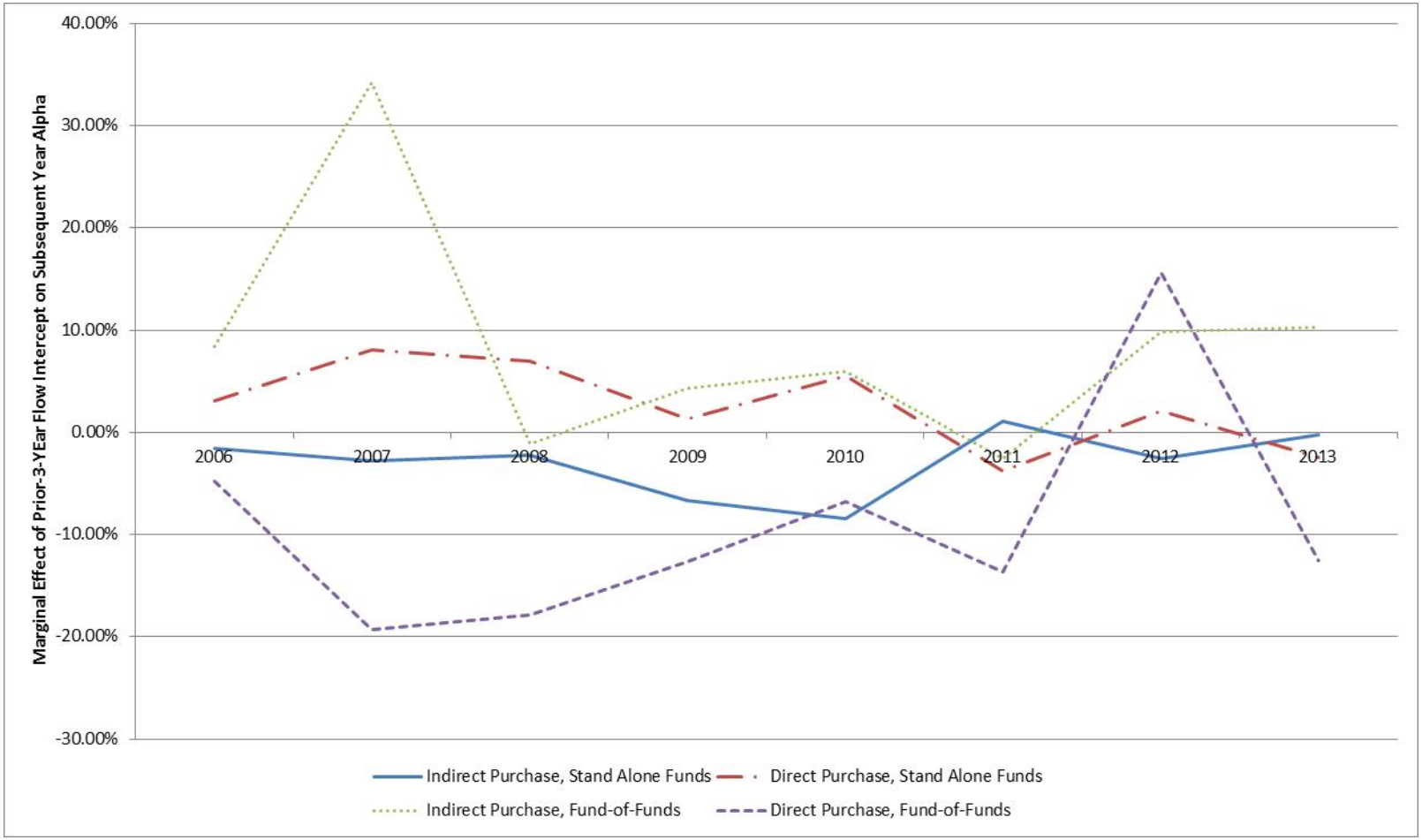
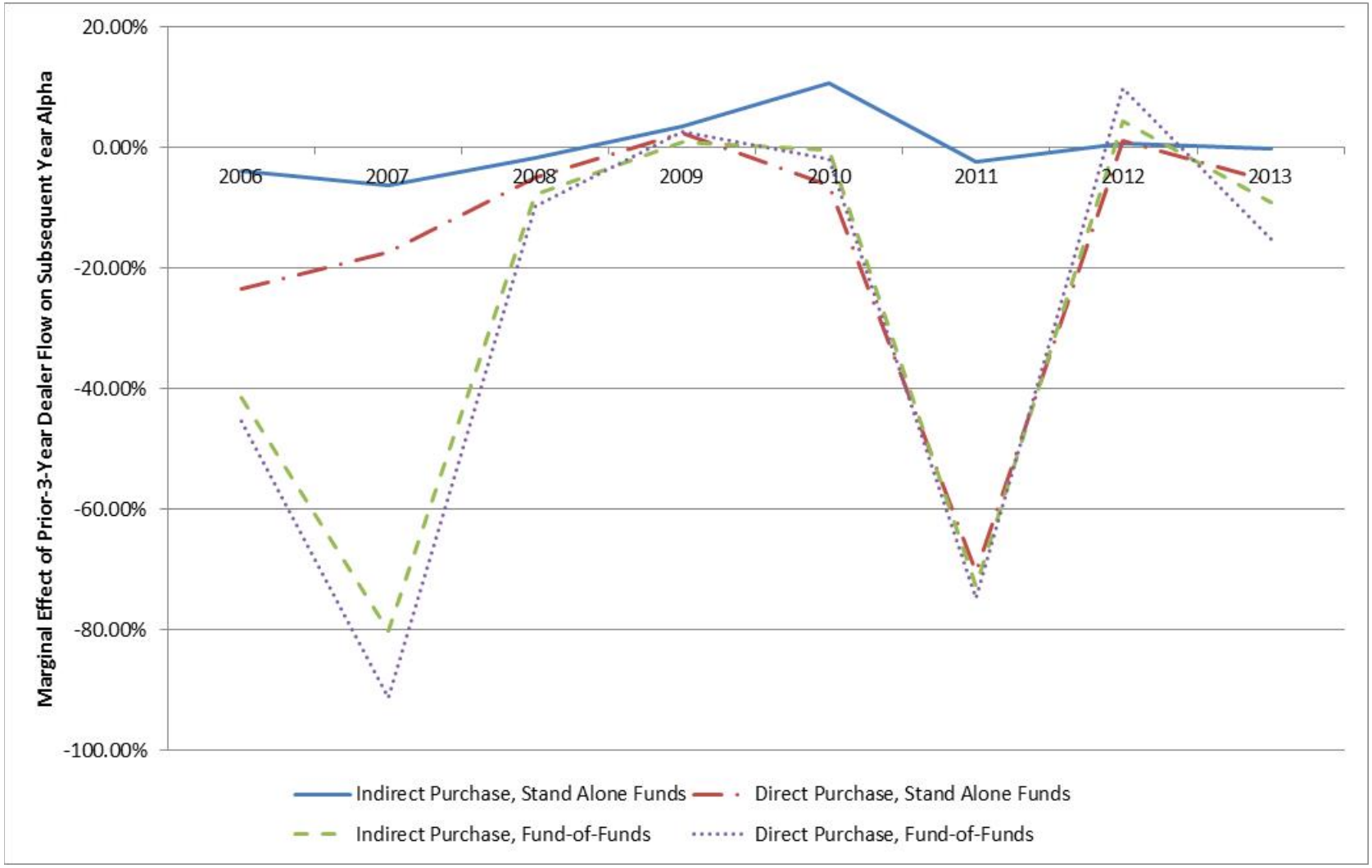


Figure 7. Marginal Effects for Affiliated Dealer Flow in Alpha Regressions in Rolling Subsample Years, based on Table 6

This figure presents the marginal effects of the regression models in Table 6 for affiliated dealer flow analyses 2003-2005 and alpha in 2006, flow models 2004-2006 and alpha in 2007, flow models 2005-2007 and alpha regressions in 2008, etc. The marginal effects are for a 1-standard deviation change in dealer affiliated on alpha, as per Table 6.



broker-dealer flows show little relation between past alpha and future flow in Tables II.1 Panel A and Table II.2 Panel A, and are negatively related to past performance in Table II.2 Panel B. That evidence is suggestive of conflicts of interest, which lowers incentives to generate flow through improvements in alpha. To test this possibility, we control for lagged affiliated dealer flow relative to AUM in the alpha regressions to see if there is an impact on future performance. The data indicate that a 1-standard deviation increase in lagged affiliated dealer flow is associated with a reduction in future alpha by 2.39% (Model 3 for stand-alone funds not purchased directly), 7.03% (Model 6 for stand-alone funds purchased directly), 2.85% (Model 9 for fund-of-funds not purchased directly), and 4.07% (Model 12 for fund-of-funds purchased directly). As in Figures 5 and 6, we consider the stability of these estimates over time, and find they are most pronounced in 2007 for all of the fund categories, and in 2011 for stand-alone funds purchased directly; see Figure 7. Overall, these effects are the least pronounced for stand-alone funds that are not purchased directly. Also, it is notable that in some years, affiliated dealer flows appear to help future performance (or at least not hurt performance) such as in 2009 and 2012, and generally the negative effects of affiliated dealer flows are least pronounced for all fund categories in the financial crisis years from 2008-2010.

5. Conclusion

This paper presented proprietary data obtained directly from mutual fund managers in Canada that relate detailed mutual fund fee structures to specific types of fund flows, and to performance. The data in this study has been gathered with the view towards better informing academics, practitioners and policymakers about the relationship between specific types of mutual fund fees and flows, and how fees and flows are related in conjunction to fund performance.

In the first part of the analysis, we presented data consistent with the view that prior alpha affects future fund flows, and this relationship is strongly influenced by fund fees. Regression analyses comparing across funds and over time indicated that trailer fees flatten the flow-performance relationship, and give rise to more flow regardless of performance. Similar effects on the flow-performance relation were found for other fee types such as deferred sales charges.

In the second part of the analysis, we presented data that strongly indicated that there is a close relation between flow-performance intercept and slope, fee structures, and future alpha. For stand-alone funds that cannot be purchased directly, regression analyses comparing across funds and over time indicate that a 1-standard deviation increase in flow-performance slope is associated with an increase in alpha by 4.9% relative to the average monthly alpha. Further, the data indicate a 1-standard deviation increase in trailer fees and deferred sales charges is indirectly associated with a reduction in future alpha by 5.2% and 2.4% relative to the average monthly alpha, respectively. We provided an analysis of the subsample of funds that changed their fees over time, and the data on the subsample are strongly consistent with these statistics. Further, for stand-alone funds that can be purchased directly, and for fund-of-funds, the results are in part consistent with the above results, but with some differences in terms of the statistical significance and the size of the effects.

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Appendix I. Summary Statistics for Mutual Fund Fees

This appendix presents mutual fund fee summary statistics by different purchase option types. Based on types of dealership, funds are categorized as "series cannot be purchased directly from fund manager" and "series can be purchased directly from fund manager". Based on types of sales charges, funds are categorized as "Deferred Sales Charges", "Front-end load", "Fee Based" and "No Load". Variables marked as "$" are recorded in Canadian dollars; variables marked as "%" are recorded as percentages to total asset under management.

Table I.1. Panel A. Stand-alone funds

	Deferred Sales Charge	Front-end load	Fee Based	No load
Maximum Posted Initial Trailer Fee (%)	0.4469	0.7246		0.6536
Trailer Slope	0.3333	0.311		-0.0684
Initial Trailer Length(Years)	5.7231	6.0792		4.7240
Subsequent Trailer Fee (%)	0.5881	0.7343		0.6374
Length of Subsequent Trailer Fee(Years)	1.1710	1.1804		1.0307
Subsequent Trailer Fee 2 (%)	0.2941	0.7048		0.6435
Length of Subsequent Trailer Fee 2(Years)	1.3233	1.4689		0.9945
Subsequent Trailer Fee 3 (%)	0.2716	0.7048		0.6311
Length of Subsequent Trailer Fee 3(Years)	0.1611	0.2339		0.0000
Subsequent Trailer Fee 4 (%)	0.2716	0.7048		0.6311
Front End Commission paid for DSC purchases (%)	3.5200	0.0000		0.0000
Management Expense Ratio(MER)%	2.3000	2.0800	1.1980	1.6100
Trading Expense Ratio (TER) %	1.2983	1.2348	0.9170	1.4177
Total One-Time Referral Fees ($)	0.0000	0.0000	0.0000	0.0000
Total On-Going Referral Fees Paid ($)	0.0000	0.0000	0.0000	0.0000
Other Payments to Dealer-Brokers ($)	0.0004	0.0002	0.0008	0.0001
Front End Commissions Paid ($)		352163.4151		
Management Fee (%)	1.7804	1.6250	1.2323	0.9747
Performance Fee (%)	0.0645	0.0412	0.2104	0.0542
Negotiated Management Fees Paid ($)	127941.9352	99297.5415	361674.0947	311002.6448
Maximum Front End Commission for FE purchases (%)	0.0000	4.5281	0.0000	0.0000
Maximum Posted Switch Fee (%)	1.9984	1.9977	1.9629	1.9751
Deferred Sales Charges Amount Year 1 (%)	4.7928			
DSC Slope	-0.1860			
Other Payments to Dealer-Brokers (%)	0.0004	0.0002	0.0008	0.0001
Front End Commissions Paid (%)		0.5628		
Negotiated Management Fees Paid (%)	0.0958	0.0620	0.2483	0.1103

Table I.1. Panel B. Fund-of-funds

	Deferred Sales Charge	Front-end load	Fee Based	No load
Maximum Posted Initial Trailer Fee (%)	0.5265	0.8116		0.8536
Trailer Slope	-0.0765	-0.0866		-0.0762
Initial Trailer Length(Years)	4.8883	5.1198		4.8685
Subsequent Trailer Fee (%)	0.6796	0.8154		0.8293
Length of Subsequent Trailer Fee(Years)	1.1117	1.1121		1.0644
Subsequent Trailer Fee 2 (%)	0.2767	0.7799		0.8387
Length of Subsequent Trailer Fee 2(Years)	1.0005	1.0005		0.9947
Subsequent Trailer Fee 3 (%)	0.2469	0.7799		0.8199
Length of Subsequent Trailer Fee 3(Years)	0.0000	0.0000		0.0000
Subsequent Trailer Fee 4 (%)	0.2469	0.7799		0.8199
Front End Commission paid for DSC purchases (%)	2.9059	0.0000		0.0000
Management Expense Ratio(MER)%	2.2200	2.0000	1.2843	1.9500
Trading Expense Ratio (TER) %	1.1743	1.1731	0.6050	1.8245
Total One-Time Referral Fees ($)	0.0000	0.0000	0.0000	0.0000
Total On-Going Referral Fees Paid ($)	0.0000	0.0000	0.0000	0.0000
Other Payments to Dealer-Brokers ($)	0.0000	0.0000	0.0004	0.0001
Front End Commissions Paid ($)		487621.3485		
Management Fee (%)	1.8787	1.7851	1.3369	0.9903
Performance Fee (%)	0.0875	0.0637	0.1035	0.0811
Negotiated Management Fees Paid ($)	512872.4944	383277.3938	230503.6664	362683.0820
Maximum Front End Commission for FE purchases (%)	0.0000	4.4362	0.0000	0.0000
Maximum Posted Switch Fee (%)	2.0000	1.9995	1.9989	1.9906
Deferred Sales Charges Amount Year 1 (%)	4.2111			
DSC Slope	-0.1488			
Other Payments to Dealer-Brokers (%)	0.0000	0.0000	0.0004	0.0001
Front End Commissions Paid (%)		0.3875		
Negotiated Management Fees Paid (%)	0.5328	0.5230	0.5507	0.2503

Appendix II. Additional Robustness Checks for Flow-Performance Regressions

This appendix provides additional robustness checks for the flow-performance sensitivity regressions in section 4.1 of the paper. The analysis here shows that the inferences about flow-performance sensitivity being negatively affected by trailer fees and deferred sales charges, among other things indicated in Table 3 and accompanying text, are robust to different specifications. We explicitly show this fact by providing a number of alternative specifications below. While there are some differences in some of the variables analyzed here relative to those in Table 3 and accompanying text, those differences do not give rise to material differences in the inferences that can be drawn from the data and do not affect the conclusions from this report.

Table II.1 presents regression analyses of fund flows relative to past performance for all of the funds in the data. The basic model specification is as follows:

$$Flow_{t+1} = Constant + \beta_1 * Alpha_t + \beta_2 * Alpha^2_t + \beta_3 * Purchase\ Option\ Dummy + \beta_4 * Purchase\ Option\ Dummy * Alpha_t + \beta_5 * controls + residuals$$

The regression is estimated as a panel model with random effects across each fund series/purchase option combination (FundSERV code) and month. Table II.1 Panel A presents similar regressions as in Table 3 Model 6, with the difference being that each of the models in Table II.1 Panel A use different dependent variables for flow. Model 1 in Table II.1 Panel A uses the sum total of all types of inflows less outflows, Model 2 uses PAC inflows – SWP outflows, Model 3 uses switches in less switches out, Model 4 uses reinvested distributions less paid distributions, Model 5 uses affiliated broker-deal inflows less affiliated dealer outflows, and Model 6 uses affiliated investment fund inflows less affiliated investment fund outflows. In all

of the models, the dependent variable is measured relative to prior period AUM. Table II.1 Panel A presents the regressions for the funds where purchases cannot be made directly from the fund company, while Table II.1 Panel B presents the regressions where purchases can be directly made from the fund company.

For funds that cannot be purchased directly from the fund company, Table II.1 Panel A indicates that flow is significantly positively related to past performance for the sum total of all types of flows (Model 1, statistically significant at the 1% level), PAC Inflows – SWP Outflows (Model 2, significant at the 5% level), switches (Model 3, significant at the 1% level), and affiliated investment fund flows (Model 6, significant at the 1% level), and negatively related to reinvested distributions less paid distributions (Model 4, significant at the 1% level). The economic significance is such at that 1-standard deviation increase in prior period alpha gives rise to a 65.7% increase in all flows (Model 1), a 1.1% increase in PAC inflows – SWP outflows, a 30.4% increase in switches in less to switches out, a 3.6% decrease in reinvested distributions less paid distributions, a 1.2% increase in affiliated broker dealer flows (although statistically insignificant), and a 2.9% increase in affiliated investment fund flows. The fact that affiliated fund flows show no statistical sensitivity to past performance is a notable finding. New PAC-SWP flows are not statistically related to past performance (Model 2). A number of interaction terms with purchase options and prior performance are statistically significant in Table II.2 Panel A. Deferred sales charges, front end, and no load purchase options flatten the overall flow-performance relationship (relative to the fee based option) in Model 1.

For funds that can be purchased directly from the fund company, Table II.1 Panel B indicates that flow is significantly positively related to past performance only for all inflows – all outflows (Model 7), switches (Model 9), and affiliated dealer flows (Model 11). PAC-SWP

Table II.1. Regression Analysis of Flow Types for Different Purchase Options

This table presents unbalanced FundSERV fixed effects panel regressions of the determinants of the percentage fund net flow (one period ahead) for different types of flow. Explanatory variables include alphas, purchase options (deferred sales charge, front end, fee based and no load), and interaction terms with purchase options and lagged alphas. Variables are as defined in Table 1. Standard errors are clustered by FundSERV code. T-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A. Stand-Alone Fund, Cannot be Purchased Directly

	Model 1 All Inflows - All Outflows	Model 2 PAC Inflows - SWP Outflows	Model 3 Switches In - Switches Out	Model 4 Reinvested Distributions - Paid Distributions	Model 5 Affiliated Dealer Inflows - Outflows	Model 6 Affiliated Investment Funds Inflows - Outflows
Alpha Lagged	0.00461***	0.00000496**	0.000915***	-0.00000918***	0.0000340	0.000217***
	(26.48)	(2.38)	(13.85)	(-2.76)	(1.34)	(2.95)
Alpha Lagged ^2	0.000189***	-0.000000617*	0.0000827***	-0.00000164***	0.0000201***	-0.00000892
	(6.32)	(-1.69)	(7.29)	(-2.81)	(4.58)	(-0.69)
Purchase Option Deferred Sales Charge	-0.0118***	0.000133***	-0.00243***	-0.000322***	-0.000347***	-0.00127
	(-17.38)	(6.96)	(-10.13)	(-11.09)	(-2.90)	(-1.59)
Alpha Lagged * Purchase Option Deferred Sales Charge	-0.00287***	-0.00000408*	-0.000274***	0.00000976***	-0.0000326	-0.000246***
	(-14.96)	(-1.78)	(-3.76)	(2.66)	(-1.17)	(-3.02)
Purchase Option Front End	-0.00935***	0.0000944***	-0.000433*	-0.000204***	-0.000102	-0.00558***
	(-13.61)	(4.84)	(-1.78)	(-6.89)	(-0.84)	(-6.81)
Alpha Lagged * Purchase Option Front End	-0.00253***	-0.00000939***	-0.000409***	-0.00000131	-0.0000181	-0.000194**
	(-13.03)	(-4.04)	(-5.54)	(-0.35)	(-0.64)	(-2.36)
Purchase Option No Load	-0.000650	0.000117***	0.00242***	-0.000261***	0.00198***	-0.00424***
	(-0.65)	(3.85)	(6.80)	(-5.71)	(11.12)	(-3.21)
Alpha Lagged * Purchase Option No Load	-0.00112***	0.00000151	-0.0000402	-0.00000593	0.000405***	0.000875***
	(-3.56)	(0.40)	(-0.34)	(-0.97)	(8.82)	(6.47)
Constant	0.0154***	0.000168***	0.00236***	0.0000260	0.00162***	0.00893***
	(24.91)	(9.54)	(10.84)	(0.97)	(14.87)	(11.93)
Number of Observations	802078	802078	802078	802078	802078	802078
Number of groups	14357	14357	14357	14357	14357	14357
R^2 within	0.0024	0.0001	0.0013	0.0001	0.0003	0.0001
R^2 between	0.0443	0.0011	0.0342	0.0091	0.0157	0.0073
R^2 overall	0.0102	0.0005	0.0076	0.0056	0.0031	0.003
Wald Chi^2	2558.70***	79.63***	1502.41***	197.21***	467.81***	173.33***

Table II.1 (Continued)
Panel B. Stand-Alone Funds: Can be Purchased Directly

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
	All Inflows - All Outflows	PAC Inflows - SWP Outflows	Switches In - Switches Out	Reinvested Distributions - Paid Distributions	Affiliated Dealer Inflows - Outflows	Affiliated Investment Funds Inflows - Outflows
Alpha Lagged	0.00217***	-0.0000207***	0.000901***	-0.0000633***	0.000122**	-0.000463***
	(6.41)	(-5.76)	(8.02)	(-6.41)	(2.09)	(-2.71)
Alpha Lagged ^2	0.000418***	0.00000151	0.000101**	-0.00000753**	0.0000107	0.0000336
	(3.45)	(1.18)	(2.53)	(-2.14)	(0.51)	(0.55)
Purchase Option Deferred Sales Charge	-0.0147***	0.0000230	-0.00326***	-0.000362**	-0.00532***	-0.0776***
	(-9.42)	(0.67)	(-4.73)	(-2.46)	(-12.98)	(-25.15)
Alpha Lagged * Purchase Option Deferred Sales Charge	0.000897*	0.00000576	-0.000675***	0.0000493***	-0.000139	0.000343
	(1.77)	(1.07)	(-4.01)	(3.34)	(-1.59)	(1.34)
Purchase Option Front End	-0.0122***	-0.0000658*	-0.00270***	0.0000511	-0.00381***	-0.0754***
	(-6.72)	(-1.66)	(-3.39)	(0.30)	(-8.06)	(-21.32)
Alpha Lagged * Purchase Option Front End	0.00259***	0.00000875	-0.000125	0.0000432***	0.000117	0.000387
	(5.16)	(1.64)	(-0.75)	(2.94)	(1.35)	(1.53)
Purchase Option No Load	-0.0133***	0.000343***	-0.00441***	-0.00121***	-0.00473***	-0.0578***
	(-7.83)	(9.28)	(-5.89)	(-7.94)	(-10.65)	(-18.59)
Alpha Lagged * Purchase Option No Load	-0.000788	0.00000881	0.0000711	0.0000762***	-0.000188	0.000489
	(-1.10)	(1.16)	(0.30)	(3.66)	(-1.52)	(1.36)
Constant	0.0210***	0.000173***	0.00598***	0.000983***	0.00670***	0.0729***
	(25.08)	(9.38)	(16.19)	(12.64)	(30.54)	(44.81)
Number of Observations	164078	164078	164078	164078	164078	164078
Number of groups	2407	2407	2407	2407	2407	2407
R^2 within	0.0018	0.0003	0.0009	0.0003	0.0001	0.0001
R^2 between	0.0557	0.0418	0.0231	0.0282	0.0923	0.2967
R^2 overall	0.0192	0.0452	0.0044	0.0245	0.0547	0.2169
Wald chi^2	436.80***	158.69***	194.69***	125.10***	259.68***	1003.76***

Table II.1 (Continued)
Panel C. Fund of Funds, Cannot be Purchased Directly

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	All Inflows - All Outflows	All inflows	All outflows	All Inflows - All Outflows	All inflows	All outflows
Alpha Lagged	0.00300***	0.00258***	0.00197***	0.00377***	0.00349***	0.00140***
	(10.42)	(7.63)	(8.49)	(8.55)	(6.77)	(3.95)
Alpha Lagged ^2	0.00105***	-0.000561***	-0.000162	0.00104***	-0.000569***	-0.000165
	(6.39)	(-2.89)	(-1.22)	(6.32)	(-2.93)	(-1.24)
Purchase Option Fee Based	0.00421**	-0.0158***	-0.00369			
	(2.51)	(-4.02)	(-1.20)			
Alpha Lagged * Purchase Option Fee Based	0.00148***	0.00136**	-0.000643			
	(2.76)	(2.18)	(-1.49)			
Purchase Option Deferred Sales Charge				-0.00749***	0.0137***	0.00493
				(-4.35)	(3.21)	(1.44)
Alpha Lagged * Purchase Option Deferred Sales Charge				-0.000961	-0.000825	0.000749
				(-1.60)	(-1.17)	(1.55)
Purchase Option Front End				-0.00402**	0.0130***	0.000637
				(-2.36)	(3.25)	(0.20)
Alpha Lagged * Purchase Option Front End				-0.000164	-0.00103	0.000645
				(-0.28)	(-1.50)	(1.37)
Purchase Option No Load				0.00244	0.00721	-0.00833**
				(1.13)	(1.36)	(-1.96)
Alpha Lagged * Purchase Option No Load				-0.000814	0.000822	-0.000656
				(-0.78)	(0.67)	(-0.78)
Constant	0.0131***	-0.0156***	-0.0158***	0.0174***	-0.0283***	-0.0172***
	(21.39)	(-10.12)	(-12.63)	(12.08)	(-8.05)	(-6.19)
Number of Observations	125618	125618	125618	125618	125618	125618
Number of groups	2370	2370	2370	2370	2370	2370
R^2 within	0.0027	0.0009	0.0007	0.0026	0.0009	0.0008
R^2 between	0.0137	0.0034	0.0001	0.0282	0.0029	0.0029
R2 overall	0.0067	0.0092	0.0025	0.0077	0.0057	0.0008
Wald chi^2	358.78	119.67	90.04	386.54	116.27	104.62

Table II.1 (Continued)
Panel D. Fund of Funds, Can be Purchased Directly

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
	All Inflows - All Outflows	All inflows	All outflows	All Inflows - All Outflows	All inflows	All outflows
Alpha Lagged	0.00346***	0.00293***	0.00115***	0.00184***	0.00297***	0.000632
	(12.87)	(7.30)	(3.95)	(3.28)	(3.53)	(1.04)
Alpha Lagged ^2	-0.000402**	0.00112***	0.000630***	-0.000402**	0.00111***	0.000634***
	(-2.50)	(4.67)	(3.62)	(-2.50)	(4.60)	(3.64)
Purchase Option Fee Based	0.00372**	-0.0349***	-0.00717			
	(2.04)	(-6.42)	(-1.44)			
Alpha Lagged * Purchase Option Fee Based	-0.00172***	0.000401	-0.000852			
	(-2.60)	(0.41)	(-1.19)			
Purchase Option Deferred Sales Charge				-0.00521***	0.0387***	0.00603
				(-2.72)	(6.96)	(1.14)
Alpha Lagged * Purchase Option Deferred Sales Charge				0.000799	-0.00101	0.000488
				(1.19)	(-1.01)	(0.67)
Purchase Option Front End				-0.00276	0.0369***	0.00888
				(-1.36)	(6.31)	(1.60)
Alpha Lagged * Purchase Option Front End				0.00255***	0.00125	0.000484
				(3.70)	(1.20)	(0.65)
Purchase Option No Load				0.00271	-0.00571	0.00949
				(0.86)	(-0.64)	(1.12)
Alpha Lagged * Purchase Option No Load				0.00458**	0.000732	-0.000602
				(2.08)	(0.22)	(-0.25)
Constant	0.0111***	-0.0279***	-0.0417***	0.0148***	-0.0626***	-0.0490***
	(15.31)	(-12.93)	(-21.07)	(8.90)	(-13.06)	(-10.75)
Number of Observations	89024	89024	89024	89024	89024	89024
Number of groups	1551	1551	1551	1551	1551	1551
R^2 within	0.0017	0.0011	0.0003	0.0019	0.0012	0.0003
R^2 between	0.0332	0.0235	0.0075	0.0352	0.0398	0.0064
R^2 overall	0.0079	0.0159	0.0074	0.0097	0.0327	0.0063
Wald chi^2	178.9	137.27	34.51	202.7	178.53	34.41

flows, reinvested distributions less paid distributions, and affiliated investment fund flows are negatively related to past performance in Models 7, 10, and 12, respectively. For funds-of-funds (Table II.2 Panels C and D), past performance is positively and significantly related to all types of inflows net of outflows in Models 1-11, while Model 12 shows a positive but marginally insignificant effect.

Table II.2 presents regression analyses of fund flows relative to past performance for the subset of funds that do not allow for fee based purchase options (i.e., only including funds that allow for deferred sales charges and trailer fees). The basic model specification is as follows:

$$Flow_{t+1} = Constant + \beta_1 * Alpha_t + \beta_2 * Alpha^2_t + \beta_3 * MER_t + \beta_4 * MER_t * Alpha_t + \beta_5 * Other\ Type\ of\ Fee_t + \beta_6 * Other\ Type\ of\ Fee_t * Alpha_t + \beta_5 * controls + residuals$$

The regression is analogous to that presented in Table 4 of the main part of the paper. The regression is estimated as a panel model with fixed effects across each FundSERV code and month. The dependent variables in Table II.2 are the total inflows less total outflows, total monthly pre-authorized contribution (PAC) inflows less total monthly systematic withdrawal plan (SWP) outflows, switches in and switches out, reinvested distributions and distributions to unit holders, and affiliated dealer and affiliated investment funds inflows and outflows) in Models 1-6, respectively (and likewise in Models 7-12, respectively). Each of the dependent variables in the models is divided by AUM at start of month. Models 1-6 present the data for series that cannot be purchased directly from the fund company, while Models 7-12 are for the subset of funds where purchases can be made directly from the fund company. The regressions include a variety of variables that specifically identify the different types of fees and interaction

terms with these fees and prior performance, including MER, trading expense ratio, maximum posted initial trailer, trailer slope, deferred sales charges in year 1, deferred sales charges slope, sales commissions on deferred sales charges, maximum front end commission, maximum posted switch fee, other payments to broker dealers, front end commissions paid, performance fees, negotiated management fees. The regressions also control for the minimum purchase amount.

For the series that cannot be purchased directly from the fund company, Table II.2 indicates that prior alphas are negatively related to future flows for all types of inflows and outflows aggregated together (Model 1, significant at the 5% level), the subset of PAC-SWP flows (Model 2, significant at the 1% level), switches in less switches out (Model 3, significant at the 1% level), and for affiliated investment fund inflows less outflows (Model 6, significant at the 1% level). Prior performance is statistically unrelated to future flows for reinvested distributions less paid distributions (Model 4), and for affiliated dealer inflows less outflows (Model 5), again a notable result. Higher management fees are associated with higher flows regardless of past performance for all inflows less outflows (Model 1), PAC Inflows – AWP outflows (Model 2), affiliated dealer inflows less outflows (Model 5), and affiliated investment fund inflows less outflows (Model 6). There are lower total flows (Model 1) regardless of past performance for funds with higher trading expense ratios, higher initial deferred sales charges, increasing subsequent deferred sales charges, higher sales commissions for deferred sales charges, higher other payments to broker dealers. There are higher total flows (Model 1) regardless of past performance for funds with higher maximum front end commission, higher front end commissions paid, higher performance fees, and higher negotiated management fees paid. Prior performance * MER increases the sensitivity of flow to performance for PAC-SWP flows (Model 2), and affiliated dealer flows (Model 5) and affiliated investment fund inflows

Table II.2. Regression Analysis of Flow Types

This table presents unbalanced panel regressions of the determinants of different types of fund flow (one period ahead) excluding the subsample of fee-based purchase option types. Explanatory variables include alphas, purchase options (deferred sales charge, front end, fee based, and no load), and interaction terms with purchase options, fees and lagged alphas. Also, there are a number of control variables for fund characteristics, style, and structure, as described in Table 1. T-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A. Stand-Alone Fund, Cannot be Purchased Directly

	Model 1 All Inflows - All Outflows	Model 2 PAC Inflows - SWP Outflows	Model 3 Switches In - Switches Out	Model 4 Reinvested Distributions - Paid Distributions	Model 5 Affiliated Dealer Inflows - Outflows	Model 6 Affiliated Investment Funds Inflows - Outflows
Alpha Lagged	-0.00462**	-0.0000543***	-0.00187***	-0.0000260	-0.000373	-0.00181***
	(-2.53)	(-2.75)	(-2.65)	(-0.74)	(-1.46)	(-2.81)
Alpha Lagged ^2	0.000191***	-0.00000141***	0.0000858***	-0.00000206***	0.0000152***	0.0000370***
	(5.18)	(-3.54)	(6.01)	(-2.91)	(2.95)	(2.84)
Management Expense Ratio(MER)%	0.00239***	0.0000479***	-0.000110	-0.00000732	0.000355***	0.000558***
	(8.16)	(15.05)	(-0.97)	(-1.30)	(8.62)	(5.38)
Alpha Lagged * Management Expense Ratio	0.000136	0.00000380***	-0.0000857*	0.0000101***	-0.0000910***	0.000326***
	(1.03)	(2.64)	(-1.67)	(3.96)	(-4.90)	(6.95)
Trading Expense Ratio (TER) %	-0.000138***	-0.00000147***	-0.0000274**	-0.000000232	-0.0000292***	-0.0000319***
	(-4.87)	(-4.78)	(-2.50)	(-0.43)	(-7.34)	(-3.18)
Alpha Lagged * Trading Expense Ratio	-0.00000101	0.000000247	-0.0000218**	6.75e-10	0.00000247	-0.0000330***
	(-0.04)	(0.89)	(-2.18)	(0.00)	(0.69)	(-3.62)
Maximum Posted Initial Trailer Fee (%)	-0.00203	0.0000698***	-0.00196***	-0.0000698***	-0.000271	0.000859*
	(-1.49)	(4.73)	(-3.71)	(-2.68)	(-1.42)	(1.78)
Alpha Lagged *Maximum Posted Initial Trailer Fee	0.000197	0.00000303	0.000875***	-0.0000225***	0.000295***	-0.000293***
	(0.73)	(1.03)	(8.35)	(-4.35)	(7.79)	(-3.06)
Trailer Slope	0.000957	-0.0000935***	-0.000596	0.0000378*	0.00198***	-0.00363***
	(0.82)	(-7.36)	(-1.31)	(1.68)	(12.04)	(-8.77)
Alpha Lagged * Trailer Slope	0.00378***	0.0000177***	0.00161***	-0.0000232**	-0.000586***	-0.00110***
	(6.30)	(2.72)	(6.93)	(-2.02)	(-6.98)	(-5.18)
Deferred Sales Charge Year 1	-0.0400***	-0.000357***	-0.0159***	0.000444**	-0.0175***	0.00228
	(-4.02)	(-3.31)	(-4.12)	(2.32)	(-12.55)	(0.65)
Alpha Lagged *DSC Amount Year 1 (%)	-0.000670***	0.00000523***	0.000122**	0.000000520	0.0000263	0.000165***
	(-4.84)	(3.48)	(2.28)	(0.20)	(1.35)	(3.37)
Deferred Sales Charge Slope	-0.0635***	0.00155***	0.00806*	-0.000506**	-0.0267***	0.0205***
	(-5.21)	(11.75)	(1.71)	(-2.16)	(-15.60)	(4.75)
Alpha Lagged * DSC Slope	-0.0185***	0.0000491**	-0.00583***	-0.0000725*	0.000217	-0.00234***
	(-8.37)	(2.05)	(-6.83)	(-1.72)	(0.70)	(-3.01)
Front End Commission paid for DSC purchases (%)	-0.00173***	0.0000298***	-0.000235	-0.0000707***	-0.000384***	0.000341*
	(-3.35)	(5.31)	(-1.17)	(-7.13)	(-5.29)	(1.86)
Alpha Lagged *Sales Commission paid for DSC	-0.000342***	-0.00000262***	0.0000264	-0.000000587	0.0000137**	-0.0000621***
	(-7.31)	(-5.17)	(1.46)	(-0.66)	(2.10)	(-3.76)

Table II.2. Panel A. (Continued)

	Model 1 All Inflows - All Outflows	Model 2 PAC Inflows - SWP Outflows	Model 3 Switches In - Switches Out	Model 4 Reinvested Distributions - Paid Distributions	Model 5 Affiliated Dealer Inflows - Outflows	Model 6 Affiliated Investment Funds Inflows - Outflows
Maximum Front End Commission (%)	0.00626***	0.0000517***	0.000572	-0.000164***	0.000590***	-0.0000120
	(5.22)	(3.97)	(1.23)	(-7.16)	(3.51)	(-0.03)
Alpha Lagged * Maximum Front End Commission (%)	-0.000242***	-0.00000356***	-0.0000862***	-0.000000227	-0.0000514***	-0.0000955***
	(-5.64)	(-7.66)	(-5.19)	(-0.28)	(-8.56)	(-6.30)
Maximum Posted Switch Fee (%)	-0.00631	-0.000110	0.00317	-0.000107	0.0000923	-0.000222
	(-0.40)	(-0.64)	(0.51)	(-0.35)	(0.04)	(-0.04)
Alpha Lagged * Maximum Posted Switch Fee (%)	0.00374***	0.0000176*	0.000228	0.00000164	0.000208	0.000354
	(4.04)	(1.75)	(0.64)	(0.09)	(1.61)	(1.08)
Other payment to Dealer and Broker (%)	-42.43***	0.245***	-7.336***	-0.495***	-4.853***	10.91***
	(-11.30)	(6.01)	(-5.04)	(-6.88)	(-9.23)	(8.21)
Alpha Lagged * Other payment to Dealer and Broker	-7.908***	-0.0631**	-0.844	0.116**	0.299	-9.635***
	(-2.76)	(-2.03)	(-0.76)	(2.12)	(0.75)	(-9.52)
Front End Commission paid (%)	0.0271***	0.000119***	0.00589***	-0.000280***	0.00387***	0.0350***
	(30.36)	(12.32)	(17.05)	(-16.38)	(30.93)	(111.01)
Alpha Lagged * Front End Commission paid	0.00236***	0.000000320	0.000428*	0.0000252**	0.00000141	0.00216***
	(3.58)	(0.04)	(1.68)	(2.00)	(0.02)	(9.29)
Performance Fee (%)	0.0168***	-0.0000830	0.00598***	0.0000634	0.00159**	0.000743
	(3.09)	(-1.41)	(2.84)	(0.61)	(2.09)	(0.39)
Alpha Lagged*Performance Fee	0.000287	-0.00000354*	0.000163**	0.0000128***	0.000214***	-0.000125*
	(1.55)	(-1.77)	(2.27)	(3.61)	(8.27)	(-1.91)
Negotiated Management Fee (%)	0.0236***	0.000134***	0.00326***	-0.0000362	0.00143***	0.0282***
	(19.04)	(9.96)	(6.79)	(-1.52)	(8.24)	(64.20)
Alpha Lagged * Negotiated Management Fee	0.00245***	0.0000193*	-0.00100***	-0.0000116	-0.000243*	0.00128***
	(2.59)	(1.88)	(-2.74)	(-0.64)	(-1.84)	(3.82)
Minimum Purchase Amount($)	-2.45e-10	1.82e-12	-9.57e-10***	5.39e-13	2.51e-11	3.03e-10***
	(-1.35)	(0.93)	(-13.66)	(0.16)	(0.99)	(4.73)
Alpha Lagged * Minimum Purchase Amount	-2.00e-10*	3.33e-13	4.41e-11	-3.45e-13	-6.93e-12	-7.18e-11*
	(-1.68)	(0.26)	(0.96)	(-0.15)	(-0.42)	(-1.71)
Constant	0.210***	0.00246***	0.0841***	-0.00194	0.0923***	-0.00993
	(3.23)	(3.47)	(3.33)	(-1.55)	(10.10)	(-0.43)
Number of Observations	508121	508121	508121	508121	508121	508121
Number of groups	9595	9595	9595	9595	9595	9595
R^2 within	0.0019	0.0027	0.001	0.0006	0.0009	0.1175
R^2 between	0.0021	0.0025	0.0004	0.0005	0.0007	0.1203
R^2 overall	0.0016	0.0021	0.0002	0.0002	0.0004	0.1156
F	94.31***	34.48***	51.02***	21.12***	68.96***	632.6***

Table II.2 (Continued) Panel B. Stand-Alone Funds, Can be Purchased Directly

	Model 7 All Inflows - All Outflows	Model 8 PAC Inflows - SWP Outflows	Model 9 Switches In - Switches Out	Model 10 Reinvested Distributions - Paid Distributions	Model 11 Affiliated Dealer Inflows - Outflows	Model 12 Affiliated Investment Funds Inflows - Outflows
Alpha Lagged	0.00518***	0.000118***	-0.00408***	0.0000891	-0.00175***	-0.000591
	(2.60)	(5.31)	(-5.92)	(1.51)	(-5.27)	(-0.56)
Alpha Lagged ^2	0.000572***	0.00000141	0.000117**	-0.00000379	0.0000257	0.0000222
	(4.32)	(0.95)	(2.55)	(-0.96)	(1.17)	(0.32)
Management Expense Ratio(MER)%	-0.00170*	-0.0000870***	0.000792**	0.000185***	-0.000308**	0.000462
	(-1.85)	(-8.47)	(2.49)	(6.79)	(-2.01)	(0.95)
Alpha Lagged * Management Expense Ratio	0.00479***	0.00000219	0.000666***	0.000173***	0.000812***	0.000921***
	(9.11)	(0.37)	(3.66)	(11.10)	(9.28)	(3.31)
Trading Expense Ratio (TER) %	-0.000823***	0.000000987	-0.000196***	0.000000403	-0.0000347**	0.000150***
	(-7.88)	(0.85)	(-5.42)	(0.13)	(-1.99)	(2.70)
Alpha Lagged * Trading Expense Ratio	0.000217**	-0.00000168	0.0000805**	0.00000764**	-0.0000105	-0.0000550
	(2.15)	(-1.50)	(2.31)	(2.55)	(-0.62)	(-1.03)
Maximum Posted Initial Trailer Fee (%)	0.0206***	-0.000431***	0.00565***	0.000128	0.00621***	0.0342***
	(4.47)	(-8.35)	(3.54)	(0.93)	(8.06)	(13.92)
Alpha Lagged *Maximum Posted Initial Trailer Fee	-0.000539	-0.0000376***	0.00107***	-0.000139***	0.000730***	-0.000170
	(-0.50)	(-3.14)	(2.88)	(-4.35)	(4.08)	(-0.30)
Trailer Slope	0.00676***	-0.0000437***	0.00126***	-0.000247***	-0.0000518	-0.0000866
	(8.24)	(-4.78)	(4.44)	(-10.17)	(-0.38)	(-0.20)
Alpha Lagged * Trailer Slope	0.000182	0.0000519***	-0.000308	0.0000475**	0.000207	0.0000947
	(0.23)	(5.85)	(-1.12)	(2.01)	(1.57)	(0.22)
Alpha Lagged *DSC Amount Year 1 (%)	-0.000382**	-0.00000669***	0.000174***	-0.0000150***	-0.00000439	-0.0000969
	(-2.37)	(-3.72)	(3.12)	(-3.12)	(-0.16)	(-1.13)
Alpha Lagged * DSC Slope	0.0537***	0.000575***	-0.0161***	0.00158***	-0.000572	0.00222
	(6.68)	(6.41)	(-5.81)	(6.62)	(-0.43)	(0.52)
Front End Commission paid for DSC purchases (%)	0.0127*	-0.000321***	0.000935	-0.000500**	0.00155	0.00943**
	(1.69)	(-3.83)	(0.36)	(-2.24)	(1.24)	(2.37)
Alpha Lagged *Sales Commission paid for DSC	0.000170	0.0000153***	-0.000313***	0.00000618	-0.0000128	-0.0000428
	(0.78)	(6.32)	(-4.16)	(0.96)	(-0.35)	(-0.37)
Alpha Lagged * Maximum Front End Commission (%)	0.000910***	0.00000676***	-0.000171***	0.0000231***	0.0000150	0.0000385
	(7.85)	(5.23)	(-4.27)	(6.72)	(0.78)	(0.63)
Constant	-0.00772	0.000793***	-0.00190	0.000666***	-0.00141*	0.00920***
	(-1.56)	(14.38)	(-1.11)	(4.54)	(-1.72)	(3.51)
Number of Observations	127381	127381	127381	127381	127381	127381
Number of groups	1915	1915	1915	1915	1915	1915
R^2 within	0.0006	0.0022	0.0018	0.0509	0.0004	0.0305
R^2 between	0.0003	0.0014	0.0009	0.0573	0.0003	0.0236
R^2 overall	0.0001	0.0012	0.0008	0.0547	0.0001	0.0209
F	43.99***	19.89***	17.51***	29.71***	13.72***	14.88***

less outflows (Model 6). Flow-performance sensitivity is likewise higher for all flows considered together (Model 1) for funds with increasing subsequent trailer fees, a higher maximum posted switch fee, higher front end commissions, and higher negotiated management fees paid. Flow-performance sensitivity is mitigated for all types of flows (Model 1) for funds with higher deferred sales charges, increasing subsequent deferred sales charges, higher sales commissions for deferred sales charges, higher maximum front end commissions, higher other payments to dealers, and higher minimum purchase amounts.

Table II.2 Models 7-12 present regressions for the series that can be purchased directly from the fund company. The data indicate past performance is significantly positively related to future flows for all inflows and outflows (Model 7) and PAC-SWP flows (Model 8), but negatively related to future flows for switches in less switches out (Model 9), and affiliated dealer flows (Model 11). Higher management fees are associated with higher flows regardless of past performance for switches (Model 9), reinvested distributions – paid distributions (Model 10), and lower for all flows together (Model 7), PAC Inflows – SWP Outflows (Model 8), and Affiliated Broker Dealer Inflows – Outflows (Model 11). There are higher total flows (Model 7) regardless of past performance for funds with higher maximum posted initial trailers, higher subsequent trailer fees, and higher sales commissions for deferred sales charges. There are lower total flows (Model 1) regardless of past performance for funds with higher MERs, and higher trading expense ratios. Flow-performance sensitivity is likewise higher for all flows considered together (Model 7) for funds with higher MERs, higher trading expense ratios, increasing subsequent deferred sales charges, and higher maximum front end commissions. Flow-performance sensitivity is mitigated for all types of flows (Model 7) for funds with higher maximum posted initial trailers and higher deferred sales charges.

Table II.3 presents differences between fund inflows and fund outflows. The data indicate fund inflows are much more sensitive to past performance than fund outflows for each of the regressions for directly managed funds and fund-of-funds. Also, the fee variables tend to have a more pronounced effect on inflows than outflows. On explanation for this evidence is that purchasing a fund is less subject to behavioral biases than selling a fund, as investors are reluctant to sell after poor past performance in hopes of recouping their losses. Another explanation is that fees paid to dealers drive advice, and by extension investor buying decisions, but fees charged to investors on DSC and ongoing trailer fees earned by dealers drive advice and by extension reduce redemption activity.

Finally, note that we considered numerous other robustness checks and further specifications that are not reported here for reasons of conciseness.

Table II.3. Regression Analysis of Aggregate inflow and Aggregate outflow

This table presents unbalanced panel regressions of the determinants of total fund inflow and total outflow (one period ahead). Explanatory variables include alphas, purchase options (deferred sales charge, front end, fee based, and no load), and interaction terms with purchase options and lagged alphas, as well as fee types. In Panel A, random effects are used in Models 1 and 2. Fixed effects are used in Models 3-8 in Panel A, and in Panels B and C. T-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A. Stand-Alone Funds:

	Series Cannot be Purchased Directly from the fund company (Models 1 - 4)				Series Can be Purchased Directly from the fund company (Models 5- 8)			
	Model 1 All inflows	Model 2 All outflows	Model 3 All inflows	Model 4 All outflows	Model 5 All inflows	Model 6 All outflows	Model 7 All inflows	Model 8 All outflows
Alpha Lagged	0.00147***	-0.000134	0.00493***	-0.00148	0.00341***	0.000761***	0.00726**	0.00500**
	(6.97)	(-0.88)	(2.62)	(-1.03)	(10.37)	(2.88)	(2.39)	(2.06)
Alpha Lagged ^2	0.000106***	0.000147***	0.00000134	0.0000934***	0.000821***	-0.0000989	0.00107***	0.0000357
	(2.88)	(5.51)	(0.03)	(3.18)	(4.54)	(-0.68)	(5.29)	(0.22)
Purchase Option Deferred Sales Charge	-0.00224	0.0000268						
	(-1.21)	(0.02)						
Alpha Lagged * Purchase Option Deferred Sales Charge	-0.000915***	0.0000242						
	(-3.94)	(0.14)						
Purchase Option Front End	0.00755***	0.00580***						
	(4.01)	(4.16)						
Alpha Lagged * Purchase Option Front End	-0.00111***	-0.0000970						
	(-4.72)	(-0.57)						
Purchase Option No Load	-0.0228***	-0.0307***						
	(-7.84)	(-14.24)						
Alpha Lagged * Purchase Option No Load	-0.00167***	0.000102						
	(-4.34)	(0.36)						
Alpha Lagged * Purchase Option Fee Based					0.00346***	-0.000189		
					(4.09)	(-0.28)		
Management Expense Ratio(MER)%			0.000664**	-0.000983***			0.00266*	0.000852
			(2.17)	(-4.21)			(1.90)	(0.76)
Alpha Lagged * Management Expense Ratio			-0.00129***	-0.000279***			0.00436***	-0.00191***
			(-9.35)	(-2.65)			(5.46)	(-2.99)
Trading Expense Ratio (TER) %			0.000105***	0.0000240			-0.000505***	-0.000212*
			(3.55)	(1.06)			(-3.17)	(-1.67)
Alpha Lagged * Trading Expense Ratio			0.0000652**	0.0000124			0.0000646	-0.00000902
			(2.43)	(0.60)			(0.42)	(-0.07)
Maximum Posted Initial Trailer Fee (%)			0.00212	-0.00155			-0.0815***	-0.0797***
			(1.50)	(-1.44)			(-11.57)	(-14.15)
Alpha Lagged *Maximum Posted Initial Trailer Fee			-0.000861***	0.00138***			-0.00383**	-0.00227*
			(-3.06)	(6.40)			(-2.35)	(-1.74)
Trailer Slope			0.0145***	0.00647***			-0.0116***	-0.00923***
			(11.89)	(6.94)			(-9.29)	(-9.25)
Alpha Lagged * Trailer Slope			0.00120*	0.000992**			-0.00558***	-0.00150
			(1.92)	(2.08)			(-4.61)	(-1.55)
Deferred Sales Charge Year 1			0.00303	-0.000433				
			(0.30)	(-0.06)				

Table II.3. (Continued)

	Model 1 All inflows	Model 2 All outflows	Model 3 All inflows	Model 4 All outflows	Model 5 All inflows	Model 6 All outflows	Model 7 All inflows	Model 8 All outflows
Alpha Lagged *DSC Amount Year 1 (%)			-0.000796***	-0.0000960			-0.000572**	0.000202
			(-5.54)	(-0.87)			(-2.33)	(1.03)
Deferred Sales Charge Slope			-0.106***	-0.0433***				
			(-8.34)	(-4.45)				
Alpha Lagged * DSC Slope			-0.00853***	-0.0106***			0.0401***	0.000692
			(-3.74)	(-6.07)			(3.28)	(0.07)
Front End Commission paid for DSC purchases (%)			-0.000397	-0.000365			-0.0454***	-0.0406***
			(-0.74)	(-0.89)			(-3.95)	(-4.42)
Alpha Lagged *Sales Commission paid for DSC			0.0000222	0.000107***			-0.00104***	-0.000268
			(0.46)	(2.88)			(-3.15)	(-1.01)
Maximum Front End Commission (%)			0.000248	0.000944				
			(0.20)	(1.00)				
Alpha Lagged * Maximum Front End Commission (%)			0.000189***	0.0000879**			0.000840***	-0.000157
			(4.23)	(2.58)			(4.77)	(-1.12)
Maximum Posted Switch Fee (%)			-0.00113	0.00251				
			(-0.07)	(0.20)				
Alpha Lagged * Maximum Posted Switch Fee (%)			0.0000964	-0.000411				
			(0.10)	(-0.56)				
Alpha Lagged * Other payment to Dealer and Broker			-6.947**	-8.771***				
			(-2.41)	(-3.98)				
Front End Commission paid (%)			-0.0830***	-0.0695***				
			(-89.54)	(-98.00)				
Alpha Lagged * Front End Commission paid			-0.00150**	-0.00373***				
			(-2.19)	(-7.12)				
Performance Fee (%)			0.00732	0.0000943				
			(1.35)	(0.02)				
Alpha Lagged*Performance Fee			0.000360*	-0.0000290				
			(1.87)	(-0.20)				
Negotiated Management Fee (%)			-0.0912***	-0.0210***				
			(-74.56)	(-22.42)				
Alpha Lagged * Negotiated Management Fee			0.00191*	-0.000801				
			(1.96)	(-1.07)				
Minimum Purchase Amount($)			-2.10e-10	-3.00e-10**				
			(-1.12)	(-2.08)				
Alpha Lagged * Minimum Purchase Amount			-3.21e-10***	1.42e-10				
			(-2.59)	(1.50)				
Constant	-0.0197***	-0.0137***	-0.0437	-0.0159	-0.0764***	-0.0560***	-0.0191**	0.00703
	(-11.59)	(-10.84)	(-0.65)	(-0.31)	(-507.43)	(-462.86)	(-2.54)	(1.17)
Number of Observations	802078	802078	518181	518181	166444	166444	129270	129270
Number of groups	14357	14357	9801	9801	2411	2411	1918	1918
R^2 within	0.0001	0.0001	0.0463	0.0145	0.02	0.097	0.0209	0.0226
R^2 between	0.0154	0.0311	0.0396	0.0134	0.016	0.0088	0.0163	0.0203
R^2 overall	0.0088	0.0107	0.0358	0.0128	0.016	0.0063	0.0147	0.0192
Wald Chi^2 (Models 1 and 2) / F (Models 3-8)	271.21***	410.32***	506.8***	380.1***	80.59***	2.996***	32.94***	20.18***

Table II.3
Panel B. Fund of funds: Series Cannot be Purchased Directly from the fund company (Models 1 - 6)

	Model 1 All Inflows - All Outflows	Model 2 All inflows	Model 3 All outflows	Model 4 All Inflows - All Outflows	Model 5 All inflows	Model 6 All outflows
Alpha Lagged	0.0149***	0.00514	-0.00827***	2.550	3.212	0.405
	(4.28)	(1.49)	(-3.37)	(0.24)	(0.30)	(0.05)
Alpha Lagged ^2	0.000167	-0.000168	-0.000105	0.000268	-0.0000762	-0.0000716
	(0.56)	(-0.56)	(-0.50)	(0.90)	(-0.26)	(-0.35)
Management Expense Ratio(MER)%	0.00288***	-0.00719***	-0.00856***	0.00342***	-0.00642***	-0.00808***
	(3.97)	(-9.98)	(-16.70)	(4.71)	(-9.03)	(-16.08)
Alpha Lagged * Management Expense Ratio	-0.000763	-0.00112	0.000451	-0.00140*	-0.00197***	-0.000108
	(-1.03)	(-1.53)	(0.86)	(-1.85)	(-2.67)	(-0.21)
Trading Expense Ratio (TER) %	0.000218**	0.000291***	0.000332***	0.000119	0.000138	0.000223***
	(2.01)	(2.71)	(4.36)	(1.10)	(1.31)	(3.00)
Alpha Lagged * Trading Expense Ratio	-0.0000804	-0.000359**	-0.000432***	0.0000551	-0.000180	-0.000319***
	(-0.53)	(-2.40)	(-4.05)	(0.36)	(-1.21)	(-3.06)
Maximum Posted Initial Trailer Fee (%)	-0.000560	-0.0104**	-0.0108***	-0.000786	-0.0108***	-0.0113***
	(-0.14)	(-2.56)	(-3.74)	(-0.19)	(-2.72)	(-4.02)
Alpha Lagged *Maximum Posted Initial Trailer Fee	0.00417***	0.00735***	0.00503***	0.00393***	0.00630***	0.00426***
	(2.93)	(5.24)	(5.04)	(2.72)	(4.49)	(4.30)
Trailer Slope	-0.00268	0.00195	0.00214	-0.00221	-0.000409	-0.000688
	(-0.92)	(0.67)	(1.04)	(-0.75)	(-0.14)	(-0.34)
Alpha Lagged * Trailer Slope	0.000128	0.00140	-0.000999	-0.00351	0.00115	0.000754
	(0.06)	(0.62)	(-0.63)	(-1.45)	(0.49)	(0.45)
Deferred Sales Charge Year 1	-0.0183	-0.0224**	-0.0142*	-0.0210*	-0.0220**	-0.0133*
	(-1.56)	(-2.05)	(-1.83)	(-1.76)	(-2.06)	(-1.76)
Alpha Lagged *DSC Amount Year 1 (%)	-0.00177***	-0.000400	0.00155***	-0.000492	-0.000499	0.000724
	(-3.11)	(-0.71)	(3.86)	(-0.74)	(-0.77)	(1.59)
Deferred Sales Charge Slope	-0.138**	-0.114*	0.00261	-0.132**	-0.103*	0.0110
	(-2.34)	(-1.95)	(0.06)	(-2.26)	(-1.81)	(0.27)
Alpha Lagged * DSC Slope	0.00950	-0.00162	-0.00741	0.00169	-0.00962	-0.0119**
	(1.19)	(-0.21)	(-1.32)	(0.21)	(-1.23)	(-2.16)
Front End Commission paid for DSC purchases (%)	0.00167	0.00197	0.000740	0.00177	0.00224	0.000911
	(0.70)	(0.84)	(0.44)	(0.75)	(0.98)	(0.56)
Alpha Lagged *Sales Commission paid for DSC	-0.000827***	-0.000372	-0.000298	-0.000958***	-0.000594**	-0.000392**
	(-3.20)	(-1.45)	(-1.64)	(-3.58)	(-2.28)	(-2.13)

Table II.3. Panel B.(Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	All Inflows - All Outflows	All inflows	All outflows	All Inflows - All Outflows	All inflows	All outflows
Maximum Front End Commission (%)	-0.00541	-0.00788	0.0128*	-0.000809	-0.00274	0.0168**
	(-0.51)	(-0.79)	(1.80)	(-0.08)	(-0.28)	(2.43)
Alpha Lagged * Maximum Front End Commission (%)	-0.00103***	-0.000679***	-0.000555***	-0.00144***	-0.00119***	-0.000803***
	(-4.03)	(-2.68)	(-3.08)	(-5.47)	(-4.65)	(-4.43)
Alpha Lagged * Maximum Posted Switch Fee (%)				-1.271	-1.603	-0.204
				(-0.23)	(-0.30)	(-0.05)
Other payment to Dealer and Broker (%)				49.92***	40.13***	11.23
				(4.74)	(3.90)	(1.54)
Alpha Lagged * Other payment to Dealer and Broker				-32.46***	-22.22*	-2.780
				(-2.61)	(-1.84)	(-0.33)
Front End Commission Paid (%)				-0.0876***	-0.156***	-0.127***
				(-28.71)	(-52.39)	(-60.27)
Alpha Lagged * Front End Commission Paid				-0.00564	0.00329	0.00169
				(-1.47)	(0.89)	(0.65)
Alpha Lagged*Performance Fee				0.00225***	0.000795*	-0.000416
				(4.73)	(1.71)	(-1.27)
Negotiated Management Fee (%)				-0.0237***	-0.0498***	-0.0370***
				(-6.46)	(-13.90)	(-14.62)
Alpha Lagged * Negotiated Management Fee				-0.00647	-0.0187***	-0.0127***
				(-1.43)	(-4.25)	(-4.07)
Minimum Purchase Amount				-8.98e-10	-9.57e-10	-3.59e-10
				(-0.61)	(-0.67)	(-0.35)
Alpha Lagged * Minimum Purchase Amount				9.89e-10	1.89e-09	7.11e-10
				(0.53)	(1.04)	(0.55)
Constant	0.0712	0.109**	0.0524	0.0801	0.104**	0.0454
	(1.31)	(2.16)	(1.46)	(1.45)	(2.10)	(1.30)
Number of Observations	73685	75205	75205	73611	75205	75205
Number of groups	1468	1558	1558	1468	1558	1558
R^2 within	0.0008	0.0034	0.0008	0.0399	0.1026	0.0384
R^2 between	0.0006	0.003	0.0009	0.0597	0.07735	0.0397
R^2 overall	0.0006	0.0029	0.0008	0.0362	0.0639	0.023
F	5.802***	16.08***	28.85***	39.96***	128.4***	172.4***

Table II.3.
Panel C. Fund-of-Funds, Can be Purchased Directly

	Model 7 All Inflows – All Outflows	Model 8 All inflows	Model 9 All outflows	Model 10 All Inflows – All Outflows	Model 11 All inflows	Model 12 All outflows
Alpha Lagged	-0.0276***	-0.0210***	0.0116***			
	(-5.69)	(-4.17)	(3.17)			
Alpha Lagged ^2	0.000663***	0.000928***	0.000536***	0.000515**	0.000478**	0.000279*
	(2.83)	(3.79)	(3.01)	(2.22)	(2.20)	(1.73)
Management Expense Ratio(MER)%	0.00429***	0.00515***	0.00228**	0.00468***	0.00575***	0.00234**
	(2.81)	(3.27)	(1.99)	(3.09)	(4.11)	(2.26)
Alpha Lagged * Management Expense Ratio	0.00329**	0.00165	-0.00150	0.00377***	0.000725	-0.00354***
	(2.28)	(1.10)	(-1.38)	(2.63)	(0.54)	(-3.56)
Trading Expense Ratio (TER) %	-0.000732***	-0.000408	0.000194	-0.000649***	-0.0000808	0.000437***
	(-3.04)	(-1.63)	(1.07)	(-2.73)	(-0.36)	(2.65)
Alpha Lagged * Trading Expense Ratio	0.000448	0.000720**	-0.0000560	0.000311	0.000576**	-0.0000232
	(1.45)	(2.25)	(-0.24)	(1.00)	(2.00)	(-0.11)
Maximum Posted Initial Trailer Fee (%)	0.0501	0.0232	-0.0634**	0.0500	0.0185	-0.0579**
	(1.43)	(0.64)	(-2.39)	(1.45)	(0.57)	(-2.41)
Alpha Lagged *Maximum Posted Initial Trailer Fee	0.00784***	0.00932***	-0.00234	0.00557**	0.0148***	0.00920***
	(3.13)	(3.59)	(-1.24)	(2.15)	(6.13)	(5.14)
Trailer Slope	0.0137***	0.00769***	-0.000762	0.0136***	0.00645***	-0.00183**
	(11.87)	(6.39)	(-0.87)	(11.93)	(6.03)	(-2.30)
Alpha Lagged * Trailer Slope	-0.00170	0.000200	0.00109	-0.000584	0.000673	-0.000245
	(-1.45)	(0.16)	(1.23)	(-0.48)	(0.60)	(-0.29)
Alpha Lagged *DSC Amount Year 1 (%)	0.0000570	-0.000279	-0.0000485	-0.00143	-0.00160	0.000704
	(0.13)	(-0.59)	(-0.14)	(-1.25)	(-1.50)	(0.89)
Alpha Lagged * DSC Slope	-0.101***	-0.0830***	0.0287**	-0.0866***	-0.213***	-0.170***
	(-5.23)	(-4.14)	(1.96)	(-2.74)	(-7.22)	(-7.76)
Front End Commission paid for DSC purchases (%)	0.000377	0.00222	-0.0106	-0.00246	-0.00640	-0.0124
	(0.03)	(0.16)	(-1.03)	(-0.18)	(-0.51)	(-1.34)
Alpha Lagged *Sales Commission paid for DSC	-0.000503	-0.000109	-0.0000124	-0.0000597	-0.000534	-0.00123***
	(-1.56)	(-0.32)	(-0.05)	(-0.17)	(-1.58)	(-4.92)
Alpha Lagged * Maximum Front End Commission (%)	-0.000136	-0.000431	-0.000251	0.000377	-0.00120***	-0.00212***
	(-0.52)	(-1.58)	(-1.26)	(1.22)	(-4.18)	(-9.93)
Alpha Lagged * Maximum Posted Switch Fee (%)				-0.0116***	-0.0222***	-0.0138***
				(-4.27)	(-8.72)	(-7.34)

Table II.3. Panel C.(Continued)

	Model 7 All Inflows – All Outflows	Model 8 All inflows	Model 9 All outflows	Model 10 All Inflows – All Outflows	Model 11 All inflows	Model 12 All outflows
Front End Commission Paid (%)				-0.0848***	-0.255***	-0.144***
				(-41.57)	(-134.01)	(-101.89)
Alpha Lagged * Front End Commission paid				0.00633***	0.00404**	-0.00452***
				(3.66)	(2.50)	(-3.76)
Negotiated Management Fee (%)				0.0665***	-0.0316***	-0.172***
				(16.62)	(-8.48)	(-62.21)
Alpha Lagged * Negotiated Management Fee				-0.0246***	0.0405***	0.100***
				(-3.83)	(6.80)	(22.73)
Minimum Purchase Amount				-0.00272***	-0.00260***	-0.00333***
				(-6.01)	(-6.27)	(-10.85)
Alpha Lagged * Minimum Purchase Amount				0.0000203**	0.00000148	-0.0000326***
				(2.20)	(0.17)	(-5.11)
Constant	-0.0367	-0.0545	0.0133	0.146***	0.165***	0.274***
	(-0.99)	(-1.41)	(0.47)	(3.13)	(3.80)	(8.52)
Number of Observations	71980	73224	73224	71847	73224	73224
Number of groups	1300	1316	1316	1299	1316	1316
R^2 within	0.0008	0.0228	0.0351	0.0006	0.0283	0.0306
R^2 between	0.0013	0.0194	0.0283	0.0002	0.0195	0.0331
R^2 overall	0.0005	0.013	0.0209	0.0001	0.0179	0.028
F	16.25***	9.819***	4.294***	108.3***	922.8***	771.4***

Appendix III. Additional Robustness Presentation with 3-Year Alphas

In this Appendix we present all of the exact same regressions in Tables 3-6 of the main paper using a 3-year alpha instead of a 1-year alpha. The benefit of a 1-year alpha is that it enables an analysis of all of the data provided by the funds. The cost of a 1-year alpha is that it involves a shorter estimation window that may not be robust to a longer window. As such, in this Appendix, we present 3-year alphas, and the exact same specifications as the main regressions in Table 3-6, which are labeled as Tables III.3-III.6, respectively. The 3-year alpha mean value is 0.1205, median 0.0692, and std dev. 0.3715. Roughly 50% of the observations are lost by requiring that each of the FundSERV codes to have 36 months of returns to calculate alpha. Despite these sample differences, the results in the tables show very similar findings, without any substantive exceptions (there are minor differences in the size of some effects, and the necessary exclusion of some variables, as indicated with 0 coefficient values and t-statistics in the tables, but overall the results are extremely similar). Due to the strong similarities, we focused the discussion in the paper on the Tables 3-6 with the 1-year alphas in order to be more inclusive of all of the funds that provided the data (hence gaining approximately 50% more observations in each of Tables 3-6). Tables III.3-III.6 are nevertheless presented below for the purpose of explicitly showing the similarities despite the different estimation window length and reduction in sample size.

Table III.3. Regression Analysis of Flow For All Purchase Options

This table presents unbalanced FundSERV random effects panel regressions of the determinants of the percentage fund net flow (one period ahead). The dependent variable is Flows Net of PAC, SWP, Switches, Reinvestments, Distributions, and Affiliated Dealer and Affiliated Investment Funds. Explanatory variables include alphas, purchase options (deferred sales charge, front end, fee based and no load), and interaction terms with purchase options and lagged alphas. Variables are as defined in Table 1. Standard errors are clustered by FundSERV code. T-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A. Stand-Alone Funds

	Series Cannot be Purchased Directly from the Fund Manager (Models 1 - 5)					Series Can be Purchased Directly from the Fund Manager (Models 6 - 7)	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Alpha Lagged	0.00196***	0.00178***	0.00191***	0.00317***	0.00846***	0.0141***	0.0153***
	(12.10)	(10.78)	(13.09)	(18.09)	(12.40)	(18.07)	(10.99)
Alpha Lagged ^2	0.0000157***	0.0000128***	0.0000135***	0.0000119***	0.00000947***	0.00317***	0.00298***
	(8.66)	(6.80)	(7.40)	(6.44)	(4.96)	(3.77)	(3.55)
Purchase Option Deferred Sales Charge	-0.00276*				-0.00374		0.0958***
	(-1.83)				(-1.51)		(16.31)
Alpha Lagged * Purchase Option Deferred Sales Charge	0.000765***				-0.00604***		0.000879
	(2.92)				(-8.36)		(0.50)
Purchase Option Front End		0.00161			-0.00128		0.0914***
		(1.01)			(-0.50)		(13.18)
Alpha Lagged * Purchase Option Front End		0.00156***			-0.00513***		-0.000858
		(4.83)			(-6.96)		(-0.44)
Purchase Option Fee Based			0.00124			0.0738***	
			(0.49)			(10.65)	
Alpha Lagged * Purchase Option Fee Based			0.00808***			0.00231	
			(10.21)			(1.23)	
Purchase Option No Load				-0.00252	-0.00495		0.0888***
				(-0.72)	(-1.21)		(12.38)
Alpha Lagged * Purchase Option No Load				-0.00241***	-0.00783***		-0.00946***
				(-9.77)	(-10.99)		(-4.00)
Constant	-0.00979***	-0.0117***	-0.0112***	-0.0111***	-0.00875***	-0.0587***	-0.0958***
	(-9.20)	(-12.00)	(-13.97)	(-13.98)	(-3.87)	(-21.91)	(-28.49)
Number of Observations	415133	415133	415133	415133	415133	95912	95912
Number of Groups	8,007	8,007	8,007	8,007	8,007	1,638	1,638
R2 within	0.0006	0.0006	0.0008	0.0008	0.0009	0.0055	0.0058
R2 between	0.0014	0.0019	0.0036	0.0039	0.0034	0.0695	0.2002
R2 overall	0.0002	0.0004	0.0014	0.0022	0.0017	0.0609	0.1393
Wald Chi 2	243.86	256.95	337.54	328.59	404.12	651.66	957.88

Table III.3. (Continued)
Panel B. Fund-of-Funds

	Series Cannot be Purchased Directly from the Fund Manager (Models 1 - 5)					Series Can be Purchased Directly from the Fund Manager (Models 6 - 7)	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Alpha Lagged	0.0190***	0.0186***	0.00328***	0.0145***	0.0340***	0.0134***	0.00664***
	(17.09)	(16.58)	(2.81)	(14.44)	(23.16)	(14.21)	(3.40)
Alpha Lagged ^2	-0.00404***	-0.00347***	-0.00100	-0.00451***	-0.00104	-0.00228*	-0.00253*
	(-3.40)	(-2.90)	(-0.83)	(-3.79)	(-0.86)	(-1.76)	(-1.95)
Purchase Option Deferred Sales Charge	0.00453				0.0114**		0.0174**
	(1.40)				(2.42)		(2.15)
Alpha Lagged * Purchase Option Deferred Sales Charge	-0.0154***				-0.0321***		0.00731***
	(-9.25)				(-16.26)		(3.18)
Purchase Option Front End		0.00529			0.0117**		0.0129
		(1.62)			(2.46)		(1.54)
Alpha Lagged * Purchase Option Front End		-0.0130***			-0.0300***		0.00619**
		(-8.08)			(-15.62)		(2.56)
Purchase Option Fee Based			-0.00934**			-0.00891	
			(-2.11)			(-1.05)	
Alpha Lagged * Purchase Option Fee Based			0.0307***			-0.00679***	
			(18.14)			(-3.16)	
Purchase Option No Load				-0.00269	0.00587		-0.0946***
				(-0.43)	(0.81)		(-8.07)
Alpha Lagged * Purchase Option No Load				-0.00198	-0.0235***		0.000736
				(-0.41)	(-4.78)		(0.10)
Constant	-0.0177***	-0.0181***	-0.0137***	-0.0160***	-0.0246***	0.00847***	-0.000390
	(-8.68)	(-9.04)	(-7.98)	(-9.73)	(-6.16)	(3.54)	(-0.05)
Number of Observations	57816	57816	57816	57816	57816	48894	48894
Number of Groups	1,399	1,399	1,399	1,399	1,399	1,077	1,077
R2 within	0.0063	0.0058	0.0107	0.0047	0.0107	0.0045	0.0045
R2 between	0.0059	0.0006	0.0056	0.0021	0.0034	0.0007	0.1099
R2 overall	0.004	0.0051	0.0066	0.0045	0.0075	0.0014	0.0315
Wald Chi 2	345.05	325.11	589.89	259.44	594.07	214.82	359.53

Table III.4. Flow Sensitivity Analysis for Subsample Excluding Fee-Based

This table presents monthly FundSERV code fixed effects panel regressions of the determinants of the percentage flow as a function of prior month's alpha, fee variables, interaction terms between fees and alphas, and control variables. The dependent variable is Flows Net of PAC, SWP, Switches, Reinvestments, Distributions, and Affiliated Dealer and Affiliated Investment Funds. Variables are as defined in Table 1. Standard errors are clustered by FundSERV code. T-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A. Stand-Alone Funds, cannot be directly purchased from fund manager

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Alpha Lagged	0.00107**	0.00307**	0.00220**	0.000884**	0.00440**	0.00380**
	(2.54)	(2.54)	(2.11)	(2.27)	(2.34)	(2.15)
Management Expense Ratio (MER) %	0.00128***	0.00132***	0.00140***	0.00125***	0.00133***	0.00140***
	(2.73)	(2.82)	(2.92)	(2.68)	(2.84)	(2.93)
Alpha Lagged * Management Expense Ratio	-0.000613*	-0.000381	-0.000838**	-0.000418	-0.000416	-0.000856**
	(-1.93)	(-1.19)	(-2.47)	(-1.22)	(-1.20)	(-2.34)
Trading Expense Ratio (TER) %	0.000185***	0.000182***	0.000183***	0.000188***	0.000135***	0.000136***
	(4.37)	(4.31)	(4.33)	(4.44)	(3.13)	(3.15)
Alpha Lagged * Trading Expense Ratio	-0.000113*	-0.000110	-0.000129*	-0.000141**	0.000231***	0.000204**
	(-1.65)	(-1.60)	(-1.87)	(-2.02)	(2.67)	(2.35)
Maximum Posted Initial Trailer Fee (%)	0.00140***	0.00134***	0.00139***	0.00142***	0.00138***	0.00159***
	(3.65)	(3.61)	(4.77)	(3.66)	(3.63)	(3.82)
Alpha Lagged *Maximum Posted Initial Trailer Fee	-0.00214**	-0.00313***	-0.000761	-0.00190**	-0.00224**	-0.00103
	(-2.51)	(-3.63)	(-0.80)	(-2.21)	(-2.57)	(-1.00)
Trailer Slope	0.0281***	0.0279***	0.0274***	0.0279***	0.0277***	0.0274***
	(12.81)	(12.71)	(12.46)	(12.67)	(12.59)	(12.43)
Alpha Lagged * Trailer Slope	0.00332*	0.00353**	0.00549***	0.00427**	0.00479***	0.00589***
	(1.93)	(2.05)	(2.99)	(2.41)	(2.70)	(3.15)
Deferred Sales Charge Year 1 (%)	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
Alpha Lagged *Deferred Sales Charge Year 1	0.00137***	0.00138***	0.00108***	0.00115*	0.00133**	0.00113*
	(3.97)	(4.00)	(3.04)	(1.86)	(2.13)	(1.78)
Deferred Sales Charge Slope	0.169***	0.170***	0.169***	0.169***	0.172***	0.171***
	(3.01)	(3.02)	(3.00)	(3.01)	(3.06)	(3.04)
Alpha Lagged *Deferred Sales Charge Slope	0.0323***	0.0297***	0.0170**	0.0300***	0.0215***	0.0119*
	(5.05)	(4.63)	(2.38)	(4.59)	(3.26)	(1.65)
Front End Commission Paid for DSC purchases (%)	-0.00325***	-0.00321***	-0.00343***	-0.00325***	-0.00315***	-0.00333***
	(-3.70)	(-3.64)	(-3.90)	(-3.69)	(-3.58)	(-3.78)
Alpha Lagged *Sales Commission Paid for DSC	-0.000421***	-0.000412***	-0.000308***	-0.000484***	-0.000557***	-0.000436***
	(-3.65)	(-3.57)	(-2.60)	(-3.97)	(-4.55)	(-3.45)
Maximum Posted Switch Fee (%)	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
Alpha Lagged * Maximum Posted Switch Fee	0.00192	0.00370	0.00255	0.00213	0.00368	0.00172
	(0.66)	(1.28)	(0.88)	(0.73)	(1.26)	(0.58)
Other payment to Dealer and Broker (%)	-31.42***	-15.18***	-13.72**	-31.24***	-14.36**	-13.28**

	(-5.61)	(-2.62)	(-2.37)	(-5.58)	(-2.48)	(-2.29)
Alpha Lagged*Other payment to Dealer and Broker	98.72***	74.85***	67.42***	97.84***	71.14***	65.86***
	(11.36)	(8.06)	(7.20)	(11.25)	(7.65)	(7.02)
Front End Commission Paid (%)	-0.0562***	-0.0562***	-0.0562***	-0.0563***	-0.0565***	-0.0564***
	(-36.34)	(-36.35)	(-36.34)	(-36.19)	(-36.31)	(-36.24)
Alpha Lagged * Front End Commission Paid	-0.00382***	-0.00332***	-0.00285***	-0.00288	-0.000927	-0.00122
	(-4.53)	(-3.92)	(-3.29)	(-1.62)	(-0.52)	(-0.67)
Negotiated Management Fee (%)		-0.0214***	-0.0214***		-0.0211***	-0.0213***
		(-10.80)	(-10.79)		(-10.68)	(-10.69)
Alpha Lagged * Negotiated Management Fee		0.0217***	0.0210***		0.0201***	0.0197***
		(7.03)	(6.75)		(6.52)	(6.33)
Maximum Front End Commission (%)			0.0152			0.0152
			(0.75)			(0.75)
Alpha Lagged * Maximum Front End Commission			0.000506***			0.000414***
			(5.17)			(4.10)
Performance Fee (%)			0			0
			(.)			(.)
Alpha Lagged*Performance Fee			0.00204***			0.00197***
			(2.70)			(2.58)
Minimum Purchase Amount ($)			2.64e-10			2.58e-10
			(0.99)			(0.96)
Alpha Lagged * Minimum Purchase Amount			-1.27e-09***			-1.17e-09**
			(-2.62)			(-2.40)
Alpha Lagged^2				0.00000208	0.0000322**	0.000687*
				(0.14)	(2.11)	(1.79)
Alpha Lagged^2 * Management Expense Ratio				0.00000231	-0.00000839	-0.00000807
				(0.24)	(-0.88)	(-0.83)
Alpha Lagged^2 * Trading Expense Ratio					-0.0000314***	-0.0000293***
					(-7.15)	(-6.62)
Alpha Lagged^2 *Maximum Posted Initial Trailer Fee						-0.00132*
						(-1.72)
Constant	0.0232**	0.0234**	-0.00748	0.0232**	0.0237**	-0.00737
	(2.29)	(2.31)	(-0.18)	(2.29)	(2.34)	(-0.17)
Number of Observations	254523	254523	254523	254523	254523	254523
Number of Groups	4,831	4,831	4,831	4,831	4,831	4,831
R2 within	0.0071	0.0076	0.0078	0.0071	0.0078	0.008
R2 between	0.0726	0.077	0.0229	0.0726	0.0764	0.023
R2 overall	0.0348	0.0369	0.0129	0.0348	0.0365	0.0129
F	93.69	91.35	75.35	85.03	82.27	66.89

Table III.4 (Continued)
Panel B. Stand-Alone Funds, can be directly purchased from fund manager

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Alpha Lagged	0.0135***	0.0112***	0.00473*	0.00562**	0.00606**	0.00524*
	(15.63)	(5.12)	(1.79)	(2.11)	(2.21)	(1.91)
Alpha Lagged^2	0.00349***	0.00364***	0.00322***	0.00500***	0.00316	-0.00510
	(3.52)	(3.66)	(3.23)	(4.54)	(1.10)	(-1.48)
Trading Expense Ratio (TER) %	-0.000386**	-0.000379**	-0.000380**	-0.000342**	-0.000338**	-0.000342**
	(-2.25)	(-2.21)	(-2.22)	(-1.99)	(-1.97)	(-1.99)
Alpha Lagged * Trading Expense Ratio	0.00128***	0.00127***	0.00122***	0.00126***	0.00127***	0.00137***
	(2.75)	(2.72)	(2.60)	(2.69)	(2.70)	(2.93)
Alpha Lagged^2 * Trading Expense Ratio	-0.00178***	-0.00181***	-0.00159***	-0.00188***	-0.00191***	-0.00196***
	(-3.23)	(-3.28)	(-2.87)	(-3.38)	(-3.42)	(-3.46)
Maximum Posted Initial Trailer Fee (%)		-0.0325***	-0.0326***	-0.0313***	-0.0314***	-0.0313***
		(-4.51)	(-4.44)	(-4.20)	(-4.21)	(-4.19)
Alpha Lagged *Maximum Posted Initial Trailer Fee		0.00293	0.00883***	0.00777**	0.00715**	0.00755**
		(1.08)	(2.89)	(2.53)	(2.24)	(2.36)
Maximum Front End Commission (%)			-0.00198	-0.00231	-0.00224	-0.00225
			(-0.20)	(-0.23)	(-0.23)	(-0.23)
Alpha Lagged * Maximum Front End Commission			0.00196***	0.00172***	0.00174***	0.00157***
			(4.32)	(3.72)	(3.76)	(3.37)
Minimum Purchase Amount ($)				-8.83e-08***	-8.80e-08***	-7.96e-08***
				(-6.02)	(-6.00)	(-5.38)
Alpha Lagged * Minimum Purchase Amount				-4.05e-08***	-3.89e-08***	7.58e-09
				(-3.55)	(-3.34)	(0.49)
Management Expense Ratio (MER) %				0.00188	0.00194	0.00154
				(1.15)	(1.18)	(0.94)
Alpha Lagged^2 *Maximum Posted Initial Trailer Fee					0.00247	0.000969
					(0.69)	(0.27)
Alpha Lagged^2 * Management Expense Ratio						0.00529***
						(3.79)
Alpha Lagged^2 * Maximum Front End Commission						3.05e-09***
						(3.85)
Constant	-0.0551***	-0.0324***	-0.0315***	-0.0332***	-0.0332***	-0.0330***
	(-248.55)	(-6.41)	(-4.31)	(-4.23)	(-4.24)	(-4.21)
Observations	81188	81188	81188	81188	81188	81188
Number of Groups	1,393	1,393	1,393	1,393	1,393	1,393
R2 within	0.0054	0.0056	0.0057	0.0063	0.0063	0.0067
R2 between	0.0181	0.0004	0.0554	0.0554	0.0554	0.0554
R2 overall	0.0122	0.0014	0.0421	0.0421	0.0421	0.0421
F	86.20	64.70	52.41	43.09	39.81	36.65

Table III.4 (Continued)
Panel C. Fund of Funds, cannot be directly purchased from fund manager

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Alpha Lagged	0.00806**	0.00885**	0.00258	0.0491**	0.0554***	0.0732***
	(2.31)	(2.43)	(1.37)	(2.36)	(2.65)	(3.39)
Management Expense Ratio(MER)%	0.00369***	0.00366***	0.00333***	0.00338***	0.00344***	0.00321***
	(4.13)	(4.10)	(3.60)	(3.67)	(3.73)	(3.45)
Alpha Lagged * Management Expense Ratio	0.000612	0.000691	0.00297	0.00254	0.00261	0.00573**
	(0.39)	(0.44)	(1.39)	(0.97)	(1.00)	(2.04)
Trading Expense Ratio (TER) %	-0.0000493	-0.0000668	0.000134	0.000113	0.000119	0.000126
	(-0.40)	(-0.53)	(0.87)	(0.74)	(0.78)	(0.82)
Alpha Lagged * Trading Expense Ratio	0.00168***	0.00139***	0.000812	0.000839	0.000775	0.000994
	(4.30)	(2.98)	(1.21)	(1.24)	(1.15)	(1.46)
Maximum Posted Initial Trailer Fee (%)	0.0122***	0.0120***	0.00474	0.00438	0.00194	-0.0000884
	(3.30)	(3.25)	(0.76)	(0.70)	(0.31)	(-0.01)
Alpha Lagged *Maximum Posted Initial Trailer Fee	-0.0103***	-0.0100***	-0.00980***	-0.00964**	-0.00123	0.0148**
	(-3.54)	(-3.44)	(-2.59)	(-2.54)	(-0.26)	(2.25)
Trailer Slope	0.00113	0.00112	-0.0102**	-0.00876**	-0.00836*	-0.00844*
	(0.36)	(0.35)	(-2.35)	(-1.98)	(-1.89)	(-1.91)
Alpha Lagged *Trailer Slope	-0.0234***	-0.0233***	-0.00985	-0.00986	-0.0115	-0.0111
	(-4.88)	(-4.85)	(-1.33)	(-1.33)	(-1.55)	(-1.48)
Performance Fee	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
Alpha Lagged*Performance Fee	0.00851***	0.00852***	0.00768***	0.00916***	0.00951***	0.00970***
	(6.20)	(6.21)	(5.30)	(6.02)	(6.24)	(6.35)
Negotiated Management Fee (%)	-0.0258***	-0.0256***	-0.0249***	-0.0229***	-0.0214***	-0.0212***
	(-4.65)	(-4.61)	(-4.40)	(-4.06)	(-3.78)	(-3.74)
Alpha Lagged * Negotiated Management Fee	0.0309***	0.0303***	0.0289**	0.0242**	0.0174	0.0170
	(2.75)	(2.69)	(2.43)	(2.04)	(1.44)	(1.41)
Alpha Lagged^2		-0.00226	-0.00225	-0.00248	-0.00325	0.0241**
		(-1.58)	(-1.18)	(-0.41)	(-0.53)	(2.42)
Alpha Lagged^2 * Trading Expense Ratio		0.000953	0.00246**	0.00253**	0.00263**	0.00193
		(1.06)	(2.06)	(2.06)	(2.15)	(1.55)
Deferred Sales Charge Slope			-0.0795	-0.0770	-0.0747	-0.0728
			(-1.03)	(-1.01)	(-0.98)	(-0.95)
Alpha Lagged * DSC Slope			-0.0188	-0.00671	-0.0195	-0.0280
			(-0.77)	(-0.27)	(-0.76)	(-1.08)
Front End Commission paid for DSC purchases (%)			0.00125	0.000794	0.00155	0.00168
			(0.43)	(0.28)	(0.54)	(0.58)
Alpha Lagged *Sales Commission paid for DSC			-0.00143**	-0.00132**	-0.00257***	-0.00295***
			(-2.33)	(-2.15)	(-3.48)	(-3.94)
Alpha Lagged^2* Management Expense Ratio				-0.000103	0.000531	-0.00477
				(-0.04)	(0.18)	(-1.45)
Deferred Sales Charge Year 1				0	0	0

Alpha Lagged *DSC Amount Year 1 (%)				(.)	(.)	(.)
				0.00987***	0.0110***	0.0112***
				(2.66)	(2.94)	(3.01)
Front End Commission Paid (%)				-0.0672***	-0.0676***	-0.0671***
				(-15.27)	(-15.37)	(-15.25)
Alpha Lagged * Front End Commission paid				-0.0285**	-0.0275**	-0.0293***
				(-2.55)	(-2.46)	(-2.61)
Maximum Front End Commission for FE purchases (%)					0	0
					(.)	(.)
Alpha Lagged * Maximum Front End Commission (%)					-0.00250***	-0.00289***
					(-3.03)	(-3.47)
Maximum Posted Switch Fee					0	0
					(.)	(.)
Alpha Lagged * Maximum Posted Switch Fee					0	0
					(.)	(.)
Alpha Lagged^2 *Maximum Posted Initial Trailer Fee						-0.0265***
						(-3.58)
Minimum Purchase Amount($)						-2.36e-10
						(-0.11)
Alpha Lagged * Minimum Purchase Amount						-3.53e-09
						(-0.45)
Constant	-0.0242***	-0.0240***	-0.0360**	-0.0327*	-0.0323*	-0.0304*
	(-7.96)	(-7.89)	(-2.09)	(-1.90)	(-1.88)	(-1.77)
Number of Observations	46398	46398	38035	38035	38035	38035
Number of Groups	1,156	1,156	928	928	928	928
R2 within	0.0031	0.0031	0.0038	0.0126	0.0129	0.0132
R2 between	0.0022	0.0011	0.0002	0.1758	0.1493	0.1429
R2 overall	0.0004	0.0003	0.0005	0.0899	0.0789	0.076
F	11.57	10.11	7.772	21.57	21.03	19.11

Table III.4 (Continued)
Panel D. Fund-of-Funds, can be directly purchased from fund manager

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Alpha Lagged	0.0491***	0.0480***	0.0616***	0.0477***	0.0464***	0.0531***
	(4.20)	(4.07)	(5.08)	(4.04)	(3.88)	(3.97)
Management Expense Ratio (MER) %	0.000892	0.000954	0.00101	0.000872	0.000960	0.000977
	(0.43)	(0.45)	(0.48)	(0.42)	(0.46)	(0.47)
Alpha Lagged * Management Expense Ratio	0.00931**	0.00811*	0.00834*	0.00838*	0.00721	0.00550
	(2.24)	(1.91)	(1.96)	(1.93)	(1.63)	(1.17)
Trading Expense Ratio (TER) %	-0.00105***	-0.00113***	-0.00118***	-0.00103***	-0.00124***	-0.00126***
	(-2.74)	(-2.92)	(-2.99)	(-2.69)	(-3.12)	(-3.11)
Alpha Lagged * Trading Expense Ratio	0.00426***	0.00437***	0.00444***	0.00423***	0.00336***	0.00354***
	(5.40)	(5.39)	(5.30)	(5.35)	(3.31)	(3.42)
Maximum Posted Initial Trailer Fee (%)	0.0822**	0.0822**	0.0907**	0.0827**	0.0824**	0.0904**
	(2.18)	(2.18)	(2.41)	(2.19)	(2.18)	(2.40)
Alpha Lagged *Maximum Posted Initial Trailer Fee	0.0364***	0.0358***	0.0485***	0.0364***	0.0359***	0.0446***
	(6.04)	(5.92)	(7.80)	(6.03)	(5.93)	(6.52)
Trailer Slope	0.0108***	0.0108***	0.0116***	0.0109***	0.0111***	0.0117***
	(3.83)	(3.84)	(4.13)	(3.87)	(3.92)	(4.14)
Alpha Lagged * Trailer Slope	-0.0133***	-0.0138***	-0.0156***	-0.0133***	-0.0138***	-0.0155***
	(-4.04)	(-4.09)	(-4.62)	(-4.03)	(-4.09)	(-4.57)
Deferred Sales Charge Year 1	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
Alpha Lagged *Deferred Sales Charge Year 1	0.000822	0.000989	0.00109	0.000792	0.000911	0.000807
	(0.66)	(0.77)	(0.80)	(0.64)	(0.70)	(0.59)
Front End Commission Paid for DSC purchases (%)	0.0168	0.0167	0.0208	0.0166	0.0166	0.0208
	(1.14)	(1.14)	(1.41)	(1.12)	(1.12)	(1.41)
Alpha Lagged *Sales Commission Paid for DSC	-0.000356	-0.000379	0.000597	-0.000335	-0.000347	0.000582
	(-0.42)	(-0.45)	(0.69)	(-0.40)	(-0.41)	(0.67)
Maximum Posted Switch Fee	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
Alpha Lagged * Maximum Posted Switch Fee	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
Front End Commission Paid (%)	-0.0867***	-0.0872***	-0.0850***	-0.0866***	-0.0870***	-0.0850***
	(-32.56)	(-32.73)	(-31.79)	(-32.50)	(-32.65)	(-31.75)
Alpha Lagged * Front End Commission Paid	0.0431***	0.0426***	0.0421***	0.0432***	0.0429***	0.0420***
	(9.80)	(9.67)	(9.44)	(9.73)	(9.64)	(9.33)
Negotiated Management Fee (%)		0.0443***	0.0424***		0.0452***	0.0436***
		(6.61)	(6.26)		(6.73)	(6.42)
Alpha Lagged * Negotiated Management Fee		-0.00000684	0.0109		-0.00312	0.00754
		(-0.00)	(0.78)		(-0.25)	(0.53)
Minimum Purchase Amount ($)			-0.00443***			-0.00440***
			(-8.62)			(-8.58)

Alpha Lagged * Minimum Purchase Amount			-0.00000463			-0.00000607
			(-0.43)			(-0.56)
Alpha Lagged^2				-0.00515	-0.00572	-0.0251
				(-0.70)	(-0.78)	(-1.53)
Alpha Lagged^2 * Management Expense Ratio				0.00383	0.00348	0.0106
				(0.74)	(0.67)	(1.38)
Alpha Lagged^2 * Trading Expense Ratio					0.00311	0.00280
					(1.61)	(1.43)
Alpha Lagged^2 *Maximum Posted Initial Trailer Fee						0.0133
						(1.40)
Constant	-0.0659	-0.0716*	0.165***	-0.0660	-0.0717*	0.164***
	(-1.61)	(-1.75)	(3.36)	(-1.61)	(-1.75)	(3.33)
Number of Observations	43199	43199	43199	43199	43199	43199
Number of Groups	988	988	988	988	988	988
R2 within	0.032	0.0331	0.0348	0.032	0.0332	0.0349
R2 between	0.0288	0.0006	0.0005	0.0283	0.0003	0.0005
R2 overall	0.0089	0.0013	0.0002	0.0085	0.0018	0.0002
F	99.50	90.21	84.51	87.10	76.15	69.40

Table III.5. Relation between Flow Intercept, Flow Slope and Future Alpha, on subsample excluding Fee based
This table presents FundSERV code fixed effects panel data estimates of the relationship between the flow intercept, flow slope, and 1-year lead future alphas. Flow intercept and slope are calculated based on Models 6 and 12 of Table 4 for each of the respective categories: stand-alone funds, not purchased direct, stand-alone funds purchased direct, fund of funds not purchased direct, and fund of funds purchased direct. Flow intercept refers to the level of flow in a given month irrespective of past alpha, while flow slope refers to the sensitivity of capital flows that the fund receives as a result of changes in monthly alpha. Standard errors are clustered by FundSERV code. t-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A. Stand Alone Funds

	Cannot be Purchased Directly			Can be Purchased Directly		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Flow Intercept	-0.0223**		-0.102***	0.00461***		0.239***
	(-2.32)		(-2.88)	(9.01)		(7.39)
Flow Slope		1.062*	0.956*		0.362**	0.422**
		(1.93)	(1.7)		(2.53)	(2.6)
Constant	0.159***	0.157***	0.159***	0.00239	-0.00423	0.00430
	(98.84)	(56.26)	(50.46)	(0.14)	(-0.88)	(0.19)
Number of Observations	224432	143815	143815	73704	46997	46997
Number of Groups	4,895	4,636	4,636	1,400	1,322	1,322
R2 within	0.0143	0.0221	0.0117	0.0263	0.0358	0.0256
R2 between	0.0204	0.0313	0.0212	0.0201	0.0243	0.0209
R2 overall	0.0192	0.0111	0.0169	0.0188	0.0147	0.0194
F	5.79	6.72	4.24	7.55	9.34	6.61

Table III.5 (Continued)
Panel B. Fund-of-Funds

	Cannot be Purchased Directly			Can be Purchased Directly		
	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Flow Intercept	0.0219**		0.0606**	-0.000154***		-0.000183***
	(2.15)		(2.48)	(-4.53)		(-4.57)
Flow Slope		0.256***	0.150***		0.133***	0.125**
		(2.94)	(3.42)		(3.36)	(2.34)
Constant	0.207***	0.206***	0.207***	0.0811***	0.0835***	0.0834***
	(65.41)	(64.49)	(53.73)	(63.38)	(42.64)	(42.46)
Number of Observations	40998	23455	23455	37104	22855	22855
Number of Groups	1,215	1,052	1,052	988	949	949
R2 within	0.0201	0.0149	0.0318	0.0205	0.0132	0.0097
R2 between	0.0133	0.0233	0.0256	0.0116	0.0494	0.0516
R2 overall	0.0277	0.0108	0.0291	0.0334	0.0083	0.0108
F	8.43	7.21	7.05	11.42	10.64	9.83

Table III.6. Relation between Affiliated Dealer Flow and Future Alpha, on subsample excluding Fee based

This table presents fixed effects panel data estimates of the relationship between the flow intercept, flow slope, affiliated dealer flows and 1-year lead future alphas. Flow intercept and slope are calculated based on Models 6 and 12 of Table 4 for each of the respective categories: stand-alone funds, not purchased direct, stand-alone funds purchased direct, fund of funds not purchased direct, and fund of funds purchased direct. Affiliated Dealer flow refers to the aggregate monthly money fund flow from affiliated dealers divided by the concurrent period AUM. Flow intercept refers to the level of flow in a given month irrespective of past alpha, while flow slope refers to the sensitivity of capital flows that the fund receives as a result of changes in monthly alpha. Standard errors are clustered by FundSERV code. t-statistics are in parentheses. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Panel A. Stand-Alone Funds

	Cannot be Purchased Directly			Can be Purchased Directly		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Flow Intercept	-0.0215***		-0.0974***	0.0600**		0.232**
	(-3.31)		(-3.84)	(2.13)		(2.38)
Affiliated Dealer Inflows - Outflows	-0.0490***	-0.403***	-0.378***	-0.00164**	-0.124***	-0.125***
	(-3.14)	(-3.74)	(-4.69)	(-2.01)	(-2.60)	(-2.71)
Flow Slope		1.044*	0.944*		0.513*	0.571*
		(1.89)	(1.67)		(1.74)	(1.81)
Constant	0.159***	0.157***	0.158***	-0.00151	-0.00655	0.00172
	(93.74)	(55.34)	(49.57)	(-0.09)	(-1.36)	(0.08)
Number of Observations	224432	143815	143815	72354	46717	46717
Number of Groups	4,895	4,636	4,636	1,396	1,318	1,318
R2 within	0.0003	0.0011	0.0013	0.0008	0.0021	0.0019
R2 between	0.0004	0.0009	0.0008	0.0005	0.0014	0.0016
R2 overall	0.0004	0.0007	0.0012	0.0003	0.0015	0.0022
F	23.32	19.94	34.21	27.98	39.87	41.22

Table III.6 (Continued)
Panel B: Fund of Funds

	Cannot be Purchased Directly			Can be Purchased Directly		
	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Flow Intercept	0.00852**		0.0527	-0.000172***		-0.000143**
	(2.06)		(1.41)	(-2.59)		(-2.43)
Affiliated Dealer Inflows - Outflows	-0.380***	-0.275***	-0.265***	-0.120**	-0.305***	-0.270***
	(-3.74)	(-2.86)	(-2.83)	(-2.47)	(-2.74)	(-2.64)
Flow Slope		0.249*	0.157		0.119**	0.115**
		(1.91)	(1.45)		(2.32)	(2.31)
Constant	0.208***	0.207***	0.208***	0.0812***	0.0833***	0.0832***
	(60.13)	(63.22)	(53.34)	(62.37)	(42.16)	(42.07)
Number of Observations	40998	23455	23455	37104	22855	22855
Number of Groups	1,215	1,052	1,052	988	949	949
R2 within	0.0002	0.0003	0.0007	0.0011	0.0013	0.0017
R2 between	0.0001	0.0004	0.0012	0.0008	0.0012	0.0014
R2 overall	0.0001	0.0003	0.0006	0.0005	0.0010	0.0013
F	18.73	22.35	30.17	22.28	41.03	44.87