

A Dissection of Mutual Fund Fees, Flows, and Performance

1

DOUGLAS CUMMING

SOFIA JOHAN

YELIN ZHANG

YORK UNIVERSITY
SCHULICH SCHOOL OF BUSINESS

FEBRUARY 2016

Motivation

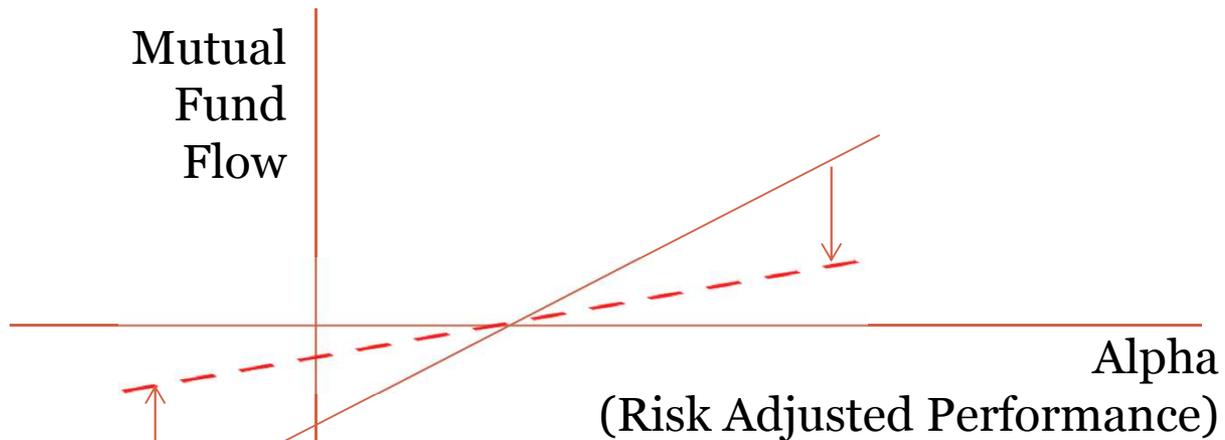
2

- Concern that trailers are harming investors, much policy discussion and debate, but no evidence from any country
 - UK (2006), Continental Europe (2007), and Australia (2010):
 - ✦ Banned Embedded Commissions
- Fiduciary Duty / Qualified Best Interest Rules
 - US: DOL Proposal in 2015: Client's best interest first
- Issue of mutual fund fees has taken center stage
- Estimated total 12b-1 fees in the US (2009): \$9.5 billion
 - 0.25% average, 1% maximum (WSJ)
- Estimated total trailer fees in Canada (2009): \$6 billion
 - 0.58% average, 1.5% maximum (our dataset)
 - Roughly \$6.5 billion in 2014

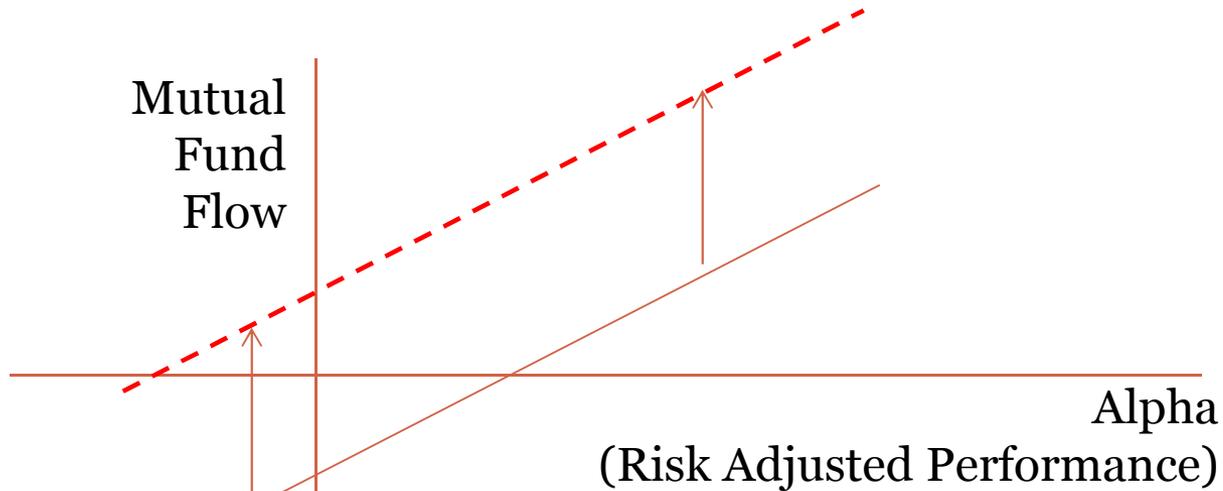
Research Questions

3

- Does past risk-adjusted performance (“alpha”) affect future fund flows?
- Is this flow-performance relation affected by the structure of fund fees?
- Does the flow-performance relation affect future alphas?
 - Incentive to generate future performance?



Possible effect 1: Don't recommend selling products with worse past performance
"lower flow-performance slope"



Possible effect 2: recommend products regardless of past performance
“higher flow-performance intercept”

Some Prior Research

6

- Mutual fund fees are high in Canada relative to the US and other countries
 - Ruckman, 2003 CJE, Khorna, Servaes, and Tufano, 2008 RFS.
- Mutual fund flows may be affected by performance and fees
 - Del Guercio and Tkac, 2002 JFQA.
- Mutual fund performance depends on the incentive to generate alpha
 - Del Guercio and Reuter, 2014 JF.

New Contributions

7

- **Specific fund details on flows by FundSERV Code**
 - Not publicly available
- **Specific fund details on purchase options**
 - Fee Based
 - Deferred Sales Charge (including low load)
 - Front End
 - No load
- **Specific fund details on fee structures**
 - Trailer fees
 - Deferred sales charges
 - Commissions
 - Management fees
 - Trading expenses
 - Other fees
- **The data enable a precise look and ability to dissect the relations between fees, flows, and performance**

Data

8

- 2003-2014
- **43** fund families (38.1% of the market)
- **\$746 billion** of AUM for direct managed funds (66.7% of market)
- **\$152 billion** in AUM for fund-of-funds (48.6% of market)
- **18,102** stand-alone funds FundSERV codes
- **4,018** fund-of-funds FundSERV codes
- **>1 million** monthly FundSERV code observations
- Four main groups:
 1. stand-alone funds that cannot be purchased directly from fund companies,
 2. stand-alone funds that can be purchased directly,
 3. fund-of-funds that cannot be purchased directly, and
 4. fund-of-funds that can be purchased directly.

| | <u>Stand-alone funds</u> | | | | <u>Fund of Funds</u> | | | |
|---|--------------------------|---------|---------|-----------|----------------------|---------|---------|-----------|
| Variable | Obs. | Mean | Median | Std. Dev. | Obs. | Mean | Median | Std. Dev. |
| <u>Fund Flow and Performance Variables</u> | | | | | | | | |
| Flows Net of PAC, SWP, Switches, Reinvestments, Distributions, and Affiliated Dealer and Affiliated Investment Funds | 1102377 | -0.0187 | 0 | 0.0864 | 294232 | -0.0630 | -0.0035 | 0.1349 |
| All Inflows - All Outflows | 1102377 | -0.005 | -0.0002 | 0.0799 | 294232 | -0.0273 | -0.0014 | 0.1108 |
| PAC Inflows - SWP Outflows | 1102377 | 0.0003 | 0 | 0.001 | 294232 | 0.0002 | 0 | 0.0008 |
| Switches In - Switches Out | 1102377 | 0.0022 | 0 | 0.0159 | 294232 | 0.0037 | 0 | 0.0181 |
| Reinvested Distributions - Paid Distributions | 1102377 | -0.0002 | 0 | 0.0013 | 294232 | 0.0012 | 0 | 0.0033 |
| Affiliated Dealer Inflows - Outflows | 1102377 | 0.0018 | 0 | 0.0069 | 294232 | 0.0029 | 0.0001 | 0.0092 |
| Affiliated Investment Funds Inflows - Outflows | 1102377 | 0.0057 | 0 | 0.0398 | 294232 | 0.0159 | 0 | 0.0609 |
| Alpha | 1010575 | 0.2502 | 0.2492 | 0.7433 | 264199 | 0.1321 | 0.001 | 0.5666 |

| | Stand-alone funds | | | | Fund of Funds | | | |
|---|-------------------|--------|---------|-----------|---------------|---------|---------|-----------|
| Variable | Obs. | Mean | Median | Std. Dev. | Obs. | Mean | Median | Std. Dev. |
| Purchase Option Variables | | | | | | | | |
| Purchase Option Deferred Sales Charge | 1209285 | 0.4579 | 0 | 0.4975 | 308336 | 0.3690 | 0 | 0.4567 |
| Purchase Option Front End | 1209285 | 0.3956 | 0 | 0.4874 | 308336 | 0.2501 | 0 | 0.4007 |
| Purchase Option Fee Based | 1209285 | 0.0835 | 0 | 0.2743 | 308336 | 0.2288 | 0 | 0.3873 |
| Purchase Option No Load | 1209285 | 0.0629 | 0 | 0.2408 | 308336 | 0.1521 | 0 | 0.3275 |
| Minimum Purchase Amount | 1209285 | 78970 | 500 | 460110.84 | 308336 | 10335 | 500 | 130544.94 |
| Fund Expense Variables | | | | | | | | |
| Deferred Sales Charge Year 1 | 1209285 | 4.7928 | 5.5 | 1.5246 | 308336 | 4.2111 | 5.5 | 2.0585 |
| Deferred Sales Charge Slope | 868685 | -0.186 | -0.1831 | 0.0486 | 299778 | -0.1488 | -0.2031 | 0.0939 |
| Sales Commission for Deferred Sales Charge | 1209285 | 1.6704 | 0 | 2.1481 | 308336 | 0.4838 | 0 | 1.3345 |
| Maximum Front End Commission | 1209285 | 1.7338 | 0 | 2.3883 | 308336 | 0.9815 | 0 | 2.0542 |
| Front End Commissions Paid | 1102377 | 0.0196 | 0 | 0.0871 | 294232 | 0.1065 | 0.0037 | 0.176 |
| Maximum Posted Switch Fee | 1209285 | 1.9964 | 2 | 0.083 | 308336 | 1.6108 | 2 | 0.7918 |
| Performance Fee | 1209285 | 0.0845 | 0 | 0.561 | 308336 | 0 | 0 | 0 |
| Negotiated Management Fees Paid | 1102377 | 0.0244 | 0 | 0.0909 | 294232 | 0.0861 | 0 | 0.1655 |
| Management Expense Ratio | 1110152 | 2.0736 | 2.1604 | 0.6552 | 251669 | 1.9686 | 2.0258 | 0.5988 |
| Trading Expense Ratio | 1209285 | 1.3137 | 0.2467 | 2.3835 | 308336 | 0.6946 | 0.25 | 1.6239 |
| Maximum Posted Initial Trailer | 1110152 | 0.5823 | 0.5 | 0.3628 | 251669 | 0.689 | 0.75 | 0.3302 |
| Trailer Slope | 1074741 | 0.0664 | 0 | 0.1644 | 251360 | -0.049 | 0 | 0.3601 |
| Other Payments to Dealer-Brokers | 1102377 | 0 | 0 | 0.0001 | 294232 | 0 | 0 | 0 |

Regression Models

11

- Full Sample (random effects)

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

- Excluding “Fee Based” (fixed effects)

- $\text{Flow}_{t+1} = \text{Constant} + \beta_1 * \text{Alpha}_t + \beta_2 * \text{Alpha}_t^2 + \beta_3 * \text{MER}_t + \beta_4 * \text{MER}_t * \text{Alpha}_t + \beta_5 * \text{Alpha}_t^2 * \text{MER}_t + \beta_6 * \text{Trailer Fee}_t + \beta_7 * \text{Trailer Fee}_t * \text{Alpha}_t + \beta_8 * \text{Alpha}_t^2 * \text{Trailer Fee}_t + \beta_9 * \text{Other Types of Fee}_t + \beta_{10} * \text{Other Types of Fee}_t * \text{Alpha}_t + \beta_{11} * \text{controls} + \text{residuals}$

- Fixed effects by year and FundServ Code

- Note: Appendices IV and V use Fund Return – Market Return and Sharpe Ratio, respectively, and results pertaining to fees are the same.

Results

12

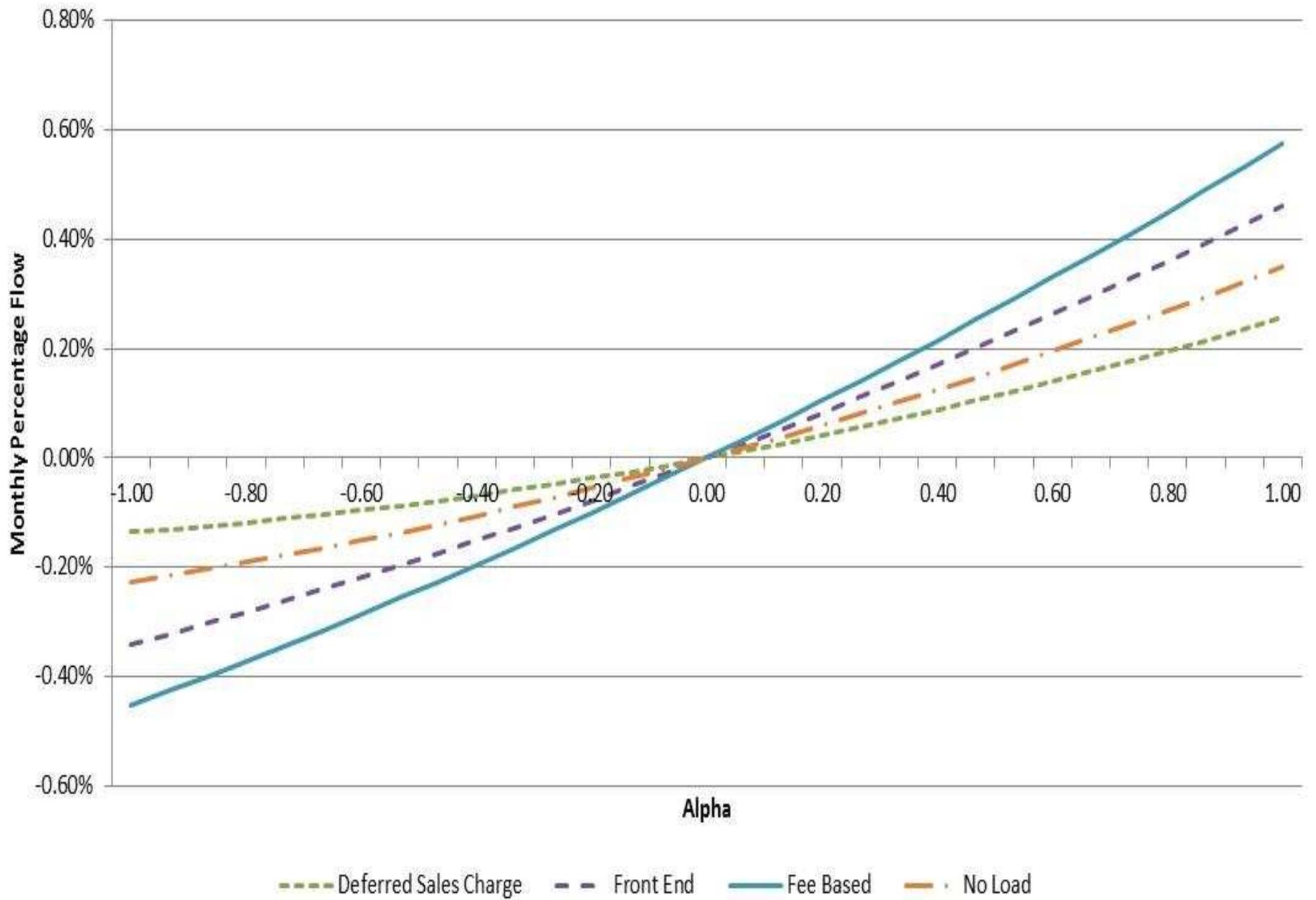
- In general, funds with higher alpha are rewarded with higher future flows.
 - For example, all other things being equal, a fund ranked at the **bottom quartile** (25th percentile) of all funds for risk adjusted performance **loses 0.02%** of its AUM in the next month, while a fund performing at the **median** gains **0.08%** of new AUM in the next month, and a **top quartile** fund receives **0.21%** of new AUM in the next month.
- Affiliated broker-dealer flows show a less robust relation between past alpha and future flows, and this relation is often **statistically insignificant**.

Results (Continued)

13

- Fee-based purchase options exhibit significantly higher flow-performance slope on average relative to other purchase options.
- A fund that moves from the top quartile to the bottom performance quartile, for example, loses:
 - ✦ 0.32% of flow relative to AUM under fee based purchase options,
 - ✦ 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.

| 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*** |



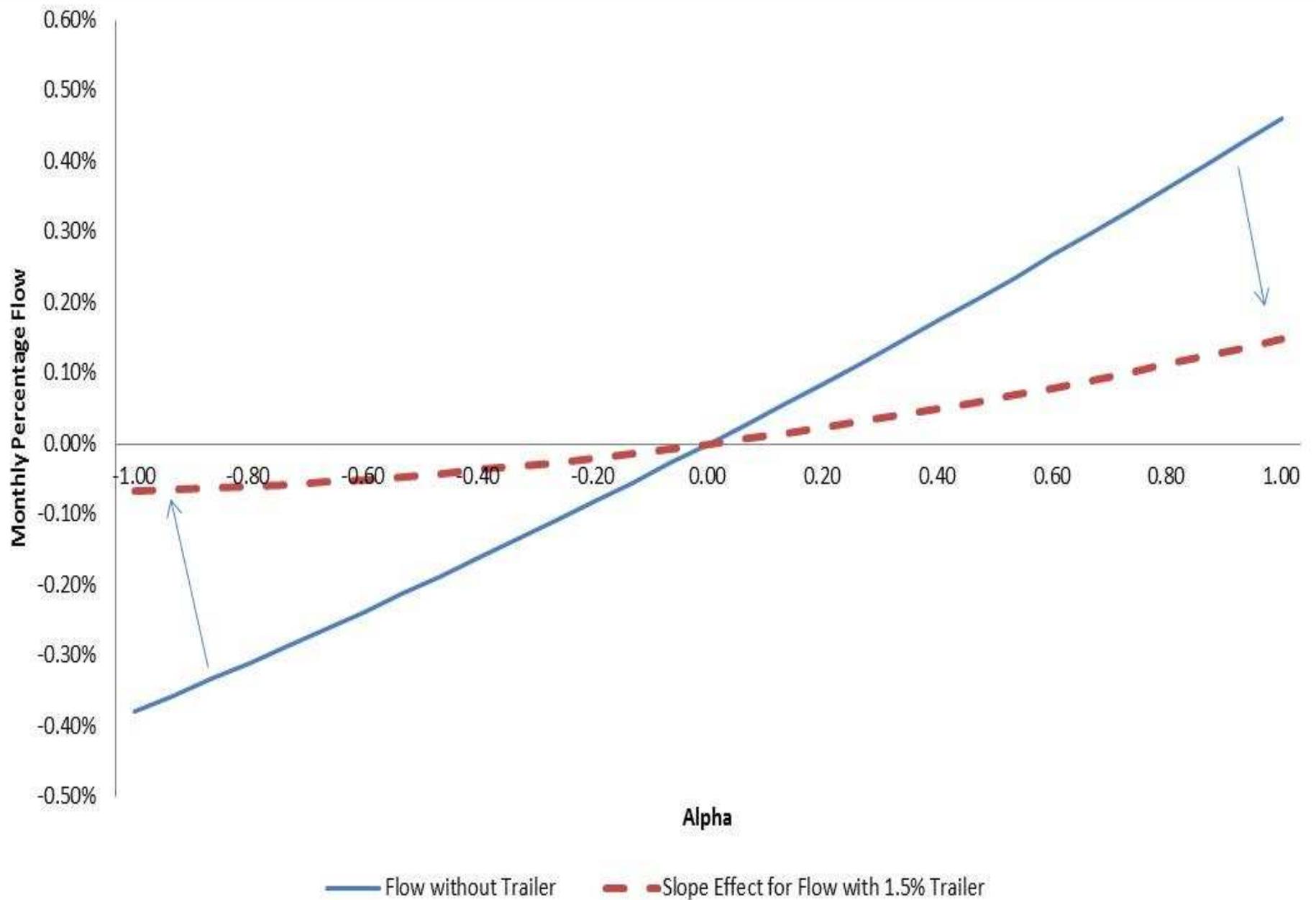
Subset of Funds Excluding Fee-Based

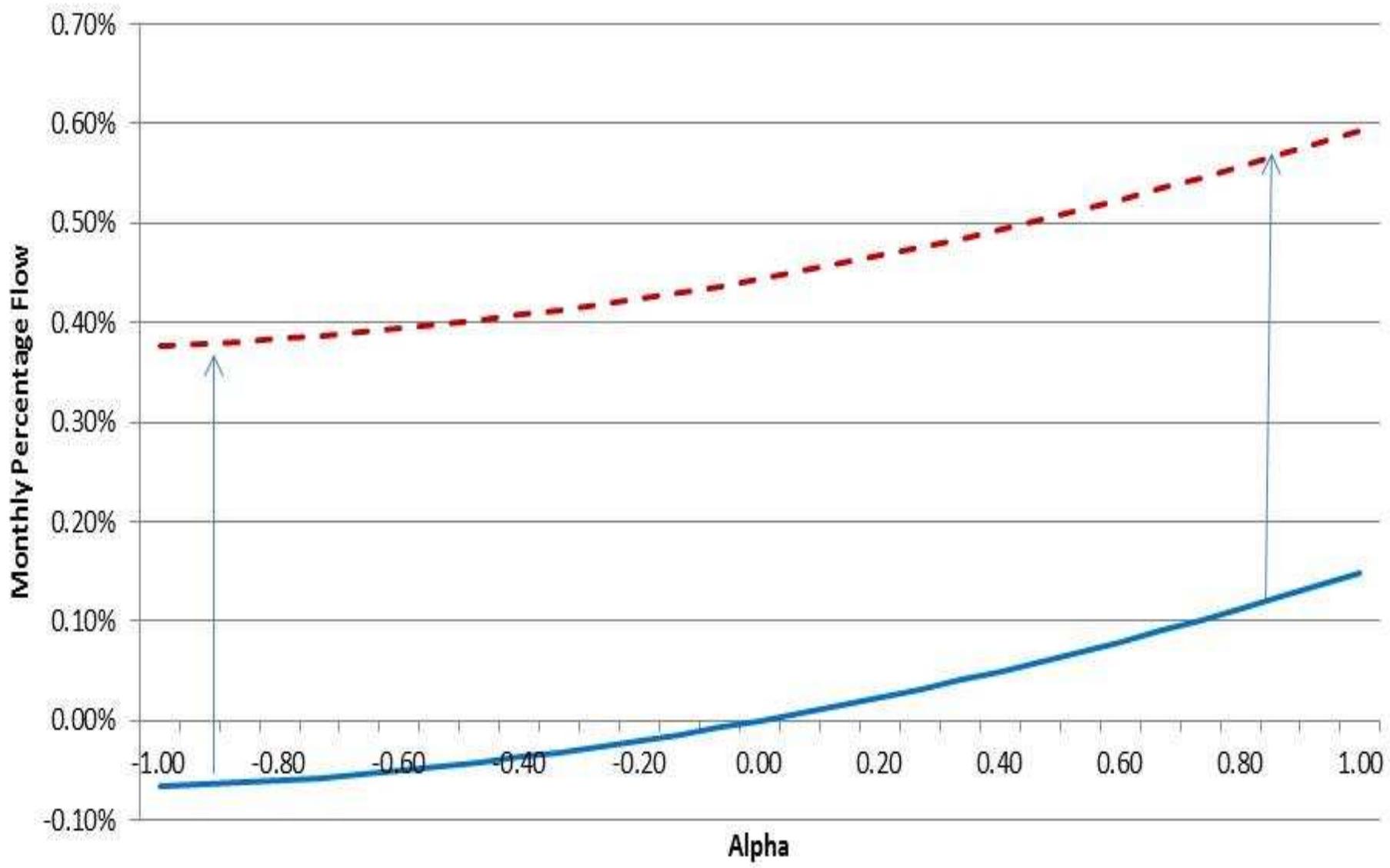
16

- A 1.5% increase in trailer fees reduces flow-performance slope by such that for any given improvement in performance, net capital inflows are 65% less than what they would otherwise have been and likewise for any given reduction in performance, net capital outflows are 65% less than what they would have been in the absence of a trailer fee.
 - **Example: AT A 1.5% TRAILER, IF A FUND MOVES FROM TOP QUARTILE PERFORMANCE TO BOTTOM QUARTILE PERFORMANCE THEN THE FUND LOSES ROUGHLY 0.08% OF ITS ASSETS. FOR A \$100M FUND, THIS CORRESPONDS TO A LOSS OF \$80,000 IN THE MONTH OF THE PERFORMANCE DROP. BUT THE FUND WOULD HAVE LOST \$260,000 IN THE MONTH OF THE PERFORMANCE DROP IN THE ABSENCE OF THE TRAILER.**
- Also, trailer fees increase new flows regardless of past performance. For example, a 1.5% trailer fee increases the average monthly flows by 0.45% of AUM each month regardless of past performance.
 - **Example: AT A 1.5% TRAILER: \$450,000 EXTRA PER MONTH REGARDLESS OF PERFORMANCE**

| | 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) |

| | 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*** |





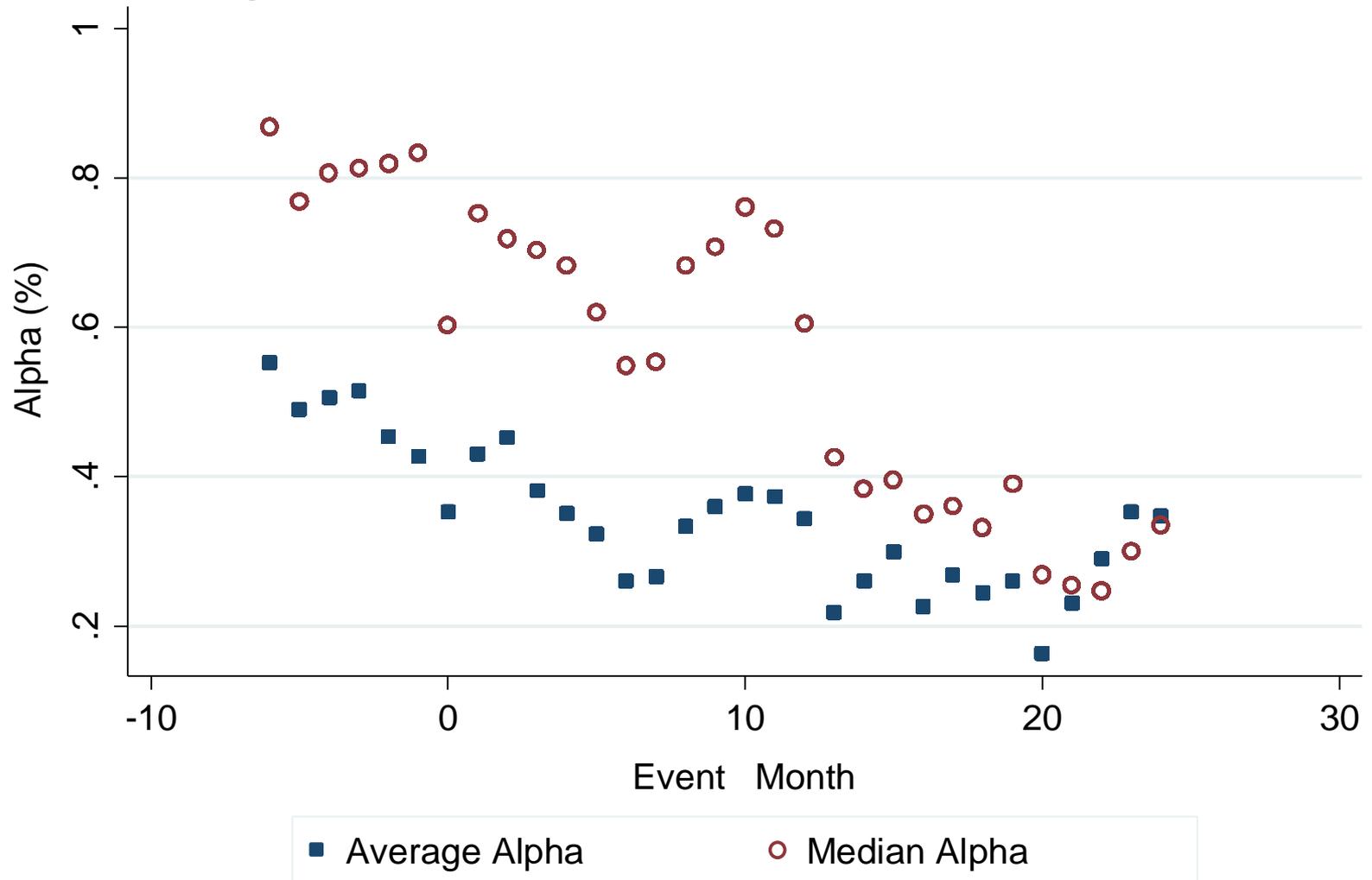
— Slope Effect for Flow with 1.5% Trailer - - Intercept Effect for 1.5% Trailer

Subsequent Performance

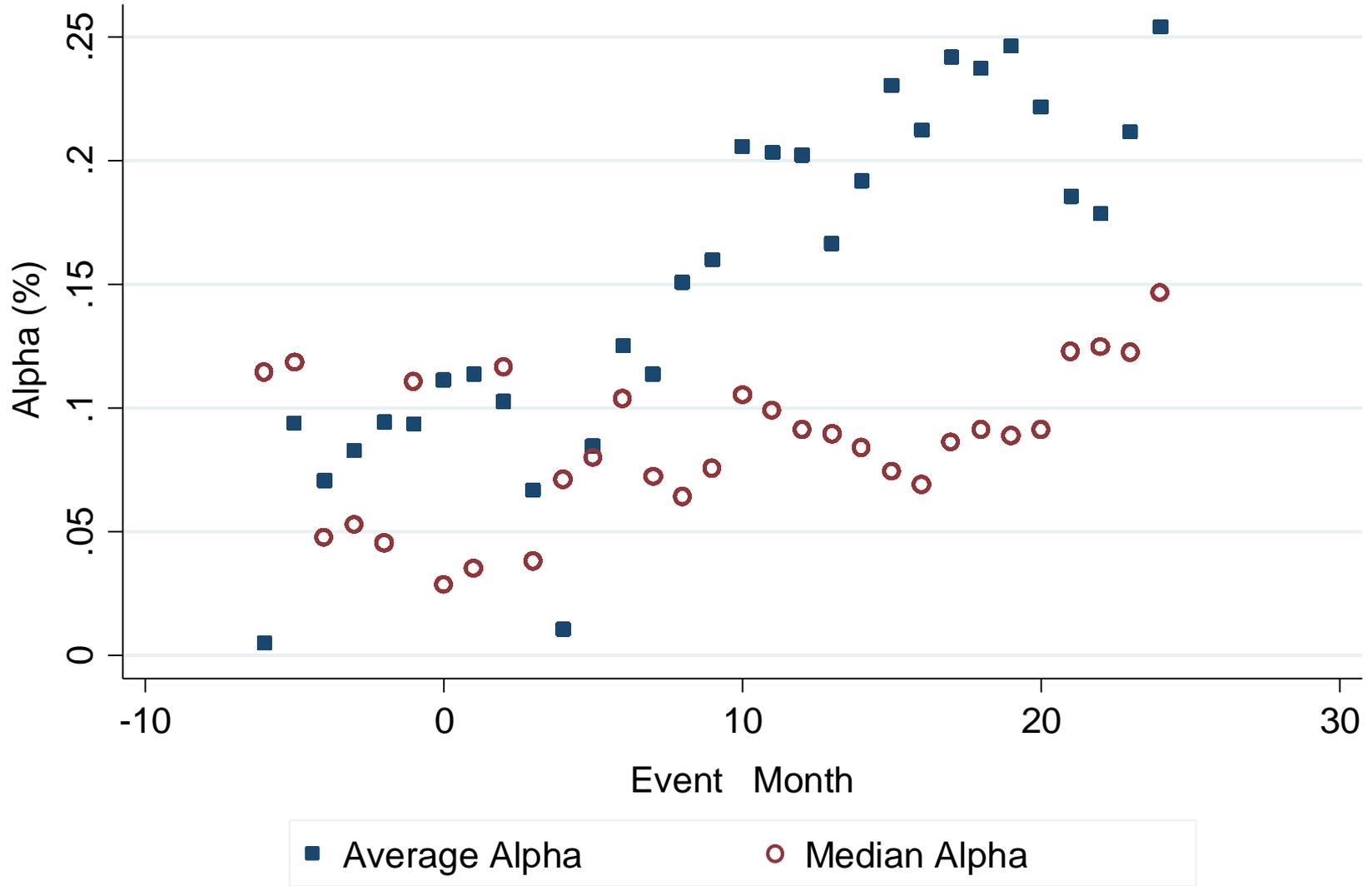
21

- For the full sample of all funds, the data indicate that **2.5%** of funds permanently increased their trailer fees in the sample period (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.
- For the full sample of all funds, the data indicate that **0.6%** of funds permanently decreased their trailer fees in the sample period (from an average of **0.42%** 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.

Changes in Alpha when First Year Trailer Fee Jumps Up



Changes in Alpha when First Year Trailer Fee Drops Down

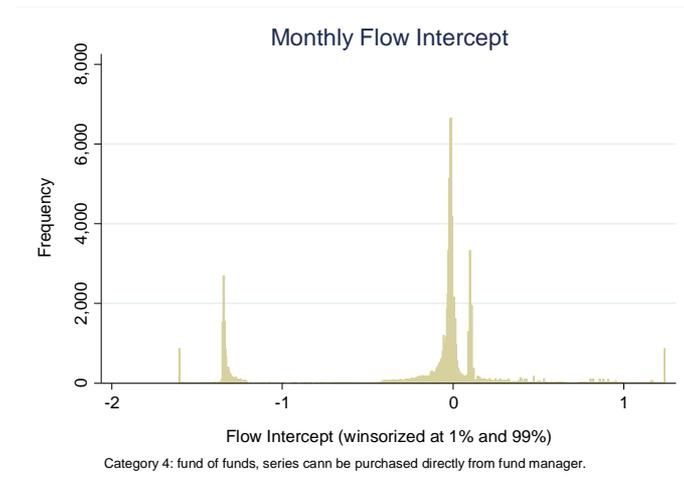
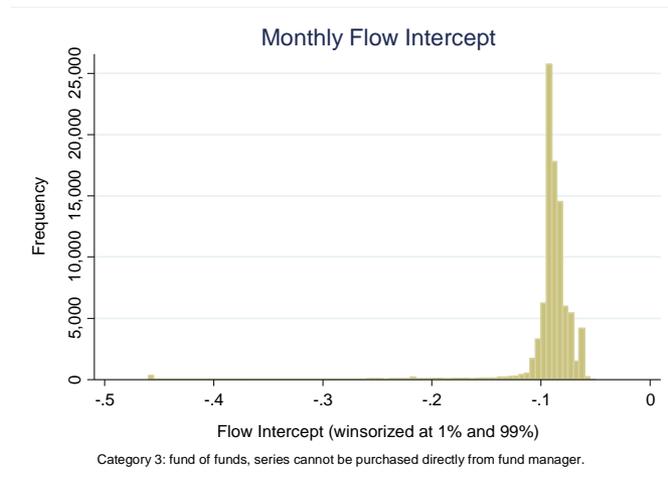
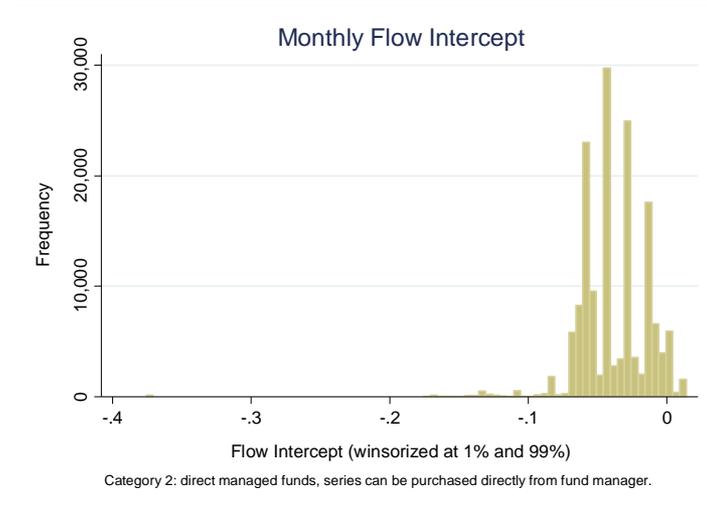
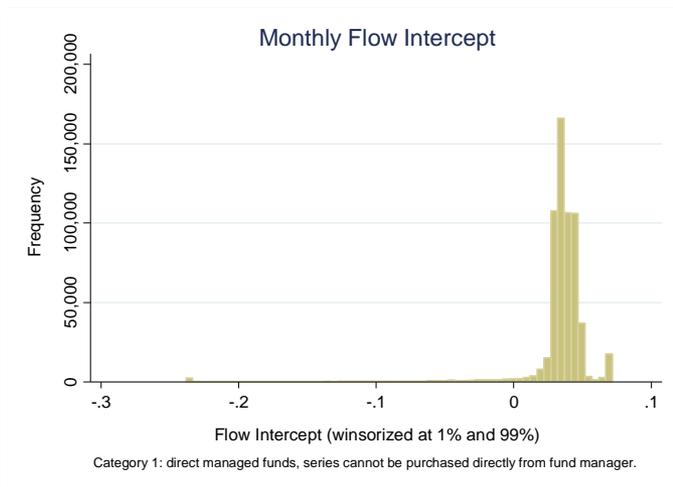


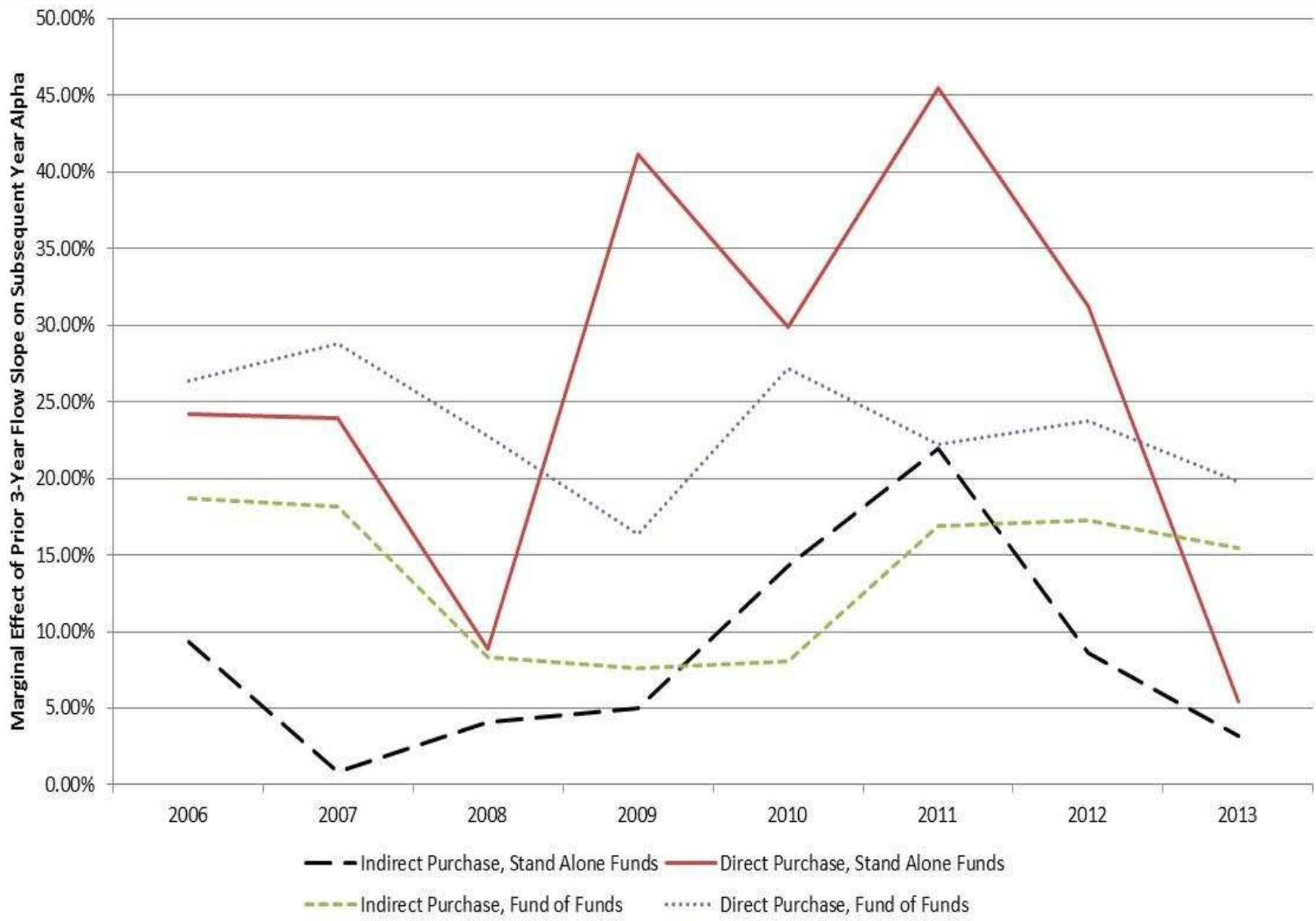
Regressions on Future Alpha

24

- Regression analyses comparing across funds and over time indicate that funds for which flows are more sensitive to past performance have better risk adjusted performance on average.
- An increase in trailer fees and deferred sales charges by 1% is indirectly associated with a reduction in future alpha by 1.4% and 0.6% relative to the average monthly alpha, respectively, due to the effects on the flow-performance intercept and slope.

| Panel A. Stand-Alone Funds | | | | | | |
|----------------------------|-------------------------------------|----------|-----------|----------------------------------|-----------|-----------|
| | <u>Cannot be Purchased Directly</u> | | | <u>Can be Purchased Directly</u> | | |
| | 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*** |



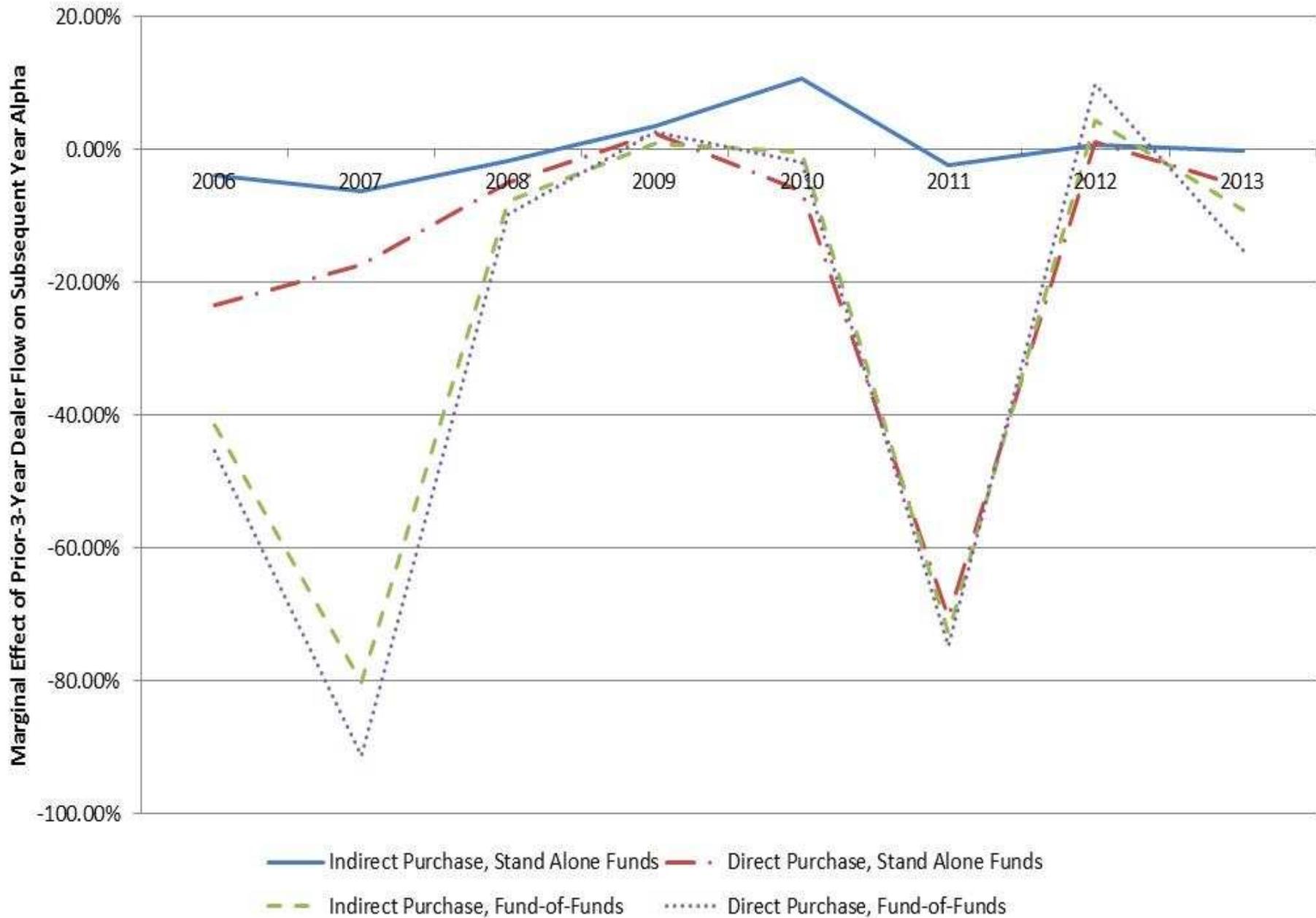


Regressions on Future Alpha

28

- Regression analyses comparing across funds and over time indicate that funds which enjoy higher levels of affiliated broker-dealer flows experience lower future alpha on average.
 - Relative to a fund that does not enjoy affiliated broker-dealer flows, an indirect purchase stand-alone fund that is at the top quartile of broker-deal flows on average experiences a reduction in future monthly alpha by **0.2%** on average.
 - The data indicate similar findings for stand-alone funds that can be purchased directly, and fund-of-funds that can and cannot be purchased directly, but some differences in these effects at different points in time.

| 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 |



Conclusions

31

- Future fund flows depend on past alpha
 - Exception: affiliated broker-dealer flows
- Some fee structures mitigate the sensitivity of flows to past performance
 - Trailer fees and DSC
- Flow without performance mitigates incentives to generate future alpha
 - Trailer fees, DSC, affiliated broker-dealer flows

Questions?

32

- Thanks very much for your interest!

Douglas Cumming

Professor and Ontario Research Chair

York University Schulich School of Business

dcumming@schulich.yorku.ca