Internet Appendix for

"Do Fire Sales Create Externalities?"

SERGEY CHERNENKO
ADI SUNDERAM

This Internet Appendix reports the following results:

1. Section 1 presents a model of how a fund managers inflows.
2. Section 2 discusses how we parse N-SAR filings and link them to the CRSP Mutual Fund Database.
3. Section 3 presents additional summary statistics on the number of funds in the sample, the distribution of the cash-to-assets ratio, and the correlation between variables.
4. Section 4 reports additional results:
   (a) **Table IA2** reports the results of regressions of the change in the cash-to-assets ratio on monthly fund flows.
   (b) **Table IA3** shows that our results are robust to using full sample and rolling average values of internalization instead of $t-2$ values of internalization.
   (c) **Table IA4** shows that internalization has a similar effect on flow management during the financial crisis as during other times.
   (d) **Table IA5** shows that internalization has a similar effect on how funds respond to inflows and outflows.
   (e) **Table IA8**–**Table IA15** report full regression output for the alternative explanations regressions in Table 4 in the paper.
   (f) **Table IA16** shows that high internalization funds hold larger cash buffers.
   (g) **Table IA17** shows that high internalization funds adjust the liquidity of their (non-cash) portfolio holdings in response to fund flows.
   (h) **Table IA18** presents suggestive evidence that the effect of internalization on flow management is stronger when the related funds charge higher fees.
5. Section 5 reports information on the compensation policies of the 100 largest investment advisers in our data, showing that compensation of most portfolio managers (a) is explicitly

linked to the overall performance of the investment adviser, (b) depends on the assessment of manager's contribution to adviser's performance, or (c) includes equity-based compensation.

1 Model of Inflows

In the paper, we present a model of how a fund manages redemptions. In this section, we show how to write down a very similar model of how a fund manages inflows. The key difference between the problems is that redemption management requires an ex ante decision of how much cash to hold before the redemptions happen. Inflow management is an ex post decision, made after the quantity of inflows is known.

Suppose fund f receives inflows x_f, which are public information. The fund must choose between investing in the illiquid asset and holding cash. In buying the illiquid asset, the fund incurs an accumulation cost. Think of this accumulation cost as reflecting the temporary price pressure that will revert. In other words, the fund is paying more than fundamental value for the asset. We assume that the accumulation cost depends on the total purchases by all funds, and parametrize it as $b_f \frac{l}{F} \left(\sum_h b_h\right)$ where b_f is the quantity purchased by fund f. As in the model in the paper, l indexes the illiquidity of the asset and we normalize accumulation costs by F, the total number of funds, so that aggregate accumulation costs do not change as we vary F.

Holding cash has carrying cost i. A complete model of inflow management would be dynamic: a fund would hold cash today, planning to invest it in the illiquid asset tomorrow with lower accumulation costs. For simplicity, we abstract from the dynamic aspects of the problem and assume that the carrying cost of cash includes expected future accumulation costs. The problem of fund f in the private market equilibrium is to pick cash holdings $c_f = x_f - b_f$ to minimize total liquidity management costs:

$$ic_f + b_f \frac{l}{F} \left(\sum_h b_h\right) \tag{1}$$

The first order condition for c_f is

$$0 = i - \frac{l}{F} \left(x_f - c_f + \sum_h (x_h - c_h)\right). \tag{2}$$

As in the main text, to simplify the analysis, we assume flows are perfectly correlated so that $x_f = x$ and solve for the symmetric equilibrium. Doing so, we find that

$$c^* = x - \frac{i}{l} \frac{F}{F+1}$$

The planner's problem is to minimize total liquidity management costs of all funds:

$$Fic + F(x-c)\frac{l}{F}F(x-c) \tag{3}$$

The first order condition is

$$c^{**} = x - \frac{i}{2l}$$

The internalization objective puts weight α on the planner's objective and weight $(1-\alpha)$ on

the private market objective. Taking the first order condition and imposing symmetry we have

$$c^{**} = x - \frac{i}{l}\eta$$

where

$$\eta = \frac{((1-\alpha) + \alpha F)\, F}{(1-\alpha)(F+1) + 2\alpha F^2}, \tag{4}$$

the same expression for η that arises in the main text.

Clearly, the expressions here are similar to those in the main model and thus similar comparative statics go through. The key difference is that the problem is ex post as opposed to ex ante: inflows are known before the decision is made. Thus, we do not need to take expectations.

2 N-SAR Filings

This section discusses how we parse N-SAR filings and link them to the CRSP Mutual Fund Database.

Parsing N-SAR Filings

Each N-SAR filing can cover multiple funds offered by a given *Registrant*. For example, the December 31, 2016 filing by Fidelity Contrafund Trust (CIK 24238) covers four funds:

1. Fidelity Contrafund,
2. Fidelity Advisor New Insights Fund,
3. Fidelity Series Opportunistic Insights Fund,
4. Fidelity Advisor Series Opportunistic Insights Fund.

The names of the funds are reported in Item 7.C.2. Furthermore, within an N-SAR filing, each fund is assigned a series number, which is reported in Item 7.C.1 and which we refer to as `SeriesNum`. Funds are instructed to continue using the same `SeriesNum` for a given fund over time.

We parse raw N-SAR filings using a Python script. Each line in an N-SAR filing reports the answer of one of the funds identified in Item 7.C to a given question. Below is a sample line from the N-SAR filing mentioned above:

$$\underbrace{\texttt{074 T00}}_{\text{item}}\underbrace{\texttt{0200}}_{\text{series}}\ \underbrace{\texttt{24397997}}_{\text{value}}$$

In this line, the first seven characters encode the question number, "`074 T00`," which corresponds to Item 74.T: *Net assets of common shareholders*. The next four characters in positions 8–11 encode the fund's `SeriesNum`. The remaining characters encode the fund's answer. In this case, since answers to Item 74 are reported in thousands, the TNA of Fidelity Advisor New Insights Fund is about $24.4 billion.

For questions that apply to all funds within a filing, such as *Registrant Information* Items 1–7, 27, 58–61, 78–79, the characters that encode the fund's `SeriesNum` are generally set to "`0000` or "`AA00`". Our script matches answers to such questions to all funds covered by the filing.

In addition to occasional typos and encoding errors (e.g., answers to multiple questions appear on a single line), the N-SAR filings have three systematic limitations:

1. The electronic system used by funds to submit their N-SAR filings imposes limits on the lengths of answers to certain questions. In particular, the system generally does not allow funds to report values of TNA, or of other balance sheet variables in Item 74, greater than `99999999` thousand. As a result, whenever the answer is equal to or greater than $100 billion, funds report either `99999999` or `0`. In the N-SAR filing mentioned above, Fidelity Contrafund reports its TNA as of December 31, 2016 as `99999999`. The actual value was

$102,065,141 thousand. We drop observations with TNA equal to 0 or `99999999`. We also drop six observations that report TNA greater than $100 billion.

2. N-SAR filings are generally limited to 99 funds. If a given trust offers more than 99 funds, information on funds with series numbers greater than 99 is not reported in a systematic manner.[1] The names of these funds are listed in a separate exhibit, which refers to the latest shareholder reports for additional information on these funds. During the 2003–2016 period, 70 filings indicate in Item 7.B that they had more than 99 funds at the end of the reporting period. In total, we are missing 1,051 fund-semi-annual-period observations as a result of this limit.

   Generally, it is the same funds whose answers are missing from one filing to another.

   A handful of filers with more than 99 funds reuse `SeriesNum` within the same filing. We discard such filings. The vast majority of funds affected by this issue are ETF and index fund families that offer many funds. Since our analysis focuses on actively managed funds, this issue should not have much effect on our results.

3. We use only original filings and ignore amendments. As a result, if an amended filing corrects a missing or incorrect value in the original filing, our algorithm would not pick this up.

Linking N-SAR Filings to CRSP

We link N-SAR filings to CRSP Mutual Fund Database and Thomson Reuters Mutual Fund Holdings using the following algorithm, leveraging the `MFLINKS` data set to link to CRSP with Thomson Reuters and `CRSP_CIK_MAP` to help link N-SAR with CRSP. `CRSP_CIK_MAP` database provides a link between share classes in CRSP (`CRSP_FUNDNO`) and registrant (`COMP_CIK`), fund (`SERIES_CIK`), and share class ids (`CONTRACT_CIK`).

1. We start by trying to link observations in N-SAR with CRSP based on the fund's `SERIES_CIK`. The latter are included in the mutual funds' SEC filings starting in 2006. Specifically, the SEC prepends a header to each filing that includes the following information on each fund covered by the filing:

```
<SERIES-ID>S000011202
<SERIES-NAME>Dodge & Cox Stock Fund
<CLASS-CONTRACT>
<CLASS-CONTRACT-ID>C000030875
<CLASS-CONTRACT-NAME>Dodge & Cox Stock Fund
<CLASS-CONTRACT-TICKER-SYMBOL>DODGX
</CLASS-CONTRACT>
```

[1] Note that a trust is different from a fund family. For example, Fidelity had 509 registered investment companies report on form N-SAR during 2016H2. These funds were offered by 60 separate trusts (CIKs), with no trust offering more than 99 funds.

Within each N-SAR filing, we link a fund's `SeriesNum` to its `SERIES-ID` by matching fund names as reported in the header and in Item 7.C. Fund names in Item 7.C often use abbreviations, such as "intl" for "international," and omit the name of the family. For example, "RidgeWorth Silvant Large Cap Growth Stock Fund" reports its name as "Silvant Large Cap Growth Stock Fund" in Item 7.C and as "RidgeWorth Silvant Large Cap Growth Stock Fund" in the SEC filing header. To handle such cases, when unsuccessful in matching raw names, our algorithm attempts to match the names after removing the brand name, reported in Item 1.A *Registrant Name*. In this example, Registrant Name is *RidgeWorth Funds*. After discarding the *Funds* part, our algorithm attempts to remove the *RidgeWorth* part from both the header name and the name of the fund as reported in Item 7.C.

2. For filings before 2006, filing header does not include `SERIES-ID` or share class ticker symbols. For these filings, we first backfill the link between `SeriesNum` and `SERIES-ID` as long as the following two conditions are met:

   (a) All `CIK-SeriesNum` observations that do match to a `SERIES-ID` match to the same `SERIES-ID`.

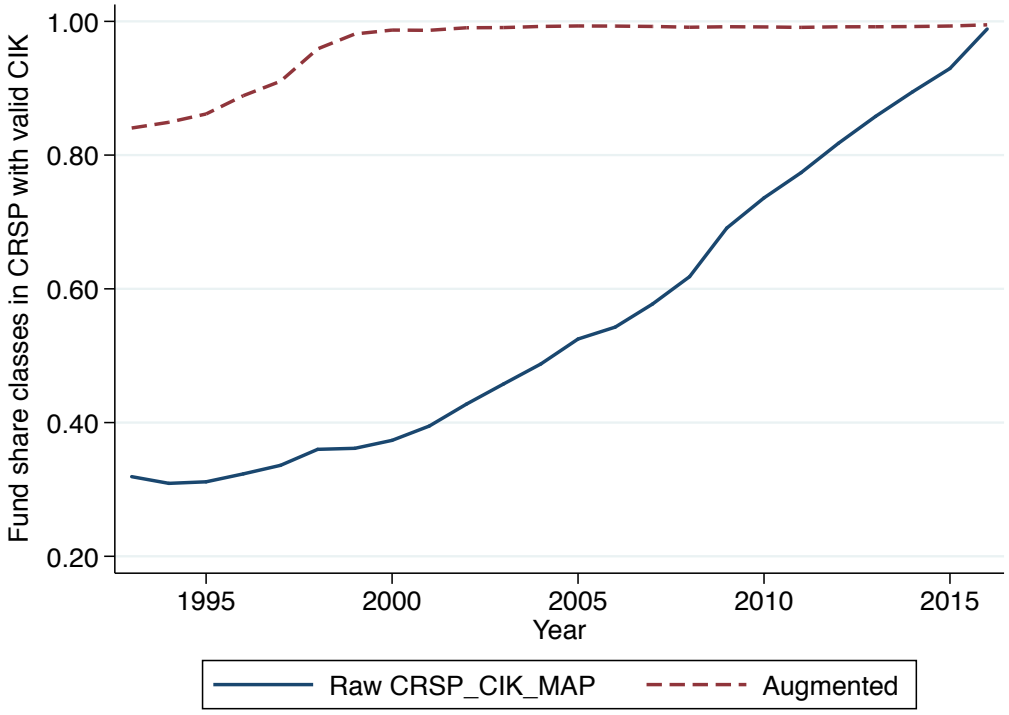
   (b) The maximum gap between two consecutive filings for a given `CIK-SeriesNum` pair is less than 12 months. This allows for changes in the fiscal year end but rules out most cases where a given `SeriesNum` is reused by different funds offered by the same trust (`CIK`).

3. In the second step, we link unmatched observations in N-SAR (both the ones with missing `SERIES-ID` and the ones that could not be linked in the first step) based on the `CIK` and fund TNA.

   (a) We first augment the `CRSP_CIK_MAP` file mapping between CRSP share classes and registrant `CIK`. We do this because the coverage of the `CRSP_CIK_MAP` deteriorates as one goes further back in time. As of 1993Q4, for example, less than 32% of all fund share classes in CRSP, accounting for about 62% of aggregate TNA, had a valid CIK. By 2016Q4, coverage is almost universal with 98.9% of all fund share classes having a valid CIK. We augment `CRSP_CIK_MAP` by matching trust names in CRSP's `FUND_NAMES` data set with registrant names in EDGAR.

   (b) Using the mapping between CRSP share classes and CIKs, we link each fund-date observation in N-SAR to all funds in CRSP with the same CIK. For each fund in N-SAR we then keep the closest match in CRSP in terms of TNA provided that a) the difference in TNA is less than 1% or b) the difference in TNA is less than 10% and fund names match exactly. The advantage of matching based on TNA as opposed to fund names is that we do not have to worry about alternative abbreviations and conventions about the reporting of fund names in CRSP versus SEC.

Fig. IA1. Link between share classes in CRSP and CIK in EDGAR. This figure shows the fraction of fund share classes in CRSP that can be linked to a CIK in EDGAR. The solid blue line uses the raw CRSP_CIK_MAP file. The dashed red line augments the raw CRSP_CIK_MAP file by matching CRSP_FUNDNO with CIK based on the fund's trust name. In CRSP, the trust name is the part of the fund name before the first colon or the full name, without class share identifier, if the fund is not part of a multi-series trust. In N-SAR, trust name is taken from Item 1.A. Coverage of the raw CRSP_CIK_MAP file is likely to be overstated because it is a header file that for each share class in CRSP lists only the most recent value of the CIK. Funds may change their CIK over time due to reorganizations. For example, on October 1, 2013, Brandywine Fund reorganized from a series of Frandywine Fund Inc (CIK 780253) into a series of Managers Trust I (CIK 882443), which later changed its name to AMG Funds I. CRSP_CIK_MAP lists only the most recent CIK 882443 for the Brandywine Fund. Using this value would not allow one to link this fund to its SEC filings prior to October 1, 2013.



3 Additional Summary Statistics

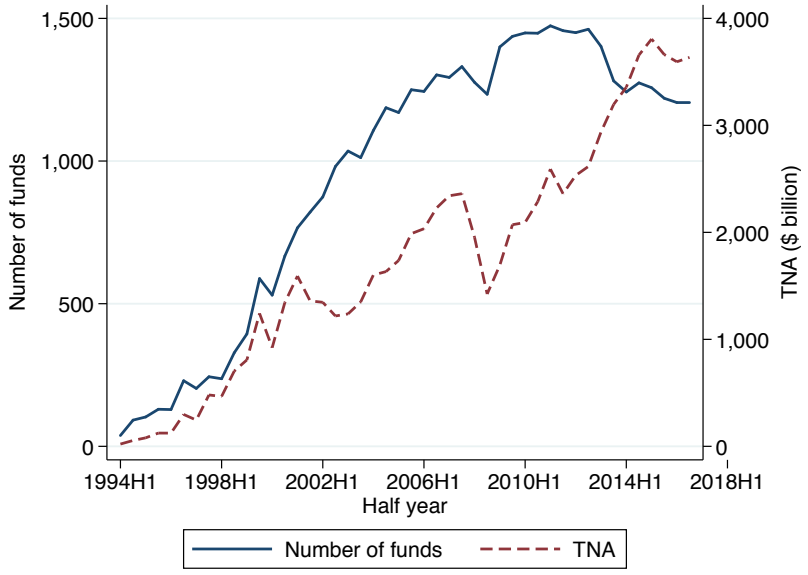


Fig. IA2. Number of funds in the sample. This figure shows the number and total net assets (TNA) of domestic equity open-end funds in the merged N-SAR/CRSP/Thomson Reuters data. Funds are required to be at least two years old, to have valid values of holdings illiquidity and of all three measures of internalization, to have TNA of at least $10 million in 2016 dollars, and to have the ratio of portfolio holdings to TNA in the $[\frac{3}{4}, \frac{4}{3}]$ interval. The sample period is 1994–2016.

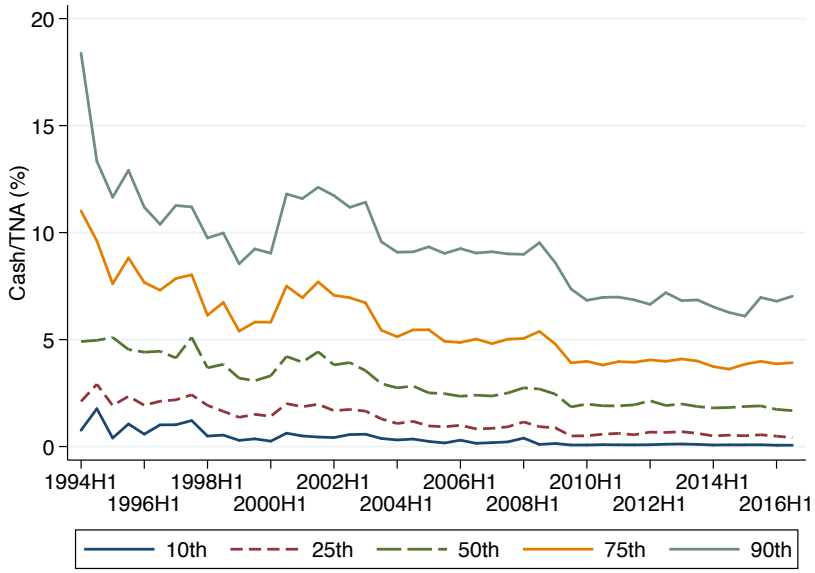


Fig. IA3. Distribution of the cash-to-assets ratio. This figure shows the 10th, 25th, 50th, 75th, and 90th percentiles of the cash-to-assets ratio for funds in the sample.

Table IA1
Correlations between internalization and fund characteristics.
This table reports pairwise correlations between internalization measures and fund characteristics. Index funds are excluded.

	Portfolio manager	Adviser with manager	Adviser without manager	Fund Size	Fund age	$\sigma(Flows)$	HHI	Illiq	Family size	Experience	Tenure
Portfolio manager	1.000										
Adviser with manager	0.518	1.000									
Adviser without manager	0.462	0.983	1.000								
Fund size	0.382	0.563	0.561	1.000							
Fund age	0.035	0.135	0.144	0.383	1.000						
$\sigma(Flows)$	−0.076	−0.094	−0.090	−0.237	−0.187	1.000					
HHI	−0.094	0.020	0.019	−0.116	0.007	0.083	1.000				
Illiq	0.199	0.363	0.352	−0.178	−0.194	0.085	−0.141	1.000			
Family size	0.286	0.399	0.399	0.581	0.195	−0.078	−0.085	−0.193	1.000		
Experience	0.160	0.121	0.105	0.172	0.179	−0.081	0.002	−0.065	−0.004	1.000	
Tenure	0.035	0.102	0.100	0.153	0.243	−0.081	0.073	−0.012	−0.126	0.707	1.000

4 Additional Results

Table IA2
Flow management using cash.

This table reports the results of regressions of the change in the cash-to-assets ratio over the semi-annual reporting period on monthly fund flows during the period:

$$\Delta\left(\frac{Cash}{TNA}\right)_{f,m-6:m} = \alpha + \sum_{s=0}^{5} \beta_s \cdot Flows_{f,m-s} + \varepsilon_{f,m},$$

where f indexes funds and m indexes months. Cash-to-assets ratio is expressed in percent. Independent variables are monthly net fund flows, scaled by TNA at the beginning of the semi-annual reporting period. Fund flows are winsorized at the 5th and 95th percentiles. Objective fixed effects are based on Lipper objective codes. Time fixed effects are based on quarter dates. Standard errors are adjusted for clustering by fund. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Active			Index		
	(1)	(2)	(3)	(4)	(5)	(6)
$Flows_{f,m}$	18.507***	18.645***	18.281***	2.581***	2.236***	2.481***
	(1.075)	(1.076)	(1.090)	(0.676)	(0.675)	(0.781)
$Flows_{f,m-1}$	4.893***	4.778***	5.132***	1.005*	0.804	1.080
	(1.070)	(1.066)	(1.092)	(0.601)	(0.622)	(0.694)
$Flows_{f,m-2}$	0.219	0.118	−0.106	−0.830	−0.543	−0.587
	(1.093)	(1.094)	(1.130)	(0.769)	(0.787)	(0.839)
$Flows_{f,m-3}$	−3.118***	−3.235***	−3.471***	0.891	0.763	0.507
	(1.083)	(1.085)	(1.104)	(0.677)	(0.702)	(0.815)
$Flows_{f,m-4}$	−3.597***	−3.397***	−3.030***	−0.507	−0.498	−0.678
	(1.093)	(1.089)	(1.097)	(0.735)	(0.781)	(0.836)
$Flows_{f,m-5}$	−12.630***	−12.379***	−12.208***	−1.602**	−1.480**	−1.026
	(1.119)	(1.121)	(1.117)	(0.699)	(0.673)	(0.739)
$Constant$	−0.143***			−0.061***		
	(0.011)			(0.014)		
N	37,707	37,706	37,628	5,402	5,401	5,173
R^2	0.02	0.03	0.06	0.00	0.04	0.17
Objective FEs		✓			✓	
Time FEs		✓			✓	
Objective-time FEs			✓			✓

Table IA3

Rolling values of internalization.

This table shows that using the full sample or rolling average values of internalization generates results that are similar to the baseline specifications that use $t-2$ value of internalization. Columns 2, 5, and 8 use the full sample average of internalization. Columns 3, 6, and 9 use the rolling average from the beginning of the sample period through quarter $t-2$. Objective-quarter date fixed effects are included. Standard errors are adjusted for clustering by fund. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager			Investment adviser					
				with manager			without manager		
	Baseline	Mean	Rolling	Baseline	Mean	Rolling	Baseline	Mean	Rolling
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$Flows_{f,t}$	3.046***	2.714**	2.915***	2.396***	1.092	2.722***	2.703***	1.260	2.588***
	(0.922)	(1.119)	(0.882)	(0.829)	(0.932)	(0.811)	(0.841)	(0.935)	(0.818)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.492***	0.552***	0.538***	0.648***	0.891***	0.578***	0.584***	0.854***	0.595***
	(0.157)	(0.195)	(0.152)	(0.146)	(0.164)	(0.141)	(0.147)	(0.163)	(0.141)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.373***	1.366***	1.307***	0.928**	0.743*	1.062**	1.009**	0.790*	1.067**
	(0.407)	(0.410)	(0.410)	(0.421)	(0.416)	(0.418)	(0.421)	(0.415)	(0.416)
$Flows_{f,t-1}$	−2.161**	−1.824*	−2.436***	−1.710**	−1.021	−2.646***	−1.904**	−1.061	−2.764***
	(0.860)	(1.054)	(0.807)	(0.787)	(0.897)	(0.784)	(0.787)	(0.895)	(0.789)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	−0.389***	−0.452**	−0.350**	−0.506***	−0.638***	−0.314**	−0.464***	−0.625***	−0.286**
	(0.148)	(0.185)	(0.138)	(0.138)	(0.158)	(0.133)	(0.137)	(0.156)	(0.132)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	−0.336	−0.319	−0.327	0.020	0.109	−0.224	−0.039	0.086	−0.260
	(0.392)	(0.397)	(0.392)	(0.409)	(0.415)	(0.406)	(0.407)	(0.414)	(0.404)
$Fund\ Internalize_{f,t-2}$	−0.008*	−0.011**	0.002	−0.007	−0.009*	0.003	−0.008*	−0.008	0.003
	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)
$Illiq_{f,t-2}$	−0.062**	−0.062**	−0.068**	−0.056*	−0.056*	−0.069**	−0.055*	−0.057*	−0.069**
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
$Constant$	−0.108***	−0.093***	−0.164***	−0.114***	−0.105***	−0.166***	−0.109***	−0.108***	−0.164***
	(0.028)	(0.032)	(0.027)	(0.031)	(0.031)	(0.029)	(0.030)	(0.031)	(0.029)
N	37,707	37,707	37,707	37,707	37,707	37,707	37,707	37,707	37,707
R^2	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Objective-time FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table IA4

Flow management during the financial crisis.

This table reports the results of the flow management regression during the full period versus during the financial crisis. We use two alternative definitions of the financial crisis: August 2007–December 2009 and March 2008–June 2009. Ojective-quarter date fixed effects are included. Standard errors are adjusted for clustering by fund. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager			Investment adviser					
				with manager			without manager		
	Baseline	2007m8–2009m12	2008m3–2009m6	Baseline	2007m8–2009m12	2008m3–2009m6	Baseline	2007m8–2009m12	2008m3–2009m6
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$Flows_{f,t}$	3.046***	1.937	4.155	2.396***	2.474	4.022	2.703***	2.891	3.594
	(0.922)	(2.408)	(3.392)	(0.829)	(2.489)	(3.553)	(0.841)	(2.473)	(3.553)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.492***	0.677*	0.295	0.648***	0.589	0.320	0.584***	0.510	0.406
	(0.157)	(0.389)	(0.551)	(0.146)	(0.410)	(0.588)	(0.147)	(0.406)	(0.582)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.373***	0.579	0.805	0.928**	0.250	0.711	1.009**	0.353	0.589
	(0.407)	(1.171)	(1.649)	(0.421)	(1.257)	(1.752)	(0.421)	(1.258)	(1.753)
$Flows_{f,t-1}$	−2.161**	−2.318	1.099	−1.710**	−0.903	0.082	−1.904**	−1.143	0.028
	(0.860)	(1.993)	(2.863)	(0.787)	(2.109)	(2.868)	(0.787)	(2.128)	(2.954)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	−0.389***	−0.274	−0.799*	−0.506***	−0.535	−0.609	−0.464***	−0.489	−0.602
	(0.148)	(0.352)	(0.478)	(0.138)	(0.362)	(0.487)	(0.137)	(0.362)	(0.501)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	−0.336	−0.026	3.346**	0.020	0.511	3.427**	−0.039	0.440	3.414**
	(0.392)	(1.132)	(1.693)	(0.409)	(1.192)	(1.681)	(0.407)	(1.200)	(1.694)
$Fund\ Internalize_{f,t-2}$	−0.008*	−0.044***	−0.063***	−0.007	−0.042***	−0.057**	−0.008*	−0.038**	−0.051**
	(0.004)	(0.015)	(0.022)	(0.005)	(0.015)	(0.024)	(0.005)	(0.015)	(0.024)
$Illiq_{f,t-2}$	−0.062**	0.046	0.093	−0.056*	0.076	0.116	−0.055*	0.067	0.104
	(0.029)	(0.102)	(0.115)	(0.029)	(0.103)	(0.117)	(0.029)	(0.102)	(0.117)
$Constant$	−0.108***	0.097	0.321**	−0.114***	0.092	0.294*	−0.109***	0.065	0.257*
	(0.028)	(0.094)	(0.137)	(0.031)	(0.101)	(0.152)	(0.030)	(0.100)	(0.152)
N	37,707	5,696	3,173	37,707	5,696	3,173	37,707	5,696	3,173
R^2	0.06	0.05	0.05	0.06	0.05	0.05	0.06	0.05	0.05
Objective-time FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table IA5
Inflows versus outflows.

This table reports the results of regressions of the change in the cash-to-assets ratio over the semi-annual reporting period on quarterly inflows and outflows interacted with internalization proxies. Cash-to-assets ratio is expressed in percent. *Fund Internalize* captures the fund's incentive to internalize the price impact it may impose on either the other funds managed by the fund's portfolio manager (columns 1–2) or other funds within the same fund family (columns 3–6). Columns 3–4 consider all funds within the family, while columns 5–6 restrict the calculation of internalization to family funds that are not managed by the same portfolio managers. Raw values of *Fund Internalize* are converted into decile rankings within each quarter. Standard errors are adjusted for clustering by fund. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager		Investment adviser: with manager		Investment adviser: without manager	
	Active	Index	Active	Index	Active	Index
	(1)	(2)	(3)	(4)	(5)	(6)
$Inflows_{f,t}$	4.198^{***}	-0.451	2.506^{*}	1.464	2.692^{**}	1.496
	(1.384)	(1.745)	(1.305)	(1.244)	(1.306)	(1.228)
$Outflows_{f,t}$	1.519	6.665^{**}	2.511	2.273	3.000^{*}	1.944
	(1.721)	(2.600)	(1.696)	(1.977)	(1.695)	(1.899)
$Inflows_{f,t} \times$ *Fund Internalize*$_{f,t-2}$	0.415^{*}	0.131	0.760^{***}	-0.263	0.718^{***}	-0.279
	(0.235)	(0.228)	(0.224)	(0.184)	(0.223)	(0.184)
$Outflows_{f,t} \times$ *Fund Internalize*$_{f,t-2}$	0.617^{**}	-0.978^{***}	0.478^{*}	-0.259	0.379	-0.188
	(0.284)	(0.346)	(0.280)	(0.299)	(0.277)	(0.290)
$Inflows_{f,t} \times Illiq_{f,t-2}$	1.875^{***}	-0.063	1.286^{**}	0.145	1.351^{**}	0.157
	(0.601)	(0.652)	(0.631)	(0.630)	(0.629)	(0.632)
$Outflows_{f,t} \times Illiq_{f,t-2}$	0.727	0.782	0.514	0.514	0.620	0.479
	(0.783)	(1.224)	(0.837)	(1.236)	(0.829)	(1.230)
$Inflows_{f,t-1}$	-4.498^{***}	-0.176	-3.744^{***}	-1.084	-3.869^{***}	-1.000
	(1.327)	(2.064)	(1.261)	(1.370)	(1.251)	(1.312)
$Outflows_{f,t-1}$	1.341	-0.565	1.726	0.593	1.489	0.701
	(1.465)	(2.246)	(1.500)	(1.557)	(1.498)	(1.492)
$Inflows_{f,t-1} \times$ *Fund Internalize*$_{f,t-2}$	-0.333	0.048	-0.507^{**}	0.249	-0.479^{**}	0.232
	(0.228)	(0.271)	(0.215)	(0.201)	(0.212)	(0.192)
$Outflows_{f,t-1} \times$ *Fund Internalize*$_{f,t-2}$	-0.441^{*}	0.068	-0.541^{**}	-0.155	-0.490^{**}	-0.179
	(0.250)	(0.299)	(0.252)	(0.236)	(0.250)	(0.229)
$Inflows_{f,t-1} \times Illiq_{f,t-2}$	-1.777^{***}	0.622	-1.378^{**}	0.501	-1.423^{**}	0.507
	(0.566)	(0.930)	(0.594)	(0.899)	(0.591)	(0.897)
$Outflows_{f,t-1} \times Illiq_{f,t-2}$	2.035^{***}	-0.627	2.379^{***}	-0.555	2.309^{***}	-0.560
	(0.719)	(0.971)	(0.770)	(0.982)	(0.764)	(0.979)
$Illiq_{f,t-2}$	0.028	-0.045	0.045	-0.056	0.046	-0.059
	(0.039)	(0.073)	(0.041)	(0.074)	(0.041)	(0.073)
Fund Internalize$_{f,t-2}$	-0.008	-0.019	-0.018^{*}	-0.008	-0.019^{**}	-0.008
	(0.009)	(0.013)	(0.009)	(0.012)	(0.009)	(0.011)
N	37707	5402	37707	5402	37707	5402
R^2	0.06	0.21	0.06	0.21	0.06	0.21
Objective-time FEs	✓	✓	✓	✓	✓	✓

Table IA6

Alternative explanations: Past returns.

This table reports the full set of regression results corresponding to line (2) in Table 3 in the paper. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager	Investment manager	
		with manager	without manager
	(1)	(2)	(3)
$Flows_{f,t}$	2.980^{***}	2.320^{***}	2.621^{***}
	(0.922)	(0.828)	(0.840)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.477^{***}	0.635^{***}	0.572^{***}
	(0.157)	(0.146)	(0.147)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.341^{***}	0.904^{**}	0.983^{**}
	(0.407)	(0.421)	(0.421)
$Flows_{f,t-1}$	-2.235^{***}	-1.725^{**}	-1.910^{**}
	(0.861)	(0.788)	(0.788)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	-0.373^{**}	-0.501^{***}	-0.461^{***}
	(0.148)	(0.138)	(0.137)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	-0.367	-0.010	-0.066
	(0.393)	(0.409)	(0.407)
$Fund\ Internalize_{f,t-2}$	-0.009^{**}	-0.008	-0.009^{*}
	(0.004)	(0.005)	(0.005)
$Illiq_{f,t-2}$	-0.071^{**}	-0.064^{**}	-0.063^{**}
	(0.029)	(0.029)	(0.029)
$R_{f,m}$	-0.019	-0.021	-0.020
	(0.030)	(0.030)	(0.030)
$R_{f,m-1}$	-0.011	-0.013	-0.013
	(0.030)	(0.030)	(0.030)
$R_{f,m-2}$	0.038	0.037	0.037
	(0.029)	(0.029)	(0.029)
$R_{f,m-3}$	0.101^{***}	0.099^{***}	0.100^{***}
	(0.032)	(0.032)	(0.032)
$R_{f,m-4}$	0.115^{***}	0.116^{***}	0.116^{***}
	(0.032)	(0.032)	(0.032)
$R_{f,m-5}$	0.007	0.007	0.007
	(0.029)	(0.029)	(0.029)
N	37,693	37,693	37,693
R^2	0.059	0.060	0.059

Table IA7
Alternative explanations: Future returns.

This table reports the full set of regression results corresponding to line (3) in Table 3 in the paper. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager	Investment manager	
		with manager	without manager
	(1)	(2)	(3)
$Flows_{f,t}$	2.794^{***}	2.254^{***}	2.633^{***}
	(0.947)	(0.845)	(0.858)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.522^{***}	0.658^{***}	0.581^{***}
	(0.161)	(0.149)	(0.150)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.464^{***}	1.022^{**}	1.114^{***}
	(0.417)	(0.427)	(0.427)
$Flows_{f,t-1}$	-2.171^{**}	-1.607^{**}	-1.826^{**}
	(0.889)	(0.801)	(0.799)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	-0.390^{**}	-0.528^{***}	-0.481^{***}
	(0.153)	(0.140)	(0.139)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	-0.455	-0.074	-0.137
	(0.401)	(0.416)	(0.413)
$Fund\ Internalize_{f,t-2}$	-0.009^{*}	-0.008	-0.008
	(0.005)	(0.005)	(0.005)
$Illiq_{f,t-2}$	-0.099^{***}	-0.092^{***}	-0.092^{***}
	(0.030)	(0.031)	(0.030)
$R_{f,m+1:m+1}$	-0.019	-0.020	-0.020
	(0.031)	(0.031)	(0.031)
$R_{f,m+1:m+3}$	0.072	0.071	0.071
	(0.050)	(0.050)	(0.050)
$R_{f,m+1:m+6}$	0.116	0.119	0.120
	(0.074)	(0.074)	(0.074)
$R_{f,m+1:m+12}$	-0.083	-0.082	-0.083
	(0.066)	(0.066)	(0.066)
N	35,273	35,273	35,273
R^2	0.061	0.061	0.061

Table IA8

Alternative explanations: Powers of illiquidity.

This table reports the full set of regression results corresponding to line (4) in Table 3 in the paper. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager	Investment manager	
		with manager	without manager
	(1)	(2)	(3)
$Flows_{f,t}$	3.006^{***}	2.064^{*}	2.444^{**}
	(1.151)	(1.121)	(1.136)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.499^{***}	0.675^{***}	0.608^{***}
	(0.157)	(0.148)	(0.149)
$Flows_{f,t-1}$	−1.733	−1.110	−1.365
	(1.122)	(1.109)	(1.110)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	-0.385^{**}	-0.506^{***}	-0.461^{***}
	(0.150)	(0.141)	(0.139)
$Fund\ Internalize_{f,t-2}$	-0.008^{*}	−0.006	−0.007
	(0.004)	(0.005)	(0.005)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.261	0.602	0.731
	(1.782)	(1.777)	(1.781)
$Flows_{f,t} \times Illiq^2_{f,t-2}$	−0.933	−0.596	−0.711
	(2.359)	(2.346)	(2.350)
$Flows_{f,t} \times Illiq^3_{f,t-2}$	−0.661	−0.666	−0.645
	(2.216)	(2.203)	(2.205)
$Flows_{f,t} \times Illiq^4_{f,t-2}$	1.071	1.026	1.051
	(2.269)	(2.253)	(2.255)
$Flows_{f,t} \times Illiq^5_{f,t-2}$	−0.249	−0.244	−0.251
	(0.520)	(0.517)	(0.517)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	−2.486	−2.023	−2.115
	(1.714)	(1.712)	(1.716)
$Flows_{f,t-1} \times Illiq^2_{f,t-2}$	−1.729	−2.050	−1.947
	(2.295)	(2.288)	(2.291)
$Flows_{f,t-1} \times Illiq^3_{f,t-2}$	2.646	2.681	2.659
	(2.125)	(2.116)	(2.119)
$Flows_{f,t-1} \times Illiq^4_{f,t-2}$	−0.660	−0.606	−0.630
	(2.195)	(2.187)	(2.188)
$Flows_{f,t-1} \times Illiq^5_{f,t-2}$	0.014	0.002	0.010
	(0.508)	(0.506)	(0.506)
$Illiq_{f,t-2}$	0.025	0.028	0.030
	(0.088)	(0.088)	(0.088)
$Illiq^2_{f,t-2}$	−0.062	−0.061	−0.060
	(0.121)	(0.121)	(0.121)
$Illiq^3_{f,t-2}$	−0.131	−0.127	−0.127
	(0.103)	(0.104)	(0.104)
$Illiq^4_{f,t-2}$	0.138	0.133	0.132
	(0.114)	(0.113)	(0.113)
$Illiq^5_{f,t-2}$	−0.031	−0.030	−0.030
	(0.026)	(0.026)	(0.026)
N	37,707	37,707	37,707
R^2	0.059	0.059	0.059

Table IA9
Alternative explanations: Deciles of illiquidity.

This table reports the full set of regression results corresponding to line (5) in Table 3 in the paper. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager	Investment manager	
		with manager	without manager
	(1)	(2)	(3)
$Flows_{f,t}$	7.048***	5.194***	5.690***
	(1.547)	(1.545)	(1.555)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.506***	0.690***	0.624***
	(0.158)	(0.147)	(0.148)
$Flows_{f,t-1}$	−2.922*	−1.656	−1.988
	(1.497)	(1.525)	(1.514)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	−0.391***	−0.509***	−0.465***
	(0.150)	(0.141)	(0.140)
$Fund\ Internalize_{f,t-2}$	−0.008*	−0.007	−0.008
	(0.005)	(0.005)	(0.005)
$Flows_{f,t} \times Illiq\ Decile\ 1_{f,t-2}$	−5.635***	−4.046**	−4.344***
	(1.600)	(1.627)	(1.626)
$Flows_{f,t} \times Illiq\ Decile\ 2_{f,t-2}$	−3.446**	−1.863	−2.160
	(1.642)	(1.672)	(1.675)
$Flows_{f,t} \times Illiq\ Decile\ 3_{f,t-2}$	−5.262***	−3.721**	−3.992**
	(1.617)	(1.633)	(1.636)
$Flows_{f,t} \times Illiq\ Decile\ 4_{f,t-2}$	−4.529***	−3.017*	−3.264**
	(1.639)	(1.648)	(1.650)
$Flows_{f,t} \times Illiq\ Decile\ 5_{f,t-2}$	−5.487***	−4.265***	−4.485***
	(1.627)	(1.637)	(1.639)
$Flows_{f,t} \times Illiq\ Decile\ 6_{f,t-2}$	−4.045**	−2.988*	−3.163*
	(1.660)	(1.654)	(1.656)
$Flows_{f,t} \times Illiq\ Decile\ 7_{f,t-2}$	−3.992**	−3.043*	−3.166*
	(1.713)	(1.705)	(1.705)
$Flows_{f,t} \times Illiq\ Decile\ 8_{f,t-2}$	−3.880**	−3.296*	−3.393**
	(1.714)	(1.707)	(1.705)
$Flows_{f,t} \times Illiq\ Decile\ 9_{f,t-2}$	−4.334***	−3.771**	−3.840**
	(1.651)	(1.632)	(1.635)
$Flows_{f,t-1} \times Illiq\ Decile\ 1_{f,t-2}$	0.770	−0.459	−0.231
	(1.529)	(1.568)	(1.561)
$Flows_{f,t-1} \times Illiq\ Decile\ 2_{f,t-2}$	0.688	−0.511	−0.289
	(1.530)	(1.581)	(1.574)
$Flows_{f,t-1} \times Illiq\ Decile\ 3_{f,t-2}$	0.015	−1.139	−0.943
	(1.593)	(1.608)	(1.604)
$Flows_{f,t-1} \times Illiq\ Decile\ 4_{f,t-2}$	0.957	−0.220	−0.050
	(1.595)	(1.617)	(1.613)
$Flows_{f,t-1} \times Illiq\ Decile\ 5_{f,t-2}$	2.323	1.378	1.537
	(1.553)	(1.587)	(1.584)
$Flows_{f,t-1} \times Illiq\ Decile\ 6_{f,t-2}$	2.157	1.403	1.532
	(1.666)	(1.665)	(1.663)
$Flows_{f,t-1} \times Illiq\ Decile\ 7_{f,t-2}$	0.923	0.158	0.243
	(1.719)	(1.712)	(1.712)
$Flows_{f,t-1} \times Illiq\ Decile\ 8_{f,t-2}$	−0.457	−0.901	−0.838
	(1.634)	(1.634)	(1.632)
$Flows_{f,t-1} \times Illiq\ Decile\ 9_{f,t-2}$	0.397	−0.115	−0.062
	(1.645)	(1.632)	(1.632)
$Illiq\ Decile\ 1_{f,t-2}$	0.246**	0.223**	0.221**
	(0.099)	(0.100)	(0.100)
$Illiq\ Decile\ 2_{f,t-2}$	0.175*	0.155	0.154
	(0.097)	(0.099)	(0.099)

Table IA9 (*continued*)

Illiq Decile $3_{f,t-2}$	0.152	0.134	0.132
	(0.097)	(0.098)	(0.098)
Illiq Decile $4_{f,t-2}$	0.174*	0.157	0.156
	(0.099)	(0.100)	(0.100)
Illiq Decile $5_{f,t-2}$	0.120	0.103	0.101
	(0.099)	(0.100)	(0.100)
Illiq Decile $6_{f,t-2}$	0.152	0.138	0.136
	(0.100)	(0.100)	(0.100)
Illiq Decile $7_{f,t-2}$	0.159	0.145	0.145
	(0.099)	(0.099)	(0.099)
Illiq Decile $8_{f,t-2}$	0.114	0.103	0.102
	(0.095)	(0.096)	(0.096)
Illiq Decile $9_{f,t-2}$	0.111	0.104	0.104
	(0.090)	(0.090)	(0.090)
N	37,707	37,707	37,707
R^2	0.059	0.059	0.059

Table IA10
Alternative explanations: Layers of illiquidity.

This table reports the full set of regression results corresponding to line (6) in Table 3 in the paper. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager	Investment manager	
		with manager	without manager
	(1)	(2)	(3)
$Flows_{f,t}$	2.981***	2.236***	2.497***
	(0.905)	(0.816)	(0.828)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.506***	0.677***	0.623***
	(0.153)	(0.145)	(0.146)
$Flows_{f,t-1}$	−1.999**	−1.525**	−1.704**
	(0.836)	(0.773)	(0.777)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	−0.419***	−0.537***	−0.499***
	(0.144)	(0.135)	(0.135)
$Fund\ Internalize_{f,t-2}$	−0.009**	−0.009*	−0.010**
	(0.005)	(0.005)	(0.005)
$Flows_{f,t} \times Illiq\ of\ Decile\ 1_{f,t-2}$	1.074	0.681	0.724
	(1.358)	(1.366)	(1.369)
$Flows_{f,t} \times Illiq\ of\ Decile\ 2_{f,t-2}$	−0.484	−0.383	−0.402
	(4.632)	(4.698)	(4.695)
$Flows_{f,t} \times Illiq\ of\ Decile\ 3_{f,t-2}$	−9.907	−10.436	−10.417
	(7.237)	(7.277)	(7.267)
$Flows_{f,t} \times Illiq\ of\ Decile\ 4_{f,t-2}$	15.461**	15.808**	15.870**
	(7.569)	(7.518)	(7.510)
$Flows_{f,t} \times Illiq\ of\ Decile\ 5_{f,t-2}$	−8.363	−8.198	−8.244
	(7.226)	(7.237)	(7.238)
$Flows_{f,t} \times Illiq\ of\ Decile\ 6_{f,t-2}$	0.849	1.798	1.723
	(7.292)	(7.186)	(7.196)
$Flows_{f,t} \times Illiq\ of\ Decile\ 7_{f,t-2}$	7.300	6.728	6.770
	(6.588)	(6.532)	(6.532)
$Flows_{f,t} \times Illiq\ of\ Decile\ 8_{f,t-2}$	−2.335	−2.642	−2.602
	(5.007)	(5.003)	(5.001)
$Flows_{f,t} \times Illiq\ of\ Decile\ 9_{f,t-2}$	−4.115	−3.846	−3.930
	(3.879)	(3.874)	(3.870)
$Flows_{f,t} \times Illiq\ of\ Decile\ 10_{f,t-2}$	1.301	0.834	0.915
	(1.592)	(1.573)	(1.573)
$Flows_{f,t-1} \times Illiq\ of\ Decile\ 1_{f,t-2}$	0.439	0.743	0.704
	(0.888)	(0.904)	(0.906)
$Flows_{f,t-1} \times Illiq\ of\ Decile\ 2_{f,t-2}$	−7.330**	−7.670**	−7.625**
	(2.991)	(3.043)	(3.047)
$Flows_{f,t-1} \times Illiq\ of\ Decile\ 3_{f,t-2}$	10.155	10.945*	10.837*
	(6.446)	(6.399)	(6.400)
$Flows_{f,t-1} \times Illiq\ of\ Decile\ 4_{f,t-2}$	−5.407	−5.638	−5.601
	(6.630)	(6.494)	(6.484)
$Flows_{f,t-1} \times Illiq\ of\ Decile\ 5_{f,t-2}$	2.300	2.355	2.364
	(4.884)	(4.833)	(4.829)
$Flows_{f,t-1} \times Illiq\ of\ Decile\ 6_{f,t-2}$	9.295*	7.966*	8.050*
	(4.747)	(4.654)	(4.664)
$Flows_{f,t-1} \times Illiq\ of\ Decile\ 7_{f,t-2}$	−16.483***	−15.844***	−15.896***
	(5.437)	(5.356)	(5.355)
$Flows_{f,t-1} \times Illiq\ of\ Decile\ 8_{f,t-2}$	1.084	1.344	1.314
	(4.658)	(4.651)	(4.652)
$Flows_{f,t-1} \times Illiq\ of\ Decile\ 9_{f,t-2}$	5.039	4.836	4.903
	(3.914)	(3.902)	(3.902)
$Flows_{f,t-1} \times Illiq\ of\ Decile\ 10_{f,t-2}$	0.253	0.644	0.583
	(1.510)	(1.506)	(1.508)

Table IA10 (*continued*)

Illiq of Decile 1$_{f,t-2}$	−0.022	−0.022	−0.022
	(0.074)	(0.074)	(0.074)
Illiq of Decile 2$_{f,t-2}$	0.323	0.305	0.309
	(0.210)	(0.211)	(0.211)
Illiq of Decile 3$_{f,t-2}$	−0.444	−0.416	−0.420
	(0.374)	(0.375)	(0.375)
Illiq of Decile 4$_{f,t-2}$	−0.159	−0.150	−0.152
	(0.388)	(0.388)	(0.388)
Illiq of Decile 5$_{f,t-2}$	0.012	0.006	0.009
	(0.381)	(0.380)	(0.380)
Illiq of Decile 6$_{f,t-2}$	0.982***	0.953**	0.955**
	(0.378)	(0.380)	(0.380)
Illiq of Decile 7$_{f,t-2}$	−0.885*	−0.882*	−0.883*
	(0.486)	(0.485)	(0.485)
Illiq of Decile 8$_{f,t-2}$	0.466	0.479	0.477
	(0.386)	(0.386)	(0.386)
Illiq of Decile 9$_{f,t-2}$	−0.301*	−0.305*	−0.304*
	(0.164)	(0.164)	(0.164)
Illiq of Decile 10$_{f,t-2}$	0.051	0.058	0.057
	(0.080)	(0.080)	(0.080)
N	37,707	37,707	37,707
R^2	0.061	0.061	0.061

Table IA11
Alternative explanations: Holdings HHI.

This table reports the full set of regression results corresponding to line (7) in Table 3 in the paper. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager	Investment manager	
		with manager	without manager
	(1)	(2)	(3)
$Flows_{f,t}$	2.985^{***}	2.383^{***}	2.689^{***}
	(0.912)	(0.832)	(0.844)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.497^{***}	0.654^{***}	0.589^{***}
	(0.156)	(0.147)	(0.148)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.394^{***}	0.916^{**}	0.999^{**}
	(0.414)	(0.431)	(0.431)
$Flows_{f,t-1}$	-2.150^{**}	-1.690^{**}	-1.885^{**}
	(0.854)	(0.791)	(0.790)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	-0.391^{***}	-0.518^{***}	-0.475^{***}
	(0.148)	(0.140)	(0.138)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	−0.332	0.064	0.002
	(0.397)	(0.418)	(0.415)
$Fund\ Internalize_{f,t-2}$	-0.008^{*}	−0.007	−0.008
	(0.005)	(0.005)	(0.005)
$Illiq_{f,t-2}$	-0.061^{**}	-0.055^{*}	-0.055^{*}
	(0.029)	(0.030)	(0.030)
$Flows_{f,t} \times Holdings\ HHI_{f,t-2}$	0.273	−0.023	−0.001
	(0.460)	(0.453)	(0.453)
$Flows_{f,t-1} \times Holdings\ HHI_{f,t-2}$	0.038	0.300	0.289
	(0.407)	(0.395)	(0.395)
$Holdings\ HHI_{f,t-2}$	−0.017	−0.018	−0.018
	(0.026)	(0.025)	(0.025)
N	37,707	37,707	37,707
R^2	0.059	0.059	0.059

Table IA12
Alternative explanations: Top share.

This table reports the full set of regression results corresponding to line (8) in Table 3 in the paper. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager	Investment manager	
		with manager	without manager
	(1)	(2)	(3)
$Flows_{f,t}$	3.110^{***}	2.319^{***}	2.625^{***}
	(0.916)	(0.835)	(0.848)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.486^{***}	0.682^{***}	0.617^{***}
	(0.157)	(0.148)	(0.149)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.362^{***}	0.830^{*}	0.916^{**}
	(0.417)	(0.436)	(0.435)
$Flows_{f,t-1}$	-2.265^{***}	-1.556^{*}	-1.756^{**}
	(0.857)	(0.794)	(0.793)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	-0.381^{**}	-0.559^{***}	-0.514^{***}
	(0.148)	(0.141)	(0.139)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	−0.269	0.194	0.128
	(0.400)	(0.422)	(0.419)
$Fund\ Internalize_{f,t-2}$	-0.008^{*}	−0.006	−0.007
	(0.004)	(0.005)	(0.005)
$Illiq_{f,t-2}$	-0.061^{**}	-0.056^{*}	-0.055^{*}
	(0.029)	(0.030)	(0.030)
$Flows_{f,t} \times Top\ Share_{f,t-2}$	0.014	−0.314	−0.287
	(0.422)	(0.423)	(0.423)
$Flows_{f,t-1} \times Top\ Share_{f,t-2}$	0.552	0.842^{**}	0.825^{**}
	(0.343)	(0.345)	(0.343)
$Top\ Share_{f,t-2}$	−0.037	−0.035	−0.035
	(0.024)	(0.024)	(0.024)
N	37,707	37,707	37,707
R^2	0.059	0.059	0.059

Table IA13
Alternative explanations: Active share.

This table reports the full set of regression results corresponding to line (9) in Table 3 in the paper. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager	Investment manager	
		with manager	without manager
	(1)	(2)	(3)
$Flows_{f,t}$	2.722^{***}	2.559^{***}	2.919^{***}
	(0.997)	(0.908)	(0.924)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.511^{***}	0.590^{***}	0.511^{***}
	(0.167)	(0.160)	(0.162)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.252^{**}	0.984^{**}	1.057^{**}
	(0.493)	(0.500)	(0.501)
$Flows_{f,t-1}$	-1.863^{**}	-1.677^{**}	-1.943^{**}
	(0.914)	(0.831)	(0.832)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	-0.387^{**}	-0.463^{***}	-0.403^{***}
	(0.157)	(0.150)	(0.148)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	-0.082	0.144	0.083
	(0.464)	(0.468)	(0.467)
$Fund\ Internalize_{f,t-2}$	-0.010^{**}	-0.009^{*}	-0.010^{**}
	(0.005)	(0.005)	(0.005)
$Illiq_{f,t-2}$	0.002	0.009	0.010
	(0.032)	(0.032)	(0.032)
$Flows_{f,t} \times Active\ Share_{f,t-2}$	1.199^{*}	0.788	0.857
	(0.618)	(0.625)	(0.628)
$Flows_{f,t-1} \times Active\ Share_{f,t-2}$	-0.951^{*}	-0.620	-0.668
	(0.571)	(0.587)	(0.586)
$Active\ Share_{f,t-2}$	-0.088^{***}	-0.084^{***}	-0.083^{***}
	(0.024)	(0.025)	(0.025)
N	33,889	33,889	33,889
R^2	0.063	0.063	0.063

Table IA14
Alternative explanations: Clientele.

This table reports the full set of regression results corresponding to line (10) in Table 3 in the paper. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager	Investment manager	
		with manager	without manager
	(1)	(2)	(3)
$Flows_{f,t}$	3.668***	3.326***	3.614***
	(1.102)	(0.987)	(0.995)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.547***	0.681***	0.612***
	(0.160)	(0.150)	(0.151)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.260***	0.780*	0.869*
	(0.427)	(0.449)	(0.449)
$Flows_{f,t-1}$	−2.608**	−2.334**	−2.533***
	(1.068)	(0.975)	(0.975)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	−0.418***	−0.525***	−0.477***
	(0.152)	(0.140)	(0.139)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	−0.256	0.122	0.054
	(0.409)	(0.430)	(0.428)
$Fund\ Internalize_{f,t-2}$	−0.007	−0.006	−0.007
	(0.005)	(0.005)	(0.005)
$Illiq_{f,t-2}$	−0.059**	−0.053*	−0.052*
	(0.030)	(0.030)	(0.030)
$Flows_{f,t} \times Num.\ Classes_{f,t-2}$	−0.331	−0.397*	−0.385*
	(0.210)	(0.211)	(0.212)
$Flows_{f,t} \times Classes\ HHI_{f,t-2}$	−0.412	−0.575	−0.564
	(0.459)	(0.462)	(0.462)
$Flows_{f,t} \times Front\ Load_{f,t-2}$	−0.206	−0.164	−0.166
	(0.528)	(0.528)	(0.528)
$Flows_{f,t} \times Institutional\ share_{f,t-2}$	−0.787**	−0.734*	−0.740*
	(0.382)	(0.378)	(0.378)
$Flows_{f,t-1} \times Num.\ Classes_{f,t-2}$	0.212	0.257	0.248
	(0.198)	(0.197)	(0.197)
$Flows_{f,t-1} \times Classes\ HHI_{f,t-2}$	0.498	0.654	0.645
	(0.437)	(0.442)	(0.442)
$Flows_{f,t-1} \times Front\ Load_{f,t-2}$	0.128	0.083	0.087
	(0.501)	(0.498)	(0.498)
$Flows_{f,t-1} \times Institutional\ share_{f,t-2}$	0.796**	0.753**	0.757**
	(0.360)	(0.356)	(0.356)
$Num.\ Classes_{f,t-2}$	−0.001	−0.001	−0.000
	(0.007)	(0.007)	(0.007)
$Classes\ HHI_{f,t-2}$	0.010	0.009	0.009
	(0.019)	(0.019)	(0.019)
$Front\ Load_{f,t-2}$	−0.016	−0.018	−0.018
	(0.016)	(0.016)	(0.016)
$Institutional\ share_{f,t-2}$	−0.003	−0.004	−0.005
	(0.014)	(0.013)	(0.013)
N	36,899	36,899	36,899
R^2	0.057	0.057	0.057

Table IA15
Alternative explanations: Fund managers.

This table reports the full set of regression results corresponding to line (11) in Table 3 in the paper. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager	Investment manager	
		with manager	without manager
	(1)	(2)	(3)
$Flows_{f,t}$	0.572	−0.848	−0.654
	(1.249)	(1.355)	(1.377)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.369**	0.563***	0.512***
	(0.162)	(0.149)	(0.150)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.559***	1.144***	1.212***
	(0.400)	(0.417)	(0.416)
$Flows_{f,t-1}$	−1.106	0.168	0.043
	(1.171)	(1.268)	(1.275)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	−0.360**	−0.529***	−0.492***
	(0.153)	(0.143)	(0.142)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	−0.375	0.013	−0.042
	(0.390)	(0.410)	(0.408)
$Fund\ Internalize_{f,t-2}$	−0.011**	−0.008*	−0.009*
	(0.005)	(0.005)	(0.005)
$Illiq_{f,t-2}$	−0.061**	−0.055*	−0.054*
	(0.029)	(0.030)	(0.030)
$Flows_{f,t} \times Team_{f,t-2}$	0.265	0.538	0.496
	(0.984)	(0.988)	(0.986)
$Flows_{f,t} \times Num.\ managers_{f,t-2}$	−0.145	−0.094	−0.080
	(0.253)	(0.249)	(0.249)
$Flows_{f,t} \times Experience_{f,t-2}$	0.384***	0.393***	0.400***
	(0.072)	(0.070)	(0.070)
$Flows_{f,t} \times CFA_{f,t-2}$	−0.279	0.054	0.027
	(0.902)	(0.907)	(0.910)
$Flows_{f,t} \times Team_{f,t-2}$	0.518	0.284	0.324
	(0.934)	(0.940)	(0.937)
$Flows_{f,t} \times Num.\ managers_{f,t-2}$	−0.040	−0.088	−0.100
	(0.227)	(0.224)	(0.224)
$Flows_{f,t} \times Experience_{f,t-2}$	−0.126*	−0.138*	−0.143**
	(0.072)	(0.071)	(0.070)
$Flows_{f,t} \times CFA_{f,t-2}$	−0.618	−0.942	−0.920
	(0.859)	(0.869)	(0.871)
$Team_{f,t-2}$	−0.035	−0.042	−0.042
	(0.035)	(0.036)	(0.036)
$Num.\ managers_{f,t-2}$	0.011	0.009	0.008
	(0.009)	(0.009)	(0.009)
$Experience_{f,t-2}$	0.002	0.001	0.001
	(0.003)	(0.002)	(0.002)
$CFA_{f,t-2}$	0.005	0.003	0.003
	(0.029)	(0.029)	(0.029)
N	37,480	37,480	37,480
R^2	0.060	0.060	0.060

Table IA16
Cash holdings.

This table reports the results of regressions of the cash-to-assets ratio on internalization proxies and fund characteristics:

$$\left(\frac{Cash}{TNA}\right)_{f,t} = \alpha + \beta \cdot \textit{Fund Internalize}_{f,t} + \gamma' \mathbf{X}_{f,t} + \varepsilon_{f,t},$$

where f indexes funds and t indexes time. Cash-to-assets ratio is expressed in percent. Raw values of *Fund Internalize* are converted into decile ranks within each quarter. All other continuous variables are standardized so that their coefficients represent the effect of a one-standard deviation change in each variable. Standard errors are adjusted for clustering by fund. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

	Portfolio manager		Investment adviser			
			with manager		without manager	
	Active	Index	Active	Index	Active	Index
	(1)	(2)	(3)	(4)	(5)	(6)
$\textit{Fund Internalize}_{f,t}$	0.082***	−0.101**	0.119***	0.021	0.109***	0.051
	(0.021)	(0.050)	(0.027)	(0.055)	(0.027)	(0.048)
$Illiq_{f,t}$	0.480***	0.089	0.349***	0.039	0.372***	0.033
	(0.109)	(0.154)	(0.111)	(0.157)	(0.111)	(0.154)
$\sigma(Flows)_{f,t}$	0.178***	−0.078***	0.171***	−0.074**	0.170***	−0.075**
	(0.039)	(0.029)	(0.039)	(0.029)	(0.039)	(0.029)
$Size_{f,t}$	0.117*	−0.180*	0.004	−0.327**	0.022	−0.365***
	(0.071)	(0.105)	(0.081)	(0.134)	(0.081)	(0.128)
$\textit{Family size}_{f,t}$	−0.673***	−0.135	−0.680***	−0.266**	−0.675***	−0.302**
	(0.078)	(0.140)	(0.080)	(0.130)	(0.080)	(0.124)
$\textit{Institutional share}_{f,t}$	−0.287***	−0.083	−0.271***	−0.113	−0.271***	−0.121
	(0.055)	(0.096)	(0.054)	(0.095)	(0.054)	(0.094)
$Turnover_{f,t}$	−0.167***	−0.144**	−0.131**	−0.164**	−0.135**	−0.169***
	(0.053)	(0.067)	(0.053)	(0.065)	(0.053)	(0.065)
$\textit{Short selling}_{f,t}$	1.052***	−0.165	1.032***	−0.251*	1.045***	−0.275*
	(0.355)	(0.139)	(0.359)	(0.142)	(0.361)	(0.143)
$Options_{f,t}$	3.743***	10.589***	4.078***	11.289***	4.044***	11.348***
	(0.809)	(1.687)	(0.814)	(1.691)	(0.813)	(1.688)
$\textit{Other practices}_{f,t}$	0.447	−0.848	0.266	−0.631	0.282	−0.567
	(0.302)	(0.634)	(0.306)	(0.678)	(0.306)	(0.678)
Constant	3.158***	1.679***	2.992***	1.030***	3.045***	0.917**
	(0.160)	(0.380)	(0.179)	(0.395)	(0.178)	(0.373)
N	34,879	5,045	34,879	5,045	34,879	5,045
R^2	0.117	0.430	0.117	0.427	0.117	0.428
Objective-time FEs	✓	✓	✓	✓	✓	✓

Table IA17
Fund flows and changes in portfolio illiquidity.

This table shows that high internalization funds adjust the liquidity of their portfolio holdings in response to fund inflows and outflows. We estimate the same regressions as in Table 4 in the paper, except that the dependent variable is the active change in the illiquidity of the portfolio holdings, excluding cash, over the semi-annual reporting period. The active change in portfolio illiquidity is defined as

$$\sum_{s} (w_{f,s,t} - w_{f,s,t-1}) \times Illiq_{s,t}$$

The dependent variable is first winsorized at the 5th and 95th percentiles and then standardized to have zero mean and standard deviation equal to one. Index funds are excluded. Standard errors are adjusted for clustering by fund. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

			Investment adviser			
	Portfolio manager		with manager		without manager	
	(1)	(2)	(3)	(4)	(5)	(6)
$Flows_{f,t}$	−0.032	−0.099	0.120	−0.003	0.101	−0.023
	(0.172)	(0.178)	(0.136)	(0.158)	(0.138)	(0.159)
$Flows_{f,t} \times$ *Fund Internalize*$_{f,t-2}$	−0.068**	−0.051	−0.097***	−0.070**	−0.093***	−0.066**
	(0.031)	(0.031)	(0.028)	(0.030)	(0.028)	(0.030)
$Flows_{f,t-1}$	−0.035	−0.037	0.021	0.008	−0.000	−0.016
	(0.168)	(0.177)	(0.131)	(0.153)	(0.133)	(0.155)
$Flows_{f,t-1} \times$ *Fund Internalize*$_{f,t-2}$	−0.022	−0.020	−0.031	−0.029	−0.027	−0.024
	(0.031)	(0.031)	(0.026)	(0.028)	(0.026)	(0.028)
$Illiq_{f,t-2}$	−0.531***	−0.531***	−0.538***	−0.539***	−0.538***	−0.538***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Fund Internalize$_{f,t-2}$	−0.000	−0.000	0.005***	0.005***	0.005***	0.005***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$Flows_{f,t} \times Illiq_{f,t-2}$		−0.229***		−0.180**		−0.184**
		(0.084)		(0.090)		(0.090)
$Flows_{f,t-1} \times Illiq_{f,t-2}$		−0.045		−0.023		−0.030
		(0.084)		(0.089)		(0.088)
N	33,478	33,478	33,478	33,478	33,478	33,478
R^2	0.616	0.616	0.616	0.616	0.616	0.616
Objective-time FEs	✓	✓	✓	✓	✓	✓

Table IA18

Fund fees, incentive to internalize price impact, and flow management.

This table shows that the effect of internalization on using cash to accommodate fund flows is stronger when the affiliated funds charge high fees. Cash-to-assets ratio is expressed in percent. *Fund Internalize* captures the fund's incentive to internalize the price impact it may impose on either the other funds managed by the fund's portfolio manager (columns 1–2) or other funds within the same fund family (columns 3–6). Columns 3–4 consider all funds within the family, while columns 5–6 restrict the calculation of internalization to family funds that are not managed by the same portfolio managers. Raw values of *Fund Internalize* are converted into decile rankings within each quarter. *High Fees* is a dummy variable equal to one when the value-weighted average of the expense ratios of the affiliated funds is above the median for the semi-annual reporting period. Annual expense ratios are calculated as the ratio of total expense (N-SAR item 72X) and average monthly TNA (N-SAR item 75B). In columns 1–2, the average expense ratio is calculated over other funds managed by the fund's portfolio manager. In columns 3–6, the average expense ratio is calculated over other funds managed by the same investment adviser. Note that while *Adviser internalize* is calculated using 13F data and thus includes holdings by both mutual funds and other investment vehicles managed by the adviser, calculation of the expense ratio is limited to other mutual funds. Standard errors are adjusted for clustering by fund. $*$, $**$, and $***$ indicate statistical significance at 10%, 5%, and 1%.

			Investment adviser			
	Portfolio manager		with manager		without manager	
	(1)	(2)	(3)	(4)	(5)	(6)
$Flows_{f,t}$	3.078***	4.861***	2.370***	3.611***	2.677***	3.915***
	(0.925)	(1.214)	(0.830)	(1.284)	(0.842)	(1.294)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2}$	0.487***	0.165	0.654***	0.399*	0.589***	0.340*
	(0.157)	(0.219)	(0.145)	(0.206)	(0.146)	(0.206)
$Flows_{f,t} \times Illiq_{f,t-2}$	1.465***	1.360***	1.012**	0.916**	1.093***	0.998**
	(0.408)	(0.411)	(0.421)	(0.423)	(0.421)	(0.423)
$Flows_{f,t} \times Fund\ Internalize_{f,t-2} \times High\ Fees_{f,t-2}$		0.667**		0.491*		0.485*
		(0.298)		(0.286)		(0.286)
$Flows_{f,t} \times High\ Fees_{f,t-2}$		−4.094**		−2.213		−2.218
		(1.743)		(1.603)		(1.622)
$Flows_{f,t-1}$	−2.030**	−2.751**	−1.605**	−2.296*	−1.784**	−2.445*
	(0.860)	(1.115)	(0.789)	(1.266)	(0.789)	(1.275)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2}$	−0.408***	−0.326	−0.520***	−0.337*	−0.481***	−0.307
	(0.148)	(0.207)	(0.138)	(0.201)	(0.136)	(0.201)
$Flows_{f,t-1} \times Illiq_{f,t-2}$	−0.363	−0.322	−0.001	0.078	−0.058	0.022
	(0.396)	(0.402)	(0.414)	(0.415)	(0.411)	(0.412)
$Flows_{f,t-1} \times High\ Fees_{f,t-2}$		1.691		1.286		1.253
		(1.715)		(1.530)		(1.548)
$Flows_{f,t-1} \times Fund\ Internalize_{f,t-2} \times High\ Fees_{f,t-2}$		−0.211		−0.369		−0.358
		(0.290)		(0.265)		(0.266)
$Illiq_{f,t-2}$	−0.069**	−0.067**	−0.063**	−0.061**	−0.062**	−0.061**
	(0.029)	(0.029)	(0.030)	(0.030)	(0.030)	(0.030)
$Fund\ Internalize_{f,t-2}$	−0.008*	−0.006	−0.007	−0.005	−0.008*	−0.006
	(0.004)	(0.007)	(0.005)	(0.007)	(0.005)	(0.007)
$High\ Fees_{f,t-2}$		0.043		0.030		0.031
		(0.066)		(0.064)		(0.064)
$Fund\ Internalize_{f,t-2} \times High\ Fees_{f,t-2}$		−0.006		−0.003		−0.003
		(0.011)		(0.010)		(0.010)
N	37,572	37,572	37,572	37,572	37,572	37,572
R^2	0.059	0.059	0.059	0.060	0.059	0.059
Objective-time FEs	✓	✓	✓	✓	✓	✓

5 Fund Manager Compensation

Table IA19

Fund manager compensation and investment adviser performance.

This table provides examples of the dependence of fund manager compensation on the overall performance of the fund's investment adviser/fund manager's employer. For each of the one hundred largest investment advisers in our data, we check the discussion of fund manager's compensation in the most recent registration statement on form N-1A. We code two measures compensation, and provide quotes that form the basis for our coding. *Annual bonus* is a dummy variable equal to one if the annual bonus depends on the adviser's overall financial performance or assessment of manager's contribution to the overall performance of the adviser. *Equity* is a dummy variable equal to one if the fund manager owns equity in the adviser or if the value of deferred compensation depends on the performance of the adviser.

Investment adviser	**N-1A link**	**Annual Bonus**	**Equity**	**Discussion**
AllianceBernstein L.P.	Oct 31, 2018	1	1	**Annual bonus:** "Among the qualitative components considered, the most important include thought leadership, collaboration with other investment colleagues, **contributions to risk-adjusted returns of other portfolios in the firm**, efforts in mentoring and building a strong talent pool and being a good corporate citizen." **Equity:** "Part of the annual incentive compensation is generally paid in the form of a cash bonus, and part through an award under the firm's Incentive Compensation Award Plan (ICAP). The ICAP awards vest over a four-year period. Deferred awards are paid in the form of **restricted grants of the firm's Master Limited Partnership Units**, and award recipients have the ability to receive a portion of their awards in deferred cash."
Allianz Global Investors U.S. LLC	Aug 27, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "The deferred component for most recipients would be a notional award of the Long Term Incentive Program ('LTIP'); for members of staff whose variable compensation exceeds an additional threshold, the deferred compensation is itself split 50%/50% between the LTIP and a Deferral into Funds program ('DIF'). ... The LTIP element of the variable compensation cliff vests three years after each (typically annual) award. Its value is directly tied to the **operating profit of Allianz Global Investors**."
American Beacon Advisors, Inc.	Feb 28, 2018	1	1	**Annual bonus:** "The amount of the total bonus pool is based upon the **profitability of the Manager**." **Equity:** "Additionally, the Portfolio Managers participate in the Manager's **equity incentive plan**."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
American Century Investment Management Inc	Mar 1, 2018	1	1	**Annual bonus:** "A second factor in the bonus calculation relates to the **performance of a number of American Century Investments funds** managed according to one of the following investment disciplines: global growth equity, global value equity, disciplined equity, global fixed-income, and multi-asset strategies. Performance is measured for each product individually as described above and then combined to create an overall composite for the product group. These composites may measure one-year performance (equal weighted) or a combination of one-, three- and five-year performance (equal or asset weighted) depending on the portfolio manager's responsibilities and products managed. This feature is designed to encourage effective teamwork among portfolio management teams in achieving long-term investment success for similarly styled portfolios." **Equity:** "Portfolio managers are eligible for grants of **restricted stock of ACC**."
Artisan Partners LP	Feb 1, 2018	1	0	**Annual bonus:** "Artisan Partners' portfolio managers are compensated through a fixed base salary or similar payment and a subjectively determined incentive bonus or payment that is a portion of a bonus pool, the aggregate amount of which is tied to **Artisan Partners' fee revenues generated by all accounts** included within the manager's investment strategies, including the Funds." **Equity:** No specific mention.
AssetMark, Inc.	Jul 31, 2018	1	1	**Annual bonus:** "The size of the overall bonus pool each year is determined by AssetMark and depends on, among other factors, the levels of compensation generally in the investment management industry (based on market compensation data) and **AssetMark's profitability for** the year, which is largely determined by assets under management." **Equity:** "The portfolio managers receive their compensation from AssetMark in the form of salary, bonus, **stock options, and restricted stock**."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Atlanta Capital Management Company, LLC	Feb 1, 2018	1	1	**Annual bonus:** "The size of the overall incentive compensation pool is determined each year by Atlanta Capital's management team in consultation with EVC and depends primarily on **Atlanta Capital's profitability** for the year." **Equity:** "Compensation of Atlanta Capital portfolio managers and other investment professionals has three primary components: (1) a base salary, (2) an annual cash bonus, and (3) annual stock-based compensation consisting of **options** to purchase shares of EVC's nonvoting common stock, **restricted shares** of EVC's nonvoting common stock, and grants of **profit participation interests** in Atlanta Capital."
AXA Equitable Funds Management Group, LLC	May 1, 2018	1	1	**Annual bonus:** "Annual short-term incentive compensation opportunities, granted in cash, are made available depending on whether **firm-wide objectives** were met during the year, as measured by various performance objectives such as underlying and adjusted earnings, expense management and sales." **Equity:** "Annual long-term incentive compensation, granted in the form of **stock options, restricted stocks and/or performance units**, is offered in a manner similar to the short-term incentive compensation and is based on the combination of firm-wide performance and individual performance."
BAMCO, Inc.	Jan 26, 2018	1	1	**Annual bonus:** "The compensation for Messrs. Greenberg, Peck, Lippert, Umansky, Bieger, Gwirtzman and Rosenberg includes a base salary and an annual bonus that is based, in part, on the amount of assets they manage, as well as their individual long-term investment performance, their **overall contribution to the Firm** and the Firm's profitability." **Equity:** "The terms of his contract are based on Mr. Baron's role as the Firm's Founder, Chief Executive Officer and Chief Investment Officer, and his position as portfolio manager for the majority of the Firm's assets under management."
BlackRock Inc	Dec 29, 2017	0	1	**Annual bonus:** No specific mention. **Equity:** "Discretionary incentive compensation is distributed to portfolio managers in a combination of cash, deferred **BlackRock, Inc. stock awards**, and/or deferred cash awards that notionally track the return of certain BlackRock investment products."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
BMO Asset Management Corp.	Dec 29, 2017	0	1	**Annual bonus:** No specific mention. **Equity:** "Portfolio managers also may have a long-term incentive program consisting of **restricted share units** or other units linked to the performance of BMO."
BNY Mellon Asset Management North America Corporation	Sep 28, 2018	1	1	**Annual bonus:** "Our incentive model is designed to compensate for quantitative and qualitative objectives achieved during the performance year. An individual's final annual incentive award is tied to the **firm's overall performance**, the team's investment performance, as well as individual performance." **Equity:** "The following factors encompass our investment professional rewards program. . . . **BNY Mellon restricted stock** and/or . . . **BNY Mellon Asset Management North America Corporation equity**."
Boston Management and Research	May 1, 2018	1	1	**Annual bonus:** "Salaries, bonuses and stock-based compensation are also influenced by the **operating performance of the investment adviser** and its parent company." **Equity:** "Compensation of the investment adviser's portfolio managers and other investment professionals has three primary components: (1) a base salary, (2) an annual cash bonus, and (3) annual non-cash compensation consisting of **options** to purchase shares of EVC nonvoting common stock and/or **restricted shares** of EVC nonvoting common stock that generally are subject to a vesting schedule and (4) (for equity portfolio managers) a Deferred Alpha Incentive Plan, which pays a deferred cash award tied to future excess returns in certain equity strategy portfolios."
Bridgeway Capital Management, Inc.	Oct 31, 2018	1	1	**Annual bonus:** "Profit sharing bonuses are driven by **company performance** and an assessment of individual execution of responsibilities." **Equity:** "Portfolio Managers (as well as all of the Adviser's partners) participate in an **Employee Stock Ownership Program** or **Phantom Stock Program** of the Adviser or both."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Capital Growth Management LP	May 1, 2018	1	1	**Annual bonus:** "Mr. Heebner receives a fixed salary from CGM as well as compensation related to the **profitability of CGM** and based upon his shareholding in the general partner of CGM." **Equity:** "Mr. Heebner receives a fixed salary from CGM as well as compensation related to the profitability of CGM and based upon **his shareholding in the general partner of CGM**."
Capital Research and Management Company	Feb 1, 2018	0	0	**Annual bonus:** "Investment professionals also may participate in profit-sharing plans." No further information is provided. **Equity:** No specific mention.
Charles Schwab Investment Management, Inc.	Feb 28, 2018	1	0	**Annual bonus:** "The discretionary bonus is determined in accordance with the CSIM Equity and Fixed Income Portfolio Manager Incentive Plan (the Plan) as follows: There are two independent funding components for the Plan: • 75% of the funding is based on equal weighting of Investment Fund Performance and Risk Management and Mitigation • 25% of the funding is based on **Corporate results**" **Equity:** No specific mention.
City National Rochdale, LLC	Jan 31, 2018	1	1	**Annual bonus:** "In addition, CNB may make discretionary contributions ('employer contributions') each year equal to a **portion of its consolidated net profits**, subject to an overall maximum percentage of compensation." **Equity:** "Investment professionals are also eligible to participate in CNB's **stock option program**, which provides for an annual stock grant based on individual performance, and corporate profit sharing program, which is a qualified defined contribution plan available to all CNB employees who are entitled to receive paid vacation."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
ClearBridge Investments, LLC	Dec 27, 2017	1	1	**Annual bonus:** "Several factors are considered by ClearBridge Senior Management when determining discretionary compensation for portfolio managers. These include but are not limited to: ... Overall **firm profitability and performance**." **Equity:** "Legg Mason Restricted Stock Deferral–a mandatory program that typically defers 5% of discretionary year-end compensation into Legg Mason **restricted stock**. The award is paid out to employees in shares subject to vesting requirements."
Cohen & Steers Capital Management, Inc.	Jun 28, 2018	1	1	**Annual bonus:** "Compensation for the portfolio managers is determined by evaluating four primary components, in order of emphasis: (1) investment performance, (2) leadership and collaboration, (3) team level revenue changes and (4) the **firm's financial results**." **Equity:** "Compensation of portfolio managers and other investment professionals is comprised of: (1) a base salary, (2) an annual cash bonus and (3) long-term **stock-based compensation** consisting generally of restricted stock units of CNS, the parent company of the Advisor, CNS Asia and CNS UK."
Columbia Management Investment Advisers, LLC	Oct 1, 2018	1	1	**Annual bonus:** "Funding for the bonus pool is determined by management and depends on, among other factors, the levels of compensation generally in the investment management industry taking into account investment performance (based on market compensation data) and both Ameriprise Financial and **Columbia Management profitability** for the year, which is largely determined by assets under management." **Equity:** "Portfolio manager direct compensation is typically comprised of a base salary, and an annual incentive award that is paid either in the form of a cash bonus if the size of the award is under a specified threshold, or, if the size of the award is over a specified threshold, the award is paid in a combination of a cash bonus, an **equity incentive award**, and deferred compensation."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Commerce Investment Advisors, Inc.	Feb 28, 2018	1	1	**Annual bonus:** "The bonus structure varies somewhat by portfolio manager but generally is based on four primary components: the **financial performance of Commerce's parent company**, Commerce Bancshares; the portfolio manager's investment performance over the one-, three- and five-year periods on the accounts managed; amount of business attributable to the individual based on current revenue/amount of new business revenue generated by the individual; and/or the **financial performance of the individual's department** rather than overall profitability of Commerce Trust Company." **Equity:** "Certain senior portfolio managers are also eligible to receive incentive compensation in the form of **options** to purchase shares of Commerce Bancshares, Inc. ('Commerce Bancshares'), Commerce's parent company."
Cramer Rosenthal McGlynn, LLC	Oct 26, 2018	1	1	**Annual bonus:** "The profit-sharing plan is based on the **income of the firm**." **Equity:** "The long-term incentive plan provides an opportunity for experienced portfolio managers and other key contributors to CRM to be rewarded in the future depending on the achievement of financial goals and value creation. The plan, which is comprised of a **profit-sharing component and option program**, was created as a means of more closely aligning the interests of CRM professionals with those of the firm. "
Davis Selected Advisers, L.P.	May 1, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "...compensation for services provided to the Adviser consists of: (i) a base salary; (ii) an annual discretionary bonus; (iii) **awards of equity** ("Units") in Davis Selected Advisers, L.P. ..."
Delaware Management Company	Feb 28, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "Portfolio managers may be awarded **incentive unit awards** ("Awards") relating to the underlying shares of common stock of MMHI issuable pursuant to the terms of the Delaware Investments Incentive Unit Plan (the "Plan") adopted on Nov. 30, 2010."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Denver Investment Advisors LLC	Apr 30, 2017	1	1	**Annual bonus:** "Compensation for investment professionals generally consists of base salary, profit sharing, and potential incentive compensation, as well as possible equity ownership in the firm. ... Importantly, incentive compensation is based on the **performance of the portfolios as a whole**, and not the performance of any individual." **Equity:** "Compensation for investment professionals generally consists of base salary, profit sharing, and potential incentive compensation, as well as possible **equity ownership** in the firm."
Diamond Hill Capital Management Inc	Feb 28, 2018	1	1	**Annual bonus:** "To align their interests with those of shareholders, all portfolio managers also participate in an annual cash and equity incentive compensation program that is based on: ... The Advisers assessment of the investment **contribution they make to Funds they do not manage**." **Equity:** "To align their interests with those of shareholders, all portfolio managers also participate in an annual cash and **equity incentive** compensation program..."
Dimensional Fund Advisors LP	Feb 28, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "Portfolio managers may be awarded the right to purchase **restricted shares** of the stock of the Advisor."
DWS Investment Management Americas, Inc.	Dec 1, 2018	1	1	**Annual bonus:** "Variable Compensation (VC) is a discretionary compensation element that enables the Advisor and its affiliates to provide additional reward to employees for their performance and behaviors, while reflecting DWS affordability and the **financial situation of Deutsche Bank AG** (the "Bank") and DWS." **Equity:** "Both Group and Individual Components may be awarded in **shares** or other share-based instruments and other deferral arrangements."
Evergreen Investment Management Company, LLC	Dec 1, 2009	0	0	**Annual bonus:** No specific mention. **Equity:** No specific mention.

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Federated Investors, Inc.	Jan 26, 2018	1	1	**Annual bonus:** "The Financial Success category is designed to tie the portfolio manager's bonus, in part, to **Federated's overall financial results**. Funding for the Financial Success category may be determined on a product or asset class basis, as well as on corporate financial results (and may be adjusted periodically)." **Equity:** "The annual incentive amount is determined based primarily on Investment Product Performance (IPP) and, to a lesser extent, Financial Success, and may be paid entirely in cash, or in a combination of cash and **restricted stock of Federated Investors, Inc.**"
Fidelity Management & Research Co	Mar 1, 2018	0	1	**Annual bonus:** none. **Equity:** "The portfolio manager also is compensated under **equity-based compensation plans** linked to increases or decreases in the net asset value of the stock of FMR LLC, FMR's parent company."
Fifth Third Asset Management, Inc.	Nov 23, 2011	0	1	**Annual bonus:** No specific mention. **Equity:** "Portfolio managers also are eligible to participate in Fifth Third Bancorp long-term, non-cash incentive programs. Such incentives have taken the form of non-transferable **restricted stock grants** and stock appreciation rights and are awarded to eligible participants on the basis of Fifth Third Bancorp's overall financial performance."
Foresters Investment Management Company, Inc.	Jan 31, 2018	1	0	**Annual bonus:** "Each portfolio manager is also entitled to participate on the same basis as other employees in the profit sharing plan that is offered by FIMCO's parent. The amount that is contributed to this plan is determined in the sole discretion of the parent based upon the **overall profitability of FIMCO** and its affiliates from all lines of business. The profitability of FIMCO is an important factor in determining the amount of this contribution." **Equity:** No specific mention.

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Franklin Templeton Investments	Sep 1, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "Bonuses generally are split between cash (50% to 65%) and **restricted shares of Resources stock** (17.5% to 25%) and mutual fund shares (17.5% to 25%). The deferred equity-based compensation is intended to build a vested interest of the portfolio manager in the financial performance of both Resources and mutual funds advised by the investment manager."
Fred Alger Management Inc	Feb 28, 2018	1	1	**Annual bonus:** "The annual bonus is variable from year to year, and considers various factors, including: the firm's overall financial results and profitability; the **firm's overall investment management performance**; . . . " **Equity:** "Alger Management has implemented a long-term deferred compensation program ("LTDC") which gives key personnel the opportunity to have **equity-like participation** in the long-term growth and profitability of the firm."
Gabelli Funds LLC	Apr 30, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "The portfolio managers of the Fund receive a compensation package that includes a minimum draw or base salary, **equity based incentive compensation** via awards of stock options and restricted stock, and incentive based variable compensation based on a percentage of net revenues received by the Adviser for managing the Fund to the extent that the amount exceeds a minimum level of compensation."
GE Asset Management Inc	Jan 28, 2016	1	1	**Annual bonus:** "The size of the GEAM incentive bonus pool in a given year is based upon overall GE financial results and **GEAM results**." **Equity:** "In addition to the forgoing compensation GE periodically grants **options** to purchase shares of GE common stock."
Goldman Sachs Asset Management	Apr 16, 2018	1	1	**Annual bonus:** "Year-end discretionary variable compensation is primarily a function of each portfolio manager's individual performance and his or her contribution to overall team performance; the **performance of GSAM** and Goldman Sachs; the team's net revenues for the past year which in part is derived from advisory fees, and for certain accounts, performance-based fees; and anticipated compensation levels among competitor firms." **Equity:** "Portfolio managers may receive **equity-based awards** as part of their discretionary variable compensation."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Great-West Capital Management, LLC	Apr 30, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "As well, the portfolio managers may be eligible for equity incentives in the form of **stock options** in Great-West Lifeco Inc. and may participate in employee benefits programs sponsored by GWL&A that include a 401(k) plan as well as one or more non-qualified deferred compensation plans."
Hartford Funds Management Company, LLC	Feb 28, 2018	0	0	**Annual bonus:** No specific mention. **Equity:** No specific mention.
Heartland Advisors Inc	May 1, 2018	1	1	**Annual bonus:** "Collectively, **firm wide investment performance** increases or decreases the ranking pool amount, typically from 110% to 95%, respectively. ... A discretionary incentive, which is based, among other factors, on the research of securities that are held or considered for purchase for the Fund, contribution to the Fund's day-to-day management, leadership, organizational development, and the profitability of the Advisor." **Equity:** "Finally, the Portfolio Managers may also be eligible to own stock of Heartland Holdings, Inc., Heartland Advisors' parent company."
Hotchkis & Wiley Capital Management, LLC	Aug 29, 2018	1	1	**Annual bonus:** "The Investment Team is evaluated and accountable at three levels. ... The third level pertains to overall portfolio and **firm performance**." **Equity:** "The portfolio managers of the Funds own **equity in the Advisor**."
ICON Advisers, Inc.	Jan 23, 2018	1	0	**Annual bonus:** "The executive committee also grants bonuses based on the **profitability of the adviser**." **Equity:** No specific mention.
Invesco Advisers, Inc.	Dec 15, 2017	1	1	**Annual bonus:** "The portfolio managers are eligible, along with other employees of the Adviser and each Sub-Adviser, to participate in a discretionary year-end bonus pool. The Compensation Committee of Invesco Ltd. reviews and approves the amount of the bonus pool available considering investment performance and **financial results** in its review." **Equity:** "Portfolio managers may be granted an annual deferral award that allows them to select receipt of shares of certain Invesco Funds with a four year pro-rata vesting period as well as common shares and/or **restricted shares** of Invesco Ltd. stock from pools determined from time to time by the Compensation Committee of Invesco Ltd.'s Board of Directors."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Ivy Investment Management Company	Jul 5, 2017	0	1	**Annual bonus:** No specific mention. **Equity:** All portfolio managers are eligible for **restricted stock awards** and/or cash-settled restricted stock unit awards."
Janus Capital Management LLC	Oct 29, 2018	1	1	**Annual bonus:** "The overall investment team variable compensation pool is funded by an amount equal to a percentage of Janus Henderson's **pre-incentive operating income**." **Equity:** "Variable compensation is paid in the form of an annual discretionary bonus, a portion of which is deferred (for awards exceeding $75,000). Deferrals are typically made in **Janus Henderson stock**, although in some cases deferrals are made in funds for regulatory reasons."
Jennison Associates LLC	Oct 29, 2018	1	0	**Annual bonus:** "Overall **firm profitability** determines the size of the investment professional compensation pool." **Equity:** No specific mention.
John Hancock Asset Management	May 1, 2018	1	1	**Annual bonus:** "The **profitability of JHAM (US)** and its parent company also are considered in determining bonus awards." **Equity:** "A limited number of senior investment professionals, who serve as officers of both JHAM (US) and its parent company, may also receive **options** or **restricted stock grants** of common shares of Manulife Financial."
J.P. Morgan Investment Management Inc.	Nov 1, 2018	1	1	**Annual bonus:** "These elements reflect individual performance and the **performance of JPMorgan's business as a whole**." **Equity:** "JPMorgan's portfolio managers are required to notionally invest a certain percentage of their deferred compensation (typically 20% to 50% depending on the level of compensation) into the selected funds they manage. The remaining portion of the non-cash incentive is elective and may be notionally invested in any of the other mutual funds available in the Mandatory Investment Plan which may include **JPMorgan restricted stock unit**, depending upon the employee's election."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Liberty Ridge Capital Inc	Dec 9, 2008	1	1	**Annual bonus:** "For each portfolio manager, Liberty Ridge's compensation structure includes the following components: base salary, annual bonus, **annual cash payments relating to interests under a phantom equity plan**, deferred profit sharing, and the ability to participate in a voluntary income deferral plan." **Equity:** "Each portfolio manager is eligible to receive equity incentives in the form of **'phantom equity.'** Phantom equity gives the portfolio managers the right (subject to certain terms and conditions) to participate in the future growth of Liberty Ridge, as if the portfolio managers were the owners of shares of Liberty Ridge's common stock."
Loomis Sayles & Company LP	Feb 1, 2018	1	0	**Annual bonus:** "Variable compensation is based on four factors: investment performance, **profit growth of Loomis Sayles**, profit growth of the manager's business unit and personal conduct." **Equity:** No specific mention.
Lord Abbett & Co LLC	Aug 1, 2018	1	1	**Annual bonus:** "Each portfolio manager receives compensation from Lord Abbett consisting of a salary, bonus, and **profit-sharing plan** contributions." **Equity:** "In addition, Lord Abbett may designate a bonus payment of a manager for participation in the firm's senior incentive compensation plan, which provides for a deferred payout over a five-year period. The plan's earnings are based on the **overall asset growth of the firm** as a whole. Lord Abbett believes this incentive focuses portfolio managers on the impact their Fund's performance has on the overall reputation of the firm as a whole and encourages exchanges of investment ideas among investment professionals managing different mandates."
Luther King Capital Management Corporation	May 1, 2018	1	0	**Annual bonus:** "The majority of compensation is derived from bonuses, which are discretionary and based on individual merit as well as **success of the Adviser** in any given year." **Equity:** No specific mention.
LWI Financial Inc.	Oct 29, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "Portfolio managers may be awarded the **right to purchase restricted shares of the stock of Loring Ward Holdings Inc.** as determined from time to time by the Board of Directors of Loring Ward Holdings Inc. or its delegees."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Marsico Capital Management, LLC	Jan 31, 2018	1	1	**Annual bonus:** "Base salary is typically based on two primary factors: (1) Marsico Capital's **overall profitability** for the period, and (2) individual achievements and contributions benefitting Marsico Capital's clients and the firm." **Equity:** "Certain of Marsico Capital's portfolio managers also may have been offered the **opportunity to acquire equity interests** in the firm's parent company."
MFS Investment Management	Feb 28, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "Portfolio managers also typically benefit from the opportunity to participate in the MFS **Equity Plan**. Equity interests are awarded by management, on a discretionary basis, taking into account tenure at MFS, contribution to the investment process, and other factors."
Morgan Stanley Investment Management Inc.	Jun 8, 2018	1	1	**Annual bonus:** "Specifically, consideration is given to one or more of the following factors, which can vary by portfolio management team and circumstances: ... **Revenue and profitability of the Firm** ... Team, product and/or MSIM performance ..." **Equity:** "Deferred compensation granted to MSIM employees are generally granted as a mix of deferred cash awards under the Investment Management Alignment Plan ('IMAP') and equity-based awards in the form of **stock units**."
Nationwide Asset Management, LLC	Sep 24, 2018	0	0	**Annual bonus:** No specific mention. **Equity:** No specific mention.
Natixis Advisors, L.P.	Jun 1, 2018	1	0	**Annual bonus:** "The variable bonus is based on a combination of **firm performance** (based on four factors—financial profitability, gross sales, net sales and business development) and individual performance (based on individual performance assessed at least annually by the employee's manager)." **Equity:** No specific mention.
Neuberger Berman Management LLC	May 1, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "Certain employees (primarily senior leadership and investment professionals) participate in Neuberger Berman's **equity ownership structure**, which was designed to incentivize and retain key personnel."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
New York Life Investment Management LLC	Aug 28, 2018	1	0	**Annual bonus:** "Variable compensation for investment personnel is generally based on both quantitative and qualitative factors. Quantitative factors may include some of the following: ... (3) the **overall revenues and profitability of the firm**;" **Equity:** No specific mention.
Nicholas Company, Inc.	Jul 30, 2018	1	0	**Annual bonus:** "The Adviser compensates its portfolio managers based on the investment performance results of the funds and accounts they manage, the value of the assets in the funds and accounts they manage, in addition to the **profitability of the Adviser**." **Equity:** No specific mention.
Northern Trust Investments Inc	Jul 31, 2018	1	1	**Annual bonus:** "The annual cash incentive award is discretionary and is based on a quantitative and qualitative evaluation of each portfolio manager's investment performance and contribution to his or her respective product team plus the **financial performance of the investment business unit** and Northern Trust Corporation as a whole." **Equity:** "In addition, non-cash incentives, such as **stock options** or **restricted stock** of Northern Trust Corporation, may be awarded from time to time."
Nuveen Asset Management, LLC	Dec 29, 2017	1	1	**Annual bonus:** "The Funds' portfolio managers are eligible for an annual cash bonus based on investment performance, qualitative evaluation and **financial performance of Nuveen Asset Management**." **Equity:** "Certain key employees of Nuveen Asset Management, including certain portfolio managers, have received **profits interests in Nuveen Asset Management** which entitle their holders to participate in the firm's growth over time."
Oak Associates, ltd	Feb 28, 2018	1	0	**Annual bonus:** "The discretionary quarterly bonus is determined by senior management of the Adviser **based on the Adviser's profitability** and various subjective factors deemed appropriate by management." **Equity:** No specific mention, although one of the portfolio managers, James D. Oelschlager, is managing member and founder of the adviser.

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
OppenheimerFunds, Inc.	Aug 28, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "Finally, the long-term award component consists of grants in the form of **appreciation rights** in regard to the common stock of the Sub-Adviser's holding company parent, restricted shares of such common stock, as well as deferred cash investments in the fund(s) managed by a portfolio manager."
Pacific Life Fund Advisors LLC	July 30, 2018	1	1	**Annual bonus:** "The **financial performance** of PLFA and its parent company impact overall funding for annual incentives." **Equity:** "Certain investment professionals are eligible to receive long-term incentive payments. The value of these incentives is tied to the growth in the enterprise value of Pacific Asset Management via a **phantom equity plan** (a contractual plan that is designed to mimic stock ownership)."
PIMCO	Jul 30, 2018	1	1	**Annual bonus:** "Portfolio managers who are Managing Directors receive an amount determined by the Compensation Committee, based upon an individual's **overall contribution to the firm**." **Equity:** "The LTIP provides participants with deferred cash awards that appreciate or depreciate based on PIMCO's operating earnings over a rolling three-year period. . . . The M Unit program provides mid-to-senior level employees with the potential to acquire an **equity stake in PIMCO** over their careers and to better align employee incentives with the Firm's long-term results. In the program, options are awarded and vest over a number of years and may convert into PIMCO equity which shares in the profit distributions of the Firm. M Units are non-voting common equity of PIMCO and provide a mechanism for individuals to build a significant equity stake in PIMCO over time."
Pioneer Investment Management Inc	Dec 31, 2017	1	0	**Annual bonus:** "**Amundi Pioneer's financial performance**, as well as the investment performance of its investment management group, affect a portfolio manager's actual bonus by a leverage factor of plus or minus (+/-) a predetermined percentage." **Equity:** No specific mention.

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Principal Management Corporation	Mar 1, 2017	1	1	**Annual bonus:** "The variable component is designed to reinforce delivery of investment performance, **firm performance**, team collaboration, regulatory compliance, operational excellence, client retention and client satisfaction." **Equity:** "Deferred compensation is required to be invested into Principal Financial Group ("PFG") **restricted stock units** and funds managed by the team, via a co-investment program."
Putnam Investment Management LLC	Dec 30, 2017	1	1	**Annual bonus:** "Actual incentive compensation may be higher or lower than the target, based on individual, group, and subjective performance, and may also reflect the **performance of Putnam as a firm**." **Equity:** "Incentive compensation includes a cash bonus and may also include grants of deferred cash, **stock or options**."
RBC Global Asset Management (U.S.) Inc.	Jan 26, 2018	1	1	**Annual bonus:** "Annual bonuses for all employees are determined by two factors: the **firm's financial performance** and individual performance." **Equity:** "Investment professionals are eligible to participate in separate profit sharing plans covering portfolio managers, analysts, and traders that provide them with a share of the operating profits generated by their teams, and senior investment professionals may also participate in the RBC GAM-US firm profit sharing plan that provides them with a share of the operating profits generated by the Advisor. These plans serve as a **proxy for ownership benefits.**"
Royce & Associates LLC	May 1, 2018	1	1	**Annual bonus:** "Portfolio Managers receive quarterly variable compensation based on **Royce's net revenues**." **Equity:** "From time to time, on a purely discretionary basis, Portfolio Managers may also receive **options to acquire stock** in Royce's parent company, Legg Mason, Inc."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
RS Investment Management Co. LLC	May 1, 2016	1	1	**Annual bonus:** "In addition, RS Investments' investment professionals typically benefit from the opportunity to hold ownership interests (or options to purchase ownership interests) in the firm. To the extent an individual holds an ownership interest, he or she participates in **overall firm profits**. **Equity:** "In addition, RS Investments' investment professionals typically benefit from the opportunity to hold **ownership interests** (or options to purchase ownership interests) in the firm. To the extent an individual holds an ownership interest, he or she participates in overall firm profits."
Russell Investment Management, LLC	Mar 1, 2018	1	1	**Annual bonus:** "For the profit sharing plan, contributions by Russell Investments will be made at the discretion of Russell Investments' Board of Directors based on a **profitability assessment** (which may include factors in addition to achieving the operating profit plan)." **Equity:** "The **equity incentive plan** provides key professionals with shares and/or options, the values of which are tied to Russell Investments' financial performance."
Schwartz Investment Counsel, Inc.	May 1, 2018	1	0	**Annual bonus:** "The annual bonus is based upon a variety of factors, which may include the **overall performance and profitability of the Adviser** and the overall performance of and profit generated by the accounts managed by a portfolio manager." **Equity:** No specific mention.
Security Investors, LLC	May 1, 2018	1	1	**Annual bonus:** "The portfolio managers' incentives may include: a competitive base salary, bonus determined by individual and **firm wide performance**, equity participation, co-investment options, and participation opportunities in various investments, including through deferred compensation programs." **Equity:** "The portfolio managers' incentives may include: a competitive base salary, bonus determined by individual and firm wide performance, **equity participation**, co-investment options, and participation opportunities in various investments, including through deferred compensation programs."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
SEI Investment Management Corporation	Oct 28, 2018	1	0	**Annual bonus:** "Thirty percent of the portfolio managers' compensation is tied to the **corporate performance of SEI**, as measured by the earnings per share earned for a particular year." **Equity:** No specific mention.
SIT Investment Associates Inc	Nov 1, 2018	1	1	**Annual bonus:** "The bonus awards are based on the attainment of personal and company goals which are comprised of a number of factors, including: the annual composite investment performance of the Adviser's accounts (which may include one or more of the Funds) relative to the investment accounts' benchmark index (including the primary benchmark of a Fund included in the composite, if any); the **Adviser's growth in assets under management** from new assets (which may include assets of a Fund); **profitability of the Adviser**; and the quality of investment research efforts." **Equity:** "The compensation of the portfolio managers and analysts is comprised of a fixed base salary, an annual bonus, and periodic deferred compensation bonuses which may include **phantom stock** plans. Portfolio managers and analysts also participate in the profit sharing 401(k) plan of the Adviser."
SSGA Funds Management, Inc.	Jan 31, 2018	1	1	**Annual bonus:** "The size of the incentive pool for most business units is based on the **firm's overall profitability** and other factors, including performance against risk-related goals. For most SSGA investment teams, SSGA recognizes and rewards performance by linking annual incentive decisions for investment teams to the firm's or business unit's profitability and business unit investment performance over a multi-year period." **Equity:** "Depending on the job level, a portion of the annual incentive may be awarded in deferred compensation, which may include cash and/or Deferred Stock Awards (**State Street stock**), which typically vest over a four-year period."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Sterling Capital Management LLC	Feb 1, 2018	1	0	**Annual bonus:** "Sterling Capital offers each of its investment professionals a compensation plan which can be comprised of three components: (1) base salary, which is linked to job function, responsibilities and experience, (2) incentive compensation, which varies based on investment performance and other factors determined by the executive management of Sterling Capital, and (3) a **percentage of firm profits or revenues**, which varies based on factors determined by executive management." **Equity:** No specific mention.
Stratton Management Company	May 1, 2015	1	0	**Annual bonus:** "The bonus is based, in part, on each fund's asset level as well as the **overall financial performance of the advisor**." **Equity:** No specific mention.
SunAmerican Asset Management, LLC	Feb 28, 2018	1	0	**Annual bonus:** "The short-term incentive is discretionary and based on the respective Portfolio's performance, the individual's performance and the **organizational performance** of AIG in the current compensation period." **Equity:** No specific mention.
TCW Investment Management Company	Feb 29, 2016	0	1	**Annual bonus:** No specific mention. **Equity:** "Many portfolio managers participate in **equity incentives** based on overall firm performance of the applicable TCW Advisor and its affiliates, through ownership or participation in restricted unit plans that vest over time or unit appreciation plans of the Advisor's parent company."
Thrivent Asset Management, LLC	Feb 28, 2018	1	0	**Annual bonus:** "Some portfolio managers also participate in Thrivent Financial's long-term incentive plan, which provides for an additional variable payment based on the **extent to which Thrivent Financial met corporate goals** during the previous three-year period." **Equity:** No specific mention.

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
TIAA-CREF	Aug 1, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "The variable component of a portfolio manager's compensation is remunerated as: (1) a current year cash bonus; and (2) a long-term performance award, which is on a 3-year cliff vesting cycle. Fifty percent (50%) of the long-term award is based on the Fund(s) managed by the portfolio manager during the 3-year vesting period, while the value of the remainder of the long-term award is based on the **performance of the TIAA organization as a whole**."
Tocqueville Asset Management L.P.	Feb 28, 2018	1	1	**Annual bonus:** "The level of the discretionary bonus is determined by the General Partner based upon a number of factors, including the **firm's profitability**, the expansion of the client account base, the securities market environment for the respective period, the portion of revenue generated by the work and effort of the Portfolio Manager, the involvement of the Portfolio Manager in the investment management functions of the Advisor, his role in the development of other investment professionals and his work relationship with support staff, and his overall contribution to strategic planning and his input in decisions for the Advisor's group of investment managers." **Equity:** "In addition, Messrs. Kleinschmidt, Hunt, Vandeventer, Hathaway, Sellecchia, Delafield, Kaufthal, Maxwell and McIntyre as **shareholders of Tocqueville Management Corp**, the General Partner of the Advisor, also receive compensation based upon the profitability of the firm."
T. Rowe Price Associates, Inc.	May 1, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "Portfolio manager compensation consists primarily of a base salary, a cash bonus, and an **equity incentive** that usually comes in the form of restricted stock grants."
Turner Investments LP	Jan 27, 2017	1	1	**Annual bonus:** "In addition, each employee is eligible for equity ownership and equity owners of Turner **share firm annual profits**." **Equity:** "All portfolio managers are **equity owners** of Turner."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
UBS Global Asset Management	Nov 28, 2017	1	1	**Annual bonus:** "Performance award: . . . Based on the individual's financial and non-financial contributionas assessed through a rigorous performance assessment process–as well as on the **performance of their respective function, of UBS Asset Management and of UBS as a whole**." **Equity:**"Deferred amounts are then delivered via two deferral vehicles—75% in the UBS Asset Management **Equity Ownership Plan** (AM EOP) and 25% in the Deferred Contingent Capital Plan (DCCP):"
USAA Asset Management Company	Oct 1, 2018	1	0	**Annual bonus:** "Portfolio managers also are eligible to receive an annual corporate bonus based on the **attainment of certain corporate performance metrics**." **Equity:** No specific mention.
Victory Capital Management Inc	Mar 1, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "The Adviser's portfolio managers may participate in the **equity ownership plan** of the Adviser's parent company."
Virtus Investment Partners Inc	Mar 6, 2018	0	1	**Annual bonus:** No specific mention. **Equity:** "Certain key individuals also have the opportunity to take advantage of a long-term incentive compensation program, including potential awards of Virtus **restricted stock units** ("Virtus RSUs") with multi-year vesting, subject to Virtus board of directors' approval."
Voya Investment Management Co. LLC	Sep 28, 2018	1	1	**Annual bonus:** "Compensation consists of: (i) a fixed base salary; (ii) a bonus, which is based on **Voya IM performance**,. . . " **Equity:** "Compensation consists of: . . . and (iii) long-term **equity awards** tied to the performance of our parent company, Voya Financial, Inc.. . . "
Waddell & Reed Investment Management Company	Oct 31, 2017	0	1	**Annual bonus:** No specific mention. **Equity:** "All portfolio managers are eligible for **restricted stock awards** and/or cash-settled restricted stock unit awards."
Wasatch Advisors Inc	Jan 31, 2018	1	1	**Annual bonus:** "At the end of each year, the Board of Directors of the Advisor will allocate a bonus pool that will loosely mirror **firm profits** net of stock buybacks and deferred compensation payouts." **Equity:** "As of January 1, 2018, all of the portfolio managers are **shareholders of the Advisor**."

Table IA19 (*continued*)

Investment adviser	N-1A link	Annual Bonus	Equity	Discussion
Wellington Management	Feb 28, 2018	1	1	**Annual bonus:** "The Investment Professionals may also be eligible for bonus payments based on their **overall contribution** to Wellington Management's business operations." **Equity:** Many portfolio managers are **partners of Wellington Management Group LLP**.
Wells Fargo Funds Management, LLC	Feb 1, 2018	0	0	**Annual bonus:** No specific mention. **Equity:** No specific mention.
William Blair Investment Management, LLC	May 1, 2018	1	1	**Annual bonus:** "As of December 31, 2017, compensation for partners of the Adviser consists of a fixed base salary, a share of the **firm's profits** and, in some instances, a discretionary bonus, and compensation for associates of the Adviser consists of a fixed base salary and a discretionary bonus." **Equity:** "As of December 31, 2017, compensation for partners of the Adviser consists of a fixed base salary, a share of the **firm's profits** and, in some instances, a discretionary bonus, and compensation for associates of the Adviser consists of a fixed base salary and a discretionary bonus."
Total: 100		72	75	