Does Portfolio Disclosure Make Money Smarter?*

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Abstract

We provide causal evidence that mandatory portfolio disclosure helps investors evaluate and select hedge fund managers. Using a staggered difference-in-differences analysis, we demonstrate that investor capital flows better predict fund performance among funds that publicly disclose their portfolio holdings. Additional cross-sectional analyses suggest that this gain in selection ability varies with the informational value of disclosure. Furthermore, examining investor-level allocations, we find that institutional investors earn higher returns on their allocations to disclosing funds. Overall, these results help contribute to the cost-benefit analysis of mandatory portfolio disclosure.

Keywords: Mandatory portfolio disclosure; smart money; hedge funds; 13F
JEL Codes: G11, G14, G23, G28

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1 Introduction

Since 1979, institutional investors have been required to publicly disclose their quarterly equity holdings via Form 13F filed with the Securities and Exchange Commission ("SEC"). This disclosure of proprietary information is of particular concern for hedge fund managers. Hedge fund strategies are ideas that cannot be patented, and mandatory disclosure leaves hedge funds vulnerable to copycat traders that mimic and front-run the positions publicly revealed in Form 13F filings (see Brown and Schwarz (2013) and Cao, Du, Yang, and Zhang (2018)). The costs of this disclosure are well-documented: fund returns decrease substantially after a fund begins filing Form 13F (Shi, 2017); and human copycat traders have been shown to induce an average annual performance loss 2.56 percentage points ("p.p.") on the disclosing fund (Cao et al., 2018).

However, both the SEC and the public have long held the view that portfolio disclosure benefits fund investors. For example, in 1979, after soliciting public feedback on the 13F filing requirement, the SEC noted that Form 13F will provide investors with "a greater basis for comparison shopping among investment managers," and that "such an evaluation is dependent upon a periodic examination of a manager's investment decisions as reflected by his holdings transactions."[1] That is, the SEC, based on public feedback, was of the opinion that Form 13F helps investors evaluate fund managers and make more informed (i.e., smarter) investment decisions. Indeed, the information contained in Form 13F is valuable to *the econometrician*. Agarwal, Ruenzi, and Weigert (2018b) demonstrate that Form 13F helps predict hedge fund performance.[2] In this paper, we test whether *real-world* investors use the information contained in 13F filings, and we find evidence that this information helps improve their fund selection ability.

[1]The SEC solicited public feedback after it announced the adoption of Rule 13f-1, which required quarterly reporting. The SEC received 124 letters in response. See: Securities and Exchange Act of 1934 Release No. 15461. January 5, 1979.

[2]Kacperczyk, Sialm, and Zheng (2005, 2008) and Cremers and Petajisto (2009) also demonstrates in the mutual fund market that the portfolio information contained in public disclosure predicts mutual fund returns.

In particular, we study how public disclosure affects aggregate investor decisions, as proxied by the quarterly net fund flows into a given hedge fund. We employ a "follow the money" approach, to see whether investments subsequently lead to good performance, and whether divestments avoid bad performance. This relationship between past fund flows and future performance (if it exists) is referred to as the "smart money" effect in the literature,[3] and in this paper we investigate how the smart money effect changes after a fund begins filing Form 13F.

We begin our study with a portfolio-based analysis. We double-sort hedge funds based on (1) 13F filing status (i.e., whether they have previously filed 13F or not), and (2) past fund flows. In each filing-status group, we form a long-short portfolio by longing the the high-flow funds (top quartile), and shorting the low-flow funds (bottom quartile). We consider this portfolio to be a dollar-neutral proxy for the smart money: it captures whether high flows precede future good performance, and whether low flows precede future poor performance.

We compare the high-low flow portfolio for filers versus non-filers, and find evidence that the smart money effect is larger among filing funds, compared to non-filers. In particular, the difference in performance spread is 29 basis points ("bps") of monthly excess returns and 25 bps of monthly Fung and Hsieh (2001) seven-factor ("FH7") alpha. Annualized, this spread is approximately 3.0 p.p. of FH7 alpha. Our results provide evidence that investors make smarter allocation decisions to funds that publicly disclose their holdings.

Our portfolio analysis captures the different smart money effect between two groups, but does not reflect that these two groups may have other unobservable differences. To identify the impact of disclosure on investors' fund selection ability, we take advantage of our staggered panel data structure to estimate longitudinal changes in the smart money effect. Our variable of interest is the "smartness" of fund flows, that is, the beta coefficient on a regression of future performance on past fund flows. We are interested in how the

[3]See Gruber (1996), Zheng (1999), and Sapp and Tiwari (2004) for a discussion of the smart money effect among mutual fund investors, and Baquero and Verbeek (2005), Ahoniemi and Jylhä (2014), and Ozik and Sadka (2015) for discussion of smart money in the hedge fund market.

slope of this relationship changes after a fund becomes a 13F filer. This can be thought of as a standard panel diff-in-diff where the post indicator is interacted with fund flows. In particular, our methodology has been used in a corporate finance setting to study the effect of a staggered treatment on a slope, see Gormley, Kim, and Martin (2012), Lel and Miller (2015), Edmans, Jayaraman, and Schneemeier (2017), and Jayaraman and Wu (2018).

In our regression setting, we verify that the smart money effect increases after a fund starts filing Form 13F. Using a regression discontinuity approach, we find that after a fund starts filing Form 13F, an additional 10 p.p. of fund flows predicts 1.56 p.p. higher future annualized FH7 alpha.

We supplement our fund-level flow-based analysis with an investor-level holdings-based analysis. Conceptually, our within-investor analysis controls for investor-level fixed effects. Our analysis asks, for a given investor, does their portfolio of 13F-filing hedge funds perform better than their portfolio of non-filers. Investor-level hedge fund portfolios are available for a small subset of investors, namely, we have portfolio holdings for 127 registered funds of hedge funds ("FoFs").[4]

For each FoF, we form two value-weighted portfolios rebalanced quarterly, consisting of 13F-filing hedge funds and non-filing hedge funds. We find that the average FoF earns 6.49 p.p. annually on its portfolio of filers, versus 5.52 p.p. annually on its portfolio of non-filers, for a spread of 0.97 p.p. This result provides evidence that FoFs make smarter allocations within the universe of 13F-filing hedge funds than outside. By controlling for investor specific characteristics (e.g., sophistication), this result argues against the possibility that our main results are driven by a clientele effect (e.g., smarter investors just happen to choose among 13F filers rather than 13F filings make investors smarter). Our investor-level analysis helps rule out this reverse-causality story.

Our analysis generally supports an information story. Our cross-sectional tests provide

[4]There are a small number of FoFs who are registered with the SEC, and are required to disclose their portfolio holding on a quarterly basis via SEC Form N-Q, N-CSR, and N-CSRS. See Aiken, Clifford, and Ellis (2013), Agarwal, Aragon, and Shi (2018a), Gao, Haight, and Yin (2019) and Sialm, Sun, and Zheng (2019) for examples of recent work that uses portfolio data from registered FoFs.

evidence that the increase in smart money is due to the information content of portfolio disclosure. We find that the smart money effect is driven by cases where: (1) the information about a fund's portfolio holdings is more precise, e.g., when the fund is the only fund in the family or when the fund is the largest one in the family; (2) information is abnormally viewed more, as measured using the number of downloads or the number of unique IP addresses making these downloads; and (3) investors have more opportunity to use the information, i.e., when the fund imposes less restrictions on redemptions and/or subscriptions. Furthermore, we estimate a placebo specification using only FoFs (which do not hold 13(f) securities) and find no evidence that the smart money effect changes after the fund's parent firm starts filing Form 13F. Taken together, these results provide evidence that investors use the information disclosed in 13F filings to evaluate fund managers, and that this improves their fund selections.

Furthermore, our results cannot be explained entirely using the price pressure channel. Under this mechanism, smart money manifests because inflows (outflows) lead to more (less) purchases in underlying securities, which push the price of those securities up (down). Ahoniemi and Jylhä (2014) provide evidence that the general smart money effect in the hedge fund market is primarily driven by the price pressure channel. However, price pressure fails to explain several regularities in our analysis. For one, our main effect is found in a regression discontinuity setting. This implies that the price pressure effect changes after a fund becomes a filer. While this is possible, we view it as unlikely given the lagged nature of 13F disclosure. Second, the price pressure story appears to drive returns from month t to $t+2$, whereas we find evidence of the smart money effect at longer durations (up to two quarters after the initial flows). Third, under the information story, the smart money effect is stronger for funds with low flow restrictions, whereas under the price pressure story, the smart money effect is stronger for funds with high flow restrictions. Consistent with the information story, we find the smart money effect is stronger for low flow-restriction funds. Fourth, the price pressure channel cannot explain why FoFs earn higher returns on their 13F

filing hedge fund investments. While we cannot completely disentangle the price pressure and information channels, our results provide support for the information channel above and beyond what can be explained by the price pressure channel.

Our paper contributes to the cost-benefit analysis of 13F portfolio disclosure. The extant literature has largely found evidence that disclosure impairs the ability of fund managers to utilize their proprietary information,[5] leading to lower returns for their clients. Shi (2017) documents that hedge fund performance drops by 2.7 p.p. annually following disclosure. Brown and Schwarz (2013) and Cao et al. (2018) document evidence of copycat trading, and Cao et al. (2018) finds that the existence of one copycat decreases target fund performance by 2.56 p.p. annually. These costs represent a level-shift down in performance, whereas our benefits describe an increase in the selection ability of investors.

Our results, by demonstrating that investors make smarter decisions, provide a counterbalance to the documented costs of public disclosure, and has potential general equilibrium implications.[6] For example, if a decrease in returns were the only effect, then we might expect to see that disclosure is negatively related to price efficiency in public markets, as it dilutes the incentives for asset managers to collect and process information. However, our documented increase in the smartness of money can potentially offset the decrease in price efficiency. Disclosure helps investors source better hedge fund managers, which implies that informed managers receive more capital. As the efficiency of asset prices is linked to the efficiency of the asset management market (Gârleanu and Pedersen, 2018), the total effect of public disclosure on price efficiency is thus ambiguous.

This cost-benefit analysis is important for understanding the effect of portfolio disclosure on economic welfare and, in particular, whether disclosure is "good for society" (Shiller, 2013; Zingales, 2015). In the hedge fund market, the client base has shifted from wealthy

[5]Aragon, Hertzel, and Shi (2013) and Agarwal, Jiang, Tang, and Yang (2013) demonstrate that 13F filings may contain proprietary information. They demonstrate that hedge funds earn higher returns when they can avoid public disclosure.

[6]See Cochrane (2014) for a discussion of the general equilibrium challenges of drawing inferences from the cost-benefit analysis of financial regulation.

individuals to large institutional investors. Institutional investors now comprise about 85% of all hedge fund clients. These investors manage the pension plans, insurance claims, and endowments of a society. If regulation can help these institutional investors choose better hedge fund managers, then this is potentially a large gain to the wealth portfolio of a wide cross-section of society.

Finally, we add to the body of literature that studies the selection ability of registered FoFs. Aiken, Clifford, and Ellis (2015) and Gao et al. (2019) find evidence that FoFs exhibit skill when making investment decisions. Our results shed light a potential source of such skill by documenting that FoFs earn higher returns from their investments in 13F-filing hedge funds. Sialm et al. (2019) studies the nature of this skill and finds evidence that FoFs have an informational advantage in assessing the prospects of nearby hedge funds. In contrast, but not necessarily in conflict, to their finding we find evidence that FoFs benefit more from 13F disclosure when assessing geographically distant hedge funds.

The remainder of the paper is structured as follows: Section 2 discusses the institutional details; Section 3 describes the data; Section 4 provides the portfolio sorting analysis and the difference-in-difference regression analysis; Section 5 presents our cross-sectional analysis of information content; Section 6 presents holdings-based analysis using FoFs; and Section 7 concludes.

2 Institutional Details

The hedge fund market provides a unique setting with features conducive to examining the causal effect of regulation. For one, there was no large event, like the Great Depression or the Global Financial Crisis, that triggered the regulation, and the regulation was aimed at large institutional investors, such as like banks and insurance companies.

The presence of institutional investors increased substantially during the 1960s. In 1960, institutional investment managers accounted for about 20% of all trading activity on the

New York Stock Exchange ("NYSE").[7] By 1966, this figure had more than doubled to 43%,[8] and by the early 1970s institutional managers accounted for an estimated 67% of all trading on the NYSE (Jensen (1976)).

In 1968, the United States Congress directed the SEC to study the effect of institutional investors on financial markets. In March 1971, the SEC published the results in its Institutional Study,[9] and while it found no evidence that institutional investors negatively affected financial markets, the SEC noted the difficulties it encountered in conducting the study. The SEC recommended the Securities Act of 1934 Act be amended to give the SEC authority to require disclosure of holdings and transactions data.

On June 4, 1975, Congress enacted section 13(f) as part of the Securities Act Amendments of 1975.[10] The legislative history of the act sheds light on the intended impact of section 13(f). When considering the proposal, the Senate noted:

> Many people believe that it is not possible to make informed investment decisions on a security without information related to the likely market activity and the degree of institutional concentration in the security.[11]

That is, the stated purpose of Rule 13f-1 was to provide the public with more information about the positions of large institutional investors in public markets. At this time, the hedge fund market was still relatively small. After all, this was less than ten years after Carol Loomis presented the first "hedged fund" to world in her 1966 Fortune article titled "The Jones Nobody Keeps Up With." The passage of Rule 13f-1 was largely exogenous to the hedge fund market.

Another benefit of our setting is that the 13F filings are standardized and informative.

[7] See Staff of House Comm. on Energy and Commerce, 99th Cong., 2d Sess., Restructuring Financial Markets: The Major Policy Issues 269 (Comm. Print 1986)

[8] See Biel, Why Institutional Investors Control the Stock Market's Future Course, Comm. & Fin. July 27, 1967, at 1, 24.

[9] Institutional Investor Study Report, H.R. Doc. No. 64, 92d Cong., 1st Sess. XXXI-XXXIII (1971)

[10] Pub. L. No. 94-29, 89 Stat. 119 (1975)

[11] Report of Senate Comm. on Banking, Housing and Urban Affairs, S. Rep. No. 75, 94th Cong., 1st Sess. 85 (1975)

Rule 13f-1 requires institutional investment managers file Form 13F on a quarterly basis. The investment manager is required to report a schedule of investments, which includes: (1) the name of the issuer; (2) the title and class of the security; (3) the CUSIP number of the security; (4) the fair market value of the holding, using the value on the last trading day of the quarter; (5) the total number of shares held; (6) whether the manager has sole or shared discretion over the assets; (7) a list of the other managers that have discretion over this asset holding; and (8) whether the manager has sole, shared, or no voting authority over the shares held.

While the stated intent of the disclosure requirement is to increase the transparency of large influential institutional investors, market participants quickly learned that the disclosure data could be used to evaluate investment managers. By 1987, various publications regularly published evaluations and ratings of managers based on data collected from disclosure filings (Lemke and Lins (1987)).

Furthermore, hedge funds do not engage in the public sale of securities and are exempt from many of the same reporting requirements as mutual funds. For example, mutual funds are required to also report portfolio holding on Forms N-Q and N-CSR at the fund level. This increases the relative informativeness of Form 13F. Furthermore, this provides cross-sectional variation in the quality of disclosure. For example, when a fund is part of a single-fund family, 13F will reveal its entire long position, and will thus be relatively more informative compared to a fund that belongs to a multi-fund family.

The primary benefit of this setting is that the obligation to file is triggered whenever the management company has discretion over assets totaling at least $100 million invested in 13(f) securities.[12] This provides us with a staggered treatment that helps control for confounding events. Additionally, the threshold is crossed at the parent company level, thus, for a group of similar sized funds, some will disclose and some will not. This is very

[12]Section 13(d)(1) describes which types of equity securities are required to be considered. However, Rule 13(f)(1) effectively limits this set to only those equities that trade on a national securities exchange or are quoted on NASDAQ.

important as it helps us build a control group of funds and is key to our identification strategy.

One concern of the threshold condition is that it is based on AUM and firms have discretion over their assets. For example, to avoid disclosure, a firm may keep its assets below the $100 million threshold. To do this, it would need to either lower its performance or reject new money from clients. However, both of these options are very costly. Hedge funds typically charge 1.5%–2.0% per year in management fees on the assets they manage, and earn 15%–20% of all profits the produce. Furthermore, profits can encourage future fund flows. Thus, the incentive to avoid crossing the threshold is mitigated by these two large costs.

3 Data and Variable Construction

3.1 Hedge Fund Sample

Our main source for hedge fund data is the Lipper TASS database, which includes a history of monthly hedge fund returns, as well as a series of fund characteristics. As of December 2016, TASS contains a total of 20,094 live and graveyard funds. Following the literature, we filter out funds that report quarterly (not monthly), funds that report returns denominated in currencies other than U.S. dollars, funds that report returns before (not after) fees, and funds with unknown styles. We also exclude the first 18 months of returns for each fund to mitigate backfill bias, exclude all observations before 1994 to mitigate survivorship bias, and correct for master-feeder duplicates as in Aggarwal and Jorion (2010). Finally, we drop funds that do not have at least 24 return observations, resulting in a sample of 6,163 unique funds (4,398 hedge funds and 1,765 FoFs) managed by 3,134 management companies from January 1994 to November 2016.

To identify if and when management companies filed 13F reports, we search the EDGAR index files for the name of each management company. We focus our search on filings

of the following form types: 13F-E, 13F-E/A, 13F-HR, 13F-HR/A, 13F-NT, 13F-NT/A, 13FCONP, and 13FCONP/A.[13] If a management company filed at least one filing of these form types prior to the beginning of a quarter, we classify the management company (and funds under its management) as a "13F filer" for that quarter. This is to ensure the availability of 13F reports before investors' purchasing and selling decisions (that is, before fund flows arise) in that quarter. Since 1999Q2 is the first quarter during which a meaningful number of 13F filings were recorded in the EDGAR index files, we classify management companies from 1999Q3 onward. As a result, a total of 3,053 management companies (managing 5,997 unique funds) are classified from July 1999, and 821 management companies as 13F filers. Finally, we follow Shi (2017) and drop observations after a management company's last 13F filing. This essentially filters out a small number of management companies that no longer file 13F but are classified as 13F filers because of an old 13F report. The resulting sample includes 814 filers, among which 633 switched from non-filers to filers during the period from July 1999 to December 2016. These "switchers" manage 1,503 unique funds (1,220 hedge funds and 283 FoFs). The sample also includes 2,232 management companies that never filed a 13F report during the same period. These "never-filers" manage 4,063 unique funds (2,669 hedge funds and 1,394 FoFs).[14] While we use only hedge funds for our main analyses, we also keep FoFs for a placebo test later.

3.2 Variable Construction

We proxy for investor decisions using net fund flows at the fund level. Following the literature (Chevalier and Ellison, 1997; Sirri and Tufano, 1998), we calculate quarterly fund flow as:

$$\text{Flow}_{i,t} = \frac{\text{AUM}_{i,t} - \text{AUM}_{i,t-1}(1 + R_{i,t-1:t})}{\text{AUM}_{i,t-1}}, \tag{1}$$

[13] The EDGAR index files are available at `https://www.sec.gov/Archives/edgar/full-index/`.

[14] 181 filers that are not switchers ("always-filers") manage 413 unique funds (380 hedge funds and 33 FoFs).

where $\text{Flow}_{i,t}$ is the percent fund flow for fund i at quarter t, $\text{AUM}_{i,t}$ is the AUM of fund i at quarter t, and $R_{i,t-1:t}$ is the net-of-fee return of fund i from quarter $t-1$ to quarter t.

We evaluate hedge fund performance using monthly net-of-fee returns reported in TASS. In our main regression analysis, we consider three performance measures: excess return, FH7 alpha, and FH8 alpha. Following Carhart (1997), we first calculate monthly alphas. Specifically, at the end of each month, we first estimate factor loadings using return observations from the past 24 months (i.e., month $t-23$ to t) and (1) the FH7 model and (2) the FH8 model. We then calculate alpha based on the loadings for month $t+1$. Finally we compound monthly alphas to get quarterly alpha. As an untabulated robustness check, we also use alternative performance measures, including the market model (CAPM), the Fama and French (1992) three-factor model (FF3), and the Carhart (1997) four-factor model.

In certain specifications, we include a set of fund-level control variables. The time-variant controls include: lagged $LogSize$, the logarithm of AUM at the end of $t-4$; $LogAge$, the logarithm of fund age in months (at the end of quarter t); $LagFlow$, the average fund flows in quarter $t-1$, $t-2$, and $t-3$; $LagRet$, the average excess returns in quarter t, $t-1$, $t-2$, and $t-3$; and $Volatility$, the volatility of past 12 month returns. Time-invariant controls include: redemption notice period, measured in units of 30 days ($RedemptionNotice$); lockup period ($LockUp$); management fee ($ManagementFee$); incentive fee ($IncentiveFee$); the log of one plus minimum investment ($MinInvestment$); indicator variables for: whether personal capital is committed ($PersonalCapital$); whether there is a high water mark provision ($HighWaterMark$); whether the fund uses leverage ($Leveraged$); and whether the fund is offshore ($Offshore$). Throughout our regression analyses, all time-variant variables (including quarterly fund flow) are winsorized at 1% and 99% level to remove the influence of outliers.

Table 1 presents the summary statistics of our baseline regression sample of hedge funds between 1999Q3 and 2016Q3. Panel A reports the baseline regression sample, Panel B reports the switchers sample, Panel C reports the always-filers sample, and Panel D reports

the never-filers sample.

Table 1 about here

3.3 Fund-of-Hedge Funds Sample

We use Form N-SAR to identify FoFs among the set of all registered investment companies. Following Gao et al. (2019) we first identify closed-end funds (Item 27) and then filter funds with minimum initial investment requirements (Item 61). This procedure yields a sample of 496 potential FoFs. Next, we use holdings data reported in forms N-CSR, N-CSRS, and N-Q to exclude funds that primarily hold assets other than hedge funds. Finally, to avoid double-counting, only master funds are included in our sample. The final sample consists of 127 FoFs covering a sample period from 2004Q3 to 2016Q4.

We hand collect quarterly portfolio holdings from Form N-CSR, N-CSRS, and N-Q filings for all registered FoFs in our final sample. We then match each hedge fund investment with the list of hedge fund names in TASS and Form ADV. Overall, we are able to match 79.06% of the hedge funds. To determine whether a hedge fund-quarter observation is "filer" or "non-filer", we match the fund's asset management company with Form 13F. Table 2 presents a summary of our registered FoF data.

4 Portfolio Disclosure and Selection Ability

We study the effect of portfolio disclosure on investors' selection ability using (1) a univariate portfolio analysis, and (2) a difference-in-differences estimation.

4.1 Portfolio Sorts

We first study whether investors make better decisions when investing in 13F-filing funds. We conjecture that high flows reflect investor expectations that returns will be high, and low

flows reflect expectations that returns will be low. If investors can predict future performance, then the spread in performance between high-flow and low-flow funds will be positive. This spread is consistent with the smart money effect. Furthermore, if on average the spread is higher for 13F-filing funds, compared to non-13F filers, then this provides evidence that investors in aggregate have more information about 13F-filing funds compared to non-13F-filing funds.

Table 3 reports this portfolio-based analysis. At end of each calendar quarter q, we double-sort hedge funds based on (1) current filing status (i.e., filer or non-filer) and, (2) fund flow quartile in quarter q. We form value-weighted portfolios within each group-quartile, rebalanced every quarter. We consider three performance measures: excess return, Fung and Hsieh (2001) seven-factor alpha ("FH7"), and the alpha from the Fung and Hsieh (2001) seven-factor model extended to include the momentum factor ("FH8"). The FH8 model is an important benchmark for our smart money analysis. It controls for both common sources of hedge fund returns (see discussion in Fung and Hsieh (2001)) and also for momentum, the latter of which is particularly important because the early evidence of smart money in the mutual fund industry was driven by exposure to the momentum factor (Sapp and Tiwari, 2004).

Table 3 about here

In each panel of Table 3, the first four columns report the monthly performance for the four portfolios sorted on past fund flows. The fifth column, *High-Low*, presents the spread in average performance between the high-flow and low-flow funds. In each panel, the first row presents the portfolio returns for filing funds, the second row presents portfolio returns for non-filing funds, and the third row, *Filer-NonFiler*, presents the difference between filer and non-filer returns.

Panel A presents excess returns, Panel B reports FH7 alphas, and Panel C reports FH8 alphas. In each panel, the bottom right value represents the difference in the high-minus-low

spread between filers and non-filers. The difference in the spread is positive and significant in all three specifications. Measured in terms of excess returns, FH7 alpha, and FH8 alpha, the monthly difference in spreads are 29.2 bps, 25.1 bps, and 23.3 bps, respectively. These monthly differences correspond to annual differences of about 3.5% of excess returns, 3.0% of FH7 alpha, and 2.8% of FH8 alpha and demonstrate that investor flows better predict future performance among the set of 13F filing funds.

4.2 Difference-in-Differences Estimation

We next provide causal evidence that selection ability varies with disclosure requirements. We employ a staggered difference-in-differences to estimate the effect of mandatory portfolio disclosure on aggregate selection ability.

4.2.1 Baseline Analysis

Our main specification is a staggered panel difference-in-differences regression, given by:

$$\begin{aligned}\text{Performance}_{\text{i,t+k}} = \alpha_i + \alpha_t + \beta_1 13\text{F}_\text{i} \times \text{Post}_{\text{i,t}} \times \text{Flow}_{\text{i,t}} \\ + \beta_2 13\text{F}_\text{i} \times \text{Post}_{\text{i,t}} + \beta_3 \text{Flow}_{\text{i,t}} \times \text{Post}_{\text{i,t}} + \beta_4 \text{Flow}_{\text{i,t}} \times 13\text{F}_\text{i} \\ + \beta_5 \text{Flow}_{\text{i,t}} + \beta_6 13\text{F}_\text{i} + \beta_7 \text{Post}_{\text{i,t}} + \gamma_1 \text{Controls}_{\text{i,t}} \\ + \gamma_2 \text{Flow}_{\text{i,t}} \times \alpha_t + \gamma_3 \text{Flow}_{\text{i,t}} \times \text{Controls}_{\text{i,t}} + \varepsilon_{i,t}\end{aligned} \tag{2}$$

where the dependent variable $Performance_{i,t+k}$ is the quarterly compounded performance in quarter $t+k$. Performance is measured as (1) excess returns, (2) alpha from the FH7 model, and (3) alpha from the FH8 model. $13F_i$ is an indicator for whether fund i files form 13F at any point during our sample. This indicates whether fund i is in our treatment or control group. $Post_{i,t}$ is an indicator for whether fund i has filed form 13F prior to quarter t.

A standard difference-in-differences analysis studies the effect of an event on a level

variable. In our context this would correspond to the impact of $13F_i \times Post_{i,t}$ on future performance, and would be captured by the β_2 coefficient above. The standalone fund and time fixed effects, α_i and α_t respectively, captures between-firm and across-quarter differences in performance, and thus β_2 captures the decrease in performance experienced by funds after the fund begins filing Form 13F, over and above any change in other funds and controlling for the average lever of performance at each fund. The study of the level effect is the focus of Shi (2017).

However, in our setting, we are interested not in a level variable, but in a slope coefficient – the sensitivity of future performance to past fund flows. The standalone fixed effects only capture differences in the level of performance, not the flow-performance sensitivity. We thus add $Flow_{i,t} \times \alpha_i$ and $Flow_{i,t} \times \alpha_t$ to capture between-firm and across-quarter differences in flow-performance sensitivity, where $Flow_{i,t}$ is the quarterly fund flow in quarter t. As a result, the coefficient β_1 captures the increase in flow-performance sensitivity as a result of mandatory disclosure, controlling for between-fund differences and time trends. This difference-in-differences framework in which the outcome of interest is not a level variable but a slope coefficient was previously employed by Gormley et al. (2012), Lel and Miller (2015), Edmans et al. (2017), and Jayaraman and Wu (2018). $Controls_{i,t}$ are a set of fund-level control variables (defined in section 3.2). Standard errors are clustered at the management company level (Bertrand, Duflo, and Mullainathan, 2004).

The null hypothesis is that $\beta_1 = 0$, i.e., that smart money is unaffected by disclosure. Given that 13F disclosure is informative (Agarwal et al., 2018b), this hypothesis will hold only if investors in aggregate ignore the information contained in 13F disclosure. if investors have limited attention and ignore the information contained in 13F disclosure.

Our hypothesis is that $\beta_1 > 0$, i.e., that disclosure increases the smart money effect. This hypothesis requires that investors in aggregate learn sufficiently from the information contained in 13F disclosure.

While finding that $\beta_1 > 0$ would support our hypothesis, it would also be consistent with

disclosure leading to a change in the investment base. For example, suppose sophisticated investors are restricted in the set of hedge funds with which they are permitted to invest. Perhaps the stakeholders of a pension fund have placed restrictions on the management in hopes of promoting transparency. Our subsequent cross-sectional analyses rule out this possibility.

Table 4 estimates our main specification (equation 2). The dependent variable is excess returns in Panel A; FH7 alpha is Panel B; and FH8 alpha in Panel C. In each case, the coefficient on our variable of interest, i.e., the beta on $13F \times Post \times Flow$, is positive and significant at least at the 10% level. Column 5 is our most stringent specification which includes firm and quarter fixed effects. The coefficient of interest is 0.019, 0.013, and 0.017 in Panels A, B, and C, respectively. The interquartile range of flows (from Table 1) is 9.58, thus the impact on annual performance for an interquartile increase in flows for filers vs. non-filers is 73 bps, 50 bps, and 65 bps of excess returns, FH7 alpha, and FH8 alpha respectively.

Table 4 about here

Our difference-in-difference estimation assumes that treatment and control group of funds follow similar patterns prior to the event (i.e., the filing status change from non-13F filer to 13F filer). To verify this assumption, we define a set of indicators to mark time periods before $Post = 1$. Suppose $Post = 1$ at time t, then $Before0 = 1$ at time $t-1$ and zero otherwise. Similarly, $Before1 = 1$ at time $t-2$, $Before2 = 1$ at time $t-3$, and $Before3 = 1$ at time $t-4$.

Table 5 about here

Column 1 of Table 5 examines the differential trend in selection ability between filers and non-filers. The variables of interest are $13F \times Flow \times Before$. Here we do not find evidence that selection ability differs significantly in the four quarters prior to the filing

status change. The coefficients are also insignificantly different from each other, suggesting that flow-performance predictability does not exhibit a differential trend prior to 13F-filing.

4.2.2 Dynamic Effects

We next investigate how long it takes for 13F-filing to affect flow-performance predictability. We define a set of indicators to mark time periods after $Post = 1$. Suppose $Post = 1$ at time t, then $After1 = 1$ at time $t + 1$ and zero otherwise. Similarly, $Afterk = 1$ at time $t + k$, and $Afterk+ = 1$ at all times greater than or equal to $t + k$. Columns 2 to 4 of Table 5 report the results of our dynamic analysis. The coefficient on $After5$ is significant and positive at the 1% level. This suggests that it takes 5 quarters (1.25 years) for mandatory disclosure to affect selection ability. This is reasonable given the informational content of disclosure. One 13F filing provides a snapshot of the fund's positions, however put together enough snapshots and it forms a movie.

4.2.3 RDD Analysis

One issue is that funds far from the cutoff may be materially different from funds close to the cutoff, and this difference may not be fully captured by covariates. In the spirit of a regression discontinuity design (RDD) we limit our analysis to funds close to disclosure threshold. Since we cannot observe the value of 13(f) securities for non-filers, we use the following two methods to restrict our sample: (i) for funds that experience a filing status switch (i.e., from non-filing to filing), we restrict the sample to those fund-quarter observations within a four-year window centered around the filing status change,[15] and (ii) following Shi (2017), we restrict the sample based on the fund company AUM reported in TASS. Specifically, for our full regression sample, we only keep fund-quarter observations where the TASS company AUMs are between 50 million and 300 million.

[15]Note that since we only use funds that have ever changed filing status, the term $13F$ would always be 1, therefore $13F \times Flow$ would take the same value as $Flow$. In light of this, we drop the term $13F \times Flow$ when reporting the regression results.

Table 6 about here

Table 6 reports the RDD analysis. We repeat the baseline regression analysis (equation 2) for subsamples (i) and (ii). Subsample (i) is reported in Columns 1, 2, and 3, and subsample (ii) is reported in Columns 4, 5, and 6. We find that our coefficient of interest increases across all specifications. For example, Panel C Column 5 of Table 4 corresponds to Column 6 of Table 6. We see the coefficient increases from 0.017 to 0.036. In terms of economic magnitude, an interquartile increase in flows leads to a 138 bps increase in FH8 alpha (for filers vs. non-filers), this compares to 65 bps increase reported in the baseline specification.

4.2.4 Persistence

Our results provide evidence that disclosure increases the smart money effect. However, Ahoniemi and Jylhä (2014) document that the smart money effect is a short-term effect driven by contemporaneous flows. A concern with our analysis is that disclosure increases price pressure, which in turn drives our smart money effect. To address this concern we examine the persistence of the msart money effect.

Table 7 about here

We repeat the baseline specification but replace performance one quarter into the future with performance up to eight quarters (i.e., two years) into the future. The results are presented in Table 7. Here, we find some evidence that smart money is persistent. Fund flows predict performance at a horizon of three quarters when performance is measured in terms of excess returns, and at a horizon of two quarters when performance is measured in terms of FH7 alpha and FH8 alpha.

Furthermore, the price pressure story implies that performance should reverse when the price pressure subsides. Our analysis finds no evidence that the smart money effect reverses in the two years following the investment decision, suggesting our results are not due to price pressure.

5 Cross-Sectional Analysis

In this section we provide evidence against the shifting-client hypothesis by examining whether the increase in selection ability is concentrated among funds for which the expected benefits of disclosure are higher. Under the the alternative hypothesis, a subset of sophisticated investors invest in 13F filing funds because they are banned from investing in non-filing funds. The smart money effect is smarter for filers, but this is unrelated to the content of disclosure. That is, the informational value of disclosure should not affect selection ability under the alternative hypothesis.

To shed light on the economic mechanisms that drive our results, we next explore the rich cross-sectional heterogeneity among sample hedge funds. We look at how the smart money effect is impacted by variation in: (1) informational content of 13F filing, (2) attention paid to 13F filings, and (3) the ability to invest using the information provided. We find that the smart money effect increases when information is more precise, when investors pay more attention to it, and when it can be used more freely.

5.1 Disclosure Fraction

5.1.1 Subsample Analysis

Our analysis is conducted at the fund level, but Form 13F reports the aggregate positions at the company level. We expect that information will be more precise when: (i) fund is from a single-fund company; (ii) the fund is the largest fund within a fund company; and (iii) the proportion of its portfolio revealed in 13F is above or below the cross-sectional median.

Table 8 about here

Table 8 reports the results of these cross-sectional tests. The dependent variable (performance) is measured as the quarterly FH8 alpha. Columns 1 and 2 report the results of test (i); Columns 3 and 4 report the results of test (ii); and Columns 5 and 6 report the

results of test (iii). The effect of disclosure on selection ability is is driven by the funds with more precise information. In each of the odd-numbered columns, the coefficient on the triple interaction term is positive and significant; in each of the even-numbered columns, the coefficient is positive but insignificant.

5.1.2 Placebo Test

We next shut down the information channel and repeat our main analysis with the subset of FoFs. FoFs are hedge funds that invest in other hedge funds. They typically do not invest in 13(f) securities, and as such, the information revealed on their parent company's 13F filing should be minimal. However, under the alternative hypothesis, disclosure will affect selection ability.

Table 9 about here

Table 9 reports the estimates of the placebo regressions. This repeats the analysis presented in Table 4, except only using FoFs. Consistent with our hypothesis, the coefficient on our variable of interest ($13F \times Post \times Flow$) is sometimes positive, sometimes negative, but never significantly different from zero.

5.2 Investor Attention

We next investigate cross-sectional differences in investor attention. 13F filings contain useful information for making investment decisions, but we will only see a smart money effect if investors pay attention to the filings. We use the EDGAR log files to measure when potential investors access 13F filings.[16]

We split the sample based on company-level "abnormal investor attention." Following Li and Sun (2018), we define quarterly "abnormal EDGAR downloads"as the residuals of the

[16]Numerous studies have used this data set to measure investor attention; for example, see: Drake, Roulstone, and Thornock (2015), Lee, Ma, and Wang (2015), and Li and Sun (2018). The EDGAR log files data set can be found here: `https://www.sec.gov/dera/data/edgar-log-file-data-set.html`.

following contemporaneous cross-sectional model:

$$\begin{aligned}\text{Log(EDGAR}+1)_{\text{i,q}} = \beta_1 \text{nForms}_{\text{i,q}} + \beta_2 \text{nFunds}_{\text{i,q}} + \beta_3 \text{Size}_{\text{i,q}} + \beta_4 \text{Age}_{\text{i,q}} \\ + \beta_5 \text{Flow}_{\text{i,q}} + \beta_6 \text{Return}_{\text{i,q}} + \beta_7 \text{Volatility}_{\text{i,q}} + \varepsilon_{i,q}\end{aligned} \tag{3}$$

where $EDGAR$ is either the number of downloads or the number of unique IP addresses accessing 13F reports during quarter q;[17] $nForms$ is the logarithm of the number of 13F reports filed by company i before the end of q; $nFunds$ is the logarithm of the number of funds managed by company i; $Size$ is the logarithm of company AUM; Age is the logarithm of company age in months; $Flow$ is the average quarterly fund-level flows over the past four quarters; $Return$ is the average quarterly fund-level return over the past four quarters; and $Volatility$ is the fund-level return volatility over the past 12 months. Our abnormal investor attention measure controls for other fund and company characteristics that may affect investor's information acquisition activities.

We split our sample based on average abnormal EDGAR downloads and estimate the baseline smart money regression (equation 2.

Table 10 about here

Table 10 reports the results of the investor attention tests. Abnormal EDGAR downloads have been calculated based on: the number of downloads (Panel A), and the number of unique IP addresses (Panel B). Across both panels, the coefficient of interest (on $13F \times Post \times Flow$) is positive and significant for the high investor attention subsample (the odd-

[17] We follow the literature to identify and drop "robot" downloads from the raw EDGAR log file. We follow the procedure described in Li and Sun (2018): First, following Lee et al. (2015), we exclude the searching records of those users who download more than 50 unique firms' filings in one day. The user is identified by their unique IP address. Second, following Ryans (2017) and Drake et al. (2015), we remove log records that reference an index (i.e, $idx = 1$), as index pages only provide the links to filings rather than the actual filing data. Third, following Ryans (2017), we keep the request records with successful document delivery (i.e., $code = 200$). We then further exclude the search records of users who make more than 25 filing requests per minute or more than 500 requests per day, or with more than three unique CIKs searching per minute. Finally, we only keep one search record for a specific filing (unique accession number) to each user in a given day.

numbered columns). Coefficients for the low investor attention subsample are positive but not significant. Consistent with our hypothesis, these results suggest that disclosure impacts selection ability only when investors view the disclosure.

5.3 Mobility of Capital

Our next set of tests study whether the smart money effect is related to the ease of which an investor can get in and out of a fund. The information contained in Form 13F is only of value if investors can actually use it. If there are restrictions on redemptions or subscriptions, then we expect the information will be less useful. That is, we expect the smart money effect will increase by more when money can freely enter or exit a fund.

We split the sample based on the following fund characteristics: (i) whether a fund has lock-up provision; (ii) total redemption period (defined as redemption notice period plus redemption frequency, following Liang, Schwarz, Getmansky Sherman, and Wermers (2019)); (iii) the subscription frequency; and (iv) overall flow restriction based on (i)-(iii).

Table 11 about here

Table 11 reports the results of the mobility of capital tests. Columns 1 and 2 report the results of test (i); Columns 3 and 4 report the results of test (ii); Columns 5 and 6 report the results of test (iii); and Columns 7 and 8 report the results of test (iv). The odd-numbered columns represent the subsample of firms with less restrictions on the movement of investor capital. The coefficient on the triple interaction term is positive and significant across all the odd-numbered columns, while sometimes positive and sometimes negative, but never significantly different from zero across the even-numbered columns (those with more restrictions on investor capital). These results demonstrate that money is smarter when information can be used more freely.

Our three sets of tests demonstrate that the smart money effect is stronger when investors have more precise information, when investors abnormally access information, and when they

are less restricted in using this information. This is consistent with investors using portfolio disclosure to make more informed allocation decisions.

6 Holdings-Based Analysis

We directly address the investor sophistication hypothesis by examining fund performance holding investors constant. Investor-level hedge fund investments are available for a subset of 127 registered FoFs. Conceptually, this analysis can be viewed as comparing the smart money effect for 13F-filing versus non-filing hedge funds–after controlling for investor fixed effects.

Following Aiken et al. (2013), we calculate quarterly hedge fund returns:

$$R_{j,t+1} = \frac{\text{Value}_{j,t+1} - \left(\text{Cost}_{j,t+1} - \text{Cost}_{j,t}\right)}{\text{Value}_{j,t}} - 1, \tag{4}$$

where $R_{j,t+1}$ is the return on portfolio hedge fund j in quarter $t+1$, and $\text{Value}_{j,t}$ and $\text{Cost}_{j,t}$ are the dollar value and cost basis, respectively, of the FoF's position in hedge fund j as of the end of quarter t.[18]

6.1 Holdings-Based Analysis: Full Sample

At the end of each calendar quarter, we assign hedge funds in each FoF's portfolio to one of two portfolios: 13F-filing or non-filing.[19] We then compute value-weighted quarterly returns on 13F-filing and non-filing portfolios over the next quarter, assuming that FoFs did

[18] As discussed in Aiken et al. (2013), however, there are issues with computing hedge fund returns in this way when cost basis changes from quarter t to quarter $t+1$. In this case, and when the formula yields a missing return value, we replace the return with the median return computed using other FoFs holding the same hedge fund during the quarter (without changing cost basis).

[19] For a given FoF-quarter observation to be included in the analysis, we require that (1) at least 50% of its holdings can be matched with TASS or Form ADV (and therefore we can determine their filing status), (2) its 13F-filing portfolio contains at least one hedge fund with valid returns, and (3) its non-filing portfolio contains at least one hedge fund with valid returns. The final sample consists of 2,084 FoF-quarter observations from 117 FoFs, spanning 49 quarters.

not change their holdings between quarter-ends. Portfolios are rebalanced every calendar quarter. We then examine the spread between the two portfolios.

We also compute returns on the 13F-filing hedge funds that FoFs choose *not* to hold. At the end of each calendar quarter, we build two portfolios for each FoF: 13F-filing hedge funds held by the FoF, and 13F-filing hedge funds non held by the FoF.[20] We then compute equal-weighted quarterly returns over the next quarter. We equal-weight because there is no allocation assigned to non-held funds. We then examine the spread between the two return series.

Table 12 about here

Table 12 reports the results of our holdings-based analysis. Panel A presents the comparison between the 13F-filing and non-filing portfolios. On average, a FoF holds 11.2 filers and 5.3 non-filers. The filer portfolio earns 1.59% per quarter and the non-filing portfolio earns 1.35% per quarter. The spread is 0.23% per quarter (or 0.92% per year), and is statistically significant at between the 1% and 10% level, depending on how standard errors are clustered.

Panel B presents the comparison between the portfolio of 13F-filing funds held versus the portfolio of 13F-filing funds *not* held. The held portfolio earns 1.46% per quarter and the not-held portfolio earns 1.25% per quarter. The spread is 0.21% per quarter (or 0.84% per year), and is statistically significant at 5% level with standard errors double-clustered by FoF and quarter.

These results refute the alternative hypothesis. Holding constant the investors, these results demonstrate that selection ability is higher among funds that disclose.

[20]For a given FoF-quarter observation to be included in the analysis, we impose the same requirement as the previous 13F-filing portfolio vs non-filing portfolio analysis, except for (3) where we now require its 13F-filing not held portfolio contains at least one 13-filing hedge fund with valid returns. The final sample consists of 2,355 FoF-quarter observations from 122 FoFs, spanning 49 quarters.

6.2 Holdings-Based Analysis: Non-Local Funds

Prior research suggests that professional money managers have local informational advantages (Coval and Moskowitz, 2001; Teo, 2009; Sialm et al., 2019). Geographic proximity facilitates information production, monitoring, and access to fund managers, thus 13F reports should be more valuable to hedge fund investors (e.g., FoFs) when choosing among non-local hedge funds. We therefore expect to find stronger portfolio results when using the subset of non-local funds. This is consistent with our hypothesis, but inconsistent with the alternative hypothesis.

Following Sialm et al. (2019), we define a fund's location as the Metropolitan Statistical Area (MSA).[21] An underlying hedge fund is defined as non-local if its MSA is different from that of the FoF. All the FoFs in our sample are located in the US, however, some portfolio hedge funds are located outside the US; we categorize all non-US portfolio hedge funds as non-local. We then repeat our holdings-based analysis using the subset of the non-local hedge funds.

Table 13 about here

Table 13 reports our holdings-based results using the subset of non-local portfolio hedge funds. Panel A presents the comparison between the 13F-filing and non-filing portfolios. The 13F-filing portfolio earns 1.52% per quarter and the non-filing portfolio earns 1.17%. The spread is 0.35% per quarter (or 1.4% per year), and is statistically significant at 5% level with standard errors double-clustered by FoF and quarter.

Panel B presents the comparison between the portfolio of 13F-filing funds held and the not-held portfolio. The held portfolio earns 1.45% per quarter and the not-held portfolio

[21] We obtain FoF zip code and state information from header information reported in Form N-CSR, N-CSRS, and N-Q filings. Using the state/zip code information, we then merge it with the Metropolitan Areas and Components data defined by the Office of Management and Budget (OMB) as of 2013. For each underlying hedge fund that is matched with TASS or Form ADV, we obtain zip code and state information from TASS (zip code and state of its management firm) and Form ADV (zip code and state reported in Item 1.F.1) and merge it with MSA data from OMB.

earns 1.2%. The spread is 0.25% per quarter (or 1% per year), and is statistically significant at 1% level across all four clustering methods.

The magnitude from both tests are larger than the results the full sample holdings-based analysis (section 6.1). The results suggest that 13F reports are more useful when investor's informational advantage regarding the underlying hedge fund is comparatively weak. Overall, our holdings-based analysis holds constant the investor base provides evidence that our main results are not driven by a shifting client base.

7 Conclusion

Obtaining causal quantitative estimates of the effect of regulation is a difficult problem. These estimates are necessary for the even more daunting task of cost-benefit and welfare analysis. We take advantage of the unique features of the hedge fund market to quantify the causal effect of mandatory portfolio disclosure.

We document that mandatory disclosure increases investors' selection ability, and find that this is due to the informational value of disclosure. We also rule out alternative stories related to price pressure and client-base effects.

The benefits of mandatory disclosure are elusive. In public securities markets, obtaining causal estimates of the benefits to investors is difficult because: regulation tends to occur concurrent with other major events; the disclosure typically requires multiple pieces of information or is non-standardized; it is difficult to identify a control group; and the channel from regulation to disclosure quality to the economic benefit is unidentifiable. Our paper allows us to address these issues in the related private securities market (i.e., the hedge fund market). We demonstrate that mandatory disclosure helps investors make more informed investment decisions.

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Figure 1: **Performance of the Filer and Non-Filer HML Portfolios**
This figure plots the monthly returns for the portfolios of 13F-filing hedge funds and non-13F-filing hedge funds. Within each group, we sort fund by capital flows into quartiles, and build value-weighted high-minus-low ("HML") portfolios of the high-flow funds minus the low-flow funds. The red dashed line presents the cumulative monthly returns for the non-filing HML portfolio, and the blue solid line presents the cumulative monthly returns for the filing HML portfolio.

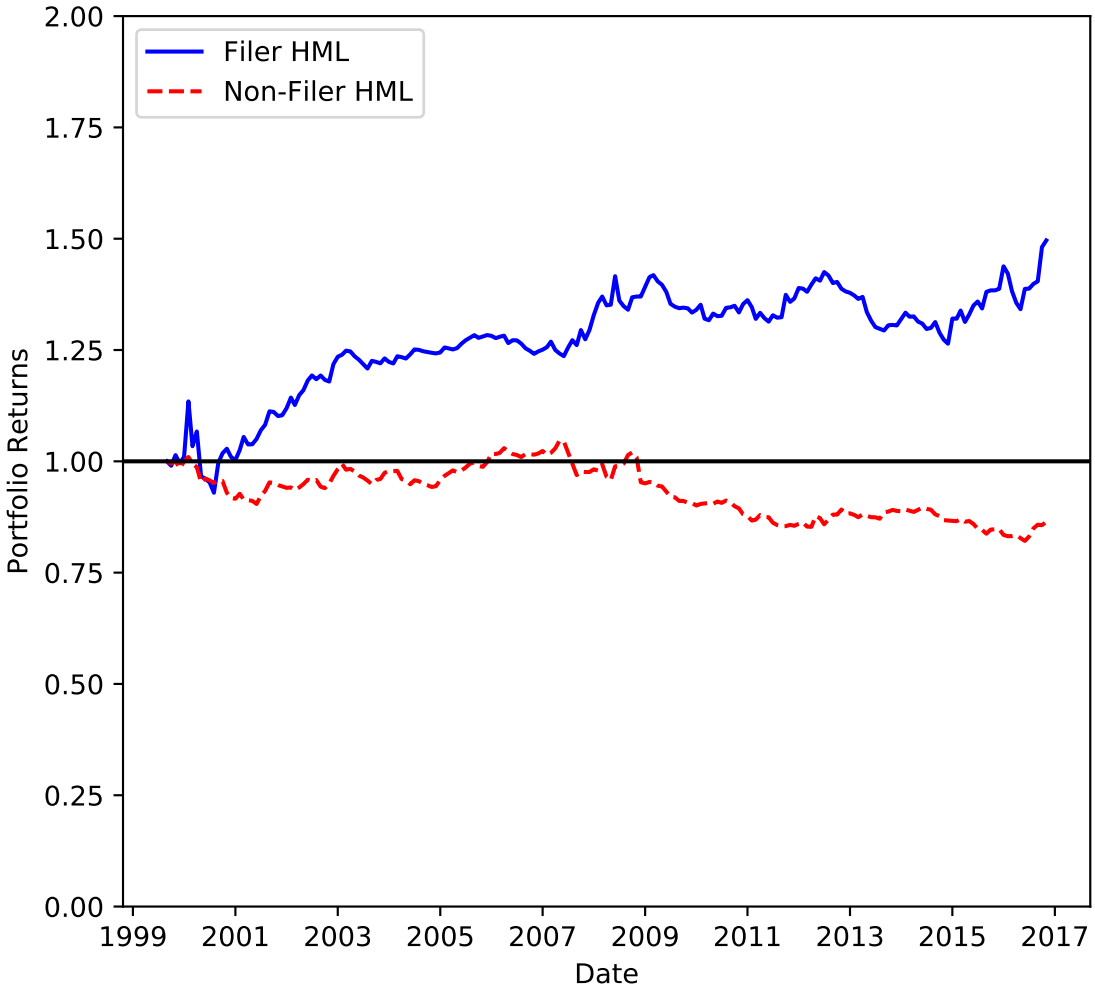

Table 1: **Summary Statistics**

This table presents the summary statistics of our sample of hedge funds between 1999Q3 and 2016Q3. Following Shi (2017), we exclude fund of hedge funds and observations after the last 13F in our sample. *Flow* is the percentage fund flow during each calendar quarter. *Excess Return* are quarterly compounded excess return over the risk-free rate. *FH7 Alpha* is the quarterly compounded Fung and Hsieh (2001) seven-factor alpha, *FH8 Alpha* is the quarterly compounded Fung and Hsieh (2001) plus momentum eight-factor alpha; both alpha measures are calculated following Agarwal et al. (2018). *Fund Size* is the fund's AUM at quarter-end. *Family Size* is the fund company's AUM at quarter-end. *Fund Age* is the number of months since fund inception. *Return Volatility* is the return volatility using fund returns during between month $m-11$ and m. The time-invariant fund characteristics include the following: *Redemption Notice* in days, *Lock-Up Period* in months, *Management Fees*, *Incentive Fees*, *Min Invest*: the minimum investment requirement, *Personal Capital*: an indicator whether personal capital is committed, *High Water Mark*: an indicator whether there is a high water mark provision, *Leveraged*: an indicator whether the fund uses leverage, and *Offshore*: an indicator whether the fund is offshore (*Offshore*). Panel A reports the baseline regression sample, Panel B reports the switchers sample, Panel C reports the always-filers sample, and Panel D reports the never-filers sample.

Panel A: Full Baseline Sample

Variable	N	Mean	StdDev	Q1	Median	Q3
Flow (%/quarter)	71245	1.062	20.685	-5.013	-0.006	4.567
Excess Return (%/quarter)	71245	1.368	9.270	-2.160	1.149	4.682
FH7 Alpha (%/quarter)	60064	0.736	9.090	-2.898	0.518	3.896
FH8 Alpha (%/quarter)	60064	0.716	9.093	-2.997	0.497	3.980
Fund Size (millions $)	71245	174.352	369.059	15.000	49.000	158.950
Family Size (millions $)	48491	259.430	580.006	19.105	63.529	221.000
Fund Age (months)	71202	88.089	55.984	44.000	74.000	117.000
Return Volatility (%)	65699	3.721	3.145	1.552	2.819	4.881
Redemption Notice (days)	3495	36.763	29.967	15	30	45
Lock-Up Period (months)	3495	3.755	7.123	0	0	6
Management Fees (%)	3491	1.471	0.703	1.000	1.500	2.000
Incentive Fees (%)	3487	18.421	5.487	20	20	20
Min Invest (thousands $)	3475	963.245	2802.905	100	500	1000
Personal Capital	3495	0.115	0.319	0	0	0
High Water Mark	3491	0.706	0.456	0	1	1
Leveraged	3495	0.629	0.483	0	1	1
Offshore	3495	0.559	0.497	0	1	1

Panel B: Switchers Sample

Variable	N	Mean	StdDev	Q1	Median	Q3
Flow (%/quarter)	24055	1.522	20.686	-4.903	0.062	5.623
Excess Return (%/quarter)	24055	1.609	8.008	-1.503	1.374	4.666
FH7 Alpha (%/quarter)	20513	0.881	7.674	-2.313	0.648	3.712
FH8 Alpha (%/quarter)	20513	0.889	7.650	-2.383	0.643	3.797
Fund Size (millions $)	24055	265.322	482.251	31.100	86.468	264.670
Family Size (millions $)	14612	489.564	1168.425	48.814	137.687	432.778
Fund Age (months)	24021	90.204	56.162	46.000	77.000	120.000
Return Volatility (%)	22292	3.151	2.552	1.392	2.455	4.105
Redemption Notice (days)	1055	42.555	31.146	30	30	60
Lock-Up Period (months)	1055	4.711	7.570	0	0	12
Management Fees (%)	1054	1.483	0.825	1.000	1.500	2.000
Incentive Fees (%)	1054	19.176	4.493	20	20	20
Min Invest (thousands $)	1052	1234.631	1852.992	250	1000	1000
Personal Capital	1055	0.113	0.316	0	0	0
High Water Mark	1054	0.767	0.423	1	1	1
Leveraged	1055	0.626	0.484	0	1	1
Offshore	1055	0.504	0.500	0	1	1

Panel C: Always-Filers Sample

Variable	N	Mean	StdDev	Q1	Median	Q3
Flow (%/quarter)	8034	0.256	19.495	-4.961	-0.075	3.380
Excess Return (%/quarter)	8034	1.231	8.884	-1.697	1.180	4.274
FH7 Alpha (%/quarter)	7173	0.577	7.442	-2.149	0.474	3.087
FH8 Alpha (%/quarter)	7173	0.393	7.099	-2.302	0.441	3.046
Fund Size (millions $)	8034	226.307	435.586	25.605	82.838	222.557
Family Size (millions $)	4367	479.598	1126.811	41.680	133.280	415.279
Fund Age (months)	8034	107.597	63.529	55.000	95.000	149.000
Return Volatility (%)	7612	3.257	2.864	1.337	2.337	4.251
Redemption Notice (days)	342	34.965	22.971	30	30	45
Lock-Up Period (months)	342	4.278	6.709	0	0	12
Management Fees (%)	342	1.207	0.568	1.000	1.000	1.500
Incentive Fees (%)	342	17.926	5.605	20	20	20
Min Invest (thousands $)	339	1375.563	2589.733	500	1000	1000
Personal Capital	342	0.053	0.224	0	0	0
High Water Mark	342	0.664	0.473	0	1	1
Leveraged	342	0.588	0.493	0	1	1
Offshore	342	0.409	0.492	0	0	1

Panel D: Never-Filers Sample

Variable	N	Mean	StdDev	Q1	Median	Q3
Flow (%/quarter)	39156	0.946	20.914	-5.096	-0.029	4.186
Excess Return (%/quarter)	39156	1.249	10.035	-2.723	0.994	4.807
FH7 Alpha (%/quarter)	32378	0.680	10.182	-3.543	0.430	4.304
FH8 Alpha (%/quarter)	32378	0.678	10.253	-3.699	0.383	4.410
Fund Size (millions $)	39156	107.805	236.569	9.470	30.517	97.000
Family Size (millions $)	29512	140.049	288.454	11.836	38.000	127.026
Fund Age (months)	39147	82.787	53.179	42.000	68.000	109.000
Return Volatility (%)	35795	4.174	3.450	1.758	3.212	5.544
Redemption Notice (days)	2098	34.143	29.977	14	30	45
Lock-Up Period (months)	2098	3.189	6.899	0	0	1
Management Fees (%)	2095	1.508	0.645	1.000	1.500	2.000
Incentive Fees (%)	2091	18.121	5.874	20	20	20
Min Invest (thousands $)	2084	759.180	3189.882	100	250	1000
Personal Capital	2098	0.127	0.333	0	0	0
High Water Mark	2095	0.683	0.466	0	1	1
Leveraged	2098	0.637	0.481	0	1	1
Offshore	2098	0.611	0.488	0	1	1

Table 2: **Summary Statistics: FoFs Holdings**
This table presents the summary statistics of our sample of 127 fund-of-hedge funds ("FoFs") between 2004Q3 and 2016Q4. Following Gao et al. (2019), we identify and collect quarterly holdings of FoFs form SEC filings. We match each underlying hedge fund with TASS and Form ADV, and classify them to 13F-filing funds or non-filing funds. Panel A shows the summary statistics of sample FoFs at the end of 2004; Panel B shows the summary statistics of sample FoFs at the end of 2010; Panel C shows the summary statistics of sample FoFs at the end of 2016. *FoF AUM* is the summation of current values of all underlying hedge funds; *# of Holdings* is the number of hedge funds currently held; *# of Filer Held* is the number of underlying hedge funds categorized as "filer"; *Filer AUM* is the proportion of FoF's assets that invested in "filer" hedge funds; *# of Non-Filer Held* is the number of underlying hedge funds categorized as "non-filer"; *Non-Filer AUM* is the proportion of FoF's assets that invested in "non-filer" hedge funds.

	Mean	**StdDev**	**Q1**	**Median**	**Q3**
Panel A: 2004Q4 (Number of FoFs: 49)					
FoF AUM (millions $)	188.751	335.787	50.827	75.795	188.969
# of Holdings	23.714	13.342	15.000	21.000	29.000
# of Filer Held	6.592	4.354	4.000	6.000	8.000
Filer AUM (%)	29.879	12.936	18.361	31.361	37.814
# of Non-Filer Held	6.184	4.091	3.000	6.000	7.000
Non-Filer AUM (%)	27.140	12.912	20.528	25.481	29.516
Panel B: 2010Q4 (Number of FoFs: 46)					
FoF AUM (millions $)	392.293	881.760	30.470	118.927	430.999
# of Holdings	30.522	28.226	17.000	23.500	37.000
# of Filer Held	16.630	10.586	10.000	14.000	22.000
Filer AUM (%)	65.055	19.046	51.545	66.124	78.300
# of Non-Filer Held	8.870	14.938	2.000	6.500	11.000
Non-Filer AUM (%)	23.405	12.739	12.763	24.570	33.938
Panel C: 2016Q4 (Number of FoFs: 45)					
FoF AUM (millions $)	411.710	817.576	55.833	140.936	462.664
# of Holdings	28.333	26.061	16.000	24.000	31.000
# of Filer Held	18.467	10.235	12.000	17.000	23.000
Filer AUM (%)	74.555	18.281	66.034	77.632	88.837
# of Non-Filer Held	7.644	15.094	1.000	4.000	10.000
Non-Filer AUM (%)	19.797	16.737	7.581	15.838	28.460

Table 3: **Portfolio Sorts**

We perform the following (2×4) portfolio sorting analysis: at the end of every calendar quarter q, we double-sort funds based on (i) fund flows during quarter q (four quartiles, labelled Low, Q2, Q3, and High) and (ii) filing status as of quarter q (labelled Filer and NonFiler). Within each group-quartile, we form value-weighted portfolios, and rebalance quarterly. The following table reports the monthly excess returns (Panel A), FH7 alpha (Panel B), and FH8 alpha (Panel C). The first four columns report the portfolios sorted by flows, and the fifth column reports the long-short portfolio constructed as the high-flow portfolio minus the low-flow portfolio. This high-minus-low portfolio captures the smart money effect. The first row reports the filer portfolios, the second row reports the non-filer portfolios, and the third row reports the long-short portfolio constructed as the filer portfolio minus the non-filer portfolio. The bottom right cell reports the difference in high-minus-low portfolios for the filers compared to non-filers. This measures how the smart money effect differs between the filer and non-filer groups.

Panel A: Excess Return

	Flow				
	Low	Q2	Q3	High	High-Low
Filer	0.290*	0.402**	0.366	0.513***	0.224*
	(1.89)	(2.48)	(1.44)	(3.94)	(1.91)
NonFiler	0.396***	0.287*	0.334**	0.328**	-0.068
	(2.94)	(1.78)	(2.20)	(2.43)	(-0.87)
Filer-NonFiler	-0.106	0.115	0.031	0.186**	0.292**
	(-1.02)	(1.16)	(0.20)	(2.10)	(2.32)

Panel B: FH7 Alpha

	Flow				
	Low	Q2	Q3	High	High-Low
Filer	0.111	0.195*	0.125	0.284***	0.173
	(1.29)	(1.85)	(0.64)	(2.75)	(1.52)
NonFiler	0.213**	0.067	0.133	0.135	-0.078
	(2.27)	(0.66)	(1.24)	(1.47)	(-0.99)
Filer-NonFiler	-0.102	0.127	-0.008	0.149	0.251**
	(-1.05)	(1.16)	(-0.05)	(1.46)	(2.06)

Panel C: FH8 Alpha

	Flow				
	Low	Q2	Q3	High	High-Low
Filer	0.104	0.165*	0.094	0.250**	0.146
	(1.20)	(1.80)	(0.53)	(2.58)	(1.31)
NonFiler	0.192**	0.045	0.106	0.105	-0.087
	(2.15)	(0.47)	(1.13)	(1.28)	(-1.10)
Filer-NonFiler	-0.088	0.119	-0.012	0.145	0.233*
	(-0.91)	(1.10)	(-0.08)	(1.43)	(1.91)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4: **Baseline Smart Money Analysis**
This table presents the baseline smart money analysis estimated from regression specification (2). Fund performance is measured as excess returns, FH7 alpha, and FH8 alpha. $Flow$ is the quarterly fund flow. $13F$ is an indicator for whether fund i ever files Form 13F. $Post$ is an indicator for whether fund i has ever filed Form 13F as of quarter q. The time-variant controls include: LogSize, the logarithm of AUM at the end of $q-4$; LogAge, the logarithm of fund age in months (at the end of q); LagFlow, the average fund flows in quarter $q-1$, $q-2$, and $q-3$; LagRet, the average returns in quarter q, $q-1$, $q-2$, and $q-3$; and Volatility, the volatility of past 12 month returns. The time-invariant controls include the following: redemption notice period, measured in units of 30 days (*RedemptionNotice*); lockup period (*LockUp*); management fee (*ManagementFee*); incentive fee (*IncentiveFee*); the log of one plus minimum investment (*MinInvestment*); indicator variables for: whether personal capital is committed (*PersonalCapital*); whether there is a high water mark provision (*HighWaterMark*); whether the fund uses leverage (*Leveraged*); and whether the fund is offshore (*Offshore*). Depending on the specifications, we include time and style fixed effects, or time and fund fixed effects. In presence of fund fixed effects (Column 5 of each Panel), standalone time-invariant fund characteristics are omitted, but their interactions with flow are estimated but not reported. We cluster standard errors at the management company level. Panel A reports regression results using excess returns, Panel B reports regression results using FH7 alphas, and Panel C reports regression results using FH8 alphas.

Panel A: Excess Return

	(1)	(2)	(3)	(4)	(5)
13F×Post	-0.006***	-0.005***	-0.005***	-0.005***	-0.001
	(-4.93)	(-4.58)	(-4.56)	(-4.59)	(-0.49)
13F	0.007***	0.007***	0.007***	0.007***	
	(5.81)	(6.63)	(6.61)	(6.65)	
13F×Post×Flow	0.010**	0.015***	0.015***	0.018***	0.019***
	(2.11)	(2.79)	(2.59)	(3.14)	(3.03)
13F×Flow	-0.005	-0.009*	-0.014***	-0.015***	-0.015***
	(-1.14)	(-1.74)	(-2.72)	(-2.89)	(-2.61)
Flow	0.001	-0.001	-0.043	0.032	-0.035
	(0.64)	(-0.22)	(-0.93)	(0.61)	(-0.61)
LogSize		-0.000*	-0.000*	-0.000*	-0.014***
		(-1.86)	(-1.74)	(-1.77)	(-15.93)
LogAge		-0.000	0.000	0.000	-0.012***
		(-0.02)	(0.05)	(0.22)	(-3.95)
LagFlow		0.000	-0.000	-0.000	-0.026***
		(0.11)	(-0.08)	(-0.19)	(-8.55)
LagRet		0.068***	0.065***	0.069***	-0.136***
		(5.48)	(5.23)	(5.46)	(-10.32)
Volatility		0.174***	0.176***	0.170***	0.296***
		(6.90)	(6.96)	(6.77)	(7.50)
RedemptionNotice		0.001**	0.001**	0.001**	
		(2.05)	(2.08)	(2.10)	
LockUp		0.001*	0.001*	0.001*	
		(1.88)	(1.87)	(1.87)	
ManagementFee		0.001	0.001	0.001	
		(1.56)	(1.61)	(1.58)	
IncentiveFee		0.000	0.000	0.000	
		(0.51)	(0.57)	(0.47)	
MinInvestment		0.001***	0.001***	0.001***	
		(3.13)	(3.10)	(3.11)	
PersonalCapital		0.002**	0.002**	0.002**	
		(2.07)	(2.07)	(2.11)	
HighWaterMark		0.002*	0.002*	0.002*	
		(1.74)	(1.75)	(1.73)	
Leveraged		0.000	0.000	0.000	
		(0.07)	(0.08)	(0.05)	
Offshore		-0.001	-0.001	-0.001*	
		(-1.60)	(-1.63)	(-1.68)	
Time FE×Flow	No	No	Yes	Yes	Yes
Style FE×Flow	No	No	Yes	Yes	Yes
Controls×Flow	No	No	No	Yes	Yes
Fixed Effects	Time & Style	Time & Style	Time & Style	Time & Style	Time & Fund
Observations	71245	61231	61231	61231	61128
Adjusted R^2	0.18	0.183	0.184	0.185	0.207
# of Clusters	2161	2008	2008	2008	1937
Clustered by	Company	Company	Company	Company	Company

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Panel B: FH7 Alpha

	(1)	(2)	(3)	(4)	(5)
13F×Post	-0.004***	-0.004***	-0.004***	-0.004***	0.002
	(-3.13)	(-2.85)	(-2.90)	(-2.91)	(0.70)
13F	0.005***	0.003**	0.003**	0.003**	
	(3.63)	(2.51)	(2.48)	(2.53)	
13F×Post×Flow	0.015**	0.015**	0.013*	0.015**	0.013*
	(2.48)	(2.29)	(1.95)	(2.34)	(1.86)
13F×Flow	-0.009	-0.008	-0.012*	-0.011	-0.010
	(-1.47)	(-1.35)	(-1.72)	(-1.61)	(-1.42)
Flow	-0.000	-0.003	-0.054	0.053	-0.005
	(-0.02)	(-0.93)	(-0.95)	(0.85)	(-0.08)
LogSize		-0.000	-0.000	-0.000	-0.012***
		(-0.70)	(-0.63)	(-0.66)	(-11.69)
LogAge		-0.002*	-0.002*	-0.002*	-0.017***
		(-1.85)	(-1.74)	(-1.68)	(-4.12)
LagFlow		-0.006**	-0.006**	-0.006**	-0.028***
		(-2.21)	(-2.15)	(-1.99)	(-7.83)
LagRet		0.109***	0.108***	0.111***	-0.057***
		(5.50)	(5.43)	(5.60)	(-2.76)
Volatility		-0.011	-0.009	-0.014	-0.023
		(-0.35)	(-0.28)	(-0.46)	(-0.48)
RedemptionNotice		0.000	0.000	0.000	
		(0.33)	(0.41)	(0.44)	
LockUp		0.001	0.001	0.001	
		(1.12)	(1.12)	(1.11)	
ManagementFee		-0.000	-0.000	-0.000	
		(-0.22)	(-0.15)	(-0.17)	
IncentiveFee		0.000*	0.000*	0.000*	
		(1.85)	(1.83)	(1.76)	
MinInvestment		0.001***	0.001***	0.001***	
		(3.47)	(3.50)	(3.48)	
PersonalCapital		-0.000	-0.001	-0.001	
		(-0.34)	(-0.42)	(-0.41)	
HighWaterMark		0.002**	0.002**	0.002**	
		(1.98)	(2.00)	(1.99)	
Leveraged		0.001	0.000	0.000	
		(0.53)	(0.45)	(0.44)	
Offshore		-0.001	-0.001	-0.001	
		(-0.58)	(-0.56)	(-0.55)	
Time FE×Flow	No	No	Yes	Yes	Yes
Style FE×Flow	No	No	Yes	Yes	Yes
Controls×Flow	No	No	No	Yes	Yes
Fixed Effects	Time & Style	Time & Style	Time & Style	Time & Style	Time & Fund
Observations	60064	56894	56894	56894	56709
Adjusted R^2	0.075	0.080	0.081	0.081	0.110
# of Clusters	2064	1953	1953	1953	1848
Clustered by	Company	Company	Company	Company	Company

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Panel C: FH8 Alpha

	(1)	(2)	(3)	(4)	(5)
13F×Post	-0.005***	-0.005***	-0.005***	-0.005***	0.001
	(-3.42)	(-3.20)	(-3.25)	(-3.27)	(0.33)
13F	0.005***	0.004***	0.004***	0.004***	
	(3.91)	(2.82)	(2.81)	(2.86)	
13F×Post×Flow	0.017***	0.018***	0.016**	0.019***	0.017**
	(2.79)	(2.81)	(2.41)	(2.86)	(2.46)
13F×Flow	-0.011*	-0.012*	-0.015**	-0.014**	-0.015**
	(-1.88)	(-1.85)	(-2.20)	(-2.13)	(-2.12)
Flow	0.000	-0.001	-0.049	0.068	-0.001
	(0.17)	(-0.22)	(-1.15)	(1.39)	(-0.01)
LogSize		-0.000	-0.000	-0.000	-0.012***
		(-0.48)	(-0.43)	(-0.46)	(-11.28)
LogAge		-0.002**	-0.002**	-0.002**	-0.018***
		(-2.15)	(-2.06)	(-2.00)	(-4.44)
LagFlow		-0.006**	-0.005*	-0.005*	-0.028***
		(-2.03)	(-1.93)	(-1.81)	(-7.59)
LagRet		0.056***	0.056***	0.060***	-0.105***
		(3.07)	(3.06)	(3.27)	(-5.53)
Volatility		-0.009	-0.006	-0.013	-0.012
		(-0.24)	(-0.18)	(-0.36)	(-0.23)
RedemptionNotice		0.000	0.000	0.000	
		(0.30)	(0.41)	(0.44)	
LockUp		0.001	0.001	0.001	
		(1.44)	(1.44)	(1.44)	
ManagementFee		-0.001	-0.001	-0.001	
		(-0.67)	(-0.62)	(-0.63)	
IncentiveFee		0.000*	0.000*	0.000*	
		(1.77)	(1.75)	(1.68)	
MinInvestment		0.001***	0.001***	0.001***	
		(3.18)	(3.23)	(3.22)	
PersonalCapital		-0.001	-0.001	-0.001	
		(-0.57)	(-0.66)	(-0.64)	
HighWaterMark		0.003**	0.003**	0.003**	
		(2.07)	(2.11)	(2.11)	
Leveraged		0.000	0.000	0.000	
		(0.34)	(0.29)	(0.27)	
Offshore		-0.001	-0.001	-0.001	
		(-0.57)	(-0.54)	(-0.53)	
Time FE×Flow	No	No	Yes	Yes	Yes
Style FE×Flow	No	No	Yes	Yes	Yes
Controls×Flow	No	No	No	Yes	Yes
Fixed Effects	Time & Style	Time & Style	Time & Style	Time & Style	Time & Fund
Observations	60064	56894	56894	56894	56709
Adjusted R^2	0.063	0.066	0.067	0.067	0.099
# of Clusters	2064	1953	1953	1953	1848
Clustered by	Company	Company	Company	Company	Company

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5: **Parallel Trends and Dynamic Effects**

This table reports the results of verifying parallel trends assumption and analyzing dynamic treatment effects. We estimate an extended baseline model (2) using FH8 alpha. We define a set of indicators, and their definitions can be found in section 4.2.2. Other controls are estimated but not reported. We include time fixed effects and fund fixed effects. In presence of fund fixed effects, standalone time-invariant fund characteristics are omitted, but their interactions with flow are are estimated but not reported. We cluster standard errors at the management company level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
13F×Post	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.47)	(0.43)	(0.43)	(0.44)	(0.44)	(0.44)	(0.45)
13F×Flow×Before3	0.023				0.023	0.023	0.023
	(0.98)				(0.97)	(0.97)	(0.98)
13F×Flow×Before2	0.010				0.010	0.010	0.010
	(0.48)				(0.48)	(0.48)	(0.48)
13F×Flow×Before1	-0.020				-0.021	-0.021	-0.021
	(-1.04)				(-1.05)	(-1.05)	(-1.06)
13F×Flow×Before0	0.006				0.006	0.006	0.006
	(0.45)				(0.41)	(0.40)	(0.40)
13F×Post×Flow	0.018**						
	(2.30)						
13F×Flow×After1		-0.005	-0.005	-0.005	-0.004	-0.004	-0.004
		(-0.30)	(-0.31)	(-0.29)	(-0.23)	(-0.24)	(-0.22)
13F×Flow×After2		-0.003	-0.003	-0.003	-0.002	-0.002	-0.002
		(-0.17)	(-0.17)	(-0.17)	(-0.13)	(-0.13)	(-0.13)
13F×Flow×After3		-0.009	-0.009	-0.009	-0.009	-0.009	-0.009
		(-0.44)	(-0.45)	(-0.44)	(-0.40)	(-0.41)	(-0.40)
13F×Flow×After4+		0.019***			0.020**		
		(2.61)			(2.49)		
13F×Flow×After4			0.005	0.005		0.005	0.006
			(0.27)	(0.29)		(0.30)	(0.33)
13F×Flow×After5+			0.019***			0.020**	
			(2.68)			(2.55)	
13F×Flow×After5				0.056***			0.057***
				(2.84)			(2.84)
13F×Flow×After6+				0.019**			0.019**
				(2.56)			(2.44)
13F×Flow	-0.015*	-0.014**	-0.014**	-0.014**	-0.015*	-0.015**	-0.015*
	(-1.94)	(-2.02)	(-2.02)	(-2.02)	(-1.96)	(-1.96)	(-1.96)
Flow	0.001	0.000	0.000	0.000	0.001	0.001	0.000
	(0.02)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Time FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time & Fund FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	57902	57902	57902	57902	57902	57902	57902
Adjusted R^2	0.097	0.097	0.097	0.097	0.097	0.097	0.097

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6: **RDD Smart Money Analysis**

This table reports the regression results in the spirit of a regression discontinuity design. We conduct two subsample analyses: (i) for funds that experience a filing status switch (i.e., from non-filing to filing), we restrict the sample to those fund-quarter observations from the four-year window around the filing status change; and (ii) following Shi (2017), we restrict the sample to fund-quarter observations where the management company AUM is between $50 million and $300 million. We estimate baseline regression model (2). Fund performance is measured as excess returns, FH7 alpha, and FH8 alpha. *Flow* is the quarterly fund flow. $13F$ is an indicator for whether fund i ever files Form 13F. *Post* is an indicator for whether fund i has ever filed Form 13F as of quarter q. The time-variant controls include: LogSize, the logarithm of AUM at the end of $q-4$; LogAge, the logarithm of fund age in months (at the end of q); LagFlow, the average fund flows in quarter $q-1$, $q-2$, and $q-3$; LagRet, the average returns in quarter q, $q-1$, $q-2$, and $q-3$; and Volatility, the volatility of past 12 month returns. We include time fixed effects and fund fixed effects. In presence of fund fixed effects, standalone time-invariant fund characteristics are omitted, but their interactions with flow are estimated but not reported. We cluster standard errors at the management company level. Columns 1, 2, and 3 report the results using subsample (i), and columns 4, 5, and 6 report the results using subsample (ii).

	Panel A: Subsample (i)			**Panel B: Subsample (ii)**		
	(1)	(2)	(3)	(4)	(5)	(6)
	Excess	FH7	FH8	Excess	FH7	FH8
13F×Post	0.001	-0.001	0.000	0.003	0.005	0.004
	(0.22)	(-0.33)	(0.08)	(0.68)	(1.07)	(0.85)
13F×Post×Flow	0.044***	0.039***	0.036***	0.029***	0.031***	0.036***
	(3.89)	(3.29)	(3.25)	(3.41)	(3.01)	(3.44)
13F×Flow				-0.034***	-0.029***	-0.032***
				(-4.01)	(-2.98)	(-3.40)
Flow	-0.007	0.041	-0.127	0.043	0.041	-0.021
	(-0.05)	(0.30)	(-0.89)	(0.51)	(0.46)	(-0.23)
LogSize	-0.027***	-0.023***	-0.024***	-0.017***	-0.016***	-0.015***
	(-8.20)	(-5.77)	(-5.39)	(-8.79)	(-7.61)	(-6.49)
LogAge	0.020	-0.008	-0.020	-0.012**	-0.008	-0.014
	(1.16)	(-0.37)	(-0.91)	(-2.07)	(-0.89)	(-1.50)
LagFlow	-0.054***	-0.060***	-0.065***	-0.030***	-0.031***	-0.028***
	(-6.13)	(-5.27)	(-5.41)	(-4.79)	(-4.28)	(-3.71)
LagRet	-0.332***	-0.271***	-0.319***	-0.154***	-0.094**	-0.140***
	(-7.34)	(-4.54)	(-4.62)	(-6.17)	(-2.09)	(-3.86)
Volatility	0.309*	0.165	0.276	0.318***	-0.024	0.049
	(1.93)	(0.89)	(1.37)	(4.04)	(-0.30)	(0.57)
Time FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes
Style FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes
Controls×Flow	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Time & Fund	Time & Fund	Time & Fund	Time & Fund	Time & Fund	Time & Fund
Observations	6659	6096	6096	21894	20443	20443
Adjusted R^2	0.273	0.136	0.121	0.235	0.126	0.124

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7: **Persistence of Smart Money Effect**

This table studies the smart money effect at longer horizons, up to eight quarters in the future. We estimate baseline regression model (2). Fund performance is measured as excess returns, FH7 alpha, and FH8 alpha. *Flow* is the quarterly fund flow. $13F$ is an indicator for whether fund i ever files Form 13F. *Post* is an indicator for whether fund i has ever filed Form 13F as of quarter q. Other controls are estimated but not reported. We include time fixed effects and fund fixed effects. In presence of fund fixed effects, standalone time-invariant fund characteristics are omitted, but their interactions with flow are estimated but not reported. We cluster standard errors at the management company level. Panel A reports regression results using excess returns, Panel B reports regression results using FH7 alphas, and Panel C reports regression results using FH8 alphas.

Panel A: Excess Return

	(1) Q+1	(2) Q+2	(3) Q+3	(4) Q+4	(5) Q+5	(6) Q+6	(7) Q+7	(8) Q+8
13F×Post	-0.001	-0.002	-0.001	0.000	0.001	0.003*	0.004*	0.005**
	(-0.49)	(-0.92)	(-0.47)	(0.12)	(0.32)	(1.67)	(1.94)	(2.49)
13F×Post×Flow	0.019***	0.005	0.011*	-0.008	0.001	0.007	-0.009	-0.001
	(3.03)	(0.84)	(1.80)	(-1.45)	(0.13)	(1.07)	(-1.47)	(-0.13)
13F×Flow	-0.015***	0.001	-0.006	0.002	0.001	0.006	0.010*	0.004
	(-2.61)	(0.15)	(-1.13)	(0.41)	(0.25)	(0.96)	(1.83)	(0.78)
Flow	-0.035	-0.048	-0.021	-0.052	0.067	-0.038	-0.051	0.086
	(-0.61)	(-1.08)	(-0.53)	(-1.17)	(1.01)	(-0.60)	(-1.20)	(1.59)
Time FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time & Fund FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	61128	58669	56085	53589	51176	48887	46679	44501
Adjusted R^2	0.207	0.219	0.219	0.221	0.214	0.212	0.217	0.215

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Panel B: FH7 Alpha

	(1) Q+1	(2) Q+2	(3) Q+3	(4) Q+4	(5) Q+5	(6) Q+6	(7) Q+7	(8) Q+8
13F×Post	0.002	0.002	0.003	0.006**	0.006**	0.006**	0.006**	0.007**
	(0.70)	(0.83)	(1.42)	(2.12)	(2.22)	(2.24)	(2.09)	(2.34)
13F×Post×Flow	0.013*	0.010*	-0.003	-0.006	-0.004	0.002	-0.007	-0.001
	(1.86)	(1.68)	(-0.54)	(-1.10)	(-0.56)	(0.26)	(-1.22)	(-0.12)
13F×Flow	-0.010	-0.006	0.008	0.002	0.007	0.008	0.010*	0.006
	(-1.42)	(-1.04)	(1.31)	(0.42)	(1.25)	(1.34)	(1.89)	(1.11)
Flow	-0.005	-0.002	0.051	-0.020	0.126**	-0.070	-0.052	-0.024
	(-0.08)	(-0.04)	(1.12)	(-0.45)	(2.08)	(-1.07)	(-1.00)	(-0.52)
Time FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time & Fund FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	56709	56441	56085	53589	51176	48875	46626	44402
Adjusted R^2	0.110	0.109	0.112	0.111	0.110	0.107	0.103	0.100

Panel C: FH8 Alpha

	(1) Q+1	(2) Q+2	(3) Q+3	(4) Q+4	(5) Q+5	(6) Q+6	(7) Q+7	(8) Q+8
13F×Post	0.001	0.002	0.004	0.005*	0.005*	0.006*	0.005*	0.006**
	(0.33)	(0.85)	(1.45)	(1.82)	(1.85)	(1.93)	(1.84)	(2.11)
13F×Post×Flow	0.017**	0.011*	-0.001	-0.005	0.000	0.004	-0.005	-0.001
	(2.46)	(1.67)	(-0.21)	(-1.03)	(0.06)	(0.60)	(-0.78)	(-0.09)
13F×Flow	-0.015**	-0.006	0.006	0.001	0.005	0.005	0.007	0.004
	(-2.12)	(-0.94)	(1.07)	(0.22)	(0.85)	(0.80)	(1.31)	(0.71)
Flow	-0.001	0.004	0.049	-0.022	0.131**	-0.081	-0.029	-0.010
	(-0.01)	(0.06)	(1.06)	(-0.43)	(2.11)	(-1.40)	(-0.55)	(-0.22)
Time FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time & Fund FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	56709	56441	56085	53589	51176	48875	46626	44402
Adjusted R^2	0.099	0.099	0.101	0.098	0.096	0.097	0.092	0.088

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8: **Cross-Sectional Smart Money Analysis: Precision of Information**
This table reports the cross-sectional regression results based on the precision of information. We split the sample in the following three ways: (i) based on the number of funds reported in TASS, we split the sample to "single-fund company" and "multi-fund company"; (ii) based on whether a fund is the largest fund within a fund company; and (iii) based on whether the proportion revealed in 13F is above or below the cross-sectional median. We estimate baseline regression model (2) using FH8 alpha. *Flow* is the quarterly fund flow. $13F$ is an indicator for whether fund i ever files Form 13F. *Post* is an indicator for whether fund i has ever filed Form 13F as of quarter q. The time-variant controls include: LogSize, the logarithm of AUM at the end of $q-4$; LogAge, the logarithm of fund age in months (at the end of q); LagFlow, the average fund flows in quarter $q-1$, $q-2$, and $q-3$; LagRet, the average returns in quarter q, $q-1$, $q-2$, and $q-3$; and Volatility, the volatility of past 12 month returns. We include time fixed effects and fund fixed effects. In presence of fund fixed effects, standalone time-invariant fund characteristics are omitted, but their interactions with flow are estimated but not reported. We cluster standard errors at the management company level. Method (i) is reported in Columns 1 and 2, method (ii) in Columns 3 and 4, and method (iii) in Columns 5 and 6.

	(1) Single-Fund Company	(2) Multi-Fund Company	(3) Largest Fund	(4) Other Funds	(5) Above Median	(6) Below Median
13F×Post	-0.002	0.002	0.001	0.001	-0.001	0.002
	(-0.43)	(0.56)	(0.17)	(0.30)	(-0.19)	(0.53)
13F×Post×Flow	0.035***	0.011	0.032***	0.003	0.035***	0.011
	(2.78)	(1.31)	(3.57)	(0.30)	(3.08)	(1.21)
13F×Flow	-0.021*	-0.010	-0.018**	-0.012	-0.022**	-0.011
	(-1.71)	(-1.15)	(-2.08)	(-1.16)	(-2.17)	(-1.22)
Flow	-0.007	0.023	0.000	-0.062	0.204**	-0.046
	(-0.06)	(0.36)	(0.00)	(-0.82)	(2.22)	(-0.69)
LogSize	-0.014***	-0.011***	-0.013***	-0.013***	-0.014***	-0.012***
	(-8.24)	(-8.13)	(-10.19)	(-6.87)	(-8.67)	(-8.03)
LogAge	-0.017**	-0.018***	-0.019***	-0.011	-0.021***	-0.016***
	(-2.46)	(-3.18)	(-3.97)	(-1.31)	(-3.06)	(-2.67)
LagFlow	-0.032***	-0.026***	-0.031***	-0.031***	-0.030***	-0.027***
	(-6.16)	(-5.35)	(-7.65)	(-4.57)	(-6.34)	(-5.12)
LagRet	-0.137***	-0.107***	-0.129***	-0.115***	-0.119***	-0.127***
	(-5.02)	(-4.09)	(-5.91)	(-3.93)	(-4.65)	(-4.57)
Volatility	0.012	-0.008	0.004	-0.046	0.052	-0.071
	(0.19)	(-0.10)	(0.07)	(-0.49)	(0.84)	(-0.90)
Time FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes
Style FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes
Controls×Flow	Yes	Yes	Yes	Yes	Yes	Yes
Time & Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24387	32279	38373	18208	25914	30493
Adjusted R^2	0.110	0.097	0.106	0.094	0.116	0.090

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9: **Placebo Smart Money Analysis**

This table repeats the baseline analysis but with a placebo subsample. We limit the analysis to only fund-of-hedge funds ("FoFs"). FoFs do not hold 13(f) securities, thus Form 13F should be less informative for FoFs. We report results estimated from regression specification (2). Fund performance is measured as excess returns, FH7 alpha, and FH8 alpha. *Flow* is the quarterly fund flow. $13F$ is an indicator for whether fund i ever files Form 13F. *Post* is an indicator for whether fund i has ever filed Form 13F as of quarter q. The time-variant controls include: LogSize, the logarithm of AUM at the end of $q-4$; LogAge, the logarithm of fund age in months (at the end of q); LagFlow, the average fund flows in quarter $q-1$, $q-2$, and $q-3$; LagRet, the average returns in quarter q, $q-1$, $q-2$, and $q-3$; and Volatility, the volatility of past 12 month returns. We include time fixed effects, or time and fund fixed effects. In presence of fund fixed effects, standalone time-invariant fund characteristics are omitted, but their interactions with flow are estimated but not reported. We cluster standard errors at the management company level.

	(1) Excess	(2) Excess	(3) FH7	(4) FH7	(5) FH8	(6) FH8
13F×Post	-0.002*	-0.002	-0.001	-0.000	-0.001	-0.001
	(-1.72)	(-0.94)	(-0.60)	(-0.03)	(-0.72)	(-0.29)
13F	0.001		0.001		0.001	
	(1.27)		(0.54)		(0.44)	
13F×Post×Flow	0.001	-0.006	0.003	0.006	0.006	0.009
	(0.24)	(-0.69)	(0.37)	(0.51)	(0.67)	(0.91)
13F×Flow	0.003	-0.006	0.005	-0.001	0.003	-0.003
	(0.67)	(-0.91)	(0.72)	(-0.11)	(0.38)	(-0.46)
Flow	0.002	-0.052	0.004***	0.003	0.004***	0.056
	(1.13)	(-0.82)	(2.79)	(0.06)	(2.72)	(1.28)
LogSize		-0.006***		-0.005***		-0.005***
		(-7.74)		(-5.95)		(-6.38)
LogAge		-0.003		-0.004		-0.006*
		(-1.33)		(-1.26)		(-1.85)
LagFlow		-0.008***		-0.009***		-0.008***
		(-3.71)		(-3.22)		(-3.03)
LagRet		-0.119***		0.032		-0.048
		(-3.80)		(0.89)		(-1.26)
Volatility		0.042		-0.346***		-0.406***
		(0.31)		(-2.84)		(-3.41)
Time FE×Flow	No	Yes	No	Yes	No	Yes
Controls×Flow	No	Yes	No	Yes	No	Yes
Fixed Effects	Time	Time & Fund	Time	Time & Fund	Time	Time & Fund
Observations	27604	22726	23704	21253	23704	21253
Adjusted R^2	0.393	0.420	0.284	0.338	0.201	0.273

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 10: **Cross-Sectional Smart Money Analysis: Information Acquisition**
This table reports the cross-sectional regression results based on the amount of investor attention paid to the fund. We split funds based on the median level of abnormal investor attention. Our measures of investor attention are based on: # of downloads (Panel A); and # of unique IP addresses (Panel B). The detailed descriptions of calculating abnormal investor attention can be found in section 5.2. We estimate baseline regression model (2) using switchers subsample and FH8 alpha. *Flow* is the quarterly fund flow. $13F$ is an indicator for whether fund i ever files Form 13F. *Post* is an indicator for whether fund i has ever filed Form 13F as of quarter q. The time-variant controls include: LogSize, the logarithm of AUM at the end of $q-4$; LogAge, the logarithm of fund age in months (at the end of q); LagFlow, the average fund flows in quarter $q-1$, $q-2$, and $q-3$; LagRet, the average returns in quarter q, $q-1$, $q-2$, and $q-3$; and Volatility, the volatility of past 12 month returns. We include time fixed effects and fund fixed effects. In presence of fund fixed effects, standalone time-invariant fund characteristics are omitted, but their interactions with flow are estimated but not reported. We cluster standard errors at the management company level.

	Panel A: Abnormal investor attention based on # of Downloads		**Panel B: Abnormal investor attention based on unique # of IPs**	
	(1)	(2)	(3)	(4)
	High	Low	High	Low
13F×Post	-0.006	0.000	-0.005	-0.001
	(-1.39)	(0.03)	(-1.18)	(-0.18)
13F×Post×Flow	0.039***	0.006	0.038***	0.009
	(3.12)	(0.48)	(2.98)	(0.74)
Flow	-0.122	0.131	-0.140	0.143
	(-0.77)	(1.15)	(-0.89)	(1.17)
LogSize	-0.012***	-0.011***	-0.012***	-0.012***
	(-7.09)	(-5.45)	(-7.14)	(-5.68)
LogAge	-0.005	-0.015*	-0.003	-0.010
	(-0.58)	(-1.80)	(-0.36)	(-1.06)
LagFlow	-0.036***	-0.024***	-0.035***	-0.025***
	(-4.00)	(-3.40)	(-3.95)	(-3.54)
LagRet	-0.075	-0.123***	-0.080	-0.132***
	(-1.45)	(-3.31)	(-1.52)	(-3.39)
Volatility	-0.139	-0.022	-0.127	-0.052
	(-1.48)	(-0.19)	(-1.35)	(-0.43)
Time FE×Flow	Yes	Yes	Yes	Yes
Style FE×Flow	Yes	Yes	Yes	Yes
Controls×Flow	Yes	Yes	Yes	Yes
Time & Fund FE	Yes	Yes	Yes	Yes
Observations	8890	8859	8890	8858
Adjusted R^2	0.092	0.111	0.090	0.115

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: **Cross-Sectional Smart Money Analysis: Flow Restrictions**
This table reports the cross-sectional regression results based on whether investor can get in and out of a fund more freely. To study this, we split the sample based on the following fund characteristics: (i) whether a fund has lock-up provision; (ii) total redemption (defined as redemption notice period *plus* redemption frequency); (iii) subscription frequency; and (iv) overall flow restriction based on (i)-(iii). We estimate baseline regression model (2) using FH8 alpha. $Flow$ is the quarterly fund flow. $13F$ is an indicator for whether fund i ever files Form 13F. $Post$ is an indicator for whether fund i has ever filed Form 13F as of quarter q. The time-variant controls include: LogSize, the logarithm of AUM at the end of $q-4$; LogAge, the logarithm of fund age in months (at the end of q); LagFlow, the average fund flows in quarter $q-1$, $q-2$, and $q-3$; LagRet, the average returns in quarter q, $q-1$, $q-2$, and $q-3$; and Volatility, the volatility of past 12 month returns. We include time fixed effects and fund fixed effects. In presence of fund fixed effects, standalone time-invariant fund characteristics are omitted, but their interactions with flow are estimated but not reported. We cluster standard errors at the management company level. Method (i) is reported in Columns 1 and 2, method (ii) in Columns 3 and 4, method (iii) in Columns 5 and 6, and method (iv) in Columns 7 and 8.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Total	Total	Subscription	Subscription	Overall	Overall
	Lock-Up?	Lock-Up?	Redemption	Redemption	Frequency	Frequency	Restriction	Restriction
	No	Yes	Short	Long	Short	Long	Relaxed	Strict
13F×Post	0.002	0.000	0.000	0.004	0.002	0.007	0.004	-0.000
	(0.57)	(0.05)	(0.09)	(1.06)	(0.51)	(0.92)	(0.95)	(-0.05)
13F×Post×Flow	0.019**	0.009	0.021**	0.002	0.017**	-0.025	0.023**	0.007
	(2.24)	(0.71)	(2.29)	(0.21)	(2.39)	(-1.10)	(2.13)	(0.79)
13F×Flow	-0.018**	-0.004	-0.016*	-0.016	-0.014*	-0.028	-0.021**	-0.008
	(-2.05)	(-0.29)	(-1.76)	(-1.46)	(-1.89)	(-1.33)	(-1.99)	(-0.78)
Flow	-0.006	0.020	0.014	-0.115	-0.004	0.305	-0.062	0.030
	(-0.09)	(0.16)	(0.23)	(-0.49)	(-0.07)	(1.25)	(-0.85)	(0.32)
LogSize	-0.012***	-0.012***	-0.012***	-0.012***	-0.011***	-0.017***	-0.011***	-0.013***
	(-9.60)	(-6.12)	(-8.90)	(-6.92)	(-10.31)	(-5.57)	(-7.47)	(-8.59)
LogAge	-0.018***	-0.017**	-0.023***	-0.015**	-0.020***	0.008	-0.021***	-0.018***
	(-3.63)	(-2.42)	(-3.88)	(-2.57)	(-4.44)	(0.63)	(-3.18)	(-3.41)
LagFlow	-0.027***	-0.028***	-0.024***	-0.034***	-0.026***	-0.033***	-0.025***	-0.032***
	(-6.95)	(-3.46)	(-5.46)	(-5.40)	(-6.92)	(-2.77)	(-5.53)	(-5.73)
LagRet	-0.117***	-0.086**	-0.175***	-0.040	-0.101***	-0.111*	-0.172***	-0.074***
	(-5.51)	(-2.44)	(-7.08)	(-1.42)	(-4.99)	(-1.76)	(-6.62)	(-3.05)
Volatility	0.013	-0.069	0.018	-0.037	0.008	-0.153	0.052	-0.055
	(0.22)	(-0.96)	(0.27)	(-0.56)	(0.15)	(-1.42)	(0.73)	(-0.92)
Time FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style FE×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls×Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time & Fund FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	39056	17653	32566	22964	49909	5458	24953	31721
Adjusted R^2	0.102	0.096	0.117	0.096	0.102	0.075	0.121	0.092

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 12: **FoFs Holdings-Based Analysis: Full Sample**
This table reports the holdings-based analysis using our sample of FoFs and the entire sample of underlying hedge funds. At the end of each calendar quarter, we assign underlying hedge funds in each FoF's portfolio to one of two portfolios. We then compute the quarterly returns on the two portfolios over the next quarter. Within a given FoF-quarter, hedge funds are value-weighted and then we average calendar time portfolios across FoFs and quarters. Standard errors are clustered using various methods (no clustering, clustered by quarter, clustered by FoF, and double-clustered by FoF and quarter) and are reported in parentheses. The first two columns report the average returns of the two portfolios, and the third column reports return of the long-short portfolio constructed using these two portfolios. In Panel A, we examine FoF's 13F-filing holdings and its non-filing holdings. In Panel B, we examine 13F-filing hedge funds currently held and 13-filing hedge funds currently not held.

Panel A: Filer Portfolio vs NonFiler Portfolio			
	Filer	NonFiler	Filer-NonFiler
Raw Returns (% per quarter)	1.585	1.353	0.232
t-statistics			
No Clustering	(17.57)***	(12.17)***	(2.60)***
Clustered by Quarter	(3.37)***	(2.89)***	(1.79)*
Clustered by FoF	(21.20)***	(13.09)***	(2.29)**
Clustered by FoF and Quarter	(3.39)***	(2.90)***	(1.68)*
Panel B: Filer Held vs Filer Not Held			
	Filer Held	Filer Not Held	Held-NotHeld
Raw Returns (% per quarter)	1.459	1.246	0.213
t-statistics			
No Clustering	(16.66)***	(18.40)***	(3.63)***
Clustered by Quarter	(3.03)***	(2.58)***	(2.26)**
Clustered by FoF	(20.89)***	(29.58)***	(3.17)***
Clustered by FoF and Quarter	(3.05)***	(2.60)***	(2.13)**

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 13: **FoFs Holdings-Based Analysis: Non-Local Funds**

This table reports the holdings-based analysis using our sample of FoFs and the subset of non-local hedge funds. An underlying hedge fund is defined as non-local if it is located in a Metropolitan Statistical Area (MSA) that is different from that of the FoF. At the end of each calendar quarter, we assign underlying hedge funds in each FoF's portfolio to one of two portfolios. We then compute the quarterly returns on the two portfolios over the next quarter. Within a given FoF-quarter, hedge funds are value-weighted and then we average calendar time portfolios across FoFs and quarters. Standard errors are clustered using various methods (no clustering, clustered by quarter, clustered by FoF, and double-clustered by FoF and quarter) and are reported in parentheses. The first two columns report the average returns of the two portfolios, and the third column reports return of the long-short portfolio constructed using these two portfolios. In Panel A, we examine FoF's 13F-filing holdings and its non-filing holdings. In Panel B, we examine 13F-filing hedge funds currently held and 13-filing hedge funds currently not held.

Panel A: Filer Portfolio vs NonFiler Portfolio			
	Filer	NonFiler	Filer-NonFiler
Raw Returns (% per quarter)	1.521	1.170	0.351
t-statistics			
No Clustering	(14.96)***	(8.89)***	(2.98)***
Clustered by Quarter	(3.14)***	(2.42)**	(2.35)**
Clustered by FoF	(17.84)***	(8.95)***	(2.69)***
Clustered by FoF and Quarter	(3.16)***	(2.42)**	(2.20)**
Panel B: Filer Held vs Filer Not Held			
	Filer Held	Filer Not Held	Held-NotHeld
Raw Returns (% per quarter)	1.450	1.202	0.248
t-statistics			
No Clustering	(15.02)***	(16.87)***	(3.57)***
Clustered by Quarter	(2.96)***	(2.40)**	(3.06)***
Clustered by FoF	(18.64)***	(28.48)***	(3.13)***
Clustered by FoF and Quarter	(2.98)***	(2.41)**	(2.77)***

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$