

Does Portfolio Disclosure Make Money Smarter?

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 predict fund performance better among funds that publicly disclose their portfolio holdings. Additional cross-sectional analyses suggest that selection ability varies with the informational value of disclosure. Finally, using a subsample of registered fund-of-hedge funds, we document direct evidence that investors earn higher returns on their allocations to disclosing funds. We quantify the benefit of mandatory disclosure on the ability of investors to assess opportunities in private securities markets.

Keywords: Mandatory portfolio disclosure; smart money; hedge funds; 13F

JEL Codes: G11, G14, G23, G28

1 Introduction

Do investors benefit from mandatory disclosure? This question is difficult to address in public securities markets. The Securities Act of 1933, Regulation FD, and the Sarbanes-Oxley Act have all increased disclosure requirements, however, in each case, there are confounding economic events, it is difficult to identify control groups and counterfactuals, and it is unclear what benefits accrue to potential investors. In this paper, we overcome these issues by studying whether investors benefit from mandatory disclosure in the market for *private* securities, that is, in the market for hedge funds. This market is relatively large, with assets upwards of \$5.2 trillion (Barth, Joenväärä, Kauppila, and Wermers (2020)), and manages money from a wide cross-section of society. About 85% of assets under management (AUM) come from institutional investors, including endowments, charitable foundations, pension funds, and insurance companies. The efficient regulation of disclosure in the hedge fund market is thus relevant for the larger investing public.

Since 1978, hedge funds and other large institutional investors have been required to publicly disclose their portfolio holdings on Form 13F. Mandatory portfolio disclosure, however, leaves funds vulnerable to copycat traders that mimic and front-run the revealed positions, the cost of which is substantially high (Brown and Schwarz (2013), Shi (2017), Cao, Du, Yang, and Zhang (2018)). Yet, both regulators and the public have long held the view that portfolio disclosure benefits fund investors. For example, in 1979 the SEC noted, after soliciting public feedback, that disclosure provides investors with “a greater basis for comparison shopping among investment managers,” and that the evaluation of managers is “dependent upon a periodic examination of a manager’s investment decisions as reflected by his holdings transactions.”¹ Indeed, portfolio disclosure can help *the econometrician* predict future fund performance (Kacperczyk, Sialm, and Zheng (2005, 2008), Cremers and Petajisto (2009), Agarwal, Ruenzi, and Weigert (2018b)). However, to the best of our knowledge, there is no

¹The 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.

prior evidence that *real-world* investors benefit from mandatory portfolio disclosure.

In this paper, we demonstrate that investors benefit from mandatory disclosure by providing causal evidence that selection ability varies with disclosure requirements. In public securities markets, it is difficult to cleanly identify the effects of regulation (Leuz and Wysocki, 2016), however, our setting has several useful features that allow for causal inference: First, the regulation was not targeted at hedge funds per se. Rule 13f-1 was passed in 1975 at a time when hedge funds were still in their infancy. Second, the reporting requirement applies to a fund only after a threshold condition is met, which helps us control for confounding concurrent events. Third, control groups can be identified because the threshold is not triggered at the fund-level, but at the parent company-level. Thus, disclosing and non-disclosing funds share an overlapping support, which allows us to build control groups and is key to our identification strategy. Fourth, our setting allows us to quantify the direct effect on aggregate investors. In contrast to public markets, private markets hold fix the price of investment, and we can directly observe the relationship between investment decisions (flows) and future returns. Finally, it is costly for funds to strategically time the crossing of the threshold; doing so sacrifices profit on two margins, i.e., the incremental incentive and management fees earned on additional assets.

We take advantage of our staggered panel data structure to estimate the effect of mandatory portfolio disclosure on aggregate selection ability. Aggregate selection ability is also referred to as the “smart money” effect and is measured as the sensitivity (slope) of future performance to current fund flows.² Our methodology differs from the standard difference-in-differences analysis, which studies the effect of an event on a level variable. We study the effect of an event on a *slope* variable, and this methodology has been used previously in corporate finance settings (see Gormley, Kim, and Martin (2012); Lel and Miller (2015); Edmans, Jayaraman, and Schneemeier (2017); Jayaraman and Wu (2018)).

²See 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 a discussion of the smart money effect in the hedge fund market.

Our main finding is that mandatory portfolio disclosure increases investors’ selection ability. After a fund crosses the disclosure threshold, investor fund flows better predict future performance. Our difference-in-differences estimation reveals that, relative to funds that do not disclose, a 10 p.p. increase in fund flows this quarter predicts a 52 to 76 basis point increase in annualized alpha the next quarter.³ Our results are robust to alternative performance measures, including excess returns, and alphas from the CAPM and the Carhart (1997) four-factor models.

A unique feature of our setting is that it also allows us to study the channel through which disclosure affects selection ability. We examine cross-sectional differences in the informational value of disclosure filings. We find that selection ability increases with: (1) the informational content of 13F filings, (2) the attention paid to 13F filings, and (3) the ability to invest using the information provided. We also perform a placebo test to shut down the information channel (using only funds of hedge funds (“FoFs”)) and find no increase in selection ability. Taken together, these results suggest that disclosure reduces information asymmetries between investors and fund managers, which increases investor selection ability.

One might argue that a shifting client-base might explain the documented significant relationship between disclosure and selection ability. For example, suppose that in the interest of transparency, the stakeholders of a large pension fund bar their investment managers from investing in non-13F filing hedge funds.⁴ In this case, disclosure gives rise to the observed selection ability, not because it informs investors’ decisions but simply because it expands the set of potential clients to include more sophisticated investors. However, this alternative hypothesis cannot explain why the informational value of disclosure affects selection ability.

Additionally, we address the alternative hypothesis using an investor-level holdings-based analysis that effectively holds fixed investor sophistication. Investor-level hedge fund port-

³Our main measures of alpha are the Fung and Hsieh (2001) seven-factor model (“FH7”) and the FH7 model extended to include the momentum factor from Carhart (1997). For brevity, we label this extended model FH8.

⁴We use “13F-filing hedge funds” and “13F hedge funds” as a short-hand to denote funds belonging to management companies that are required to publicly disclose their portfolio holdings.

folios are available for a subset of 127 registered FoFs.⁵ We find that the average registered FoF earns an annualized spread of 0.92 p.p. on its portfolio of disclosing versus non-disclosing funds, and a spread of 0.84 p.p. on its portfolio of disclosing funds versus the disclosing funds it chooses *not* to hold.

Another potential concern is that disclosure increases copy-cat funds and front running, which increases price pressure, thus driving our observed results. However, we find that (1) our results continue to hold when we use performance two-quarters ahead, whereas the documented price pressure relationship is mostly contemporaneous (Ahoniemi and Jylhä (2014)), and that (2) our results do not reverse when studying performance up to eight-quarters ahead, as would be expected under the price pressure story. Additionally, holdings in our investor-level analysis are reported with a lag of up to 120 days, thus it is unlikely that the benefits documented in the holding-based analysis are due to contemporaneous price pressure.

Our study makes several contributions to the literature. We are the first to quantify the causal effect of mandatory disclosure on the ability of investors to evaluate investment opportunities in securities markets. This has been of keen interest since 1963 when Congress issued a special report on the regulation of securities markets (SEC, 1963). Early empirical work finds evidence that the Securities Act of 1933 (“’33 Act”) increases the ability of investors to assess the risks of new stock issuances (Stigler (1964), Jarrell (1981), Simon (1989)). However, these documented effects are confounded by the multitude of concurrent institutional and societal changes that took place during the Great Depression (see Friend and Herman (1964), Easterbrook and Fischel (1984), Fox (1999)). Furthermore, the disclosure mandated by the ’33 Act was routinely voluntarily disclosed prior to the Act (Romano, 1998).

A closely related literature studies the secondary market effects of mandatory disclosure.

⁵There 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.

Disclosure potentially provides more information to investors and may also reduce information asymmetry and adverse selection *between* investors in the secondary market (see Copeland and Galai (1983), Glosten and Milgrom (1985), Kyle (1985), Easley and O’Hara (1987), Admati and Pfleiderer (1988)). In fact, the SEC’s explicit motivation behind the implementation of Regulation FD (“Reg FD”) in 2000 was to “[level] the playing field” (Koch, Lefanowicz, and Robinson, 2013). The extant literature largely finds mixed effects of Reg FD on investors: information asymmetry either increases (Sidhu, Smith, Whaley, and Willis, 2008) or decreases (Eleswarapu, Thompson, and Venkataraman, 2004; Chiyachantana, Jiang, Taechapiroontong, and Wood, 2004), and the level of information tends to decrease (Gomes, Gorton, and Madureira, 2007; Gintchel and Markov, 2004; Bailey, Li, Mao, and Zhong, 2003; Heflin, Subramanyam, and Zhang, 2003; Agrawal, Chadha, and Chen, 2006).

In contrast, studies investigating the impact of the Sarbanes-Oxley Act of 2002 (“SOX”) find: an increase in market liquidity (Jain, Kim, and Rezaee, 2008; Albuquerque and Zhu, 2019) and an increase in information provided to investors (Doyle, Ge, and McVay, 2007; Ashbaugh-Skaife, Collins, Kinney Jr, and LaFond, 2008; Feng, Li, and McVay, 2009; Hammersley, Myers, and Shakespeare, 2008). However, with both Reg FD and SOX, it is difficult to measure the quality of disclosure and to quantify the net benefits to investors. Reg FD prevents selective disclosure and SOX is more focused on auditing and enforcement of financial reporting, rather than on specific disclosures.

Form 13F filings allow us to address both strands of literature and isolate the information channel. Our staggered panel setting allows us to control for the effect of concurrent events; our market is a primary market for securities, and thus we can disentangle the decision making process from the adverse selection channel;⁶ and we can directly measure outcomes, namely returns to aggregate investment decisions. This allows us to causally measure the direct benefits that accrue to investors from mandatory disclosure.

Our hedge fund setting is important for the disclosure literature more broadly because

⁶There exists a secondary market for hedge funds, but it is relatively illiquid. Ramadorai (2012) documents 1,005 secondary market transactions between August 1998 and August 2008.

it is one of the few markets where we are able to provide causal estimates of the costs and benefits of regulation. The extant literature has found evidence that disclosure impairs the ability of fund managers to utilize their proprietary information, leading to lower returns for their clients (see Aragon, Hertz, and Shi (2013), Agarwal, Jiang, Tang, and Yang (2013), Brown and Schwarz (2013)). In particular Shi (2017) provides causal evidence that mandatory disclosure reduces fund returns, and Cao et al. (2018) quantifies the causal effect of copy-cat traders on this decline.

We also add to the body of literature that studies the investor selection ability. This literature provides evidence for and against a general smart money effect in the mutual fund market (see Gruber (1996), Zheng (1999), Sapp and Tiwari (2004)) as well as in the hedge fund market (see Baquero and Verbeek (2005), Ahoniemi and Jylhä (2014), Ozik and Sadka (2015)). However, our results are consistent with studies that document the selection ability of registered FoFs (Aiken, Clifford, and Ellis (2015), Gao et al. (2019), Sialm et al. (2019)). Our results shed light a potential source of such skill by documenting that FoFs earn higher returns from their investments in 13F hedge funds, and that FoFs benefit more from 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-differences regression analysis; Section 5 presents our cross-sectional analysis of the informational value of disclosure; Section 6 presents holdings-based analysis using registered 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

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

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

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

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

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

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. 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

¹²Section 13(d)(1) describes which types of equity securities are required to be considered. However, Rule

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 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 they 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

13(f)(1) effectively limits this set to only those equities that trade on a national securities exchange or are quoted on NASDAQ.

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 are classified as 13F filers because of an old 13F report but no longer filing 13F. The resulting sample includes 814 filers, among which 633 switched from a non-filer to a filer 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 keep FoFs for a placebo test later.

¹³The EDGAR index files are available at <https://www.sec.gov/Archives/edgar/full-index/>.

¹⁴181 filers that are not switchers (“always-filers”) manage 413 unique funds (380 hedge funds and 33 FoFs).

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:

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

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:

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

where the dependent variable $\text{Performance}_{i,t+k}$ 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. $\text{Post}_{i,t}$ 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 $13F_i \times \text{Post}_{i,t}$ 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 level 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 $\text{Flow}_{i,t} \times \alpha_i$ and $\text{Flow}_{i,t} \times \alpha_t$ to capture between-firm and across-quarter differences in flow-performance sensitivity, where $\text{Flow}_{i,t}$ 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 in 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.

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

¹⁵Note 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.

price pressure, which in turn drives our smart money effect. To address this concern we examine the persistence of the smart 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 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 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 following contemporaneous cross-sectional model:

$$\begin{aligned} \text{Log}(\text{EDGAR} + 1)_{i,q} = & \beta_1 nForms_{i,q} + \beta_2 nFunds_{i,q} + \beta_3 Size_{i,q} + \beta_4 Age_{i,q} \\ & + \beta_5 Flow_{i,q} + \beta_6 Return_{i,q} + \beta_7 Volatility_{i,q} + \varepsilon_{i,q} \end{aligned} \quad (3)$$

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

¹⁶Numerous 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>.

¹⁷We 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.

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-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:

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

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 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

¹⁸As 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).

¹⁹For 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.

²⁰For 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.

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.

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

²¹We 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.

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 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 we 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.

References

- Admati, Anat R, and Paul Pfleiderer, 1988, Selling and trading on information in financial markets, *The American Economic Review* 78, 96–103.
- Agarwal, Vikas, George O Aragon, and Zhen Shi, 2018a, Liquidity transformation and financial fragility: Evidence from funds of hedge funds, *Journal of Financial and Quantitative Analysis* 1–58.
- Agarwal, Vikas, Wei Jiang, Yuehua Tang, and Baozhong Yang, 2013, Uncovering hedge fund skill from the portfolio holdings they hide, *The Journal of Finance* 68, 739–783.
- Agarwal, Vikas, Stefan Ruenzi, and Florian Weigert, 2018b, Unobserved performance of hedge funds, *Available at SSRN*, Working Paper.
- Aggarwal, Rajesh K, and Philippe Jorion, 2010, The performance of emerging hedge funds and managers, *Journal of Financial Economics* 96, 238–256.
- Agrawal, Anup, Sahiba Chadha, and Mark A Chen, 2006, Who is afraid of reg fd? the behavior and performance of sell-side analysts following the sec’s fair disclosure rules, *The Journal of Business* 79, 2811–2834.
- Ahoniemi, Katja, and Petri Jylhä, 2014, Flows, price pressure, and hedge fund returns, *Financial Analysts Journal* 70, 73–93.
- Aiken, Adam L, Christopher P Clifford, and Jesse Ellis, 2013, Out of the dark: Hedge fund reporting biases and commercial databases, *Review of Financial Studies* 26, 208–243.
- Aiken, Adam L, Christopher P Clifford, and Jesse Ellis, 2015, The value of funds of hedge funds: Evidence from their holdings, *Management Science* 61, 2415–2429.
- Albuquerque, Ana, and Julie Lei Zhu, 2019, Has section 404 of the sarbanes–oxley act discouraged corporate investment? new evidence from a natural experiment, *Management Science* 65, 3423–3446.
- Aragon, George O, Michael Hertzel, and Zhen Shi, 2013, Why do hedge funds avoid disclosure? evidence from confidential 13f filings, *Journal of Financial and Quantitative Analysis* 48, 1499–1518.
- Ashbaugh-Skaife, Hollis, Daniel W Collins, William R Kinney Jr, and Ryan LaFond, 2008, The effect of sox internal control deficiencies and their remediation on accrual quality, *The accounting review* 83, 217–250.
- Bailey, Warren, Haitao Li, Connie X Mao, and Rui Zhong, 2003, Regulation fair disclosure and earnings information: Market, analyst, and corporate responses, *The Journal of Finance* 58, 2487–2514.
- Baquero, Guillermo, and Marno Verbeek, 2005, A portrait of hedge fund investors: Flows, performance and smart money, *ERIM Report Series Reference No. ERS-2005-068-F&A*.

- Barth, Daniel, Juha Joenväärä, Mikko Kauppila, and Russ Wermers, 2020, The hedge fund industry is bigger (and has performed better) than you think, *OFR Working Paper* 20–01.
- Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan, 2004, How much should we trust differences-in-differences estimates?, *The Quarterly journal of economics* 119, 249–275.
- Brown, Stephen J, and Christopher Schwarz, 2013, Do market participants care about portfolio disclosure? evidence from hedge funds’ 13f filings, Working Paper.
- Cao, Sean, Kai Du, Baozhong Yang, and Liang Zhang, 2018, Copycatting and public disclosure: Direct evidence from peer companies’ digital footprints, *Available at SSRN 3280744*, Working Paper.
- Carhart, Mark M, 1997, On persistence in mutual fund performance, *The Journal of Finance* 52, 57–82.
- Chevalier, Judith, and Glenn Ellison, 1997, Risk taking by mutual funds as a response to incentives, *The Journal of Political Economy* 105, 1167–1200.
- Chiyachantana, Chiraphol N, Christine X Jiang, Nareerat Taechapiroontong, and Robert A Wood, 2004, The impact of regulation fair disclosure on information asymmetry and trading: An intraday analysis, *Financial Review* 39, 549–577.
- Copeland, Thomas E, and Dan Galai, 1983, Information effects on the bid-ask spread, *the Journal of Finance* 38, 1457–1469.
- Coval, Joshua D, and Tobias J Moskowitz, 2001, The geography of investment: Informed trading and asset prices, *Journal of Political Economy* 109, 811–841.
- Cremers, KJ Martijn, and Antti Petajisto, 2009, How active is your fund manager? a new measure that predicts performance, *Review of Financial Studies* 22, 3329–3365.
- Doyle, Jeffrey, Weili Ge, and Sarah McVay, 2007, Determinants of weaknesses in internal control over financial reporting, *Journal of accounting and Economics* 44, 193–223.
- Drake, Michael S, Darren T Roulstone, and Jacob R Thornock, 2015, The determinants and consequences of information acquisition via edgar, *Contemporary Accounting Research* 32, 1128–1161.
- Easley, David, and Maureen O’Hara, 1987, Price, trade size, and information in securities markets, *Journal of Financial economics* 19, 69–90.
- Easterbrook, Frank H, and Daniel R Fischel, 1984, Mandatory disclosure and the protection of investors, *Virginia Law Review* 669–715.
- Edmans, Alex, Sudarshan Jayaraman, and Jan Schneemeier, 2017, The source of information in prices and investment-price sensitivity, *Journal of Financial Economics* 126, 74–96.

- Eleswarapu, Venkat R, Rex Thompson, and Kumar Venkataraman, 2004, The impact of regulation fair disclosure: Trading costs and information asymmetry, *Journal of financial and quantitative analysis* 39, 209–225.
- Fama, Eugene F, and Kenneth R French, 1992, The cross-section of expected stock returns, *The Journal of Finance* 47, 427–465.
- Feng, Mei, Chan Li, and Sarah McVay, 2009, Internal control and management guidance, *Journal of accounting and economics* 48, 190–209.
- Fox, Merritt B, 1999, Retaining mandatory securities disclosure: Why issuer choice is not investor empowerment, *Virginia Law Review* 1335–1419.
- Friend, Irwin, and Edward S Herman, 1964, The sec through a glass darkly, *The Journal of Business* 37, 382–405.
- Fung, William, and David A Hsieh, 2001, The risk in hedge fund strategies: Theory and evidence from trend followers, *The Review of Financial Studies* 14, 313–341.
- Gao, Chao, Timothy D Haight, and Chengdong Yin, 2019, Fund selection, style allocation, and active management abilities: Evidence from funds of hedge funds’ holdings, *Financial Management* 1–25.
- Gintschel, Andreas, and Stanimir Markov, 2004, The effectiveness of regulation fd, *Journal of Accounting and Economics* 37, 293–314.
- Glosten, Lawrence R, and Paul R Milgrom, 1985, Bid, ask and transaction prices in a specialist market with heterogeneously informed traders, *Journal of financial economics* 14, 71–100.
- Gomes, Armando, Gary Gorton, and Leonardo Madureira, 2007, Sec regulation fair disclosure, information, and the cost of capital, *Journal of Corporate Finance* 13, 300–334.
- Gormley, Todd A, Bong Hwan Kim, and Xiumin Martin, 2012, Do firms adjust their timely loss recognition in response to changes in the banking industry?, *Journal of Accounting Research* 50, 159–196.
- Gruber, Martin J, 1996, Another puzzle: The growth in actively managed mutual funds, *The Journal of Finance* 51, 783–810.
- Hammersley, Jacqueline S, Linda A Myers, and Catherine Shakespeare, 2008, Market reactions to the disclosure of internal control weaknesses and to the characteristics of those weaknesses under section 302 of the sarbanes oxley act of 2002, *Review of Accounting Studies* 13, 141–165.
- Heflin, Frank, KR Subramanyam, and Yuan Zhang, 2003, Regulation fd and the financial information environment: Early evidence, *The Accounting Review* 78, 1–37.
- Jain, Pankaj K, Jang-Chul Kim, and Zabihollah Rezaee, 2008, The sarbanes-oxley act of 2002 and market liquidity, *Financial Review* 43, 361–382.

- Jarrell, Gregg A, 1981, The economic effects of federal regulation of the market for new security issues, *The Journal of Law and Economics* 24, 613–675.
- Jayaraman, Sudarshan, and Joanna Shuang Wu, 2018, Is silence golden? real effects of mandatory disclosure, *The Review of Financial Studies* 32, 2225–2259.
- Jensen, Michael C, 1976, *The financiers: the world of the great Wall Street investment banking houses* (Weybright and Talley).
- Kacperczyk, Marcin, Clemens Sialm, and Lu Zheng, 2005, On the industry concentration of actively managed equity mutual funds, *The Journal of Finance* 60, 1983–2011.
- Kacperczyk, Marcin, Clemens Sialm, and Lu Zheng, 2008, Unobserved actions of mutual funds, *The Review of Financial Studies* 21, 2379–2416.
- Koch, Adam S, Craig E Lefanowicz, and John R Robinson, 2013, Regulation fd: A review and synthesis of the academic literature, *Accounting Horizons* 27, 619–646.
- Kyle, Albert S, 1985, Continuous auctions and insider trading, *Econometrica: Journal of the Econometric Society* 1315–1335.
- Lee, Charles MC, Paul Ma, and Charles CY Wang, 2015, Search-based peer firms: Aggregating investor perceptions through internet co-searches, *Journal of Financial Economics* 116, 410–431.
- Lel, Ugur, and Darius P Miller, 2015, Does takeover activity cause managerial discipline? evidence from international m&a laws, *The Review of Financial Studies* 28, 1588–1622.
- Lemke, Thomas P, and Gerald T Lins, 1987, Disclosure of equity holdings by institutional investment managers: An analysis of section 13 (f) of the securities exchange act of 1934, *The Business Lawyer* 43, 93–119.
- Leuz, Christian, and Peter D Wysocki, 2016, The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research, *Journal of Accounting Research* 54, 525–622.
- Li, Frank Weikai, and Chengzhu Sun, 2018, Information acquisition and expected returns: Evidence from edgar search traffic, Working Paper.
- Liang, Bing, Christopher Schwarz, Mila Getmansky Sherman, and Russ Wermers, 2019, Share restrictions and investor flows in the hedge fund industry, *Available at SSRN 2692598*.
- Ozik, Gideon, and Ronnie Sadka, 2015, Skin in the game versus skimming the game: Governance, share restrictions, and insider flows, *Journal of Financial and Quantitative Analysis* 50, 1293–1319.
- Ramadorai, Tarun, 2012, The secondary market for hedge funds and the closed hedge fund premium, *The Journal of Finance* 67, 479–512.

- Romano, Roberta, 1998, Empowering investors: a market approach to securities regulation, *The Yale Law Journal* 107, 2359–2430.
- Ryans, James, 2017, Using the edgar log file data set, *Available at SSRN 2913612*, Working Paper.
- Sapp, Travis, and Ashish Tiwari, 2004, Does stock return momentum explain the “smart money” effect?, *The Journal of Finance* 59, 2605–2622.
- SEC, 1963, Report of special study of securities markets of the securities and exchange commission, *US Government Printing Office, Washington, DC Retrieved July 4, 2012*.
- Shi, Zhen, 2017, The impact of portfolio disclosure on hedge fund performance, *Journal of Financial Economics* 126, 36–53.
- Sialm, Clemens, Zheng Sun, and Lu Zheng, 2019, Home bias and local contagion: Evidence from funds of hedge funds, *Review of Financial Studies, Forthcoming* .
- Sidhu, Baljit, Tom Smith, Robert E Whaley, and Richard H Willis, 2008, Regulation fair disclosure and the cost of adverse selection, *Journal of Accounting Research* 46, 697–728.
- Simon, Carol J, 1989, The effect of the 1933 securities act on investor information and the performance of new issues, *The American Economic Review* 295–318.
- Sirri, Erik R, and Peter Tufano, 1998, Costly search and mutual fund flows, *The Journal of Finance* 53, 1589–1622.
- Stigler, George J, 1964, Public regulation of the securities markets, *The Journal of Business* 37, 117–142.
- Teo, Melvyn, 2009, The geography of hedge funds, *The Review of Financial Studies* 22, 3531–3561.
- Zheng, Lu, 1999, Is money smart? a study of mutual fund investors’ fund selection ability, *The Journal of Finance* 54, 901–933.

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 from 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*** (-4.93)	-0.005*** (-4.58)	-0.005*** (-4.56)	-0.005*** (-4.59)	-0.001 (-0.49)
13F	0.007*** (5.81)	0.007*** (6.63)	0.007*** (6.61)	0.007*** (6.65)	
13F×Post×Flow	0.010** (2.11)	0.015*** (2.79)	0.015*** (2.59)	0.018*** (3.14)	0.019*** (3.03)
13F×Flow	-0.005 (-1.14)	-0.009* (-1.74)	-0.014*** (-2.72)	-0.015*** (-2.89)	-0.015*** (-2.61)
Flow	0.001 (0.64)	-0.001 (-0.22)	-0.043 (-0.93)	0.032 (0.61)	-0.035 (-0.61)
LogSize		-0.000* (-1.86)	-0.000* (-1.74)	-0.000* (-1.77)	-0.014*** (-15.93)
LogAge		-0.000 (-0.02)	0.000 (0.05)	0.000 (0.22)	-0.012*** (-3.95)
LagFlow		0.000 (0.11)	-0.000 (-0.08)	-0.000 (-0.19)	-0.026*** (-8.55)
LagRet		0.068*** (5.48)	0.065*** (5.23)	0.069*** (5.46)	-0.136*** (-10.32)
Volatility		0.174*** (6.90)	0.176*** (6.96)	0.170*** (6.77)	0.296*** (7.50)
RedemptionNotice		0.001** (2.05)	0.001** (2.08)	0.001** (2.10)	
LockUp		0.001* (1.88)	0.001* (1.87)	0.001* (1.87)	
ManagementFee		0.001 (1.56)	0.001 (1.61)	0.001 (1.58)	
IncentiveFee		0.000 (0.51)	0.000 (0.57)	0.000 (0.47)	
MinInvestment		0.001*** (3.13)	0.001*** (3.10)	0.001*** (3.11)	
PersonalCapital		0.002** (2.07)	0.002** (2.07)	0.002** (2.11)	
HighWaterMark		0.002* (1.74)	0.002* (1.75)	0.002* (1.73)	
Leveraged		0.000 (0.07)	0.000 (0.08)	0.000 (0.05)	
Offshore		-0.001 (-1.60)	-0.001 (-1.63)	-0.001* (-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*** (-3.13)	-0.004*** (-2.85)	-0.004*** (-2.90)	-0.004*** (-2.91)	0.002 (0.70)
13F	0.005*** (3.63)	0.003** (2.51)	0.003** (2.48)	0.003** (2.53)	
13F×Post×Flow	0.015** (2.48)	0.015** (2.29)	0.013* (1.95)	0.015** (2.34)	0.013* (1.86)
13F×Flow	-0.009 (-1.47)	-0.008 (-1.35)	-0.012* (-1.72)	-0.011 (-1.61)	-0.010 (-1.42)
Flow	-0.000 (-0.02)	-0.003 (-0.93)	-0.054 (-0.95)	0.053 (0.85)	-0.005 (-0.08)
LogSize		-0.000 (-0.70)	-0.000 (-0.63)	-0.000 (-0.66)	-0.012*** (-11.69)
LogAge		-0.002* (-1.85)	-0.002* (-1.74)	-0.002* (-1.68)	-0.017*** (-4.12)
LagFlow		-0.006** (-2.21)	-0.006** (-2.15)	-0.006** (-1.99)	-0.028*** (-7.83)
LagRet		0.109*** (5.50)	0.108*** (5.43)	0.111*** (5.60)	-0.057*** (-2.76)
Volatility		-0.011 (-0.35)	-0.009 (-0.28)	-0.014 (-0.46)	-0.023 (-0.48)
RedemptionNotice		0.000 (0.33)	0.000 (0.41)	0.000 (0.44)	
LockUp		0.001 (1.12)	0.001 (1.12)	0.001 (1.11)	
ManagementFee		-0.000 (-0.22)	-0.000 (-0.15)	-0.000 (-0.17)	
IncentiveFee		0.000* (1.85)	0.000* (1.83)	0.000* (1.76)	
MinInvestment		0.001*** (3.47)	0.001*** (3.50)	0.001*** (3.48)	
PersonalCapital		-0.000 (-0.34)	-0.001 (-0.42)	-0.001 (-0.41)	
HighWaterMark		0.002** (1.98)	0.002** (2.00)	0.002** (1.99)	
Leveraged		0.001 (0.53)	0.000 (0.45)	0.000 (0.44)	
Offshore		-0.001 (-0.58)	-0.001 (-0.56)	-0.001 (-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*** (-3.42)	-0.005*** (-3.20)	-0.005*** (-3.25)	-0.005*** (-3.27)	0.001 (0.33)
13F	0.005*** (3.91)	0.004*** (2.82)	0.004*** (2.81)	0.004*** (2.86)	
13F×Post×Flow	0.017*** (2.79)	0.018*** (2.81)	0.016** (2.41)	0.019*** (2.86)	0.017** (2.46)
13F×Flow	-0.011* (-1.88)	-0.012* (-1.85)	-0.015** (-2.20)	-0.014** (-2.13)	-0.015** (-2.12)
Flow	0.000 (0.17)	-0.001 (-0.22)	-0.049 (-1.15)	0.068 (1.39)	-0.001 (-0.01)
LogSize		-0.000 (-0.48)	-0.000 (-0.43)	-0.000 (-0.46)	-0.012*** (-11.28)
LogAge		-0.002** (-2.15)	-0.002** (-2.06)	-0.002** (-2.00)	-0.018*** (-4.44)
LagFlow		-0.006** (-2.03)	-0.005* (-1.93)	-0.005* (-1.81)	-0.028*** (-7.59)
LagRet		0.056*** (3.07)	0.056*** (3.06)	0.060*** (3.27)	-0.105*** (-5.53)
Volatility		-0.009 (-0.24)	-0.006 (-0.18)	-0.013 (-0.36)	-0.012 (-0.23)
RedemptionNotice		0.000 (0.30)	0.000 (0.41)	0.000 (0.44)	
LockUp		0.001 (1.44)	0.001 (1.44)	0.001 (1.44)	
ManagementFee		-0.001 (-0.67)	-0.001 (-0.62)	-0.001 (-0.63)	
IncentiveFee		0.000* (1.77)	0.000* (1.75)	0.000* (1.68)	
MinInvestment		0.001*** (3.18)	0.001*** (3.23)	0.001*** (3.22)	
PersonalCapital		-0.001 (-0.57)	-0.001 (-0.66)	-0.001 (-0.64)	
HighWaterMark		0.003** (2.07)	0.003** (2.11)	0.003** (2.11)	
Leveraged		0.000 (0.34)	0.000 (0.29)	0.000 (0.27)	
Offshore		-0.001 (-0.57)	-0.001 (-0.54)	-0.001 (-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 estimated but not reported. We cluster standard errors at the management company level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
13F×Post	0.001 (0.47)	0.001 (0.43)	0.001 (0.43)	0.001 (0.44)	0.001 (0.44)	0.001 (0.44)	0.001 (0.45)
13F×Flow×Before3	0.023 (0.98)				0.023 (0.97)	0.023 (0.97)	0.023 (0.98)
13F×Flow×Before2	0.010 (0.48)				0.010 (0.48)	0.010 (0.48)	0.010 (0.48)
13F×Flow×Before1	-0.020 (-1.04)				-0.021 (-1.05)	-0.021 (-1.05)	-0.021 (-1.06)
13F×Flow×Before0	0.006 (0.45)				0.006 (0.41)	0.006 (0.40)	0.006 (0.40)
13F×Post×Flow	0.018** (2.30)						
13F×Flow×After1		-0.005 (-0.30)	-0.005 (-0.31)	-0.005 (-0.29)	-0.004 (-0.23)	-0.004 (-0.24)	-0.004 (-0.22)
13F×Flow×After2		-0.003 (-0.17)	-0.003 (-0.17)	-0.003 (-0.17)	-0.002 (-0.13)	-0.002 (-0.13)	-0.002 (-0.13)
13F×Flow×After3		-0.009 (-0.44)	-0.009 (-0.45)	-0.009 (-0.44)	-0.009 (-0.40)	-0.009 (-0.41)	-0.009 (-0.40)
13F×Flow×After4+		0.019*** (2.61)			0.020** (2.49)		
13F×Flow×After4			0.005 (0.27)	0.005 (0.29)		0.005 (0.30)	0.006 (0.33)
13F×Flow×After5+			0.019*** (2.68)			0.020** (2.55)	
13F×Flow×After5				0.056*** (2.84)			0.057*** (2.84)
13F×Flow×After6+				0.019** (2.56)			0.019** (2.44)
13F×Flow	-0.015* (-1.94)	-0.014** (-2.02)	-0.014** (-2.02)	-0.014** (-2.02)	-0.015* (-1.96)	-0.015** (-1.96)	-0.015* (-1.96)
Flow	0.001 (0.02)	0.000 (0.01)	0.000 (0.01)	0.000 (0.00)	0.001 (0.01)	0.001 (0.01)	0.000 (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 (0.22)	-0.001 (-0.33)	0.000 (0.08)	0.003 (0.68)	0.005 (1.07)	0.004 (0.85)
13F×Post×Flow	0.044*** (3.89)	0.039*** (3.29)	0.036*** (3.25)	0.029*** (3.41)	0.031*** (3.01)	0.036*** (3.44)
13F×Flow				-0.034*** (-4.01)	-0.029*** (-2.98)	-0.032*** (-3.40)
Flow	-0.007 (-0.05)	0.041 (0.30)	-0.127 (-0.89)	0.043 (0.51)	0.041 (0.46)	-0.021 (-0.23)
LogSize	-0.027*** (-8.20)	-0.023*** (-5.77)	-0.024*** (-5.39)	-0.017*** (-8.79)	-0.016*** (-7.61)	-0.015*** (-6.49)
LogAge	0.020 (1.16)	-0.008 (-0.37)	-0.020 (-0.91)	-0.012** (-2.07)	-0.008 (-0.89)	-0.014 (-1.50)
LagFlow	-0.054*** (-6.13)	-0.060*** (-5.27)	-0.065*** (-5.41)	-0.030*** (-4.79)	-0.031*** (-4.28)	-0.028*** (-3.71)
LagRet	-0.332*** (-7.34)	-0.271*** (-4.54)	-0.319*** (-4.62)	-0.154*** (-6.17)	-0.094** (-2.09)	-0.140*** (-3.86)
Volatility	0.309* (1.93)	0.165 (0.89)	0.276 (1.37)	0.318*** (4.04)	-0.024 (-0.30)	0.049 (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)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Q+1	Q+2	Q+3	Q+4	Q+5	Q+6	Q+7	Q+8
13F×Post	-0.001 (-0.49)	-0.002 (-0.92)	-0.001 (-0.47)	0.000 (0.12)	0.001 (0.32)	0.003* (1.67)	0.004* (1.94)	0.005** (2.49)
13F×Post×Flow	0.019*** (3.03)	0.005 (0.84)	0.011* (1.80)	-0.008 (-1.45)	0.001 (0.13)	0.007 (1.07)	-0.009 (-1.47)	-0.001 (-0.13)
13F×Flow	-0.015*** (-2.61)	0.001 (0.15)	-0.006 (-1.13)	0.002 (0.41)	0.001 (0.25)	0.006 (0.96)	0.010* (1.83)	0.004 (0.78)
Flow	-0.035 (-0.61)	-0.048 (-1.08)	-0.021 (-0.53)	-0.052 (-1.17)	0.067 (1.01)	-0.038 (-0.60)	-0.051 (-1.20)	0.086 (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)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Q+1	Q+2	Q+3	Q+4	Q+5	Q+6	Q+7	Q+8
13F×Post	0.002 (0.70)	0.002 (0.83)	0.003 (1.42)	0.006** (2.12)	0.006** (2.22)	0.006** (2.24)	0.006** (2.09)	0.007** (2.34)
13F×Post×Flow	0.013* (1.86)	0.010* (1.68)	-0.003 (-0.54)	-0.006 (-1.10)	-0.004 (-0.56)	0.002 (0.26)	-0.007 (-1.22)	-0.001 (-0.12)
13F×Flow	-0.010 (-1.42)	-0.006 (-1.04)	0.008 (1.31)	0.002 (0.42)	0.007 (1.25)	0.008 (1.34)	0.010* (1.89)	0.006 (1.11)
Flow	-0.005 (-0.08)	-0.002 (-0.04)	0.051 (1.12)	-0.020 (-0.45)	0.126** (2.08)	-0.070 (-1.07)	-0.052 (-1.00)	-0.024 (-0.52)
Time FE×Flow	Yes							
Style FE×Flow	Yes							
Controls	Yes							
Controls×Flow	Yes							
Time & Fund FE	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)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Q+1	Q+2	Q+3	Q+4	Q+5	Q+6	Q+7	Q+8
13F×Post	0.001 (0.33)	0.002 (0.85)	0.004 (1.45)	0.005* (1.82)	0.005* (1.85)	0.006* (1.93)	0.005* (1.84)	0.006** (2.11)
13F×Post×Flow	0.017** (2.46)	0.011* (1.67)	-0.001 (-0.21)	-0.005 (-1.03)	0.000 (0.06)	0.004 (0.60)	-0.005 (-0.78)	-0.001 (-0.09)
13F×Flow	-0.015** (-2.12)	-0.006 (-0.94)	0.006 (1.07)	0.001 (0.22)	0.005 (0.85)	0.005 (0.80)	0.007 (1.31)	0.004 (0.71)
Flow	-0.001 (-0.01)	0.004 (0.06)	0.049 (1.06)	-0.022 (-0.43)	0.131** (2.11)	-0.081 (-1.40)	-0.029 (-0.55)	-0.010 (-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)	(2)	(3)	(4)	(5)	(6)
	Single-Fund Company	Multi-Fund Company	Largest Fund	Other Funds	Above Median	Below Median
13F×Post	-0.002 (-0.43)	0.002 (0.56)	0.001 (0.17)	0.001 (0.30)	-0.001 (-0.19)	0.002 (0.53)
13F×Post×Flow	0.035*** (2.78)	0.011 (1.31)	0.032*** (3.57)	0.003 (0.30)	0.035*** (3.08)	0.011 (1.21)
13F×Flow	-0.021* (-1.71)	-0.010 (-1.15)	-0.018** (-2.08)	-0.012 (-1.16)	-0.022** (-2.17)	-0.011 (-1.22)
Flow	-0.007 (-0.06)	0.023 (0.36)	0.000 (0.00)	-0.062 (-0.82)	0.204** (2.22)	-0.046 (-0.69)
LogSize	-0.014*** (-8.24)	-0.011*** (-8.13)	-0.013*** (-10.19)	-0.013*** (-6.87)	-0.014*** (-8.67)	-0.012*** (-8.03)
LogAge	-0.017** (-2.46)	-0.018*** (-3.18)	-0.019*** (-3.97)	-0.011 (-1.31)	-0.021*** (-3.06)	-0.016*** (-2.67)
LagFlow	-0.032*** (-6.16)	-0.026*** (-5.35)	-0.031*** (-7.65)	-0.031*** (-4.57)	-0.030*** (-6.34)	-0.027*** (-5.12)
LagRet	-0.137*** (-5.02)	-0.107*** (-4.09)	-0.129*** (-5.91)	-0.115*** (-3.93)	-0.119*** (-4.65)	-0.127*** (-4.57)
Volatility	0.012 (0.19)	-0.008 (-0.10)	0.004 (0.07)	-0.046 (-0.49)	0.052 (0.84)	-0.071 (-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)	(2)	(3)	(4)	(5)	(6)
	Excess	Excess	FH7	FH7	FH8	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:		Panel B:	
	Abnormal investor attention		Abnormal investor attention	
	based on # of Downloads		based on unique # of IPs	
	(1)	(2)	(3)	(4)
	High	Low	High	Low
13F×Post	-0.006 (-1.39)	0.000 (0.03)	-0.005 (-1.18)	-0.001 (-0.18)
13F×Post×Flow	0.039*** (3.12)	0.006 (0.48)	0.038*** (2.98)	0.009 (0.74)
Flow	-0.122 (-0.77)	0.131 (1.15)	-0.140 (-0.89)	0.143 (1.17)
LogSize	-0.012*** (-7.09)	-0.011*** (-5.45)	-0.012*** (-7.14)	-0.012*** (-5.68)
LogAge	-0.005 (-0.58)	-0.015* (-1.80)	-0.003 (-0.36)	-0.010 (-1.06)
LagFlow	-0.036*** (-4.00)	-0.024*** (-3.40)	-0.035*** (-3.95)	-0.025*** (-3.54)
LagRet	-0.075 (-1.45)	-0.123*** (-3.31)	-0.080 (-1.52)	-0.132*** (-3.39)
Volatility	-0.139 (-1.48)	-0.022 (-0.19)	-0.127 (-1.35)	-0.052 (-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)
	Lock-Up?	Lock-Up?	Total	Total	Subscription	Subscription	Overall	Overall
	No	Yes	Redemption	Redemption	Frequency	Frequency	Restriction	Restriction
			Short	Long	Short	Long	Relaxed	Strict
13F×Post	0.002 (0.57)	0.000 (0.05)	0.000 (0.09)	0.004 (1.06)	0.002 (0.51)	0.007 (0.92)	0.004 (0.95)	-0.000 (-0.05)
13F×Post×Flow	0.019** (2.24)	0.009 (0.71)	0.021** (2.29)	0.002 (0.21)	0.017** (2.39)	-0.025 (-1.10)	0.023** (2.13)	0.007 (0.79)
13F×Flow	-0.018** (-2.05)	-0.004 (-0.29)	-0.016* (-1.76)	-0.016 (-1.46)	-0.014* (-1.89)	-0.028 (-1.33)	-0.021** (-1.99)	-0.008 (-0.78)
Flow	-0.006 (-0.09)	0.020 (0.16)	0.014 (0.23)	-0.115 (-0.49)	-0.004 (-0.07)	0.305 (1.25)	-0.062 (-0.85)	0.030 (0.32)
LogSize	-0.012*** (-9.60)	-0.012*** (-6.12)	-0.012*** (-8.90)	-0.012*** (-6.92)	-0.011*** (-10.31)	-0.017*** (-5.57)	-0.011*** (-7.47)	-0.013*** (-8.59)
LogAge	-0.018*** (-3.63)	-0.017** (-2.42)	-0.023*** (-3.88)	-0.015** (-2.57)	-0.020*** (-4.44)	0.008 (0.63)	-0.021*** (-3.18)	-0.018*** (-3.41)
LagFlow	-0.027*** (-6.95)	-0.028*** (-3.46)	-0.024*** (-5.46)	-0.034*** (-5.40)	-0.026*** (-6.92)	-0.033*** (-2.77)	-0.025*** (-5.53)	-0.032*** (-5.73)
LagRet	-0.117*** (-5.51)	-0.086** (-2.44)	-0.175*** (-7.08)	-0.040 (-1.42)	-0.101*** (-4.99)	-0.111* (-1.76)	-0.172*** (-6.62)	-0.074*** (-3.05)
Volatility	0.013 (0.22)	-0.069 (-0.96)	0.018 (0.27)	-0.037 (-0.56)	0.008 (0.15)	-0.153 (-1.42)	0.052 (0.73)	-0.055 (-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)***

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