The Effect of Media Coverage and Institutional Ownership on Performance

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ABSTRACT

The effect of media coverage and institutional ownership on performance

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This thesis consists of three essays that investigate the effects of media coverage and institutional ownership on flows and performances of mutual funds and firms.

The first essay (chapter 2) investigates the importance of the existence and tone of media coverage on open-ended mutual funds (OEMFs). Media coverage can be an important channel for determining which mutual funds are being considered for purchase or retention by less sophisticated individual investors. We find that media coverage is more likely for bigger, older and fee-waiving open ended mutual funds. Consistent with the investor attention hypothesis, we find that the existence, frequency and tone of media articles, and also excluding those that do not mention holdings, significantly affect future OEMF flows and performance more strongly during the following-day. Over longer periods of time, we find that the fund-performance effect of learning based on the tone of news articles is more pronounced. We find significant but small spill-over effects from news mentions of other same-management funds. We also find that funds with negative coverage are not punished as much as funds with positive coverage are rewarded.

The second essay (chapter 3) discusses the significance of changes in holdings of institutional investors on the stocks they hold. These changes may have market impacts, particularly if their size provides informational advantages due to better firm manager access, especially for stocks with lower analyst reviews and weaker internal corporate governance. We find that a stock's performance is related to prior changes in the stock holdings of institutional investors with more than 1% of a firm's outstanding shares after the publication of the Dow Jones end-of-quarter top institutional investor reports ("events"), and that the relation is more pronounced for smaller stocks. We find that the stock holdings of these Top Institutional Investors are a better predictor of a stock's subsequent returns compared to the total stock holdings of other institutional investors.

We observe abnormal performances associated with the reported shifts in stock holdings after event dates, and an increase in trading volumes on the event dates, which is consistent with the investor recognition hypothesis.

The third and final essay (chapter 4) investigates whether corporate social responsibility (CSR) affects firm value which has gained extra interest since the COVID-19 market crash. In this essay, we investigate whether a firm's Environmental/Social/Governance (ESG) orientations affect the changes in the composition of the holdings of institutional investors. We find that CSR firms outperform others throughout the market downfall, especially when they have more long-horizon institutional ownership (IO). Our results indicate that the environmental and social scores of firms significantly increase cross-sectional stock returns. We observe that CSR has a stronger effect on firm value and performance during the COVID-19 market crash for firms with higher monitoring from influential institutional owners. We also find that institutional investors do not trade based on ESG scores during normal times but that their trading reflects and affects these metrics during times of financial turmoil.

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Chapter 1: Introduction

This thesis examines the effects of media coverage and institutional ownership on fund and firm performance. Media coverage can be an important channel for determining which mutual funds are being considered for purchase by less sophisticated individual investors. Institutional ownership is usually associated with more informative stock prices and improved corporate governance. We use large hand-collected databases of news articles and institutional holding reports in our empirical tests.

In chapter 2 (essay one), we focus on the role of media coverage in he performance of open-ended mutual funds and whether media has the ability to affect financial markets and investor behavior. We find that bigger and older funds are more likely to receive media coverage and that fee waivers lead to more media mentions. We observe the existence of awareness-based buying and find that funds that receive a higher level of media coverage, tend to have higher subsequent flows. We also observe that cash inflows and performances of mutual funds differ based on the tone of the message relayed in the media. Our results show that both the existence and frequency as well as the tone of media articles significantly increase the flows to OEMFs and lower the following-day fund performance.

In chapter 3 (second essay), we investigate the importance of institutional investors and their trades for the performance of the stocks they hold. We test whether a stock's performance is related to prior changes in that stock's holdings by top institutional holders after the publication of the Dow Jones end-of-quarter top institutional investor reports, and whether the relation is more pronounced for smaller stocks with lower analyst and media coverage. We find that the holdings of institutional investors with more than 1% of a firm's total stock holdings are a better predictor of that stock's returns compared to the total stock holdings of other institutional investors. We observe an increase in trading volumes of stocks on the dates that their Top Institutional Investors reports are published, which is consistent with the media awareness hypothesis.

In chapter 4 (essay three), we use the COVID-19 market crash as an exogenous shock to evaluate the significance of institutional ownership and CSR orientations of firms. We investigate whether a firms' corporate governance metrics and ESG scores affect the changes in the

composition of the holdings of institutional shareholders, especially in times of exogenous crises such as the recent COVID-19 market crash. We find that more CSR-oriented firms outperform others throughout the pandemic, especially when they have more long-horizon institutional ownership. Our results indicate that the environmental and social scores of firms significantly increase cross-sectional stock returns during market downfalls. We also find that institutional investors do not trade based on ESG scores during normal times but that their trading reflects and affects these metrics during times of financial turmoil.

In chapter 5, we provide a brief conclusion of the effects of institutional ownership and media coverage on funds and firms and outline the contributions and implications of the findings reported in this thesis.

Chapter 2: The Investor Awareness and Learning Channels: Effect of Media Coverage on Fund Flows and Performance

2.1. Introduction

A common belief is that media influences individual perceptions (e.g. Tetlock, 2007) and affects the social, economic and financial landscapes (e.g. Stiglitz, 2002; Engelberg and Parsons, 2011). Many studies examine the effects of media coverage on the performance of different financial institutions, securities, and investors. In discussing stocks, Merton (1987) mentions that a newspaper or other mass media story about a firm that reaches many investors who are not currently shareholders could induce some of these potential investors to incur the set-up costs to follow and invest in the firm. Barber and Odean (2008) posit that news is a primary mechanism for attracting the attention of investors and provide evidence that investors buy stocks which attracted their attention. Tetlock (2007) measures investor sentiment using textual analysis and shows that media pessimism predicts short-term temporary declines in aggregate prices and trading volumes.

This chapter investigates the effects of media coverage on open ended mutual funds (OEMFs). The mutual fund industry provides a good setting for testing the effects of media coverage. First, there is no first-order valuation effect on a mutual fund due to investor attention and learning from media coverage which makes it easier to separate the augmented flows and returns due to the attention- and awareness-based buying behaviour of investors. Second, the shareholder base of retail-class OEMFs consists of individual (household) investors who are considered the least sophisticated type of investors in the market (e.g., Barber and Odean, 2013). In that sense, the behavioural effects of media coverage are expected to be more pronounced for OEMFs both in terms of investor attention and learning.

A mutual fund (MF) is a financial vehicle which pools money collected from a large number of investors and invests that money in the market on the behalf of those shareholders. MF managements receive fees which are based on the amount of assets under management (AUM) that typically range between 0.5% and 1% of AUM for equity OEMFs. As management

compensation is related directly to a fund's AUM, fund managers have an incentive to outperform to garner more inflows to increase their dollar management fees. This can be done *internally* by exhibiting better fund performance or *externally* by implementing better communication skills that increase AUM through net inflows. The former method is unreliable as the mutual fund literature generally finds that the average MF is unable to earn higher than normal returns on a long-term basis and that observed outperformances are usually temporary and often based on luck and not skill (e.g. Barras, Scaillet, and Wermers, 2010; Carhart, 1997). Results for the relationship between fund performance and the level of a fund's management expense ratio (MER) are mixed, ranging from negative (Elton et al., 1993; Haslem et al., 2008; Bello and Frank, 2010) to none (Blume and Crockett, 1970; Ippolito, 1989; Edelen et al., 2013). Edelen et al. (2013) also find that fund performance decreases with total trading costs. Then, why do some OEMFs attract inflows when they have higher MERs without outperforming? A possible explanation is the external communication skills of the funds in terms of garnering media coverage.

When search is costly, the appearance of an OEMF in the media may encourage potential investors to include the OEMF in their limited "consideration set" (Merton, 1987) and thus increase the likelihood that the OEMF will be included in an investor's investment portfolio.[1] Media coverage can be about the mutual fund itself or about its holdings. If OEMF holdings that are disclosed to the SEC quarterly are mentioned in the media, the expectation is that investors will become more aware of the OEMF and increase their flows into the OEMF. Solomon, Soltes, and Sosyura (2014) find evidence of a significant correlation between media mentions of fund holdings and the subsequent flows into the fund. Unlike their work, we focus mainly on the media coverage of the mutual fund itself and test whether news articles that refer to an OEMF or its family in the first 500 words of an article result in increased flows to the fund and affect the OEMF's subsequent performance. To support our conjecture that our results are not due to media coverage of fund-holding disclosures, we obtain supportive results from a set of robustness tests using a cleansed media mentions database which excludes articles that mention both an OEMF and its holdings.

[1] This is also referred to as information awareness (e.g., Blankespoor, Dehaan, Wertz and Zhu, 2019). The SEC, e.g., has implemented regulations like FD (Fair Disclosure) and XBRL (an easier way to view, access, and explore the contextual information in SEDAR) to facilitate information awareness and reduce search costs for investors. The SEC FD differs from, for example, the Canadian National Policy 51-201 in terms of the methods used for disclosure.

We first examine the number of news articles that mention an OEMF's name on each day to begin to capture the absolute effect of investor attention. We separately compare the cash inflows and performances of OEMFs based on the level of attention they receive through different channels of media coverage that differ from fund to fund. To illustrate, a fund's rating affects a fund's inflows (e.g. Del Guercio and Tkac, 2008, for changes in Morningstar's 5-star ratings; and Kaniel and Parham, 2017, for presence in the top 10 rankings of the Wall Street Journal). We expect that a higher rated (older) fund would benefit less from increased media coverage than a lower ranked, lesser-known (younger) fund as the higher rated (older) fund has already garnered much attention. Therefore, we control for the different characteristics of funds to better extract the pure effects of investor attention from media mentions by ensuring that our results are not driven by differences in fund characteristics or other channel mentions.

To identify which OEMF characteristics lead to media coverage, we use Poisson and negative binomial regressions to examine the relation between *Count* (number of news articles covering an OEMF in each trading day) with size, age, performance, and controls. To help address endogeneity issues in the form of reverse causation, we use the lags of the independent variables. We also use panel regressions with fixed effects and the log of the count data as a robustness check of our results. We find that media coverage for an OEMF tends to be persistent, and that media coverage is higher for funds that are bigger, older, with worse prior performance, with lower management fees, with higher previous-day absolute net flows (proxy for the level of "trading" volume), with a higher number of funds in their family, and with higher-than-average Morningstar 5-star ratings. Our results are not significantly different when we run separate tests on funds with different prospectus objectives of Income, Growth and Aggressive Growth.

We also assess how the extent and tone of OEMF media coverage affects subsequent net cash flows, cash redemptions and benchmark-adjusted returns. We find that both the existence and frequency of media articles significantly increases the flows to (consistent with the attention hypothesis) and decreases the performance of the OEMF. To examine tone, we carefully analyze each news article separately using a dictionary-based sentiment analysis technique following Loughran and McDonald (2011) to determine if the message tone is positive or negative. We hypothesize that after publication of a positive/negative news article about a given OEMF, we will observe higher/lower inflows to and lower/higher redemptions from that fund in the following

days. We find that both the existence and frequency of media articles in the previous trading day significantly increases the flows to the OEMF and that the effect is stronger for the existence of media articles. In contrast, fund performance diminishes following a news-date irrespective of the choice of our regression specification. We assess if our first-day, post-publication results for the effects of the existence, frequency, and sentiment of media coverage on flows and performance remain over the first trading week and subsequent six-month period. We find that the fund-performance based on the tone of news article is more pronounced over these longer periods (consistent with the learning hypothesis).

We use a two-stage least squares setting to address potential endogeneity issues caused by the omission of potentially influential variables in our panel regressions. Since we expect management skill to be positively related to both OEMF size and performance, we use an instrumental variable approach and the recursive demeaning procedure of Pastor and Stambaugh (2015) to deal with the resulting bias because we cannot measure skill directly. We find that fund shareholders act based on the tone and sentiment of the conveyed message since funds with more previous-day positive news mentions overperform their counterparts both in terms of their net flow percentages and benchmark-adjusted returns. We also find that our results remain intact when we examine the effect of fund news that does not mention a fund's holdings.

We consider the spillover effects from news about funds managed by the same management company.[2] We find significant effects from spillovers among funds from the same management company at the 1%-level which represent a small fraction of the total effect of the frequency and existence of the media coverage on flows of the OEMFs.

We contribute to the literature that examines how media exposure through the "investor attention/awareness" channel proposed by Gilbert (2012), amongst others, and the "information digestion" channel proposed by Del Guercio and Tkac (2008) can affect individual investment behavior (i.e. fund flows) and subsequently mutual fund investment decisions and performances.[3] Our findings differ from the findings of Blankespoor, Dehaan, Wertz and Zhu (2019) who

[2] The former are those funds belonging to the same management company but having a different fund manager and/or advisor. The latter are those funds belonging to the same management company.

[3] Thus, our study further complements a parallel literature which finds that the media can provide efficient signals to outside stakeholders about managerial behaviour and firm performance that may change firms' behavior and outcomes (e.g., Bednar, Boivie and Prince, 2013; Liu and McConnell, 2013; You, Zhang and Zhang, 2017; Chen, Goyal, Veeraraghavan and Zolotoy, 2020).

conclude that their results for the Associated Press's (AP's) staggered rollout of nationally distributed "robo-journalism" articles of firms' earnings announcements raises questions about the efficacy of regulations that aim to aid less sophisticated investors by increasing their awareness of and access to accounting information. Moreover, we contribute to a strand of the literature that measures the impact of news sentiment on the performance of financial securities (e.g., Tetlock, 2007; Fang and Peress, 2009; Kaniel and Parham, 2017).

This thesis also makes an important contribution to the communication practices and coverage of OEMFs and corporations given that mutual funds own a sizeable share of U.S. corporate equity (31% in 2017) and represent a significant component of the financial holdings of many households (e.g., 45.4% of U.S. households in 2017, *ICI Factbook 2018*). Various studies (e.g., Bodnaruk and Ostberg, 2009) support the Merton (1987) model prediction that the cost of equity increases with a decrease in the number of shareholders, which in turn depends upon investor attention or awareness which leads to less limited investor "consideration sets" and potentially to a broader shareholder base. We are, to the best of our knowledge, the first to use a comprehensive dataset of daily media coverage of funds and their families to examine fund flows and performance in the mutual fund industry.

This thesis also contributes to the spill-over effects of information revelation about "peer" entities by examining the effects of news articles about other funds on the flows and performances of the fund of interest. The current literature examines the effects of spillover about the strategies or techniques used by hedge funds (e.g. Glode and Green, 2011), stellar performance of other funds in the same family (Nanda, Wang and Zheng, 2004), demand spillover for the retail segment of the U.S. mutual fund industry (Gavazza, 2011), knowledge spillovers in the mutual fund industry through labor mobility (Cici, Kempf and Peitzmeier, 2022) and asset participation spillovers from retirement account ownership to other stockholding modes (Dimitris, Georgarakos, and Haliassos, 2011).

The rest of the chapter is structured as follows. In section 2 we develop the hypotheses to be tested. In section 3 we discuss sample selection and data manipulation including the hand-collected news database consisting of over 300,000 articles. Section 4 reports the empirical results and discusses their significance. Section 5 provides additional robustness tests. Section 6 concludes.

2.2. Development of Hypotheses

Media coverage of OEMFs can be divided into news covering the OEMF itself or its holdings. The belief is that investors are more attentive or aware of the OEMF if the OEMF itself or assets included in the OEMF's portfolio that are publicly revealed quarterly are mentioned in the media. Edelen (1999) finds an inverse relation between OEMF abnormal returns and their net flows. We posit that media coverage of OEMFs itself affects the flows based on the attention it solicits from individuals which Sirri and Tufano (1998) use as a proxy for the magnitude of search costs. We build on Solomon, Soltes, and Sosyura (2014) who find a significant correlation between media mentions of OEMF holdings and the subsequent flows into the OEMF by examining the effect of news covering the OEMF itself with and without the including of news about holdings. Solomon et al. find that extra flows respond to past returns, only if the holdings are covered in major newspapers.

Any communication between fund sponsors and fund investors, whether directly through advertisements or fund mailings, or indirectly through newspapers articles and fund ratings, is generally designed to affect the expectations of investors about the fund's ability to generate competitive returns, and subsequently to increase the inflows to the fund. Therefore, everything else held equal, an investor who has direct or indirect communications from an OEMF is more likely to consider that OEMF when making his/her capital allocation decision (Merton, 1987). Both positive and negative messages are expected to change the expectations and subsequent response of fund investors in terms of cash inflows or redemptions. As a result, media coverage can directly affect the OEMF's asset base, and indirectly affect the OEMF's ability to generate returns, and the risk-taking behavior of its managers. Hence:

> **H1:** The absolute flows to/from an OEMF and the performance of the OEMF are related to the existence and the volume of media coverage of the OEMF itself.

The expected change of such communications on the expectations and subsequent response of fund investors will depend on an assessment of their content in terms of the positivity or negativity of their tones. This leads to the following hypothesis in its alternate form:

> **H2:** The absolute flows to/from an OEMF and the performance of that OEMF depend upon the message tone which can affect investor sentiment towards that OEMF.

2.3. Sample and Data Manipulation

2.3.1. OEMF Sample

The OEMF sample is drawn from Morningstar Direct for the period from 2010 to 2018 for US OMEFs with a Global Broad Category of Equity.[4] About 87% of the sample of equity OEMFs consists of growth funds and the remainder are income funds. We obtain daily price and net assets for a sample of 5563 share classes that represent 1730 funds and 448 distinct fund families. Our sample has no survivorship bias since it includes active, merged, and liquated OEMFs. We obtain each OEMF's rating, type of share class, inception date, and respective benchmarks to be used as control variables. We use two measures for the cash flows to and from the OEMFs, the net dollar flows (TNF) which are equal to the exact amount of cash absorbed by the fund, and the percentage flows (TNFP) which are the percentage increases in OEMF assets not driven by their internal returns. Although TNFP use is more prevalent in the mutual fund literature, we also include TNF in its absolute form as it can serve as a measure for trading volume. Tetlock (2007) finds that extreme media sentiment affects the trading volume of stocks. We calculate the two flow measures using the following formulas:

$$TNF_{i,t} = AUM_{i,t} - AUM_{i,t-1} * \left(1 + FndRet_{i,t}\right) \quad (1)$$

$$TNFP_{i,t} = \frac{AUM_{i,t} - AUM_{i,t-1} * (1 + FndRet_{i,t})}{AUM_{i,t-1}} \quad (2)$$

where $AUM_{i,t}$ is the total net assets of share-class *i* for day *t* and $FndRet_{i,t}$ is the realized return of fund *i* for day *t*. The values generated using equation (1) conform to the values that are reported in the Morningstar database. The daily returns, trading volumes and volatilities for the S&P500 and Russell indexes are downloaded from CRSP.

Our mutual fund database has 8,133,208 share class–day observations. When we combine the observations for the different share classes associated with an OEMF into a single observation we are left with 2,718,146 OEMF-day observations. While we conduct the main analyses at the OEMF level, we also conduct analyses with the 800,464 fund family-day observations. Table 2.1 shows

[4] Time period is dictated by downloading restrictions on the Factiva license used to download news data.

the summary statistics for our equity OEMF sample and the covariates used in the subsequent empirical analyses.

<Table 2.1 about here.>

2.3.2. News Sample

We download the articles covering every fund family in our sample during the period of 2010 to 2018 using the Factiva search engine. Our criteria restrict the search to identify articles in the English language, financial industry, and United States region. We search for fund-family mentions as the majority of the news articles cover the family in general, rather than the OEMF itself or its share classes. We include an article as media coverage for an OEMF if it mentions the fund family's name in the first 500 words, in order to exclude the less significant and tabular mentions in longer articles. Due to the prevalence of the internet and online news sources, and their extended reach to individual and institutional investors, we do not restrict our news sample to the major newspapers and periodicals. Each downloaded article is analyzed using the Loughran and McDonald (LM) (2011) dictionary to categorize the article into positive, neutral or negative sentiment news. Two separate surveys on textual analysis, Loughran and McDonald (2016) and Guo et al. (2016) show that the LM dictionary outperforms the Harvard General Inquirer (GI) for sentiment analyses in accounting and finance. Guo et al. (2016) also show that while neural network-based approaches are the best in terms of sentiment analysis, a dictionary-based approach using the LM dictionary produces very similar results.

We extract 319,647 separate news articles covering 397 distinct fund families consisting of 111,347 with positive sentiments, 166,763 with negative sentiments, and 41,517 with neutral sentiments. We set the dates of articles published on weekends or holidays to the next Monday or the next working day, respectively, to conform to the trading-day data available for the OEMFs. Combining articles with the same date, we have 119,884 fund family-day observations with one or more news articles which represent 15% of our total fund family-day observations. Table 2.2 reports the summary statistics for media coverage and Figure 2.2 graphs the source and time-series distributions of the news articles.

<Table 2.2 and Figure 2.2 about here.>

Before we merge the OEMF data with the media coverage data, we delete OEMF-day observations with missing daily prices. When net daily assets are missing, we interpolate linearly. We remove data points for days before the inception of the OEMF as well as observations for OEMFs with a NAV less than one million dollars (e.g. Fang, Peress, and Zheng, 2014). This results in a deletion of 20,713 observations (0.7%) and 16 distinct OEMFs. Also, some of these data points which have a NAV of 10 dollars seem to be filled manually as placeholders for unreported data.

Consistent with the findings of Niessner and So (2018), we observe that negative news articles account for a greater portion of our news sample. Arguments given to support this finding include corporate managers accumulate and withhold bad news but leak and immediately reveal good news to investors (Kothari, 2006), and the media needs to cover more bad news compared to good news to hypothetically remove informational asymmetry about a firm since information asymmetry between managers and shareholders is higher for negative information (Tetlock, 2010).

2.4. Model and Empirical Results

2.4.1. Flow-Performance Model

We base our regression specification of the relationship between performance and flows on Berk and Green (2004), assuming that investors are rational and seek excess returns (α) where α is a measure of an OEMF's ability to generate excess returns. The excess return at a given date equals $\alpha^* + €$ where € is normally distributed with mean zero. Supposing that there are no incoming or outgoing flows, the total increase in the wealth of an OEMF equals its realized return minus its total costs including management fees:

$$NetFnd\$Ret_t = AUM_{t-1} * FndRet - AUM_{t-1} * MER \quad (3)$$

where AUM is the fund's net assets under management, *FndRet* is the fund's gross return which does not reflect the cost of actively managing the fund and is assumed to have a convexly increasing relation with AUM (Berk and Green, 2004); and MER is the fund's management expense ratio. The net fund return per dollar invested *NetFndRet* is equal to Net Fund Dollar Return (*NetFnd$Ret*) divided by AUM. The excess fund return is then calculated by finding the difference between *NetFndRet* and a benchmark return:

$$ExFndRet_t = NetFndRet_t - BenchmarkRet_t = \alpha^* + € = \alpha \quad (4)$$

If rationale, market participants are assumed to exploit any opportunity to allocate more capital to funds with an expected positive α and to redeem their investments from those with a negative α. If investors' expectations of future α are based on realized α, we expect a relationship between an OEMF's net inflows and lagged realized returns. Several studies using monthly returns, including Ippolito (1992) and Sirri and Tufano (1998), find that fund flows respond to prior performance. Kothari (2006) and to a lesser extent Fant and O'Neal (2000) identify an asymmetric relationship where funds with great performance are highly rewarded with increased flows while the worst performers are not punished to the same extent. Spiegel and Zhang (2013), however, argue that the asymmetry in the flow-performance relationship is a statistical artifact due to the choice of estimation method. Berk and Green (2004) show that an OEMF's size has a convex relation with its MER. Therefore, we include OMEF size in the model as flows may be affected by the relation of MER with firm size.

The baseline model for the net percentage flows of an OMEF is given by:

$$TNFP_{i,t} = \alpha + \beta_1 * FndRet_{i,t-1} + \beta_2 * logAUM_{i,t-1} + \beta_3 * MER_{i,t-1} + \beta_. * Controls_{i,t-1} + e_{i,t} \quad (5)$$

where $TNFP_{i,t}$ is the net percentage flows to OEMF i in day t, AUM is the total assets under management, and $FndRet_{i,t-1}$ is the daily return of OEMF i in day $t-1$. The coefficient β_1 (β_3), which captures the relation between flows and lagged returns (MER), is expected to be a positive (negative) value if fund investors are rational. The sign of β_2 is indeterminate due to the expected convex relation of fund AUM with MER (Berk and Green, 2004). We also control for fund characteristics that the literature shows have an effect on the level of fund flows. We control for the age of the OEMF (Chevalier and Ellison, 1997, among others), volatility of returns (Huang, Wei and Yan, 2007), and family size (Nanda, Wang and Zheng, 2004). The incentive for managers to outperform their competitors is the increase in their management fees with greater market share. However, as the costs of portfolio management increase in a convex fashion with increasing AUM, outperforming is more difficult with an increasing AUM (Chen et al., 2004) whose difficulty becomes stronger for less liquid funds (Yan and Zhang, 2009; Edelen, 1999). Berk and Green (2004) show theoretically that the flows to/from an OEMF in a perfectly efficient market continue to the point where the expected excess returns for the marginal fund investor converge to zero. At an equilibrium with no excess returns, the flows based on the return expectations of individual

investors cease. Therefore, we expect the performance of an OEMF to be inversely affected by its past flows. The performance of an OEMF is also expected to depend on its investment objective and trading strategy (Brown, Goetzmann, and Ibbotson, 1999). Also, to account for the effect of market movements, we adjust the returns of the OEMFs against the Fama-French 5 factors.

Thus, we use the following model to test for the determinants of fund alphas:

$$Alpha_{i,t} = a + \beta_1 * TNF_{i,t-1} + \beta_2 * logAUM_{i,t-1} + \beta_3 * PODummy_{i,t} + \beta_. * Controls_{i,t-1} + e_{i,t} \quad (6)$$

where $Alpha_{i,t}$ is the benchmark-adjusted return of OEMF *i* in day *t* where the benchmark is the 5-factor model of Fama and French (FF, 2015), *POdummy* is an indicator variable for the investment objective of the OEMF that takes the value of 2 if the objective is Income, 1 if it is Growth, and 0 if it is Aggressive Growth; and all other variables are as previously defined. It is worth noting that all share classes of an OEMF share the same investment portfolio and objective. We control for the investment objective of an OEMF based on a strand of literature which shows that funds with more aggressive objectives tend to generate higher mean excess returns (McDonald, 1974). We control for an OEMF's MER as risk-adjusted returns are found to be inversely related to the expense ratios (Elton et al., 1993). We control for prior day and monthly returns although the evidence for performance persistence is mixed. While Carhart (1997) finds no fund persistence after controlling for FF3 factors and momentum, Berk and Tonks (2007) document performance persistence, especially for the worst performers. Finally, we control for Morningstar ratings although there is no consensus in the literature as to whether Morningstar ratings are good predictors of performance. Blake and Morey (2000) provide evidence that OEMFs with low ratings underperform significantly while those with top ratings do not outperform. In contrast, Morey (2003) reports that a 5-star Morningstar rating causes future performance to fall off severely.

2.4.2. Determinants of Media Mentions

The literature suggests the use of Poisson or negative binomial regressions to model count data, especially for those with high dispersion (e.g. Cameron and Trivedi, 1998). The main advantage of these models is that they do not predict negative values for the count variable (Manner, 2010). Thus, as our main estimation methodology, we examine the determinants of an OEMF's mentions

in the media using a log-linear model. Therefore, we estimate the parameters of the following Poisson regression model by maximum likelihood:

$$Count_{i,t} = a + \beta_0 * Count_{i,t-1} + \beta_1 * FndRet_{i,t-1} + \beta_2 * MonthRet_{i,t-1} + \beta_3 * absTNF_{i,t-1} + \beta_4 * Age_{i,t-1} + \beta_5 * Size_{i,t-1} + \beta_6 * Rating_{i,t-1} + \beta_. * Controls_{i,t-1} + e_{i,t} \quad (7)$$

where Count is the total number of news articles mentioning the OEMF, FndRet and MonthRet are the daily and monthly returns of the OEMF, absTNF is the absolute daily flows to the OEMF, Size is the logarithm of assets under management of the OEMF, Rating is the OEMF's Morningstar 5-star Rating, and Age is the age of the OEMF's oldest share class. Our control variables include the management expense ratio, S&P500 daily return, volatility, and prospectus objective of the OEMF. Since the variance of *Count* is high compared to its mean, we also estimate model (7) using the possibly more appropriate negative binomial regression.[5] To address the problem of the null becoming more likely to be rejected for an increasingly large sample size for a given level of significance (Connolly, 1989; Leamer, 1978, Ch. 4; Shanken, 1987), we draw inferences throughout the thesis based on significance levels of 0.05%, 0.01% and 0.001%.[6]

Our results reported in Table 2.3 find persistence in *Count* for both regression specifications of model (7). This is expected as a firm with a news day has a higher than random probability of being followed by another news day in our news sample. Based on consistency in sign and significance for the two estimation methods, we find that media coverage is positively associated with lagged fund size, lagged fund age, lagged S&P500 returns, fund fee waiver, and number of funds in the family, and negatively associated with lagged fund returns, lagged fund volatility, lagged fund monthly return, and fund rating. The positive coefficients for older and larger OEMFs and those from bigger fund families are expected, as these funds interact with a bigger number of investors and possible followers of the media providing the coverage (e.g., Merton, 1987). Jain and Wu (2000) find that the advertised funds in their sample have similar characteristics to the control group, except that they are older and larger. The negative effect from

[5] The data are over dispersed and better estimated using a negative binomial model than a Poisson model if the dispersion parameter, alpha, is significantly greater than zero as is the case in Table 3 where a LR test of the estimated alpha of 5.113 has a p-value of 0.000.

[6] This also helps to address the p-hacking problem that has recently received renewed attention by Harvey (2017) in this presidential address to the American Finance Association.

prior returns is logical as the media needs to cover more bad news compared to good news to hypothetically remove informational asymmetry about a firm. Tetlock (2010) views news as a tool which eliminates the information asymmetry among market participants. In line with this and consistent with the findings of Niessner and So (2018), we observe that negative news articles account for a greater portion of our news sample. We find more support for this finding in the literature, namely, Kothari (2005) argues that corporate managers accumulate and withhold bad news but leak and immediately reveal good news to investors. This suggests that information asymmetry between managers and shareholders is higher for negative information. The higher media coverage for stocks with lower volatility is surprising and is not driven by the effect of volatility on returns. This differs from the finding of Blitz et al. (2020) that stocks with lower return-volatility and higher risk-adjusted returns have lower media mentions. We also run similar tests replacing MER with Distribution Fees (DistFees) of the OEMF and report the results in the Appendix Table A2.3 which show that DistFee is a stronger predictor of media coverage compared to MER.

<Table 2.3 about here.>

2.4.3. Effect of Media Mentions and Their Frequency on OEMF Flows

As grounded in the literature dealing with investor attention (e.g. Merton, 1987), the extra attention received as a result of media coverage serves as a factor which can lead to inflows or outflows to/from the OEMF. Solomon et al. (2014) show that OEMFs whose holdings are covered in the media have extra inflows. Kaniel and Parham (2017) report that funds mentioned in the Wall Street Journal "Category Kings" ranking list (and other same-complex funds) earn significant abnormal flows compared to similar funds that just missed the list. Thus, we include two measures of media mentions in Eq. (5) to capture shifts in flows from media-mentions that have changed investors' perceptions of a manager's ability to generate α.

The augmented model becomes:

$$TNFP_{i,t} = \alpha + \beta_0 * AnyArt\ (or\ ArtCnt)_{i,t-1} + \beta_1 * FndRet_{i,t-1} + \beta_2 * MonthRet_{i,t-1} + \beta_3 * Age + \beta_4 * Size + \beta_5 * Rating + \beta_6 * MER_{i,t-1} + \beta_. * Controls_{i,t-1} + e_{i,t} \quad (8)$$

Where *ArtCnt* is the log of the number of news articles mentioning the OEMF plus one and *AnyArt* is a dummy variable which takes the value of 1 if any articles mention the OEMF in a given day

and 0 otherwise; and all the other variables are as previously defined. The Hausman test on whether Random or Fixed effects regressions should be chosen favors the RE specification as our baseline model. While a random-effects specification assumes that the omitted variables are uncorrelated with the explanatory variables in the model, a fixed-effects specification reduces concerns about omitted time-invariant variables that impede causal inference. However, as the dollar flows are related to OEMF characteristics such as age and size, we also test a FE specification to ensure that the results are not driven by firm characteristics rather than media mentions. We control for year-fixed effects in all models and OEMF fixed effects in the fixed-effects estimations. Standard errors are clustered at the OEMF level to alleviate any sampling bias due to the residuals within each OEMF being correlated across years.

The results from the baseline model (8) for the effects of the existence (frequency) of news articles are presented in Table 2.4. The even and odd numbered columns in Table 2.4 are estimated using random effects and fixed effects, respectively. Consistent with the information awareness hypothesis, we find that both the existence ($AnyArt_{t-1}$) and frequency ($ArtCnt_{t-1}$) of articles during the previous trading day significantly increase the net dollar flows scaled by AUM (TNFP) to the OEMF, with existence being a stronger predictor of flows. We find that an OEMF's current day's TNFP is positively associated with the OEMF's lagged *TNFP*, *MonthRet*, *AbsTNF* (total value of all sales and redemptions), and *FeeWaiver*, which is consistent with the findings that fee waivers enhance an OEMF's competitiveness (Christoffersen, 2001; Wahal and Wang, 2011). We find that an OEMF's current day's *TNFP* is negatively associated with the previous day's *S&P500* (a relationship between security returns and unexpected flows to mutual funds is found by Warther, 1995) and size of the OEMF (Siri and Tuffano, 1998; Dahlquist et al., 2000). We find no (or no consistently) significant association between an OEMF's current *TNFP* and its lagged *Age* as in Webster (2002) who finds no relation between fund age and objective-adjusted returns, *Rating* which may not be an unbiased measure of a fund's ability as Morey (2002) finds a significant relationship between rating and fund age, *Net MER*, *Vol* and *Funds in Family*. We also run our tests of model (8) replacing *Net MER* with *DistFee* as reported in Table A2.6 and still find no relationship with flows.

<Table 2.4 about here.>

2.4.4. Effect of Media Mentions and Their Frequency on OEMF Performance

We expect that any effect of media mentions on the future performance of OEMFs will be indirect through changes in fund inflows/outflows. Fang and Peress (2009) report "no-media premium" for stocks since stocks with no media coverage outperform highly covered stocks consistent with the "investor recognition" hypothesis of Merton (1987). OEMFs, however, trade at the market value of their holdings and their returns are reliant upon the performance of their investment portfolios. Therefore, the only ways that the news can affect the returns of an OEMF are either by news covering the holdings of the OEMF (Solomon, Soltes, Sosyura, 2014) or news covering the OEMF itself which increase fund flows and indirectly affect fund returns. An OEMF which is not covered by the media can compensate for the lack of attention by attempting to increase the flows through actions such as window dressing (Carhart et al., 2002; Duong, Meschke, 2020) or risk shifting (Lee, 2016). However, this might affect the fund's returns adversely as the trading strategies might not be expandable to higher fund sizes (Chen et al., 2004). We extend our model by adding *ArtCnt* to equation (6). Thus, the model used to predict the effect of media mentions on performance is now:

$$Alpha_{i,t} = a + \beta_0 * AnyArt\ (or\ ArtCnt)_{i,t-1} + \beta_1 * TNF_{i,t-1} + \beta_2 * logAUM_{i,t-1} + \beta_3 * POdummy_{i,t} + \beta_. * Controls_{i,t-1} + e_{i,t} \quad (9)$$

where $Alpha_{i,t}$ is the benchmark-adjusted return for fund *i* in period *t* obtained from a two-step procedure using the 5-factor model of Fama and French (FF, 2015) and all the other variables are as previously defined. The five factors in the FF model are the excess return on the market portfolio ($RM_t - RF_t$), the return on a diversified portfolio of small minus big stocks (SMB_t), the difference between the returns on diversified portfolios of high and low book-to-market stocks (HML_t), the difference between the returns on diversified portfolios of stocks with robust and weak profitability (RMW_t), and the difference between the returns on diversified portfolios of the stocks of low and high investment firms (CMA_t). Model (9) is estimated using year-fixed effects without and with OEMF fixed effects.

Our two-step procedure for calculating the benchmark-adjusted returns for fund *i* for day *t* avoids a look-ahead bias and is consistent with those used by Gil-Bazo and Ruiz-Verdu (2009), Ferreira, Keswani, Miguel, and Ramos (2013) and Ayadi, Kryzanowski and Mohebshahedin

(2018).[7] In the first step we estimate the standard 5-factor FF (henceforth FF-5) model to obtain the 5-factor betas or sensitivities to be used in the second step for fund *i* and day *t* by running a regression using the excess returns for the fund and the five factors for the last 250 trading days ending with day t-1. In the second step, we compute the benchmark-adjusted daily excess return for fund *i* and day *t* by subtracting the expected return for fund *i* for day *t* from it actual return for that day where the expected return for fund *i* for day *t* is the sum of the five products of the actual return for a factor in day *t* times its estimated beta from the first step of the procedure. Based on the first-step results presented in Table A2.1, we find that the five factors explain from 83% to 87% of the variations in excess returns for the funds and that the estimated coefficients for all five factors are significant (Table A2.1).[8] Based on the summary statistics presented in Table A2.2, we observe that all fund categories have positive mean net returns (Panel A) but significantly negative mean FF-5 alphas with the Income funds having the most negative mean alphas (Panel B). We also observe that the mean betas are significantly different from zero for all five FF factors.

We report the results for model (9) with the 5-factor alphas as the dependent variable in Table 2.5. We observe that the existence and higher frequency of media mentions lead to lower performance in the following trading day.[9] This is expected as media coverage will affect performance indirectly through changes in flows and size of the fund, and fund performance has been found to be inversely related to flows and to have a convex relationship with size (Berk and Green, 2004).

<Table 2.5 about here.>

We also address the endogeneity caused by the omitted variable bias in our panel data. We expect management skill to be positively related to both the size of the OEMF and its performance. However, as we cannot measure skill directly, we need to use an instrumental variable approach to deal with this bias. We follow Pastor, Stambaugh, and Taylor (2015) in using an empirical strategy based on a recursive demeaning procedure to examine the size-performance relationship

[7] Brennan et al. (1998) propose that our "out-of-sample" method for calculating benchmark-adjusted excess returns eliminates any bias caused by errors in the estimation of factor betas associated with in-sample estimations.
[8] In untabulated results, we observe that all fund types have negative alphas with Income funds having the lowest alphas.
[9] As a test of robustness, we use fund net returns as well as excess returns (i.e. in excess of the daily risk-free rate) as the dependent variable in regression specification (9). The results summarized in OSA Tables 7 and 8 are consistent with those using the FF-5 benchmark.

rigorously. We use two-stage least squares regressions in which the AUM of the OEMFs is used as our instrument. AUM qualifies as a good instrument as it is strongly correlated with the forward-demeaned AUM of the OEMF and is independent of the error term. In our 2SLS setting, we follow Zhu (2018) in the choice of our instrumental variable and in not suppressing the constant to zero. The model we use is as follows:

$$fdAUM_{i,t} = a + \beta_1 * AUM_{i,t} + \beta_. * Controls_{i,t-1} + e_{i,t} \quad (10)$$

$$fdAlpha_{i,t} = a + \beta_0 * AnyArt\ (or\ ArtCnt)_{i,t-1} + \beta_1 * f\hat{d}AUM_{i,t} + \beta_. * Controls_{i,t-1} \quad (11)$$

where *fdAUM* is the forward-demeaned assets under management of the OEMF and *fdAlpha* is the forward-demeaned FF-5 benchmark-adjusted returns of the OEMF and the rest of the variables are as defined before. We also run the same 2SLS regression using *fdExFndRet* (i.e., the forward-demeaned excess return of the OEMF) as our dependent variable in the second-stage regression. Based on the results reported in Table 2.6, we observe that the effect of the size of an OEMF becomes insignificant when using FF-5 excess returns as the dependent variable and that the negative effect of media mentions becomes slightly more pronounced.

<Table 2.6 about here.>

2.4.5. Effect of Media Sentiment on OEMF Flows

After considering the attention effect of media coverage, we analyze the learnings of investors based on the media mentions of the OEMFs. The literature arrives at no consensus as to whether individual investors and institutions only become aware of an entity mentioned in the media or they also trade based on the information relayed in the news. Solomon et al. (2014) argue that attempting to infer the content of media mentions relies on an interpretation algorithm which could be problematic. Fang, Peress and Zheng (2014) do not find a significant difference in buys and sells of mutual funds when faced with positive or negative media coverage about stocks. Kaniel and Parham (2017) who report that funds in the top 10 WSJ ranking absorb more flows, do not differentiate between attention and learning effects. If our second hypothesis holds, we expect individual investors to not only pay attention to OEMFs which are covered in the media, but also to rely on the information covered in the news. If that is the case, we expect the positive (negative)

news to translate into positive (negative) flows to/from the OEMF in the form of net sales (redemptions). We categorize each of the articles into the three groups of positive, negative, and neutral using a dictionary-based sentiment analysis approach. We use the LM (2011) dictionary for the categorization as it is specifically designed for financial and accounting texts. We use the total number of positive and negative articles as the measure of media sentiment towards an OEMF in a given day. We include our sentiment measures into equation (3) to obtain:

$$TNFP_{i,t} = \alpha + \beta_P * PosCnt_{i,t-1} + \beta_N * NegCnt_{i,t-1} + \beta_1 * FndRet_{i,t-1} + \beta_2 * logAUM_{i,t-1} + \beta_3 * MER_{i,t-1} + \beta_. * Controls_{i,t-1} + e_{i,t} \quad (12)$$

where *PosCnt* (*NegCnt*) is one plus the log of the total number of positive (negative) news articles mentioning OEMF *i*; and the rest of the variables are as defined previously. If the "learning hypothesis" holds, we expect that positive (negative) news have a positive (negative) relation with sales and a negative (positive) relation with redemptions. *TNFP* is winsorized at the 1% level to make sure that the results are not caused by extreme values of *PosCnt* and *NegCnt*.

The multivariate results reported in Table 2.7 show that only positive articles mentioning an OEMF significantly increase the percentage of flows to the OEMF. Negative articles significantly decrease flows after controlling for the total number of news articles. The effects in terms of Sales and Redemptions are not as pronounced except for a slightly significant negative effect on sales from negative news articles. These results provide partial support for the untabulated univariate findings of an increase in sales, redemptions, and "trading" activity. We can infer from these results that investors pay attention to funds mentioned in the media as there are more flows for funds with more media coverage as shown in Table 2.5, and that investors increase trade activity when either positive or negative news is observed. We also run t-tests to test whether $\beta_P \neq \beta_N$. The results of the t-tests provided in Appendix Table A2.14 show that observations with positive or negative articles have significantly higher flows than those without news, and that β_P and β_N are significantly different from each other with $\beta_P > \beta_N$. In order to test the differential significance of positive and negative news articles on OEMF flows more rigorously, we next run tests using measures pertaining to the differences in the number of positive and negative news articles covering an OEMF in a given day.

<Table 2.7 about here.>

When an OEMF is mentioned in both positive and negative news articles on an observation date, we cannot differentiate between the individual effects of *PosCnt* and *NegCnt* using regression formulation (12). To address this concern, we estimate the following two models:

$$TNFP_{i,t} = \alpha + \beta_P * PCntDum_{i,t-1} + \beta_N * NCntDum_{i,t-1} + \beta_1 * ArtCnt_{i,t-1} + \beta_2 * FndRet_{i,t-1} + \beta_3 * logAUM_{i,t-1} + \beta_4 * MER_{i,t-1} + \beta_. * Controls_{i,t-1} + e_{i,t} \quad (13)$$

$$TNFP_{i,t} = \alpha + \beta_{P-N} * P-NCnt_{i,t-1} + \beta_1 * AnyArt_{i,t-1} + \beta_2 * FndRet_{i,t-1} + \beta_3 * logAUM_{i,t-1} + \beta_4 * MER_{i,t-1} + \beta_. * Controls_{i,t-1} + e_{i,t} \quad (14)$$

where *PCntDum* (*NCntDum*) is a dummy variable which equals one if there are more positive (negative) news covering an OEMF in a given day and 0 otherwise. *P-NCnt* is equal to the number of positive minus negative news items covering an OEMF on a given day. If investors trade based on message tone, we expect a significant effect on flows based on β_{P-N} and a significant difference between observations with *PCntDum*=1 and *NCntDum*=1. In order to extract the effect of news sentiment, we control for the total level of media coverage by including $ArtCnt_{i,t-1}$ and $AnyArt_{i,t-1}$ in models (13) and (14), respectively.

The results reported in Table 2.8 show that having net positive or negative media coverage increases the flows to the funds. More importantly, we observe that OEMFs with more positive (negative) than negative (positive) news items in the previous trading day (do not) have significantly higher (lower) flows compared to those without media mentions. We can infer from these results that negative sentiment does not affect the flows to the funds as strongly as positive sentiment. This also is consistent with findings of a similar asymmetric relationship between fund flows and performance (Kothari, 2005; Fant and O'Neal, 2014). Also, we find a significant relation between $P\text{-}NCnt_{i,t-1}$ and $TNFP_{i,t}$ after controlling for the effect of the existence of media coverage in the previous trading day. These results extend the results reported in Table 2.7 by suggesting that investors do trade based on the tone of the message, but the effect of sentiment is not as strong as the effect of the existence and frequency of media coverage. To further test this inference, we run a series of robustness tests using $PCntDum \geq k$ and $NCntDum \geq k$ which are dummy variables that take the value of 1 if the number of positive (negative) minus negative (positive) news items covering an OEMF in a given day is greater or equal to k, for k=2 and 3. The results reported in Table A2.8 do not show a significant change in flows based on the intensity of the tone of the message for these additional tests.

<Table 2.8 about here.>

2.4.6. Weekly Effects of Media Coverage

We now run tests on the effect of media mentions on flows and performance of the OEMFs in the next few days after the news date. In order to run these tests, we use *CAF*, which is the Cumulative Net Flows Percentage of the OEMF in the 5-day period following the news-date, and *CAR*, which is the cumulative abnormal returns of the OEMF in the same period. We capture the effect of four different measures of media coverage and sentiment on weekly flows and performances of the OEMFs. To test the attention hypothesis, we use *AnyArt* and *ArtCnt*, and to test the learning hypothesis, we employ *PCntDum* and *NCntDum* first, and *P-NCnt* next. The results of tests on *CAF* are provided in Table 2.9 while the regression results with *CAR* as the dependent variable are summarized in Table 2.10.

<Tables 2.9 and 2.10 about here>

The Table 2.9 results show that the positive effect of media mentions on flows to the OEMFs persist over the one-week period after the news date, while the difference between positive and negative tone media coverage remains a partial factor in terms of flows to the funds. Similar to the results of the daily analyses, we observe that the funds with more positive than negative news articles have significantly higher flows than those without media mentions. Larger funds absorb more weekly flows, while *Age* and *Rating* of the OEMFs are insignificant predictors of flows. The results provide strong support for the Attention hypothesis and limited support for the Learning hypothesis. The results provided in columns (1) and (2) of Table 2.10 suggest that the negative effect of the existence of media mentions on subsequent performance disappears in the 5-day period following the event, but that the negative effect of frequency remains significant although it diminishes in magnitude. Column (3) shows that news-dates dominated by negative tone articles lead to slightly lower 5-day performance and column (4) shows that the net difference between the number of positive and negative news articles has a significant positive effect on the cumulative abnormal returns of the OEMFs. Combining this result with our previous tests, we can infer that some level of learning based on the tone of the news articles does exist in terms of OEMF

performance, and that the effect of such learning is more pronounced on fund performance over longer periods compared to that for a one-day period.

As robustness tests, we use *CAFn* (*CARn*) which excludes the first trading day after the news-date to ensure that the results are not driven by first-day effects. We also create two measures to capture the average weekly flows and performances of the OEMFs. *TNFP_W* (*Alpha_W*) is the average percentage flows to (average FF-5 benchmark-adjusted returns of) the fund in the next five trading days following the news dates. In the few cases where there are not enough observations available or there is another news-date in the subsequent five-day period, we decrease the number of observations used in the estimation of these measures to a minimum of three days. The results of tests on *CAFn*, *CARn*, *TNFP_W,* and Alpha_*W* are provided in the Tables A2.10 through A2.13, respectively. In general, the results are consistent with those of the main tests presented in Tables 2.9 and 2.10 with some minor differences.

2.4.7. Longer-Term Effects of Media Coverage

Media mentions and news articles covering OEMFs may have longer term effects on their flows and performance. To test this, we calculate the monthly flows and returns of each OEMF in our sample and combine our news metrics at monthly and semi-annual levels. In an ideal world, the best approach would be to examine each different news article and observe its effect on the quarterly or annual performance and flows of the mutual funds. However, it is not possible to capture such effects in isolation due to the fact that the long-term flows and performances are affected by other news articles during the period as well as other factors.

We first test the effect of the existence of media mentions on flows and performances of the OEMFs using variants of the regression models (8) and (9). We calculate the monthly market adjusted returns and flows. We use four different measures of media coverage. The first variable of interest is *AnyArt* which is a dummy variable taking the value of 1 if there are media mentions of an OEMF in a given month and 0 otherwise. *News Months* is the number of months with at least one news article covering an OEMF in the six-month prior period. *ArtCnt* is one plus the log of the total number of news articles covering an OEMF in a given month. *ArtCnt_6m* is the aggregate value of *ArtCnt* in the six-month period. We use the same controls as our daily analysis and use a

fixed-effect setting as suggested by the Hausman and F-tests. The results for the effect of media coverage on flows and performances are reported in Tables 2.11 and 2.12, respectively.

<Tables 2.11 and 2.12 about here.>

The results provided in column (1) of Table 2.11 show that the existence of media mentions has an effect on the flows of the OEMF in the subsequent month. Moreover, in column (3) we observe that being mentioned in the media in consecutive months leads to more investors investing in the shares of a given OEMF, although the effect is not sizeable compared to that of news articles in the previous months. This is logical if we accept that markets are efficient to some extent and most of the news information is incorporated into prices in the very first month after their publication. In columns (2) and (4) we observe the effect of the frequency of media mentions in the previous month and the previous semi-annual prior period. The results confirm that news articles mentioning the OEMF in both the previous month and the previous six-month period have a positive effect on the flows of the fund, with the effect of the former being more pronounced as expected. While we find strong persistence in monthly net flow percentages of the OEMFs, we do not observe any significant effect on OEMF flows based on *Age*, *Rating*, or *MER* of the funds. Also as expected, and similar to the daily analyses, OEMFs with a *FeeWaiver* have higher flows and more volatile funds get a lower percentage of flows. In summary, the results of Table 2.11 support the effect of media coverage on flows through the attention-based channel.

Columns (1) and (2) of Table 2.12 support the negative effect of media coverage existence and frequency on OEMF performance. From a theoretical standpoint, we expect that the negative effect is caused by the increase in flows and OEMF size and subsequently a decrease in performance. The results conform to what is obtained at the daily level. However, columns (3) and (4) show that these negative effects are diminished at the six-month period. Also, we observe that smaller funds and Income funds outperform their counterparts.

Finally, we test the effects of news sentiment on the flows and performances of OEMFs using variants of regression models (12), (13), and (14). Although we do not find any significant learning effects in our daily setting, there is a possibility that the learning based on the news articles takes more time to be reflected in the flows of the mutual funds. In our long-term analysis we try to capture the learning effects which are not pronounced at the daily level. We use six different measures of News sentiment. The first variable of interest is *PCntDum* (*NCntDum*) which is a

dummy variable equal to 1 if there are more positive (negative) news covering an OEMF in a given month and 0 otherwise. *P-NCnt* is equal to the number of positive minus negative news items covering an OEMF during a given month. *Pos Months (Neg Months)* is the number of months with more positive (negative) news article covering an OEMF in the six-month prior period. *P-NCnt_6m* is the aggregate value of *P-NCnt* in the six-month period. The results for the effect of media sentiment on flows and performance are reported in Tables 2.13 and 2.14, respectively.

<Tables 2.13 and 2.14 about here.>

The results reported in Table 2.13 do not find any significant effect on OEMF flows based on the directional tone and sentiment of the news, irrespective of the choice of the model. In the first two columns we test the effects of the existence of more positive (negative) news articles in the previous month as well as the net number of positive articles minus negative articles in that period and find a positive but insignificant effect on OEMF flows based on positive message tone. In column (3) we use *P-NCnt* for a six-month period, and in columns (4) and (5) we observe the number of positive (negative) news months. The results, in general, do not find any evidence supporting investor learning theory regarding OEMF flows over the longer-term periods.

However, the results of Table 2.14 point to the existence of strong learning effects by market participants in terms of OEMF performance at the longer horizons. In column (1) we observe that having more positive compared to negative news articles in the previous months leads to higher FF-5 benchmark adjusted returns of OEMFs. Columns (2) and (3) show that the net number of positive articles minus negative articles in the previous months has a positive effect on fund performance, but this effect is smaller in the six-month period analysis. Providing more evidence for the effect of media sentiment, columns (4) and (5) show that having a higher number of positive (negative) news months in the previous six months, leads to a significantly higher (lower) benchmark-adjusted return. Although the results of Table 2.14 show the existence of strong learning effects in terms of fund performance, these results should be interpreted with caution as it is very likely that there is heterogeneity in terms of an omitted unobservable variable correlated with both news coverage and performance in our setting.

2.5. Additional Tests

2.5.1. Are our Results Due to Media Coverage of OEMF Holdings

Our previous tests of the possible effects of the media coverage of OEMFs on their flows and performances focused on all the news articles mentioning a given OEMF or its fund family and the sentiment of those mentions. In this section, we conduct some tests of the robustness of the obtained results. First, we account for the aggregate level of daily media coverage surrounding the mutual fund industry. To do so, we construct *AggCnt* as the total number of news articles covering any US mutual fund in each trading day. As previously discussed, we expect the aggregate level of news to have a negative effect on the flows to the mutual fund industry as negative news articles are the predominant part of total coverage. By controlling for the aggregate level of coverage while capturing the effect of a given OEMF's news mentions, we remove the effect of general news surrounding the industry and the possibility of those news affecting the flows and performances of a specific OEMF.

Moreover, to ensure that we isolate the effect of the news articles directly mentioning and discussing a given OEMF or its fund family from the given OEMF's holdings, we screen all the downloaded news and remove those articles that discuss a mutual fund's holdings rather than the mutual fund itself. This allows us to rerun the tests of flows and performances using OEMF-specific news articles only, which we refer to as cleansed media coverage. Similar to our previous variable constructions, we use *ArtCnt-ex* as the log of the number of news articles mentioning the OEMF, and not its holdings, plus one; and *AnyArt-ex* as a dummy variable which takes the value of 1 if any articles mention the OEMF, and not its holdings, and 0 otherwise, to capture the effects of frequency and existence of OEMF-specific media coverage, respectively.

We now run regressions of the effect of the existence and frequency of cleansed media coverage on OEMF flows and performances using Models 8 and 9, respectively. We also include *AggCnt* in our regressions to control for the time-varying behavior of cleansed media coverage. These results for flows are provided in Table 2.15, and for performance effects in Table 2.16. In col. (1) and (2), we use *AnyArt-ex* and *ArtCnt-ex* as our measure of cleansed media coverage. In col. (3) we use *NewsPct* which is a measure of the share of a given OEMF from the total daily media coverage of the mutual fund industry, calculated as the total number of news articles mentioning the OEMF divided by *AggCnt*.

<Tables 2.15 and 2.16 about here.>

The results provided in Tables 2.15 and 2.16 are almost identical to those previously reported in Tables 2.4 and 2.5 with both the existence and frequency of (not) cleansed media coverage being positively associated with OEMF flows and negatively related to the FF-5 benchmark-adjusted alphas. Although the significance of the results drops slightly, our results are consistent with the inference that the effects we observe on flows and performances of OEMFs are driven by the media coverage mentioning the funds and their families and not their holdings. This provides additional evidence supporting our first hypothesis.

We then test the effect of the sentiment of cleansed media coverage on flows and performances of OEMFs using model (14). These results are reported in Table 2.17. Although we do not find the same level of significance as before for the effect of the tone of news articles on flows and performance, we do find that days dominated with positive sentiment lead to higher subsequent flows and performances in the mentioned OEMFs.

<Table 2.17 about here.>

2.5.2. Determinants of *Count*

Previously we used Poisson and Negative Binomial to estimate a model with a count dependent variable. In order to test the validity of our results for the determinants of the number of news articles covering the OEMFs, we conduct a series of robustness checks using the version of model (7) where *ArtCnt* replace *Count* using panel regressions. The Breusch-Pagan test on the coefficients of the Pooled OLS and Random effects regressions shows that heteroskedasticity is present in the linear model and therefore that a random effects model is the more efficient estimation method. Nevertheless, we present in Table A2.4 three panel regression estimations of model (7) with year fixed-effects and the addition of the Growth and Income dummy variables.[10]

[10] The dummy-variable trap is avoided by not including a dummy variable for OEMFs with an aggressive growth objective.

Col. (2) reports the results from a random-effects regression like col. (1) but also has standard errors clustered at the OEMF level. For completeness, col. (3) reports the regression with OEMF-fixed effects and standard errors clustered at the OEMF level. In this regression model specification, we do not obtain estimates for the covariate, *Income*, because it is time-invariant for each OEMF.

The results reported in Table A2.4 are consistent with those reported previously in col. (3) of Table 2.3 and discussed in section 4.2 for the major variable of interest *ArtCnt (L1)*. These results support the existence of a significantly positive impact of the number of news articles mentioning an OEMF in the previous year [*ArtCnt (L1)*] on one plus the log of total number of articles published about an OEMF in the current year. As in col. (3) of Table 2.3, the following hold in Table A2.4: the significantly negative coefficient for *FndRet (L1)* and for *Age (L1)*, the significantly positive coefficient of *Funds in Family* and the positive coefficient for *Size (L1)* that is significant except in col. (3).

2.5.3. Analysis at the Fund Family Level

Our previous analyses use data at the OEMF level although the news was downloaded at the fund/fund-family level. A concern that could be advanced is that the characteristics of the fund family such as its size could affect how the media coverage influences the flows to/from its individual funds. To address this possible concern, we test for the determinants of net flows at the fund-family level by using variables aggregated to that level when estimating equation (8) including the interactions of different fund family characteristics such as age, size, and volatility with media mentions.

The results from this test which are reported in Tables 2.18 and 2.19 are consistent with the significantly positive effect for both the existence and the frequency of media mentions [i.e. *AnyArt (L1)* in Table 2.18 and *ArtCnt (L1)* in Table 2.19] on fund flows. Thus, the existence and frequency of media mentions significantly increase the percentage of flows to the fund and to its fund family. The inverse relation of prior returns [i.e., *FndRet (L1)*] with flows also holds in both tables as was the case for the fund-level regressions (see Table 2.3). The interaction terms of the existence and the frequency of media mentions with age and with fund family size are negative and significant

in regression specifications (1) and (2), which indicate that the effects of the existence and the frequency of media mentions are significantly lower for older and bigger fund families. In contrast, the interaction terms of the existence and the frequency of media mentions with the volatility of daily returns of an OEMF fund family are negative and significant in column (3) in both tables, which indicate that the effects of the existence and the frequency of media mentions are significantly lower for fund families with more volatile daily returns.

<Tables 2.18 and 2.19 about here.>

2.5.4. Spillover effects among OEMFs run by the same management company

In the previous section we examined possible spillover effects among OEMFs of the same fund family. In this section, we test whether news articles about other funds managed by the same management company have any spill-over effects on the flows and FF-5 alphas of the OEMF of interest. We expect to observe secondary effects from such media mentions as they are expected to lead to more investor attention for their management company and the funds it manages.

To conduct our analysis, we first remove the OEMFs from our sample for which the management company is the same as the fund advisor, as the former have already been accounted for. We use *MgrArtCnt* as the log of the number of news articles mentioning other funds managed by an OEMF's management company plus one; and *MgrAnyArt* as a dummy variable which takes the value of 1 if any articles mention other funds managed by an OEMF's management company and 0 otherwise. The results for tests of spillover effects both in terms of the flows and performances of the OEMFs of interest are provided in Table 2.20. We find that news articles mentioning other funds under the management of a given OEMF's management company have a significant effect on the flows to it at the 1% level, but no significant performance effects. The significance holds irrespective of the choice of the model. These results suggest that spillover effects only account for a small fraction of the effects of media coverage for fund flows.

<Table 2.20 about here.>

2.6. Conclusions

The literature finds that the media influences individual perceptions and affects the social, economic, and financial landscapes. The mutual fund industry provides an ideal laboratory for testing the effects of media coverage on investor perceptions since the shareholder bases of many funds consist of retail (individual) investors and media coverage has no first-order effects on the valuations of open-ended mutual funds (OEMFs). We examine two channels through which media coverage is expected to affect the cash flows and performances of OEMFs. The first is the effect of awareness-based buying behaviour of investors. As explained by Merton (1987), the appearance of a security in the media may encourage potential investors to include the security in their limited "consideration set" when search is costly. The second is the learning channel which results from investors being exposed to the message content and its tone (positive, negative or neutral). The literature has previously found significant effects on flows for mutual funds based on the media coverage of fund holdings. In this chapter, we examine the effects on fund and family flows and performances when the news coverage is for the OEMFs or their fund families.

We find that both the existence and frequency of media articles in the previous trading day significantly increase the flows to the OEMF and the effect is stronger for the existence of media articles. However, performance diminishes following a news date irrespective of our choice of regression specification. The absolute net flows of the fund in the previous day acting as a proxy for the level of "trading" volume have a positive and significant effect on the level of media coverage. The likelihood of media coverage is higher for bigger and older funds but the effects on their flows are lower from greater media coverage. We find Spillover effects to be responsible for a small fraction of the effects of media coverage on flows and performances. In Our Weekly and Monthly Analyses, we find similar patterns in terms of the effects of existence and frequency of media coverage on flows and performances.

While both "attention" and "learning" effects increase the flows to the OEMF if the tone of the news is positive, their effects are in opposite directions for negative news articles. We also observe significant flows to OEMFs with more positive news coverage in our weekly analysis. Moreover,

we find some evidence that the tone of news articles affects OEMF performance over the longer-term. While our results are consistent with the existence of both "Attention-based" buying behaviour and "Learning" effects, the evidence is stronger for the "Investor Awareness" channel. To summarize our findings, the mere mention of an OEMF's name in the media is an important driver of the OEMF's flows and performances, and the sentiment implicit in these mentions is important in determining the directional effects of that news on the OEMF's flows and performances.

Chapter 3: Firm-Performance Behavior After Stock-Holding Changes by Institutions with Top Ownership Percentages

3.1. Introduction

Investment companies, such as Mutual funds and ETFs, are important participants in financial markets. Mutual Funds (ETFs) held about 21.3 (4.4) trillion dollars in total net assets at the end of 2019 (*ICI Factbook, 2020*). Because of the number of shares held under their management, mutual funds may have superior access to firm managers,[11] and make sizeable trades that can affect market prices (e.g., Bushee, 2001). Arif, Ben-Rephael, and Lee (2016) show that daily directional trading by mutual funds can strongly destabilize prices. Therefore, these institutions can act as market price-setters rather than price-takers. Also, institutional ownership (henceforth IO) has been linked with improved corporate governance (e.g., Dasgupta et al., 2021) and more informative stock prices (e.g., Bai et al., 2016). Due to the size of their stock holdings, mutual funds can influence major corporate financial and business decisions. While some studies (e.g., Palmiter, 2001) argue that institutions can be ineffective external monitors of firms, other studies (e.g., Morgan et al., 2011; Choi, Fisch, and Kahan, 2013) provide evidence that supports the argument that funds and fund families that do not forgo their voting power have a higher informational advantage that increases with a higher proportional ownership of a firm's voting shares.

In this chapter, we answer a revised question: Do stocks held by Top Institutional Investors with more than 1% of a firm's shares outstanding outperform? To answer this question, we use the regulatory requirement that investment companies must file their individual end-of-quarter holdings with the SEC quarterly which provides the opportunity for mimicking strategies to be implemented by other investors. As Parida and Teo (2018) summarize, "more frequent disclosure would allow shareholders to observe the securities held by various funds more accurately and help them with asset allocation and diversification decisions of their overall portfolios."

[11] Although the evidence is mixed, some studies report that some equity mutual funds outperform in terms of gross returns (i.e., before accounting for expenses) which implies manager skill (e.g., Wermers, 2000; Cai and Lau, 2015; Nallareddy and Ogneva, 2017; Pástor, Stambaugh, and Taylor, 2017; Kenchington, Wan, and Yüksel, 2019).

We revisit this question because the prior literature does not provide uniform results on the effects of the holdings or changes thereof of individual or total institutional investors on future stock returns. Gompers and Metrick (2001) document a positive association between institutional ownership (IO) and future stock returns which they attribute mainly to demand shocks as opposed to informational advantages. Cai and Zheng (2004) argue that trades of institutional investors have negative predictive ability for subsequent returns. Cornet et al. (2007) find a significant relation between cash flow returns and the level of IO. Based on the recognition that institutions with different investment horizons are differentially informed, Yan and Zhang (2009) find that the holdings of transient institutions have a positive effect on future prices. Elyasiani and Jia (2010) show that more stable IO is associated with more profitable firms.

Our tests of firm performance use Pastor and Stambough's (2003) measure of innovations in aggregate liquidity to control for the effect of market liquidity on performance, as recommended by Pastor and Stambaugh (2019). While we observe higher net monthly returns for stocks with higher institutional ownership (IO), we find that the Fama and French five-factor (henceforth FF-5) alphas exhibit a slight inverse relationship with the level of IO. The moderating effect of internal governance and board structure on the relation between IO and firm performance is unclear given the opposing arguments and mixed findings reported in the literature for the effect of governance and board structure on firm performance.[12] We observe that board size, the average tenure of board directors, and the percentage of non-executive board directors are associated with an increased performance of the worst-performing firms in our sample, but lower performance for higher performance quantiles. The increased performance associated with CEO-Chairman duality is stronger for the lower performance quantiles. Using quantile regressions, we find that the performance-IO relationship is nonlinear and is moderated by the firm's internal governance and board structure, the level of analyst coverage, and firm characteristics including market value, age, and liquidity. Specifically, we observe that while the percentage of non-executive directors is an indicator of increased IO for all firms, the association of IO with board size and tenure is weaker for most-held firms in the sample.

[12] The findings include: greater firm values and higher stock returns with better corporate governance (Gompers, Ishii, and Metrick, 2003); less shares held by institutions for more closely held ownership structures (Ferreira and Matos, 2008) and percentage of shares held by institutional investors is directly related to firm governance such as board composition and shareholder rights (Chung and Zhang, 2011) and no significant IO-firm governance relation (Bushee, Carter, and Gerakos, 2014).

The literature on the trading strategies of mutual funds can be divided into two strands. One strand (e.g., O'Brien and Bhushan, 1990; Walther, 1997) argues that institutional managers trade based on their informational advantage. The other strand (Bushee, 2001; Yan and Zhang, 2009) relates institutional trading strategies to their short-sightedness designed to satisfy their myopic investors. Derrien et al. (2013) argue that longer investment horizons diminish stock mispricing while Yan and Zhang (2009) show that the positive IO effect on stock prices is driven by short-term investors. Bushee (2001) finds that a lower (higher) level of ownership by transient institutions is associated with lower (higher) near-term (long-term) expected earnings. Investor horizons or holding periods for firms are measured market-wide by the number of shares outstanding or share float divided by trading volume (e.g., Atkins and Dyl, 1997; Kryzanowski and Rubalcava, 2005) or at the institution level by the turnover ratio of stocks held by an institutional investor (e.g., Yan and Zhang, 2009). Since the investment horizons of the Top Institutional Investors could affect their governance role and trading strategies (e.g., Gaspar, Massa, and Matos, 2005), we examine and find that the informational role of institutional investors is closely related to their trading horizon when we control for the average stock holding period for our Top Institutional Investors as well as their prospectus objectives.

The advantage of institutional investors with the largest percentage holdings of a firm (henceforth Top Institutional Investors or Top Funds) over their counterparts is two-fold. First, Top Institutional Investors have the voting power to affect the main decisions of the firm that they hold. Second, Top Institutional Investors have a greater incentive to not be free riders but to incur the costs of informed voting due to the large positions they hold. Portfolio disclosures of Top Institutional Investors could be a source of new information, especially if they are viewed as more informed investors by other market participants. In that case, we expect a subsequent upward (downward) trend in the prices of securities in which the Top Institutional Investors increased (decreased) their net holdings. In a test of the relative predictor power of the changed holdings, we find, as expected, that changes in the end-of-quarter holdings of Top Institutional Investors of US stocks traded on the NYSE, AMEX, and Nasdaq are a better predictor of stock returns than the total stock holdings of other institutional investors or all investors. This test of the "Disclosure effect", which depends on the relative holding sizes of less versus more sophisticated shareholders, differs from a test of the "Trading effect" that captures the immediate impact of fund trades on stock prices (Weigand, Belden, and Zwirlein, 2004).

Gompers and Metrick (2001) argue that the preferences of the representative investor have shifted towards institutional preferences such as larger and more liquid firms. Yan and Zhang (2009) conjecture that changes in institutional holdings can affect stock returns through creating demand shocks or from their informativeness, and that the preferences of transient investors include higher share prices, book-to-market ratios and volatilities. Stock returns are also affected by whether a held stock is a constituent of an important index due to the passive holdings of index funds (e.g., Lynch and Mendenhall, 1997; Chen, Noronha, and Singal, 2004). A large body of literature reports positive price changes associated with inclusion of stocks in the S&P 500 index (e.g., Lynch and Mendenhall, 1997, Wurgler and Zhuravskaya, 2002) while other studies find no price effect after controlling for endogeneity (e.g., Harris and Gruel, 1986, Kasch and Sarkar, 2013). We find that the holding changes of the Top Institutional Investors are a better predictor of stock performances for small- (typically Nasdaq listed) and mid-cap firms, firms with weaker internal governance and firms with lower analyst coverage. Also, we observe that S&P 500 membership is associated with a lower number of Top Institutional Investors and a decrease in firm performance, after controlling for stock characteristics.

Investors have access to all quarter-end to quarter-end holding changes for each stock held by a Top Institutional Investor from the Dow Jones Institutional Holding Reports. The publication of these reports about twenty days after the fund managers file their quarterly holdings with the SEC provides a natural exogenous event that allows us to simultaneously measure the investor awareness and learning effects of IO and media coverage on stock prices. Fang and Peress (2009) report a "no-media premium" for stocks since stocks with no media coverage outperform highly covered stocks consistent with the "investor recognition" hypothesis of Merton (1987). We test if investors trade upon the release of the holdings reports of Top Institutional Investors, by focusing on abnormal price and volumes of a mentioned stock in the period surrounding the publication of the reports. If other investors presume that the Top Institutional Investors of a company are more informed, they are expected to have a higher tendency to follow their investment strategies which should be observed in a significant price change. In contrast, if other investors believe that Top Institutional Investors trade based on their myopia, we would not expect any abnormal returns associated with the report's publication. We find that trading volume increases around the publication of Top Institutional Investor reports irrespective of the content of the reports, and that a net increase (decrease) in the stock holdings of the Top Institutional Investors signals a rise

(decrease) in stock prices. These results are robust to controlling for firm characteristics and governance, and analyst coverage.

This chapter's main contribution is to the literature studying the effects of institutional investors on the performance and governance of the stocks they trade (e.g., Porter, 1992; Sias, 1996; Nofsinger and Sias, 1999; Gompers, Ishii, and Metrick, 2003; Cai and Zheng, 2004; Borochin and Yang, 2017). We provide additional evidence on the effect of institutional owners on market efficiency (e.g., Ferreira and Matos, 2008; Boehmer and Kelley, 2009). We also contribute to the debate surrounding the informational role of institutional owners (e.g., Walther, 1997; Yan and Zhang, 2009) versus their myopic trading strategies (e.g., Porter, 1992; Laverty, 1996; Bushee and Noe, 2000; Bushee, 2001; Chen, Harford, and Li, 2007). We extend the literature dealing with the importance of influential investors and the value of their positions to the held companies and other market participants. We also extend the literature regarding the effects of "Disclosure Frequency" of mutual fund holdings on the performance of the stocks they hold as well as the benchmark-adjusted returns of funds (e.g., Verbeek and Wang, 2013; Agarwal, Gay, and Ling, 2014; Parida and Teo, 2018). Finally, we contribute to the growing literature of the effect of media coverage on performances of financial securities by disentangling the trading and disclosure effects of mutual fund investments (e.g., Merton, 1987; Jain and Wu, 2000; Tetlock, 2007).

The rest of the chapter is structured as follows. In section 2 we develop the hypotheses to be tested. In section 3 we discuss sample selection and data. Section 4 reports the empirical results and discusses their significance. Section 5 concludes.

3.2. Development of the Hypotheses

The effect of institutional investors on the stocks in their portfolio has been studied from different perspectives in the literature. Sias (1996) identifies a relationship between the level of institutional ownership and stock volatility and Bushee and Noe (2000) argue that this relationship becomes more pronounced with more frequent holding disclosures. Gompers, Ishii, and Metrick (2003) find that the level of institutional ownership is related to shareholder rights as measured by their Governance Index. Fulkerson and Riley (2019) find that an increase in portfolio concentration

increases benchmark-adjusted returns and the idiosyncratic risk of institutional portfolios. Elyasiani and Jia (2010) show that only stable IO leads to an increase in future stock prices. We argue that the effect of the level of IO on returns and volatilities of the underlying firms is a function of their informational advantage, investment horizon, and whether they are active/passive monitors of the stock or they side with managers to receive more business at the expense of the smaller shareholders. We expect the more informed, short-term institutional investors and those that actively monitor firms to increase performance in the subsequent quarter. The effect of the more dedicated Top Institutional Investors on the returns of the stocks they hold is likely to be more pronounced, especially for the stocks of smaller companies and those with lower analyst reviews, due to better access to firm managers and more growth opportunities that are harder to value. Therefore, we expect:

> **HYPOTHESIS 1 (H1):** The performance of a stock is related to the percentage of stock holdings of its (Top) Institutional Investors as of the end of the previous quarter and the effect is more pronounced for smaller firms with lower analyst reviews.

The potential informational advantage of top fund managers (e.g. Nanda, Wang, and Zheng, 2004) is a channel through which these managers can enhance the performance of their trading strategies or stop future losses by selling stocks with inferior prospects. The literature (e.g., Yan and Zhang, 2009) argue that short-term and long-term institutions have different information sets corresponding to their trading strategies. Further to their findings, we argue that more dedicated institutional investors (Bushee, 2001) which hold a higher percentage of shares of a company are more informed. Using the net changes in holdings of funds, we can evaluate the importance of their economies of scale, access to fund-specific information and news advantage. If Top Institutional Investors are able to benefit from their superior information position compared to other market participants, we expect their holding changes to be predictive of security performances. This implies that the price of a stock is expected to fall if the Top Institutional Investors reduce their net holdings of that stock in a given period, and this price reduction will be proportionate to the percentage of shares the institutions hold. Similarly, we expect the price of a stock to rise if the Top Institutional Investors increase their net holdings of that stock in a given period. We expect these effects to be stronger for the stocks of smaller firms due to their higher informational asymmetry and those with lower analyst coverage and weaker internal governance.

This leads to the following hypothesis:

> **HYPOTHESIS 2 (H2):** The performance of a stock improves (deteriorates) following an increase (decrease) in the aggregate stock holdings of the Top Institutional Investors measured at the end of the previous quarter and the effect is more pronounced for smaller stocks with weaker internal governance and lower analyst coverage.

When the Dow Jones quarterly 13-F reports are published, non-Top Investors obtain easy to access information about what the managers of the Top Institutional Investors of a given stock think about its future. The holding information provided in these reports can be in part attained using mutual fund's quarterly portfolio disclosures, but it requires a more rigorous and time-consuming process which is not feasible for all investors. However, it should be noted that this source of information is somewhat stale due to the time elapsed between report filing and its release, which averages about 20 days. On the bright side, the timing of the publication of the reports provides us with an exogenous variable to capture using an event study setting. While the fund holding reports could be a good indicator of the diversity of beliefs about a stock, a better and more informed source is expected to be the change in the holdings of the top shareholders of that stock as previously discussed. Therefore, we focus on the changes in the holdings of the Top Institutional Investors and expect them to be a better indicator of future stock performance compared to an average institutional investor or all investors.

> **HYPOTHESIS 3 (H3):** Trading volume increases, and the abnormal performance of a stock is positively associated with the net change in the holdings of that stock by Top Institutional Investors surrounding the publication of the Dow Jones end-of-quarter top institutional investor reports.

3.3. Sample and Data Manipulation

The data for stock prices, returns, and volatilities and market indexes are taken from CRSP for the period of 2010 to 2020 and augmented by Thompson Reuters monthly stock ownership measures. The mutual fund holdings data are extracted from Thomson Reuters Institutional (13f) Holdings database. Board statistics are acquired from WRDS' Boardex platform. We obtain the IBES analyst reviews on the stocks and Pastor-Stambaugh Aggregate liquidity factors and from

WRDS. The quarterly institutional reports of the Top Institutional Investor holdings of stocks traded on NYSE, AMEX, and Nasdaq are downloaded from Dow Jones Factiva. The Dow Jones Newswire is a reliable source as it is one of the major sources for business news with high subscription from market participants and institutions. Although several papers in the literature have shown that investors do not trade based on the message (e.g., Fang, Peress, and Zheng, 2014), we focus on the level of coverage that the stocks receive as well as the tone of the message, i.e., whether the reports show an aggregate increase or decrease in the number of shares held by institutional investors. Our final database consists of 568,997 stock-month observations for 9038 distinct stocks. Table 3.1 provides the summary statistics for our sample of stocks. Table 3.2 provides the correlation coefficients of benchmark-adjusted returns and IO with the main covariates used in the subsequent tests, including boards statistics, IO measures, and analyst reviews.

<Tables 3.1 and 3.2 about here>

3.4. Empirical Results

3.4.1. Basic Model

Our fundamental task in this chapter is to explain the effect of IO on stock returns. However, in order to isolate the performance effect of the institutional investors, we need to control for the stock-specific and market-wide elements which affect stock returns. A basic CAPM model assumes that stock returns can be predicted using their sensitivity to market returns or beta, but its underlying assumptions that investors are rational and have homogenous expectations do not hold since we observe that institutions differ in the holdings in their portfolios. Such differences arise due to differences in expectations and preferences of the institutional managers among other things. Also, as discussed earlier, institutions can be price-setters due to the size of their holdings and therefore can be one of the determinants of stock returns. The five-factor model of Fama and French (2015) (henceforth FF-5) improves the predictability of stock returns by adding four additional factors, size, book to market ratio, profitability, and investment. Although the controversy around the model is still ongoing and a consensus has not been reached as to whether

the additional factors improve the predictability of cross-sectional returns, we assess that this model is best suited for our study. We run some of the tests using the CAPM and Fama and French three factor (Fama and French, 1992) models as a test of robustness to ensure that the choice of the FF-5 model is not driving our results.

Our two-step procedure for calculating the benchmark-adjusted returns for stock *i* for month *t* is consistent with those used by Ferreira, Keswani, Miguel, and Ramos (2013), Ayadi, Kryzanowski and Mohebshahedin (2018), among others. In the first step we estimate the standard FF-5 model to obtain the 5-factor betas to be used in the second step for stock *i* and each month *t* by running a regression using the excess returns of the stock and the realizations on the five factors for the previous 60 trading months ending with month *t-1*. The FF-5 model of stock returns follows:

$$Retft_{i,t} = \gamma_{0,t} + \beta_{1,i} * MktRf_t + \beta_{2,i} * SMB_t + \beta_{3,i} * HML_t + \beta_{4,i} * RMW_t + \beta_{5,i} * CMA_t + e_{i,t} \qquad t \text{ takes on the values [-60:-1]} \tag{1}$$

Where $Retft_{i,m}$ is the excess return of stock *i* in month *t*, and *MktRf, SMB, HML, RMW*, and CMA are the five factors of the FF-5 model, $\gamma_{0,i}$ is the intercept, and $\beta_{\bullet,i}$ is the vector of loadings on the five FF factors for stock *i* based on the previous 60 trading months ending with month *t-1* relative to month *m*.

In the second step, we compute the alpha for stock *i* in month *t* by subtracting the expected return for stock *i* in month *t* from its actual return for that month where the expected return for stock *i* for month *t* is the sum of the five products of the actual return for a factor in month *t* times its estimated beta from the first step of the procedure. The resulting alpha is used as our measure of excess performance.

We employ the FF-5 alpha to find the effect of institutional investor holdings and their changes. To do so, we model alphas as a function of the institutional investor metrics and the control variables commonly used in the literature. One of the most important factors that affect firm performance is a firm's internal governance and board independence which are discussed extensively in the literature. Usually more independent boards are associated with higher performance but as Livnat et al. (2021) points out most of the prior studies model performance as a static function of board and firm characteristics rather than a dynamic model which incorporates

the effect of past performance as well. Moreover, internal governance is also associated with higher IO in stocks as is also evident from a significant correlation of 0.18 between board size and institutional holding percentage in our sample. Therefore, in order to control for endogeneity, we approach the inclusion of internal governance measures in our models with care throughout. To understand how internal governance is related to performance and IO we run (inter)quantile regressions of FF-5 alphas and InstPct (%) on the metrics of board structure and the results are reported in Tables 3.3. The results suggest that board size and independence increase performance for the worst-performing stocks but do not have the same effect on better performing subsamples. Board independence increases the level of IO especially in the most held firms and board size is associated with an increase in IO except for the firms in the top quantile of institutional holding percentages.

<Table 3.3 About Here.>

Analyst Reviews are good indicators of the stocks future performance and due to their high followership, they affect the perceptions of investors. Thus, we do control for the number of quarterly earning estimates that have been raised and lowered compared to the last monthly cycle. As the number of analyst reviews and estimates are generally higher for bigger and older firms, we standardize these values by the market value of the stocks to reduce collinearity. Another important factor affecting performance of stocks is liquidity. Pastor and Stambaugh (2003) show that expected stock returns are cross-sectionally related to the sensitivities of returns to fluctuations in aggregate liquidity in the market and that stocks with higher liquidity betas outperform those with lower sensitivities to liquidity. Amihud (2002) shows that smaller stocks tend to have higher liquidity betas. To account for such effects, we add the innovations of aggregate level of liquidity to our model. Other factors which could potentially affect our results are firm-specific and market-wide volatilities. The literature (e.g., Lehmann, 1990) has mainly documented a positive relation between volatility and expected returns. Merton (1987) explains that when information is not fully available to all market participants, firms with higher variances of returns need to compensate investors with higher expected returns in order to remain part of their consideration sets. Barberis and Huang (2001) similarly claim that investors in higher idiosyncratic volatility stocks should earn higher returns. However, Ang et al. (2006) report results that are directly opposite to these claims. We expect that the difference is mainly based on their different techniques in forming

portfolios and also partly due to the different sample period. Nonetheless, we control for volatility as a potential driver of expected returns. Another issue to consider is that markets may not be efficient which leads to mispricing. If prices gradually adjust towards the fair price, mispricing can affect expected returns. The mispricing proxies in the model of Daniel et al. (2001) are informative about future returns. Since such a proxy should include the stock price itself, we use the difference between the monthly stock price and the most recent end of quarter price of a stock as our proxy. The reason behind this choice is that we argue that at quarter-ends the prices are closest to their fundamental value due to institutional holdings announcements. We run a univariate test whose results, which are reported in Appendix A3.1, show that the end-of-quarter returns are significantly higher than the average monthly returns for an average stock. This difference is much stronger for bigger stocks and stocks traded on Nasdaq.

Our model for identifying the determinants of stock alphas follows:

$$\alpha_{i,t} = a + \beta_1 * Size_{i,t-1} + \beta_2 * Vol_{i,t-1} + \beta_3 * TrdVol_{i,t-1} + \beta_4 * IBES_{Up_{i,t}} + \beta_5 * IBES_{Down_{i,t}} + \beta_6 * LiqInnov_t + \beta_. * Controls_{i,t-1} + e_{i,t} \quad (2)$$

Where $\alpha_{i,t}$ is the FF benchmark-adjusted return of stock *i* during month *t*, $Size_{i,t-1}$ is the log of the total market capitalization of stock *i* at the end of month *t-1*, $Vol_{i,t-1}$ is the backward-looking annual idiosyncratic volatility of stock *i* in month *t-1*, and $TrdVol_{i,t-1}$ is the number of shares of stock *i* traded in month *t-1*. *Diff* is the difference between the monthly stock price and the quarter end price and acts as a proxy for misvaluation. *IBES_Up* (*IBES_Down*) is the number of estimates raised (lowered) compared to the last monthly cycle standardized by the size of the firm and *LiqInnov* is the Innovations in the aggregate liquidity. Our controls include the price of shares, the market that a stock is traded on since stocks on the NYSE, AMEX, and Nasdaq tend to have differences in characteristics and institutional backing.

Finally, to conduct the multivariate analyses, we need to decide on the most appropriate panel regression model for testing the effect of institutional ownership on stock performance. For this purpose, we run a series of tests to determine if heteroskedasticity exists in our sample, address possible unobserved heterogeneity sources, and choose between Pooled OLS, Random Effects and Fixed Effects specifications. We first run a Breusch-Pagan (Cook-Weisberg) test for heteroskedasticity which strongly rejects the null hypothesis of constant variance with an F-

statistic of 13.47, thereby confirming the existence of heteroskedasticity in our sample/model. For robustness, we also run the White's test which also rejects homoskedasticity with a Chi-Squared of 1566.81. We test and reject the existence of statistically significant skewness and kurtosis in our sample. As a result of the existing heteroskedasticity, we use robust standard errors in all our specifications. Next, we compare different model specifications against each other. First, we run the Random Effects model which includes the unobserved effects in each cross-sectional regression as it assumes that they are random. In order to test the efficiency of a Random Effects model, we run the Breusch-Pagan (1980) Lagrange multiplier test with the null hypothesis that the variances of the unobserved heterogeneity are zero. A p-value of almost zero corresponding to a chi-squared value of 6896.92 leads us to favor a Random Effects model against the OLS. We next test the validity of a Fixed Effects model which posits that the intercept of the model should be different for each firm due to unobserved characteristics of that firm. In order to assess the validity of this proposition, we run the F-Test with the null hypothesis that the combined effect of firm-specific dummies in the model is equal to zero. The resulting F-statistic of 5.01 rejects the null and suggests that the Fixed Effects model also is superior to OLS. The final step is to choose among Random and Fixed Effects models using the Hausman test as OLS is rejected when compared against both models. We test the null hypothesis that the firm fixed effects are not correlated with the regressors of the model by testing if the difference between the coefficients of the two models are systematic. The result of the Hausman test strongly favors the use of the Fixed Effects model, rejecting the null hypothesis that the efficient model, i.e., Random Effects model, is consistent. However, we need to approach this with an abundance of caution as although the statistical tests point to the Fixed Effects model, we should also make sure that the theoretical background also confirms this. Therefore, we run some tests using the Random Effects specification as robustness checks based on the question that we are addressing. Moreover, as the stocks traded on NYSE, AMEX, and Nasdaq tend to have differences in characteristics and institutional backing, we control for the market each stock is traded at. Finally, to ensure that results are not driven by seasonality issues such as January Phenomenon we include dummies for the month of year.

The full fixed-effects model of the firm performance follows:

$$\alpha_{i,t} = a + \beta_1 * Size_{i,t-1} + \beta_2 * Vol_{i,t-1} + \beta_3 * TrdVol_{i,t-1} + \beta_4 * IBES_{Up_{i,t}} + \beta_5 * IBES_{Down_{i,t}} + \beta_6 * LiqInnov_t + \beta_7 * NYSE_i + \beta_8 * Nasdaq_i + \beta_9 * Board_{i,t} + \beta_{10} * YM_t + c_i + e_{i,t} \quad (3)$$

3.4.2. Determinants of Institutional Investor Count

We first identify what factors drive investment in a specific stock by institutional investors and what leads these investors to increase the size of their positions to become Top Institutional Investors of that stock. To this end, we run Poisson regressions using two dependent variables: *InstCnt*, total number of institutional investors holding the stock, and *TopInstCnt*, total number of Top Institutional Investors of a stock. We run this set of tests on quarterly observations to conform to the frequency of data on the number of institutional investors and the size of their holdings. We expect the size and trading volumes of stocks to be positively associated with the number of institutional investors holding the stock in the subsequent quarter. Although Arbel and Strebel (1982) show that institutions neglect investing in firms with higher risks which tend to be smaller firms, Hessel and Norman (1992) do not find a significant difference in institutional investment based on size or risk. However, Blume and Keim (2011) find that institutions have increased their holdings in smaller stocks in the more recent years. The market in which the stocks trade will also influence the number of investors which include them in their portfolio.

The base-case Poisson regression for our count variables is as follows:

$$\log(InstCnt_{i,t}) = a + \beta_1 * \log(InstCnt_{i,t-1}) + \beta_1 * Ret_{i,t-1} + \beta_2 * TrdVol_{i,t-1} + \beta_3 * Size_{i,t-1+}\beta_4 * Board_{i,t} + \beta_5 * IBES_{Up_{i,t}} + \beta_6 * IBES_{Down_{i,t}} + \beta_7 * LiqInnov_t + e_{i,t} \quad (4)$$

Where $InstCnt_{i,t}$ is the number of institutional investors of stock *i* in quarter *t*, $Ret_{i,t-1}$ is the return of stock *i* in quarter *t-1*, $TrdVol_{i,t-1}$ is the total number of stock *i* shares traded in quarter *t-1*, and $Size_{i,t}$ is the log of the total market capitalization of stock *i* in quarter t. Board $_{i,t}$ is a vector of the statistics of board of governance including board size, percentage of non-executive directors, average time spent on board, average time to retirement, and a dummy for whether the CEO is

Chairman of the board as well. We also repeat the same test for the number of Top Institutional Investors of stock *i*. The results are reported in Table 3.4.

<Table 3.4 about here>

The Poisson-regression results with *log(InstCnt)* as the dependent variable are reported in Col. (1) of Table 3.4. As expected, there is strong persistence in the number of institutional investors of a firm, suggesting that institutions do not change their holdings frequently. We also observe that the market capitalization of stocks (*Size*), shares outstanding (*QPrc*), and trading volume (*TrdVol*) all lagged one quarter have significant positive effects on *InstCnt*. Similarly, one-quarter lagged values of block holdings (*BlockCnt*), and S&P 500 membership (*S&P 500*) have significant negative effects on *InstCnt*.

To ensure that the results are not driven by over dispersion of the number of institutional investors of different stocks, we test if we should be using negative binomial regressions. The alpha for the test for over dispersion is very small suggesting that the Poisson regression can sufficiently determine the factors driving the number of institutional investors. Although there is no need to run tests using the negative binomial framework, we nevertheless provide those results in Table A3.6 which are similar to those for the Poisson regressions.

The results of the test for determinants of the number of Top Institutional Investors, reported in Col. (2) of Table 3.4 are very similar to those reported in Col. (1). One difference is the relationship between size and the Top Shareholder count. While bigger firms generally have a higher number of institutional investors, they have a lower number of Top Institutional Investors. More specifically, a one-percent increase in the size of a stock leads to approximately a 3% decrease in the number of Top Institutional Investors of that stock. We also observe that stocks traded on Nasdaq have a significantly higher number of Top Institutional Investors.

3.4.3. Institutional Investors Total Holdings and Subsequent Stock Performance

Based on the earlier discussion in Section 2, we expect significant differences in performance of stocks due to the level of institutional ownership. We add four different measures of institutional holdings to our base model in order to assess the effect of institutional investors on the stocks they hold. Our first and most basic measure is *InstPct*, which is defined as the percentage of shares of

a stock held by financial institutions. One problem is that this variable is skewed by size as there is a correlation between firm size and the percentage of institutional holdings. Therefore, we also use *AvgHold* which is the average percentage holdings of institutions in a stock. We also use *TopInstPct*, percentage of shares of a stock held by Top Institutions, and *AvgHoldTop*, the average percentage holdings of top institutional investors in a stock to capture the effect of the more financially committed institutional investors. We use the following model to measure the effect of each institutional ownership proxy on stock performance:

$$\alpha_{i,t} = a + \beta_0 * Inst_{i,t-1} + \beta_1 * Size_{i,t-1} + \beta_2 * Vol_{i,t-1} + \beta_3 * TrdVol_{i,t-1} + \beta_4 * IBES_{Up_{i,t}} + \beta_5 * IBES_{Down_{i,t}} + \beta_6 * LiqInnov_t + \beta_7 * NYSE_i + \beta_8 * Nasdaq_i + \beta_9 * Board_{i,t} + \beta_{10} * YM_t + c_i + e_{i,t} \quad (5)$$

Where $\alpha_{i,t}$ is the Fama-French 5-factor benchmark-adjusted return of stock *i* in month *t*; $Inst_{i,t}$ is our main independent variable of interest which is a measure of the level or changes in the holdings of institutional investors; *NYSE* (*Nasdaq*) is a dummy variable which takes the value of 1 if stock *i* is traded at NYSE (Nasdaq) and 0 otherwise, YM_t is a set of 11 dummies for different months of the year, and c_i is the stock fixed-effects which are time invariant characteristics of stocks in our database and will be included in the tests run in a Fixed-effects setting. The rest of variables are as defined before, and the remaining covariates are as previously defined. We control for firm and month-fixed effects in all estimations. Summary regression results for the relationship between the level of fund holdings and subsequent fund performance based on the five measures are reported in Table 3.5.

<Table 3.5 about here>

The results provided in columns (1) and (2) of Table 3.5 show that there is a negative association between the percentage of shares of a company being held by institutional investors in the previous quarter and the benchmark-adjusted returns, and that this effect is much stronger for the Top Institutional Investors. This result confirms the existence of a relationship between institutional ownership and firm performance as expected in our first hypothesis (H1). We observe that alpha is negatively related to the number of institutions in the previous quarter and to a stock's size and trading volume in the previous month. To test more rigorously the effect of the size of investments in a stock on subsequent results we run another series of tests using model (5) with three different

measures of institutional holdings. We use *BlockPct*, percentage of shares of a stock held by block owners (investors holding more than 5% of the total shares outstanding of a stock), *Top10InstPct (Top5InstPct),* percentage of shares of a stock held by its top ten (five) institutional investors, and *MaxInstPct*, percentage of shares of a stock held by its biggest institutional investor. The results reported in the Appendix Table A3.3 show that all four measures of the level of institutional ownership negatively affect the benchmark-adjusted returns. The results are strongest in column (1) where we use the percentage of shares of a company held by its blockholders.

3.4.4. Changes in Holdings of Institutional Investors and Subsequent Abnormal Stock Performance

We now test our second hypothesis dealing with the relation between stock holding changes of institutional investors and subsequent abnormal stock performance. Based on our second hypothesis, we expect institutional investors, and especially Top Institutional Investors, to make more informed trades. If this is the case, we expect negative (positive) returns in the subsequent quarter when such institutions sell (buy) their shares. We again use model (5) with proxies for changes in stock holdings. We use *NetChPct* (Net Percentage Change in Total Institutional Holdings) and *NetChTopPct* (Net Percentage Change in Top Institutional Holdings) as our two main measures of changes in positions held by institutional investors. *NetChPct* and *NetChTopPct* focus solely on the level of institutional holdings but do not consider the differences between the institutional investors which make the changes and the size of holding changes of different institutional investors. To further test for the effects of changes in the holdings of institutional investors we use a set of other variables. First, for each institutional investor *m*, we create InstNetChPct $_{m,i,q}$, as the size of the quarterly change in their holdings of stock *i* divided by the level of their holdings of stock *i* in the previous quarter *q*. Similarly, we define StkNetChPct $_{m,I,q}$, as the size of the quarterly change in their holdings of stock *i* divided by the number of shares outstanding of stock *i* in the previous quarter *q*. We then generate *EW_NetChInstPct* and *VW_NetChInstPct* as the value-weighted and equal-weighted averages of InstNetChPct to capture the effect of the average percentage change in the size of each institutional investor's position. *EW_NetChStkPct* and *VW_NetChStkPct* are also constructed in a similar fashion to capture the effect of the average size of holding changes based on the market capitalization of the stocks. We

repeat the same process including only the Top Institutional Investors of a stock to measure the difference in the effects of their holding changes as opposed to smaller institutional investors. We include holding changes by institutional investors who get above or below the 1% threshold after the quarterly changes in their holding in our measures of Top Institutional Investors, as these investors are either prior Top Investors or have recently become more invested in the shares. If our second hypothesis holds, we expect that changes in institutional investor holdings, and more specifically those by Top Institutional Investors, to have a positive effect on stock performance, irrespective of the choice of the measure. The results of these tests based on measures of all institutional investors are provided in Table 3.6, and those associated with the Top Institutional Investors are summarized in Table 3.7.

<Tables 3.6 and 3.7 about here>

The results reported in Table 3.6 support our H2 that an increase (decrease) in percentage institutional ownership leads to an increase (decrease) in abnormal stock performance. We observe a significant increase in the FF-5 alphas with increases in either NetChPct [Column (1)] or EW_ (VW_) NetChStkPct [Columns (4) and (5)] but no significant effect in Columns (2) and (3). Based on these results, we can argue that market participants do not focus on the changes of the weights of a given stock in the portfolio compositions of individual institutions, but instead pay attention to the aggregate changes in the market capitalization of the stock. We observe that the FF-5 alphas are negatively related to a firm's size (*Size*) and traded volume (*TrdVol*), the total number of institutional investors with a position in the stock [*Ln (InstCnt)*], and S&P500 membership (*S&P500*) and positively related to the number of shares outstanding (*Shrout*). We observe similar results in Table 3.7. We find that the holding changes of Top Institutional Investors are as good an indicator for the FF-5 benchmark-adjusted returns of a stock as the holding changes of all institutional investors. In other tests reported in Table A3.5 of the Appendix, we compare the effect of Top and non-Top investors. We observe that while you can predict the stock returns based on Top investor holdings, the prediction power of a given non-Top investor is insignificant at conventional levels.

Next, we consider the effects of analyst reviews and board structure on the association of changes in IO and firm performance. We add to our model the variable *IBES_Up* (*IBES_Down*) which is equal to the number of quarterly earning estimates raised (lowered) from the value as of

the last monthly run. These variables proxy for the change in the perceptions of analysts which send buy or sell signals to investors. We use board size (*BrdSize*), percentage of non-executive directors (*NED*), average time spent on board (*BrdTenure*), average time to retirement (*TimeRet*), and a dummy for whether the CEO is Chairman of the board (CEO_Duality) as measures of firm's internal governance. To avoid the endogeneity present between board structure and IO, we use the interactions of these variables with *VW_NetChTopPct*. The results are reported in Table 3.8.

<Table 3.8 about here>

We also conduct separate tests on stocks traded on each of the three trade venues and report the results for the NYSE in Columns (1) and (4), AMEX in Columns (2) and (5) and Nasdaq in Columns (3) and (6) of Table A3.4. The results are nearly the same as for the combined sample, except the coefficients for *Shrout* and *TrdVol* become insignificant.

We now examine any price-pressure effects of any imbalances in the percentages of institutional investors increasing and decreasing their holdings of a stock in a given quarter. We use *NetCnt* (*NetCntTop*) for this purpose where negative values indicate that more institutional investors (Top Institutional Investors) decreased than increased their holdings. We also investigate the effect of the relative size of the changes in investor holdings. *L10 (50)* is the number of changes in holdings greater than 10% (50%) of shares outstanding of a stock which could signal an informed trade. *S1 (5)* is the number of changes in holdings greater than 1% (5%) of that specific institutional investor's holdings of that stock. We create a dummy variable *INC (DEC)* which takes the value of 1 if the total change in the size of the holdings of institutional investors is positive (negative) and 0 otherwise. We use the interaction of these variables to obtain information on how positive and negative large changes would affect stock returns. We run a set of tests using a variant of regression specification (5) where our institutional measure is replaced with our measures that account for the size and sign of holding changes by investors.

We first focus on the measures based on all institutional investors. Our first variable of interest is *NetCnt* which is equal to the difference between the number of institutional investors increasing the size of their positions in a stock and those decreasing the size of their positions. *S1(5)_Net* is defined as the difference between the number of institutional investor position increases greater than 1%(5%) of the shares outstanding of a stock and decreases of similar magnitude. Finally, *L50_Net* captures the number of investor position increases greater than 50% of the position size

minus the number of position decreases of similar magnitude. We expect that if the institutional investors on average are making more informed trades, all the variables should positively affect the benchmark-adjusted returns of the held stocks. The results are reported in Table 3.9.

<Table 3.9 About here>

The results reported in Col. (1) of Table 3.9 show that NetCnt has a significant and positive effect on stock performance, which means that the stock will have a positive return in the subsequent quarter if more institutional investors increase the size of their holdings. This leads us to conclude that the number of institutional investors being optimistic about the future of a stock tends to have a direct relationship effect on the FF-5 alphas. Columns (2) and (3) report that S1_Net has a coefficient of 0.0007 compared to S5_Net with 0.0018 suggesting that the effect on benchmark-adjusted returns becomes stronger for higher thresholds for the size of the changes in the holdings in terms of the shares outstanding of a stock. Finally, Col. (4) shows that the net number of increases greater than 50% in institutional investors' positions is a very strong indicator of better stock performance.

We now shift our focus to the Top Institutional Investors of the stocks to capture the effects of these presumably more informed traders. We use four different measures of Top Investors holding changes. The base measure is *NetCntTop* which is equal to the difference between the number of Top Institutional Investors increasing the size of their positions in a stock and those decreasing the size of their positions. *L50_TopInc (Dec)* is defined as the number of Top Institutional Investors increasing (decreasing) the size of their positions by more than 50% of their position size in the stock as stated in the previous quarter report. *L50_TopNet* is the number of top investor position increases greater than 50% of the position size minus the number of position decreases of the same size. If H2 holds, we expect to observe a significant effect on stock alphas based on the changes in the positions of their Top Institutional Investors. The results are reported in Table 3.10.

<Table 3.10 About here>

The results in Table 3.10 are in line with our expectations based on H2. In Col. (1) we observe that the higher the difference between optimistic and pessimistic Top Investors of a stock, the higher the FF-5 alphas. Col. (2) and (3) confirm the existence of a direct relationship between the sizable holding changes of Top Institutional Investors and stock returns. In Col. (2) we observe a

positive significant effect on FF-5 alphas from *L50_TopInc*, while in Col. (3) we record a significant negative effect from *L50_TopDec*. In Col. (4) we summarize the net effect of the changes greater than 50% of the positions and we record a highly significant positive effect based on these changes on the benchmark-adjusted returns.

3.4.5. Abnormal Stock Performance Associated with the Disclosure of Institutional Holding Reports

We now use an event-study framework to test our third hypothesis dealing with the stock performance effects of the disclosure of the aggregated institutional shareholder reports which are available to investors during a few days in every quarter. If investors presume that the Top Institutional Investors of a company trade mainly based on better information rather than short-sightedness, we conjecture that there is a higher probability that non-top investors mimic or respond to the disclosure of the investment strategies of the Top Institutional Investors. Thus, the change in the holdings of the top shareholders of a stock may be a good signal of a stock's fundamentals based on the consensus beliefs of supposedly more informed institutional investors. Therefore, based on the investor learning theory, we expect a positive (negative) price impact upon the release of reports showing an increase (decrease) in the aggregate holdings of Top Institutional Investors. We categorize our events into subgroups based on the tone of the reports. Positive (Negative) event dates are those where the aggregated reported change in shares held by institutional investors is positive (negative). Positive (Negative) & 5% event dates are those dates where the net percentage increase (decrease) in holdings of Top Institutional Investors is greater than 5% of shares outstanding of the stock at the time of the report. We conjecture that these more restricted samples would better reflect information versus liquidity motivated portfolio changes. Nevertheless, we expect to observe a positive (negative) price impact after Positive (Negative) and especially Positive (Negative) & 5% events. To run the tests, we use a 55-day estimation window starting from 56 days until 2 days before an event date. To maintain consistency in the length of the estimation window, we cannot use a longer period as the report dates of a stock are usually about 65 trading days, i.e., one quarter, apart. We first estimate Abnormal Returns (ARs) using Mean-Adjusted, Market Model, Fama-French Three Factor (FF-3), and Fama-French Five Factor (FF-5) models. We then calculate the Cumulative Average Abnormal Returns (CAARs) for event-

windows of different lengths. Our first event window starts one-day before a report is published up to and including the 4th day after its publication. By including the day before the event, we control for possible information leakage and any possible uncertainty about the date and time of the event. The results of these tests are reported in Panel A of Table 3.11. For brevity, we generally concentrate our discussion on the CAARs from the FF-3 and FF-5 models.

<Table 3.11 About here>

The results reported in Panel A of Table 3.11 show that the publication of the Institutional Shareholding Reports affects the abnormal-return performance of the mentioned stocks. Regardless of the model used for predicting abnormal returns, we observe positive and significant CAARs during both categories of positive events. This is expected as both the investor awareness and learning theories suggest a positive price impact around these types of events. Around negative event dates, we observe negative CAARs based on the FF-3 and FF-5 models that are only significant for the +5% events. In general, our results are consistent with our third hypothesis that market reactions around institutional shareholding report dates are directly associated with the directional reported changes in holdings of Top Institutional Investors in the previous quarter.

As a test of robustness, we repeat our event studies with two other event windows. First, we remove the day before the event date from the event-window and use a 5-day event window starting from the event date up to and including the 4th day after the event [0,4]. Then, we focus solely on the event date and the next trading day using a [0,1] event window. These results are provided in Panels B and C, respectively, of Table 3.11.

The results reported in Panel B are consistent with those in Panel A of Table 3.11, but generally have an increased level of significance. . Based on Panel C where the event window is reduced to only a two-day period [0,1], we generally do not observe the same magnitudes for the CAAR as for the longer [-1, 4] window. To illustrate, the significant positive (negative) CAAR from the FF-3 and FF-5 models tend to be less positive (negative). A plausible explanation for these results is that information diffusion and digestion is a time-consuming process if markets are not fully efficient. The main takeaway from these tests is that irrespective of the length of the event-window or the choice of model for predicting abnormal returns, we observe, with one minor exception, significant and positive CAARs around the (Strictly) Positive event dates.

We then use a similar framework to capture any abnormal trading volume on the dates surrounding our report dates. We first calculate daily abnormal trading volumes for each day in our event window using the difference between the daily trading volume and mean trading volume in the estimation window. Next, we calculate Cumulative Average Abnormal Volumes (CAAV) for event-windows of different lengths and test for the changes in trading volume surrounding all events, positive (&5%) events, and negative (&5%) events. The results are reported in Table 3.12.

<Table 3.12 About here>

Our results show that trading volume increases after the publication of the Dow Jones Institutional Holding Reports and confirm that investors become more aware of the stocks mentioned in these reports and adjust their positions consequently. We also observe that most of the abnormal trading volume is concentrated in the first two days after the event (i.e., the [0:1] event window). There is more abnormal trading observed around positive reports compared to negative reports.

3.5. Conclusions

The subject of institutional ownership has been a frequent topic of study in the finance and accounting literature. In this chapter, we look at this phenomenon from a different viewpoint. First, we revisit the question of whether having more institutional owners in a stock's shareholder base leads to better or worse performance. We find that FF-5 alpha is negatively related to the measures of institutional holding such as percentage of shares held by institutional investors and the average holdings of those institutions. Second, we test how the stock's performance is affected if their institutional investors, and more specifically their "Top Institutional Investors", changed their positions in that stock. The results show that if Top Institutional Investors increase (decrease) the size of their holdings in a stock, the performance of the stock in the subsequent quarter will improve (deteriorate).

When we compare the stocks traded on different markets, we observe that stocks traded on NYSE underperform Nasdaq stocks. While NYSE stocks have more institutional investors on average, the link between percentage changes in institutional holdings and stock performance is

more pronounced for Nasdaq stocks. We relate that to the fact that NYSE stocks are on average bigger and older and therefore provide lower possibilities for institutional investors to gain access to informational advantages using their holdings in the stock.

Chapter 4: CSR and Institutional Ownership: Impact of the COVID-19 Pandemic

4.1. Introduction

The actions of firms which benefit or harm social welfare, referred to as Corporate Social Responsibility (henceforth CSR), have come under growing scrutiny in the recent decade and even more so since the COVID-19 market crash. The presence of quantitative Environmental, Social, and Governance (hereafter ESG) data, which convert CSR philosophies and actions into a concrete set of numbers, provides the setting for investors and scholars alike to measure the CSR orientations of companies and CSR's effect on their performance. It has become a general belief among many practitioners and scholars (e.g., Sacconi and Antoni, 2010; Lins, Servaes, and Tomayo, 2017) that a firm's CSR activities are a good proxy for its social capital and level of trust. To accommodate the ESG awareness of their investors, an increasing number of firms are reporting ESG metrics. The Governance & Accountability Institute reports that the percentage of S&P 500 firms releasing CSR reports has increased to an all-time high of 90% in 2019 compared to mere 20% at the end of 2011.[13] In this chapter, we utilize the Covid-19 market crash to assess the importance of a firm's ESG alignment for its performance during a period of market turmoil.

The controversy about the importance of CSR has grown since the 1950s. Bowen (1953) argues that firms are responsible to take the values of society into account in their decision-making processes. In contrast, Friedmann (1962) argues that firms are solely responsible for achieving profits for shareholders. Cox et al. (2004) find that CSR engagements may incur short-term costs for firms. Many recent studies (e.g., Luo and Bhattacharya, 2009; El Ghoul et al., 2011; Goss and Roberts, 2011; Eccles and Serafeim, 2014; Dimson et al., 2015; Kaspereit and Lopatta, 2016) present evidence that ESG investments create value and that such investments are in the best interest of all stakeholders including firm shareholders and society. Harjoto, Jo, and Kim (2017) find that firms with higher CSR activities have higher performance. Other papers examine the nonlinear nature of the performance effects of ESG alignments. Wang et al. (2008) propose an inverse U-shaped relationship between corporate philanthropy and financial performance. Kim

[13] https://www.ga-institute.com/research-reports/flash-reports/2020-sp-500-flash-report.html

and Statman (2012) show that the benefits of CSR dimmish as CSR investments increase. Flammer (2013) finds evidence suggesting that investments in ESG have decreasing marginal returns suggesting that a linear model seems to misspecify the nature of the relationship between CSR and firm performance and may prevent a researcher from obtaining meaningful results.

We use COVID-19 as an exogenous shock to assess how differential levels of ESG scores affect performance. Various authors have studied the importance of ESG investment during times of crisis, specifically during the Great Recession and the recent COVID-19 market collapse. Nonetheless, we expect CSR actions to matter more in such challenging times, as firms face financial difficulties, and investor trust is at its lowest and the social capital built through these CSR actions can act like an insurance policy that pays off in severe situations. Guiso, Sapienza, and Zingales (2008) posit that the decision to invest in stocks is "an act of faith (trust) that the data in our possession are reliable and that the overall system is fair". Investors pay additional attention to corporate fundamentals during an economic slowdown (Hirshleifer et al., 2008)[14] and firms with strong fundamentals are expected to be better equipped to deal with financial disturbances (Pastor and Vorsatz, 2020). This suggests that during a market crash like the one during the COVID-19 pandemic, investors seek safe investments in firms with higher ESG engagements. Ding et al. (2020) find that CSR affects share price resilience during economic shocks. Lins, Servaes, and Tomayo (2017) find that firms with high CSR ratings outperform firms with low CSR ratings during the 2008 financial crisis while Buchanan, Cao and Chen (2018) show that CSR firms have higher values before the financial crisis but experience more share-price losses during the crisis.

Albuquerque et al. (2020) find that stocks with higher ESG scores have significantly higher returns during the COVID-19 crisis. In contrast, Bae, Ghoul, Gong and Guedhami (2021) find no evidence that CSR affected stock returns during this crash period. Demers et al. (2020) show that ESG scores do not explain returns during the market collapse. Garel and Petit-Romec (2021) only find significant performance effects from Environmental factors and relate this to the fact that the COVID-19 crisis started outside the financial sector and may not represent a negative shock in the level of trust in corporations.

[14] Also see Lins, Servaes, & Tamayo (2017) and Nofsinger & Varma (2014).

Using data from Thompson Refinitiv (formerly ASSET4) and MSCI ESG (formerly KLD), we find a significant positive relation between ESG scores and performance during the Fever period (Ramelli and Wagner, 2020). More specifically, after controlling for industry, we find that environmental, and to a lesser extent social factors, are related to the buy and hold stock returns during the Fever period and that these effects cannot be explained by the time-invariant characteristics of the companies. We find that after controlling for several financial health proxies (e.g., Cash holdings and Debt ratios) as well as firm characteristics that impact returns (e.g., Size and Book-to-market ratios), ESG firms outperform their benchmarks throughout this market crash. We also observe that our findings persist after we control for measures of corporate governance.

As important players in the financial markets, institutional investors influence stocks they hold mainly due to the size of their holdings. Since the financial crisis, more institutional investors have specialized in sustainable finance and responsible investment practices, and many have included ESG as one of their stock selection criteria. A large number of institutions are signatories of the United Nation's Principles of Responsible Investment which encourages them to incorporate ESG strategies into their portfolio management analyses. To comply with the requirements of these key investors, many companies have started reporting their ESG metrics. Lee (2009) shows that differences in ownership structures of firms can affect their decision making. Oh et al. (2017) find that the ownership structures of firms affect their overall ESG engagements. However, the direction of causality in the relationship between institutional ownership (henceforth, IO) and ESG is not clearly specified. Do institutional shareholders invest more in ESG firms, or do they make the firms they invest in become more engaged in CSR activities, or both? Gillan et al. (2021) do not find a meaningful relationship between CSR and IO. Harjoto, Jo, and Kim (2017) find that IO does not strictly increase or decrease with ESG; rather it is a concave function of the level of ESG, which implies that institutions do not perceive CSR actions to be strictly value-enhancing.

One important dimensional difference among institutional investors in their approach towards the ESG strategies of firms they hold is their different investment horizons (e.g., Gaspar, Massa, and Matos, 2005; Yan and Zhang, 2009; Attig, Cleary, El Ghoul and Guedhami, 2013; Derrien, Kecskés, and Thesmar, 2013). Cheng, Ioannou, and Serafeim (2014) find that high-ESG firms consistently engage with stakeholders over the long term. Kim et al. (2019) associate long-term investors with higher demand for ESG and Nguyen et al. (2020) find that the presence of long-

term investors increases the value of firm CSR activities to firm shareholders. We test the effects of the investment horizons of institutional investors on the level of ESG in a cross-sectional setting controlling for industry dummies and time fixed effects. We find that institutional investors with longer investment horizons are associated with higher levels of CSR activities in the stocks they hold and that this is mainly attributable to higher environmental and governance factors.

The ESG strategies of firms is likely to differ based on the concentration of holdings of institutional investors (e.g., Arora and Dharwadkar, 2011; Zellweger et al., 2013), and on the holdings of Top Investors due to their higher bargaining power and access to firm managers. Although we do not have data on exogenous variations in the level of ESG associated with the holdings of different managers for a direct test, we regress the changes in the quarterly holdings of these institutional investors on the changes in the subsequent quarterly and annual levels of ESG.

We examine the holdings of institutional investors prior to, during, and after the COVID-19 market crash using the pandemic as an exogenous shock in a difference-in-difference (DiD) analysis. We find that institutional investors shifted their holdings from non-ESG firms to high-ESG firms during the COVID-19 market fall, and that there was no reversal afterwards. This result is in line with the existing literature that finds that investors seek safe investments in firms with stronger fundamentals and commitments to ESG reporting during financially difficult times (Pastor and Vorsatz, 2020). As part of this analysis, we examine the factors leading to institutional investors changing the composition of their portfolios and test whether they include a firm's ESG alignment as one of their criteria of composition changes during a market crisis. We find that High-ESG firms are more likely to retain their institutional investors during financially difficult times, even after controlling for proxies of the financial health of firms including cash holdings, debt ratios and profitability.

We find that while environmental scores are significantly related to the returns of the firms in our sample, they are not the only factor driving those returns, and that the social responsibility pillar scores have a positive and significant effect on firm performance during COVID-19. Moreover, similar tests using the MSCI ESG database find a higher significance for social responsibility compared to environmental awareness. We conclude that both environmental and social pillars are equally important for firm performance during COVID-19.

To the best of our understanding, we are the first study to comprehensively study the relationship of different types of institutional investors with the ESG engagements of firms and the combined influence of this relationship on the performance of stocks. This thesis contributes to different strands of the literature. First, we contribute to the discussion on whether CSR adds value to shareholders or is merely a by-product of agency issues among stakeholders[15] by assessing the performance effects of various ESG scores before, during, and after the COVID-19 market crash. Also, by employing different ESG metrics extracted and generated from ASSET4 and MSCI ESG and measuring their marginal effects on price performance and IO, we contribute to the literature analyzing whether ESG investments affect the performance of firms during the COVID-19 shock to the financial markets (e.g., Albuquerque, Koskinen, Yang, and Zhang, 2020; Bae, Ghoul, Gong, and Guedhami, 2021; Garel and Petit-Romec, 2021). Moreover, we contribute to the literature evaluating the impact of institutional investors on firm fundamentals by quantifying the effect of levels and changes in the composition of the holdings of institutional investors on the returns of the stocks they hold. Finally, we contribute to the ongoing literature studying the investment analysis and portfolio management practices of institutional investors by testing the factors behind the changes in the stocks held by institutional investors around the COVID-19 market downfall. Our results regarding the effect of CSR orientation on stock returns and IO can be useful for firm managers, as we highlight which practices will lead to better performance and higher IO, and also for shareholders and investors as we provide shareholders with a benchmark on how different stocks are affected during a market downfall.

The rest of the chapter is structured as follows. Section 2 presents the sample selection process and summary statistics. Section 3 reports the empirical results and tests of robustness. Section 4 concludes.

4.2. Sample and Summary Statistics

We obtain complete ESG data at year-ends 2018, 2019, and 2020 from Thompson Reuters ASSET4 ESG (Refinitiv ESG) database which is used widely by professionals and scholars and

[15] To illustrate, evidence in support of value creation is found in Ferrell, Liang, and Renneboog (2016) and Albuquerque, Durnev, and Koskinen (2015) and evidence in support of the agency view is found in Cheng, Hong, and Shue (2013).

has consistent coverage beginning in 2004. We base our main analyses on the ESG data from 2018 to ensure that firms did not adjust their alignments in response to or anticipation of the COVID-19 shock (as in, e.g., Lins, Servaes, and Tomayo, 2017) and we utilize the data from 2019 for a test of robustness. The data for 2020 are essentially used to capture the strategic response of US firms to the pandemic. The information in this database is acquired from annual reports, corporate sustainability reports, nongovernmental organizations, and news sources at an annual frequency. One of the biggest advantages of ASSET4 in research is that all 450 data points are public and transparent which allows for a deeper analysis of a firm's CSR actions. Another key feature of the scoring methodology of ASSET4 ESG is that the pillar scores are based on the relative performance to the company's sector. We download combined and pillar ESG scores. ASSET4 evaluates a firm's environmental commitments in three areas (Emission Reduction, Product Innovation, and Resource Reduction) and its social commitments in seven areas (Community, Diversity & Opportunity, Employment Quality, Health & Safety, Human Rights, Product Responsibility, and Training & Development). We employ some of these delineations in our robustness tests. To ensure the validity of our methodology, we also download ESG data from MSCI ESG database (formerly known as KLD) for year-end 2018. As the ESG scoring pattern is different in MSCI ESG, we use a linear function to transform the ESG pillar scores to range from 0 to 100 similar to those of ASSET4.

We obtain daily stock data from CRSP for all US stocks listed in the major markets. We remove financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4949) and stocks with prices lower than $1 (e.g., Fahlenbrach et al., 2021). Financial ratios are extracted from Compustat through the WRDS platform. Measures of IO are collected from the FactSet Ownership database as well as from the Thompson Reuters Institutional (13F) Holdings database.

We initially obtain ASSET4 ESG data for 1626 firms and MSCI ESG data for 1678 firms. After merging the ESG data with data for firms with no missing key information, our final sample consists of 2473 firms. This is composed of 722 firms with no ESG data, 326 firms with ESG data only from ASSET4, 413 firms with ESG data only from MSCI, and 1012 firms with ESG data from both sources. Table 4.1 provides the summary statistics for the stocks in our sample including their ESG metrics from ASSET4 and MSCI ESG.

<Table 4.1 about here.>

The COVID-19 shock caused large drops in the major market indexes. To illustrate, the S&P 500 dropped substantially from 6886.47 on February 19th to 4697.09 on March 20th. Figure 4.1 illustrates the major decline in the S&P500 TR following the start of the COVID-19 pandemic. Scholars studying the impacts of the COVID-19 Pandemic on financial markets have used different dates for the beginning and end of the market-wide crisis. Fahlenbrach et al. (2021) use the period from February 3rd to March 23rd, which they call the "Collapse" period and Ramelli and Wagner (2020) define the "Fever" period from Feb 24th to March 20th. We observe that our main results hold irrespective of the choice of the period. While we use the period February 19th to March 20th where the index is at its highest and lowest points, we repeat all our tests using the other periods for robustness and obtain consistent results.

<Figure 4.1 About here.>

4.3. Empirical Results

4.3.1. Cross-section of stock returns during COVID-19

4.3.1.1. ESG Scores and Stock Returns

We first investigate whether a firm's Environmental, Social, and Governance scores affect their performance during the COVID-19 market crash. To this end, we regress stock returns during the COVID-19 crisis on combined and pillar ESG scores. Our dependent variable is the buy and hold returns of firms in our sample from February 19th to March 23rd. Rather than using the latest available ESG scores, we use the values from the end of year 2018, in order to ensure that the firms did not have the opportunity to anticipate and react to the COVID-19 news by changing their ESG strategies. Thus, the extracted values should be purely exogenous.[16] To control for the fact that different industries were affected differentially by the crisis, we include industry dummies in our regression settings throughout the chapter. Additionally, we control for proxies of a firm's financial health and flexibility including *Cash Holdings*, *Debt Ratio* (Total debt divided by assets), and *Current Ratio* (Current assets divided by current liabilities) as a measure of liquidity (e.g., Ramelli and Wagner, 2020; Garel and Petit-Romec, 2021). We also control for other firm

[16] Lins, Servaes, and Tomayo (2017) use a similar approach employing the 2006 year-end ESG metrics in their study of the 2008 financial crisis.

characteristics that have been shown to affect stock returns (e.g., Daniel and Titman, 1997; Kogan and Papanikolaou, 2013) including *Size* (Log of total assets), *Book-to-Market* ratio, and *Momentum* (the firm's average monthly return over the one-year pre-crisis period).

The results are presented in Table 4.2. As expected, we find that firms with higher cash holdings and those with less long-term financial liabilities performed better during the COVID-19 market decline.[17] We observe that irrespective of the model parameters, higher ESG scores positively affect the performance of stocks during the COVID-19 market downturn. More specifically, we note that the E & S scores are the decisive factors in regard to cross-sectional stock returns and that G is not significantly related to returns. The effect of the E & S scores on returns is economically significant. To illustrate using the results for the model reported in column 7, the standardized coefficient of E of 0.0781 is higher than its counterpart of 0.0748 for cash holdings which is one of the most important proxies of a firm's financial flexibility (Faulkender and Wang, 2006).

<Table 4.2 about here.>

We repeat our investigation of whether ESG scores affect COVID-19 returns using data from the MSCI ESG database to increase our confidence that our results are not dependent on the source of the ESG data. Moreover, the ESG metrics for a relatively large number of firms in our database are reported in only one of our two sources and we do not want the missing data to affect our analyses. MSCI ESG data provide us with a set of strengths and weaknesses in each of the categories. For each category, we calculate the score by finding the difference between the number of strengths divided by the total number of possible strengths and weaknesses divided by the total number of possible weaknesses. Therefore, the index for each category ranges from -1 to +1. We also follow Lins, Servaes, and Tomayo (2017) to create a comprehensive index of community, diversity, employment, environment, and human rights categories (Henceforth, LST Score). For the sake of conformity with our ASSET4 metrics, we scale our E, S, G, and LST scores to range from 0 to 100. The results for the regressions of stock returns on ESG data from the MSCI ESG database are reported in Table 4.3. We find that the E & S scores are the important factors for

[17] As expected, firms with a lower sensitivity to market index returns (i.e. beta) performed better.

crisis-period stock returns and that the effects of cash holdings and long-term debt also persist using this alternative ESG database.

<Table 4.3 about here.>

4.3.1.2. ESG Scores and Institutional Ownership

We now test whether institutional investors trade based on a firm's ESG scores when rebalancing their portfolios during difficult times such as the recent COVID-19 market crash. Our institutional ownership proxies are *NCP_Inst_Q* (*NCP_Inst_S*), which are quarterly (semi-annual) measures of changes in IO by calculating the difference between institutional holdings in a given stock on March 31st, 2020, and Dec 31st, 2019 (Sep 30th, 2019).[18] If institutional investors trade based on the ESG scores of current and potential stock holdings, we should find a positive association between the changes in IO and ESG scores. We use similar proxies *NCP_T10_Q* (*NCP_T10_S*) to measure the changes in the holdings of the top 10 institutional investors of a given stock. The results of the regressions of the proxies of institutional ownership on the ESG metrics of the sample firms are provided in Table 4.4. The results show that the top 10 institutional investors of a stock, as well as all other institutional investors, buy (sell) more shares of stocks with higher (lower) E&S scores during the COVID-19 market crash.

<Table 4.4 about here.>

We next focus on the effect of institutional investors on the CSR activities of the firms they hold. We expect long-term investors to be better monitors of firm activities and to push firms towards better ESG. We categorize the institutional investors based on their investment horizons into long-term and short-term following the methodology of Derrien, Kecskés, and Thesmar (2013). We define A_{ij} as the turnover ratio of investor *j* based on its holdings of stock *i* during the period from the end of quarter t-12 to the end of quarter t. A_{ij} is calculated as follows:

$$\begin{cases} A_{ij} = \dfrac{Held_{ij,t-12} - Held_{ij,t}}{Held_{ij,t-12}} & if \quad Held_{ij,t-12} > Held_{ij,t} \\ A_{ij} = 0 & if \quad Held_{ij,t-12} \leq Held_{ij,t} \end{cases}$$

[18] These dates correspond to the quarterly disclosures of fund holdings.

Where $Held_{ij,t}$ is the number of shares of stock i held by investor j at the end of quarter t. A_{ij} also is set to zero if information to compute the change is not available. In order to find the turnover ratio of investor j, T_j, we calculate the value-weighted average of A_{ij} based on the relative size of stock i in the portfolio of investor j, as shown in the following formula:

$$T_{j,t} = \frac{\sum_{i=1}^{n} A_{ij} * Held_{ij,t-12} * Prc_{i,t-12}}{AUM_{j,t-12}}$$

Where $Prc_{i,t}$ is the price of stock i at the end of quarter t and $AUM_{j,t}$ is the total assets under management of investor j at the end of quarter t. We repeat this process four times setting t equal to 2019 Q4, 2019 Q3, 2019 Q2, and 2019 Q1 and then average the four values to ensure the estimates are not affected by one outlier quarter. We categorize the institutional investors with turnover ratios smaller than 35% as long-term and those with ratios equal to or smaller than 35% as short-term investors. From the 3707 distinct institutional investors in our sample, 613 are classified as long-term with a combined AUM of 8030.3 billion dollars and 3094 are classified as short-term with combined AUM of 9838.9 billion dollars.

To test the differential effect of investment horizons on the ESG scores of a stock, we define *LT IO* (*ST IO*) as the aggregate number of shares of a given stock held by its long-term (short-term) investors. Moreover, we construct *LT Pct* (*ST Pct*) as the percentage of shares of a given stock held by its long-term (short-term) investors. The results of the regressions of the ESG metrics on long-term and short-term IO are reported in Table 4.5. In columns (1) and (2) of Table 4.5 where the ESG score is the dependent variable, we observe that long-term institutional investors significantly increase the ESG scores of the firms they hold, but short-term investors negatively affect ESG scores. This is expected, as institutions with long-term investment horizons are better monitors of a firm's longer-term actions and ESG is associated with long-term value creation. We also observe that the effect of *LT IO* on ESG scores is mainly through the enhancement of the environmental and governance factors.

<Table 4.5 about here.>

4.3.2. Time-Series Analysis

4.3.2.1. ESG Scores and Stock Returns

We now focus on the time-series of stock returns to examine the effect of a given firm's CSR orientation on its returns through time and to differentiate between the importance of ESG reporting during crisis and non-crisis periods. Given that the CSR orientations of firms remain fixed in the short-term, we can use COVID-19 as an exogenous shock to measure the differential impact of ESG metrics on stock returns. We use the following model for this purpose:

$$Return_{i,t} = a_i + b_{1,i} * CSR_{i,j,t} + b_{2,i} * COVID + b_{3,i} * CSR_{i,j,t} * COVID + c * Controls + e_t \quad (1)$$

Where $Return_{i,t}$ is the return of stock i for quarter t, $CSR_{i,j,t}$ is j^{th} measure of CSR orientation of firm i where j includes the ESG score, and the environmental, social, and governance pillar scores. *COVID* is a dummy variable which equals 1 in the first quarter of 2020 and 0 otherwise. Similar to our cross-sectional tests, we control for FFC4 (Fama-French-Carhart 4) factors and proxies of financial health including *Cash Holdings*, *Long-Term Debt*, *Short-Term Debt*, and *Profitability* as well as firm characteristics, *Size*, and *Book-to-market ratio*. The coefficient on the interaction of *CSR* with *COVID* ($b_{3,i}$) captures the additional impact of ESG reporting during the COVID-19 market downfall.

We also use an augmented version of Model 1 where variables corresponding to the pre-Covid and post-Covid periods are added to gauge the importance of ESG practices before and after a market crisis. We use *Pre_Cov* which is equal to 1 in the last quarter of 2019 and 0 otherwise, and *Post_Cov* which is equal to 1 during the 6-month period following the COVID-19 market crash (i.e., 2nd and 3rd quarters 0f 2020), and 0 otherwise. The augmented model follows:

$$Return_{i,t} = a_i + b_{1,i} * CSR_{i,t} + b_{2,i} * COVID + b_{3,i} * CSR_{i,t} * COVID + b_{4,i} * CSR_{i,t} * Pre\_Cov + b_{5,i} * CSR_{i,t} * Post\_Cov + c * Controls + e_t \quad (2)$$

Where the coefficients on the interaction of *CSR* with *Pre_Cov* ($b_{4,i}$) and *CSR* with *Post_Cov* ($b_{5,i}$) capture the differential impact of a CSR measure in the pre-Covid and post-Covid periods.

The results of the time-series regressions on stock returns of ESG and COVID-19 are reported in Table 4.6. Columns (1) to (4) use model (1) and columns (5) to (8) use model (2). Irrespective

of the model used, the results show that the ESG score is priced by market participants and firms with stronger ESG orientations have higher returns and that this additional return is mainly due to the governance measure of a firm. While some recent evidence shows that better governed firms performed relatively well during the 2008 financial crisis (Lins, Volpin, and Wagner, 2013, and Nguyen, Nguyen, and Yin, 2015), we find a negative association between stock returns and the interaction of the governance score and *COVID* (as for the 2008 financial crisis in Buchanan, Cao and Chen, 2018). One possible reason could be that investors overvalue firms based on their governance scores during normal times and punish these overvalued firms more when they are faced with financial difficulties. While higher E & S scores do not significantly affect returns during normal times [see columns (2) and (3) of Table 4.6], they have a positive and significant effect on returns during the COVID-19 market crash. Column (6) highlights that the environmental pillar score becomes an important factor as early as the fourth quarter of 2019, when speculations about the causes and consequences of COVID-19 began to rise.[19] Thus, we can deduce that although investors do not values E&S scores to a great extent during normal times, they deem firms with high E&S scores to be the safest choices during COVID-19. Regarding the control variables, we observe that firms with lower *Long-term debt*, higher *Cash holdings*, and smaller *Size* outperform for our sample.

<Table 4.6 about here.>

4.3.2.2. ESG Scores, Institutional Holdings, and Stock Returns

To explore the effect of IO on stock returns during the COVID-19 market fall we run panel regressions of quarterly stock returns on measures of IO and their interactions with *COVID*. By employing this approach, we are able to assess the association of stock returns and their investor base during normal market situations and change thereof during financially difficult times. We use the following model to test the performance effects of institutional investors on quarterly stock returns:

[19] World Health Organization, 2020. Coronavirus disease (COVID-19) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health: interim guidance, 19 March 2020 (No. WHO/2019-nCov/HCW_advice/2020.2). World Health Organization.

$$Return_{i,t} = a_{i,t} + b_{1,i} * ESG_{i,t} + b_{2,i} * Inst_{i,t} + b_{3,i} * Inst_{i,t} * COVID + c_{i,t} * Controls_{i,t} + \partial_i + \delta_t + e_{i,t} \quad (3)$$

Where *Inst* $_{i,t}$ is one of our measures of IO including *InstPct* (*T10Pct*), the percentage of shares of a stock held by (top 10) institutional investors, and *NCP_Inst* (*NCP_T10*), the percentage change in the holdings of (top 10) institutional investors of a given stock. $ESG_{i,t}$ is the last available ESG score for stock *i* in quarter *t*. The coefficient on the interaction of *Inst* $_{i,t}$ with *COVID* ($b_{3,i}$) captures the differential level or change in a measure of IO during the market crash. As before, we include controls in our model. We use fixed-effects panel regressions where ∂_i captures the time-invariant firm-fixed effects and include δ_t which represents the quarter-fixed effects. We run different variants of model 3, the results of which are reported in Table 4.7.

<Table 4.7 about here.>

In columns (1) and (2) of Table 4.7, we report the effect of levels of total and top 10 institutional holdings on stock returns. The results show that *InstPct* (%) has a slight positive relationship with returns while *T10Pct* (%) negatively affects the returns of the stocks in our sample. In columns (3) and (4), where we use *NCP_Inst* as our measure of the change in IO, we observe that a positive flow of institutional funds to a firm during the COVID-19 market fall leads to higher returns, even after controlling for the prior level of IO in column (4). Columns (5) and (6) reveal that the change in the holdings of top 10 institutional investors is an important indicator of stock returns, but there are no additional effects during difficult times. This result is probably due to higher stickiness in the ownership of top 10 investors and their lower level of selling during difficult times. We also report a positive correlation of 0.0278 significant at the 0.1% level between the Herfindahl–Hirschman index (HHI) and returns during COVID-19 which reveals that firms with more concentrated shareholder bases performed better during that period.

4.3.2.3. ESG Scores and Changes in Institutional Holdings

We now test the driving factors behind changes in the holdings of institutional investors using the following model:

$$\Delta IO_{i,t} = a_i + b_{1,i} * CSR_{i,t} + b_{2,i} * COVID + b_{3,i} * CSR_{i,t} * COVID + c * Controls + \partial_i + \delta_t + e_{i,t} \quad (4)$$

Where $\Delta IO_{i,t}$ is either *NCP_Inst* or *NCP_T10*[20], and $CSR_{i,t}$ is one of the measures of a firm's CSR orientation including the ESG score, and environmental, social, and governance pillar scores from ASSET4. We use the same set of controls as in our previous regression settings and include time- and firm-fixed effects. We additionally control for the institutional holding changes in the previous quarter to remove the effect of negative serial correlation in the IO measures. The results of the regression of ΔIO on the ESG metrics are provided in Table 4.8.

<Table 4.8 about here.>

The results reported in columns (1) to (4) reveal that after controlling for serial autocorrelation in the dependent variable, all of our CSR measures lead to a positive change in the holdings of institutional investors during COVID-19. In other words, firms with higher CSR orientation had increased institutional holdings during the market fall. While Top 10 institutional investors acted like other institutional investors, they traded mainly based on social and governance measures and less based on environmental factors.

4.3.3. Robustness Tests

First, we investigate whether the choice of the COVID-19 crisis-period affects the association between the ESG scores and the buy-and-hold returns during the crisis. In results reported in Appendix Tables A4.1 and A4.2 we observe that the choice of the crisis-period (e.g., Fever, Collapse) does not affect our results materially.

We then examine the effect of CSR before, during, and after the COVID-19 pandemic using ESG data from the MSCI ESG database. The results reported in Table A4.3 show that the ENV and SOC scores significantly affect returns during the crisis period, similar to the results presented in Table 4.6 where the ASSET4 ESG data was employed.

We also redo our tests of the determinants of the changes in institutional ownership using combined IO data from Thompson Reuters and FactSet to assess whether the size of the sample

[20] Possible robustness, using change in Number of Institutional investors (standardized by firm size) as ΔIO.

affects the validity of our results. The results reported in Table A4.4 are very close to those of Table 4.8 where we used the IO data from Thompson Reuters.

Next, we repeat our tests of the effect of the ESG scores on cross-sectional stock returns controlling for the Fama-French five-factors to study whether our results are impacted by the choice of the benchmark. The results reported in Table A4.5 are very similar to those reported earlier in Tables 4.2 and 4.3.

Finally, we examine the effect of the ESG scores during the 2008 financial crisis to gauge the importance of CSR activities in another setting. Following Lin, Servaes, and Tomayo (2017) we set August 2008 as the start and March 2009 as the end of the 2008 financial crisis. The results reported in Table A4.6 show that a firm's ESG score, environmental pillar score (E), and governance pillar score (G) have a direct relation with the returns during this crisis. Also, as expected, we observe that long-term debt is strongly associated with lower returns during this period.

4.4. Conclusions

In this chapter, we study firm performance before, during, and after the COVID-19 market crash to capture the possible effect of CSR orientation on firm performance. Based on the cross-section of stock returns, we find that Environmental & Social scores are positively and significantly related to stock performance and higher cash holdings and lower long-term debt improve buy and hold returns during the COVID-19 market decline. Our time-series tests similarly indicate that E&S orientation is priced by market participants during times of financial market distress since investors seek investments with high E&S firms during these times. Governance measures are priced in normal times but their value does not increase during market downfalls.

We also study the portfolio management decisions of institutional investors by observing their holdings around the COVID-19 market crash. We observe that firms with a higher percentage of long-term investors generally have higher ESG scores. Tests of the cross-section of stocks in our samples reveal that all institutional investors, including those with sizable holdings in firms, adjust their positions based on the latest environmental and social metrics of the firms. Based on time-

series tests, we observe that institutional investors do not act upon the ESG data in designing the composition of their portfolios during normal market situations and only do so when a crisis hits.

Chapter 5: Conclusion

In chapter 2, we examined two possible channels through which media coverage affects the cash flows and performances of open-ended mutual funds (OEMFs). The first channel is the awareness- or attention-based buying behaviour of investors, as explained by Merton (1987); and the second channel is learning or information digestion which results from investors acting based on message favorableness and tone. The prior literature found significant effects on mutual fund flows from the media coverage of the disclosure of the holdings of OEMFs. In contrast, we examine the effects of all news coverage specifically mentioning OEMFs or their fund families. Our results show that both the existence and tone of media articles increase fund flows, but that the effect is greater from the existence of media articles. The probability of media coverage is higher for bigger and older funds but the effects on their flows are lower from greater media coverage. We find that spillover effects from same-management funds are partly responsible for the obtained results. Our findings are consistent with significant "attention" and "learning" effects. Our main contribution to the literature in this chapter is our examination of the "investor attention/awareness" and "information digestion" channels through which media exposure can affect the performance of financial securities and the behavior of individual investors. We contribute to the literature on communication practices and coverage of OEMFs by using a comprehensive dataset of daily media coverage of funds and their families. The results imply that fund managers need to pay attention to the coverage they receive as these media mentions can have flow and performance implications.

In chapter 3, we assessed the impact of institutional ownership (IO) on the firms held in the portfolios of the institutional investors. First, we reexamine the effect of increased IO on a stock's performance and find that the FF-5 alpha is negatively related to various IO measures. Second, we assess the impact of changes in the positions of "Top Institutional Investors" of stocks held on the stocks' performances. We observe that when Top Institutional Investors increase (decrease) their holdings, stock performance subsequently improves (deteriorates). We observe that while NYSE stocks typically have higher IOs, the link between IO and stock performance is more noticeable for Nasdaq stocks. Our main contribution to the literature in this chapter is to provide new evidence on the effect of institutional owners as governance monitors on their portfolio stocks. We also contribute in this chapter to the debate surrounding the informational role of institutional owners

versus their myopic trading strategies. The results indicate that top institutional investors are decisive in terms of stock performances and investors can obtain valuable information by following the changes in the composition of their holdings.

In chapter 4, we studied the performance of stocks before, during, and after the COVID-19 market downfall to capture the possible effect of ESG scores on buy-and-hold stock returns. We find that Environmental & Social scores affect stock performance significantly during the COVID-19 market decline. Our time-series tests similarly indicate that only Governance measures are priced by investors in normal times and that E&S orientations are priced during times of financial market distress resulting from an exogenous health-related shock. We also observe that firms with a longer-term-oriented shareholder base generally have higher ESG scores and that all institutional investors adjust their positions based on the latest environmental and social metrics of the firms. We find that institutional investors do not trade based on the ESG scores during normal market situations but do during the crisis. Our contribution to the literature in this chapter is the analysis of the effect of CSR orientations of institutional investor on firm performance by employing the COVID-19 crash as a truly exogenous shock.

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FIGURES

Figure 2.1: Depiction of media coverage to investor fund flows to OEMF decisions and performance

This figure depicts the relationship of the media coverage of an OEMF with its subsequent net flows and performances.

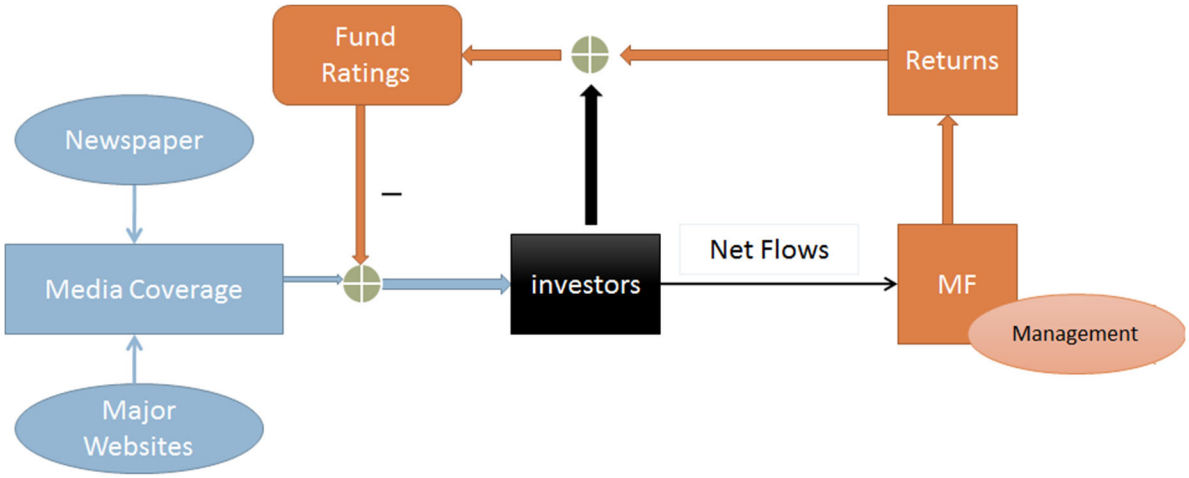
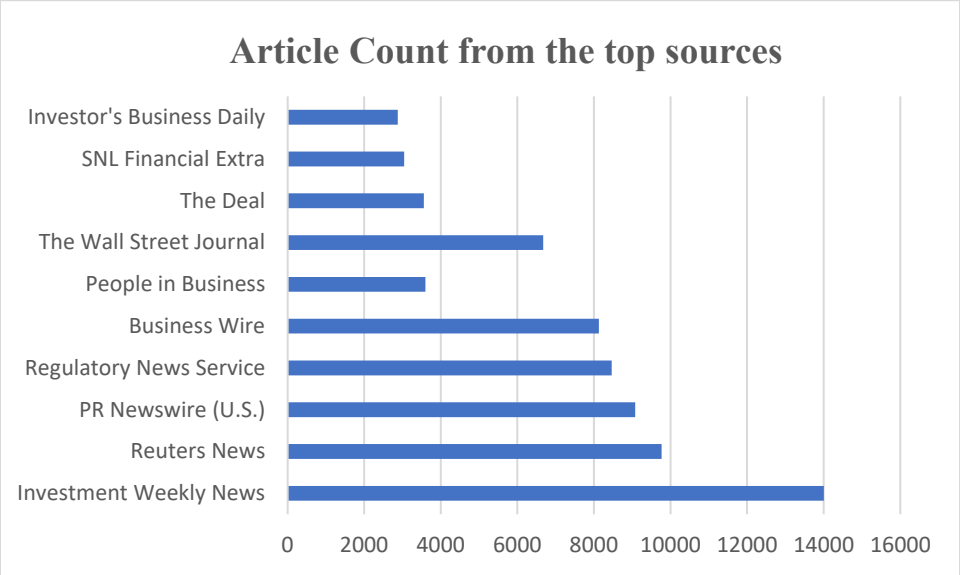


Figure 2.2: Summary Statistics of Media Coverage by Sources and Dates.

Panel A shows the top sources with more news articles in our sample except Dow Jones which is the top source with 155,672 news articles. Panel B graphs the time-series changes in the total number of news articles covering the mutual fund industry and the average number of new articles per fund during the sample period.

Panel A:



Panel B:

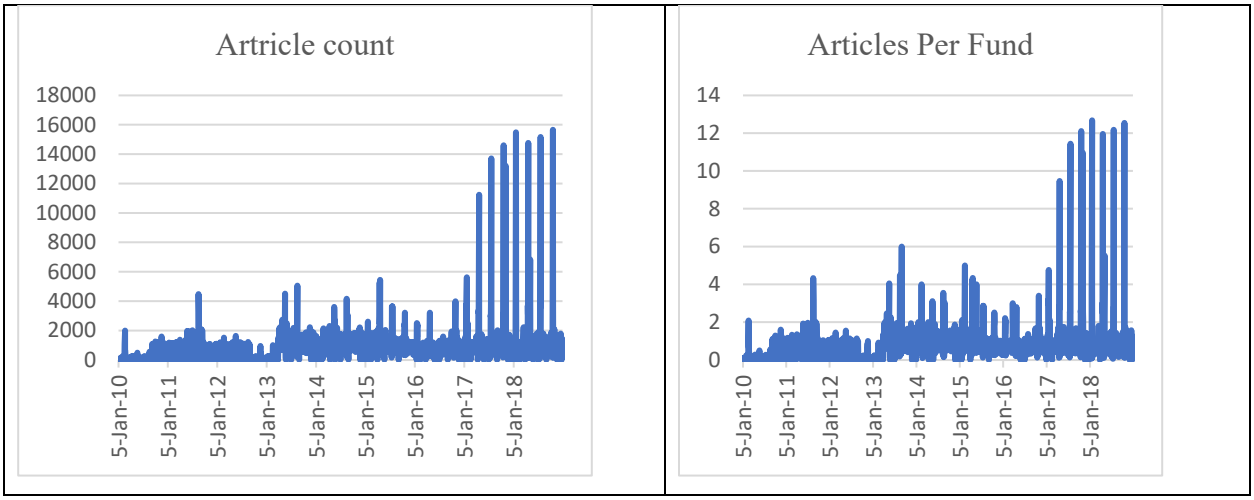


Figure 4.1. S&P 500 TR.

The S&P total return (TR) index is plotted through the COVID-19 crisis.

TABLES

Table 2.1. Descriptive Statistics for the Sample of Equity OEMFs

This table presents the summary statistics for the OEMF sample characteristics and covariates whose definitions are found in Appendix A. The sample consists of observations for 1505 distinct OEMFs with the Morningstar investment category of "Equity" over the period from 2010 to 2018. The data have been downloaded at the share-class level and aggregated to the OEMF level by combining the share classes of the same OEMF.

Variables	Average	Std. Dev.	Median	Min	Max	Skewness	P1	P99
Shares Outstanding (Mil)	60.710	158.900	16.400	0.000	3918	9.278	0.137	650.800
Net Assets ($Mil)	1233.273	4482.209	276.089	0.001	199889.800	22.090	1.800	13500.150
Funds in Family	9.833	7.986	7.000	1.000	37.000	0.627	1.000	27.000
Size	5.497	2.005	5.620	-6.908	12.210	-0.367	0.588	9.510
DFP ($)	21.500	35.500	15.654	0.930	1151.860	17.430	5.300	79.830
Age (Years)	14.250	11.910	12.273	0.003	94.530	2.211	0.247	64.750
Rating (1-5)	2.933	1.033	3.000	1.000	5.000	-0.024	1.000	5.000
Fee Level (1-5)	3.101	0.953	3.000	1.000	4.000	-0.826	1.000	4.000
NETMER (%)	1.122	0.588	1.140	-2.644	15.150	3.632	-0.335	2.485
GMER (%)	1.635	4.355	1.230	-2.644	233.800	28.600	-0.335	9.485
FeeWaiver (0-1)	0.610	0.488	1.000	0.000	1.000	-0.450	0.000	1.000
DistFee (%)	0.434	0.832	0.443	0.000	56.050	54.320	0.007	0.999
Return Characteristics								
FndRet (%)	0.037	0.992	0.072	-5.000	5.000	-0.306	-2.946	2.569
Vol (%)	0.928	0.474	0.807	0.000	4.666	1.792	0.314	2.589
ExFndRet (%)	0.035	0.992	0.070	-5.006	5.000	-0.306	-2.948	2.568
MonthRet (%)	0.006	0.052	0.010	-0.800	8.126	30.670	-0.138	0.103
Alpha (%)	-0.011	0.311	-0.005	-10.450	7.057	-1.569	-0.889	0.788
ExMktRet (%)	0.048	0.937	0.060	-6.970	5.060	-0.304	-2.680	2.400
SMB (%)	-0.001	0.515	0.000	-1.990	3.620	0.191	-1.320	1.310
HML (%)	-0.008	0.491	-0.030	-1.830	2.390	0.356	-1.220	1.420
RMW (%)	0.004	0.338	0.000	-1.630	1.660	0.013	-0.800	0.880
CMA (%)	0.001	0.304	-0.010	-1.320	1.960	0.337	-0.720	0.790
RF (%)	0.001	0.002	0.000	0.000	0.010	1.798	0.000	0.008
Flows Characteristics								
TNF (%)	0149	23.406	-0.003	-8214.710	20312.630	362.672	-9.746	11.108
AbsTNF ($Mil)	1.458	10.500	0.146	0.000	20312.630	407.052	0.000	18.700
TNFP (%)	1.594	0.370	-0.636	-39.992	99.98	4.405	-8.6200	12.75
AbsTNFP (%)	0.153	0.398	0.059	0.000	42.480	15.080	0.001	1.842
Sales ($Mil)	0.736	10.370	0.015	0.000	11118.000	528.500	0.000	11.540
Redemption ($Mil)	0.717	6.047	0.034	0.000	2874.000	101.300	0.000	10.700
SaleP (%)	0.277	132.200	0.009	0.000	168048.000	994.800	0.000	1.339
RedemP (%)	0.123	47.340	0.018	0.000	65091.000	1171.000	0.000	0.933
News Characteristics								
AnyArt	0.192	0.394	0.000	0.000	1.000	1.568	0.000	1.000
Count	0.685	2.635	0.000	0.000	133.000	11.690	0.000	11.000
ArtCnt	0.240	0.568	0.000	0.000	4.898	2.669	0.000	2.485
NET	-0.098	1.025	0.000	-51.000	35.000	-7.674	-4.000	2.000
PosCnt	0.068	0.254	0.000	0.000	3.611	4.186	0.000	1.386
NegCnt	0.101	0.343	0.000	0.000	3.951	3.900	0.000	1.792

Table 2.2. Summary Statistics for News and News-date Articles

This table presents the summary statistics for the news sample. Panel A provides the summary statistics for all the individual articles in the sample. Panel B provides the statistics on the article-date observations. The articles with the same date mentioning the same OEMF are combined. N is the number of articles in Panel A and the number of article-date observations in Panel B. Panel C provides the correlation coefficient matrix of OEMF characteristics and news metrics. All the variables are defined in Appendix A.

Variables	Average	Std. Dev.	Min	p25	p50	p75	Max
Panel A: News articles (N = 319,647)							
Word Count	447.70	1,011.61	1	166	215	515	81,300
Positive Words	4.16	11.52	0	0	1	5	753
Negative Words	6.09	16.49	0	1	1	7	1,364
Uncertain Words	3.78	13.99	0	0	0	4	1,807
Avg Syllables	1.82	0.22	1.21	1.64	1.79	2.04	3
Sentiment Score1	-3.69	14.81	-166.67	-6.29	-4.70	0.73	200.00
Sentiment Score2	-0.16	0.45	-0.99	-0.50	-0.23	0.04	0.99
Positive Article	0.17	0.37					
Negative Article	0.30	0.46					
Neutral Article	0.53	0.49					
Panel B: News-date articles (N = 109,342)							
Total Words	1,309	2,286	1	323	669	1,413	95,106
Positive Words	12.17	25.01	0	1	5	14	753
Negative Words	17.82	38.26	0	1	6	19	1,484
Uncertain Words	11.05	29.09	0	0	3	12	2,074
Positive Articles	0.49	0.96	0	0	0	1	36
Negative Articles	0.89	1.72	0	0	0	1	51
Neutral Articles	1.54	3.09	0	0	1	2	92
Sentiment Score1	-0.08	0.41	-0.99	-0.44	-0.06	0.18	0.99
Sentiment Score2	-2.84	13.89	-150.15	-6.89	-1.78	3.71	129.19

Panel C: Correlation Coefficients Matrix

Variables	***Count***	***NEG***	***NTL***	***POS***	***Size***	***Age***	***Rating***	***Return***	***TNF***
(1) Count	1.00								
(2) NEG	0.79	1.00							
(3) NTL	0.90	0.51	1.00						
(4) POS	0.48	0.28	0.24	1.00					
(5) Size	-0.01	-0.01	-0.00	-0.01	1.00				
(6) Age	0.01	0.01	0.01	0.00	0.41	1.00			
(7) Rating	-0.01	0.01	-0.01	0.00	0.15	0.02	1.00		
(8) Return	-0.01	-0.00	-0.00	-0.00	0.00	-0.01	0.01	1.00	
(9) TNF	-0.00	-0.00	-0.00	-0.00	0.01	-0.01	0.01	-0.01	1.00

Table 2.3. Tests of Count Determinants

This table reports results for the determinants of media coverage based on 2,276,126 observations for 1306 distinct OEMFs. The dependent variable is the number of articles published about an OEMF in a given year. Columns (1) and (2) report results using a Poisson and a Negative Binomial Regression, respectively. Both columns control for year-fixed effects. Since *exponential coefficients* are reported in both columns, a value less than one indicates a negative relation with the dependent variable. Z-statistics are presented in square brackets. (L1) after the variable name denotes that the variable is lagged by one trading day. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively. All the variables are defined in Appendix A.

	(1) Poisson		(2) Negative Binomial	
Variables	*Count*		*Count*	
Count (L1)	1.0594***	[1,332.024]	1.4471***	[341.910]
FndRet (L1)	0.9359***	[-38.174]	0.9225***	[-23.807]
MonthRet (L1)	0.8955***	[-112.252]	0.9362***	[-27.980]
AbsTNF (L1)	1.0034***	[17.206]	0.9997	[-0.160]
Age (L1)	1.0647***	[78.398]	1.0537***	[25.936]
Size (L1)	1.1006***	[98.169]	1.0970***	[41.547]
Rating (L1)	0.8955***	[-127.925]	0.9253***	[-39.334]
Net MER	1.0585***	[36.430]	0.9988	[-0.359]
FeeWaiver = 1	1.5769***	[254.035]	1.2362***	[52.833]
S&P 500 (L1)	1.0639***	[35.901]	1.0635***	[17.880]
Vol (L1)	0.8763***	[-138.396]	0.9264***	[-37.245]
Funds in Family	1.0540***	[502.534]	1.0421***	[150.757]
Growth Fund	1.0125**	[1.973]	0.9240***	[-5.628]
Income Fund	1.0634***	[9.170]	1.0972***	[6.109]
Constant	0.2314***	[-215.642]	0.1969***	[-108.293]
Chi-Squared			3224567.866	
(Pseudo) R^2	0.138		0.074	
Alpha			5.113***	

Table 2.4. Effect of the Existence and Frequency of Daily Media Mentions on OEMF Flows

This table reports the panel regression results for regression model (8) on OEMF flows from the existence and frequency of daily media mentions and controls based on 2,266,400 observations for 1306 distinct OEMFs. The dependent variable is the net percentage flows to the OEMF. The measure of news existence is *AnyArt* that is a dummy variable which takes the value of 1 if there are any articles mentioning the OEMF during the day and 0 otherwise. The measure of news frequency is *ArtCnt* which is the log of the total number of news articles mentioning the OEMF plus one in each day. Columns (1) and (2) capture the effects of the existence of at least one daily media mention and columns (3) and (4) focus on the frequency of daily media mentions. The odd and even numbered columns are estimated using random effects and fixed effects, respectively. *(L1)* after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the OEMF level. All the regression specifications control for year-fixed effects. Estimations in columns (2) and (4) also control for OEMF fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***TNFP***	**(2)** ***TNFP***	**(3)** ***TNFP***	**(4)** ***TNFP***
AnyArt (L1)	0.0474***	0.0480***		
	(12.104)	(12.212)		
ArtCnt (L1)			0.0240***	0.0245***
			(7.062)	(7.174)
FndRet (L1)	-0.0378***	-0.0378***	-0.0378***	-0.0378***
	(-16.696)	(-16.694)	(-16.698)	(-16.696)
TNFP (L1)	0.0220***	0.0219***	0.0220***	0.0220***
	(3.421)	(3.438)	(3.423)	(3.441)
MonthRet (L1)	0.0264***	0.0264***	0.0264***	0.0264***
	(3.073)	(3.072)	(3.072)	(3.071)
S&P 500	-0.0083***	-0.0083***	-0.0083***	-0.0084***
	(-8.658)	(-8.666)	(-8.673)	(-8.680)
AbsTNF (L1)	0.0044**	0.0043**	0.0044**	0.0044**
	(1.981)	(1.968)	(1.990)	(1.977)
Age (L1)	-0.0160*	0.0093	-0.0161*	0.0091
	(-1.689)	(0.489)	(-1.698)	(0.481)
Size (L1)	-0.1211***	-0.1257***	-0.1209***	-0.1254***
	(-7.741)	(-7.593)	(-7.719)	(-7.573)
Rating (L1)	0.0000	-0.0020	-0.0002	-0.0022
	(0.003)	(-0.191)	(-0.020)	(-0.212)
Net MER	-0.0037	0.0032	-0.0037	0.0032
	(-0.277)	(0.262)	(-0.276)	(0.261)
FeeWaiver = 1	0.0384***	0.0392***	0.0383***	0.0391***
	(3.441)	(3.480)	(3.435)	(3.473)
Vol (L1)	-0.0013	-0.0013	-0.0012	-0.0013
	(-0.285)	(-0.296)	(-0.273)	(-0.284)
Funds in Family	-0.0004	-0.0026	-0.0003	-0.0025
	(-0.195)	(-1.022)	(-0.142)	(-0.978)
Growth Fund	0.0643	0.0902***	0.0637	0.0940***
	(1.644)	(6.510)	(1.636)	(6.774)
Income Fund	0.1142**		0.1130**	
	(2.115)		(2.079)	
Constant	-0.0401	-0.0530**	-0.0378	-0.0550**
	(-0.930)	(-2.068)	(-0.880)	(-2.141)
Within R^2		0.009		0.009
R^2	0.007	0.003	0.007	0.003
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE		YES		YES

Table 2.5. Effect of Existence/Frequency of Daily Media Mentions on OEMF Performance Based on FF-5 benchmark

This table reports the panel regression results for OEMF performance based on the existence/frequency of daily media mentions and fund performance based on 2,265,869 observations for 1306 distinct OEMFs. The dependent variable is the Fama-French five-factor-adjusted return (FF-5) of the OEMF or *FF-5 Alpha*. The measure of news existence is *AnyArt* which is a dummy variable which takes the value of 1 if there are any articles for the day mentioning the OEMF and 0 otherwise. The measure of news frequency is *ArtCnt* which is the log of the total number of news articles mentioning the OEMF plus one in each day. Results presented in columns (1) and (2) capture the effects of the existence of at least one news article for the fund during a day and those in columns (3) and (4) focus on the frequency of daily media mentions for the fund. Standard errors are clustered at the OEMF level. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. All the regression specifications control for year-fixed effects. The results presented in columns (2) and (4) also control for OEMF fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***FF-5 Alpha***	**(2)** ***FF-5 Alpha***	**(3)** ***FF-5 Alpha***	**(4)** ***FF-5 Alpha***
AnyArt (L1)	-0.0016***	-0.0020***		
	(-2.923)	(-3.296)		
ArtCnt (L1)			-0.0015***	-0.0019***
			(-4.003)	(-4.329)
FndRet (L1)	0.0103***	0.0103***	0.0103***	0.0103***
	(17.531)	(17.479)	(17.530)	(17.478)
MonthRet (L1)	-0.0037***	-0.0039***	-0.0037***	-0.0039***
	(-3.424)	(-3.445)	(-3.424)	(-3.445)
TNF (L1)	0.0005**	0.0005**	0.0005**	0.0005**
	(2.218)	(2.262)	(2.217)	(2.261)
Age (L1)	0.0016***	-0.0149	0.0016***	-0.0149
	(5.813)	(-1.056)	(5.836)	(-1.057)
Size (L1)	-0.0040***	-0.0120***	-0.0040***	-0.0119***
	(-11.035)	(-11.845)	(-11.019)	(-11.825)
Rating (L1)	0.0046***	0.0034***	0.0046***	0.0034***
	(14.597)	(5.181)	(14.565)	(5.195)
Net MER	-0.0002	-0.0035*	-0.0001	-0.0035*
	(-0.118)	(-1.667)	(-0.108)	(-1.671)
FeeWaiver = 1	-0.0008	-0.0019**	-0.0008	-0.0019**
	(-1.455)	(-2.510)	(-1.393)	(-2.496)
Vol (L1)	-0.0060***	-0.0063***	-0.0060***	-0.0063***
	(-10.605)	(-10.621)	(-10.603)	(-10.619)
Funds in Family	0.0002***	0.0012***	0.0002***	0.0012***
	(3.834)	(6.392)	(3.978)	(6.456)
Growth Fund	-0.0056***	0.0181***	-0.0056***	0.0180***
	(-3.290)	(21.189)	(-3.273)	(21.157)
Income Fund	-0.0145***		-0.0145***	
	(-7.535)		(-7.514)	
Constant	0.0078***	-0.0261***	0.0077***	-0.0260***
	(2.937)	(-4.876)	(2.884)	(-4.876)
Within R^2		0.002		0.002
R^2	.0020	.0004	.0020	.0004
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE		YES		YES

Table 2.6. Effect of the Existence and Frequency of Daily Media Mentions on OEMF Performance

This table reports the panel 2SLS regression results for OEMF performance based on the existence/frequency of daily media mentions and fund performance. The dependent variable is the forward-demeaned OEMF Return in models (1) and (2) and the forward-demeaned FF-5 returns of the OEMF or Alpha in models (3) and (4). The measure of news existence is *AnyArt* which is a dummy variable which takes the value of 1 if there are any articles for the day mentioning the OEMF and 0 otherwise. The measure of news frequency is *ArtCnt* which is the log of the total number of news articles mentioning the OEMF plus one in each day. Results presented in columns (2) and (4) capture the effects of the existence of at least one news article for the fund during a day and those in columns (1) and (3) focus on the frequency of daily media mentions for the fund. Standard errors are clustered at the OEMF level. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. All the regression specifications control for year-fixed effects. The results presented in columns (2) and (4) also control for OEMF fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***fdExFndRet***	**(2)** ***fdExFndRet***	**(3)** ***fdalpha***	**(4)** ***fdalpha***
AnyArt (L1) = 1		-0.0118***		-0.0023***
		(-5.998)		(-3.734)
ArtCnt (L1)	-0.0092***		-0.0022***	
	(-6.596)		(-5.039)	
fdAUM	0.0000***	0.0000***	-0.0000	-0.0000
	(5.138)	(5.139)	(-0.861)	(-0.872)
FndRet (L1)	0.0027***	0.0027***	0.0104***	0.0104***
	(3.996)	(3.996)	(49.994)	(49.996)
MonthRet (L1)	-0.0796***	-0.0796***	-0.0038***	-0.0038***
	(-110.194)	(-110.173)	(-16.876)	(-16.853)
TNF (L1)	0.0010	0.0010	0.0005***	0.0005***
	(1.615)	(1.617)	(2.775)	(2.773)
Age (L1)	-0.0002	-0.0001	-0.0142***	-0.0142***
	(-0.025)	(-0.021)	(-7.486)	(-7.479)
Rating (L1)	-0.0038*	-0.0038**	-0.0024***	-0.0024***
	(-1.951)	(-1.985)	(-4.054)	(-4.077)
Net MER	0.0026	0.0026	-0.0006	-0.0006
	(0.619)	(0.626)	(-0.462)	(-0.454)
FeeWaiver = 1	0.0008	0.0008	-0.0002	-0.0002
	(0.374)	(0.353)	(-0.275)	(-0.291)
Vol (L1)	-0.1149***	-0.1149***	-0.0058***	-0.0058***
	(-136.785)	(-136.760)	(-22.221)	(-22.200)
Funds in Family	0.0015***	0.0015***	0.0008***	0.0008***
	(2.858)	(2.804)	(4.666)	(4.590)
Income Fund	-0.0074	-0.0065	0.0189	0.0191
	(-0.167)	(-0.147)	(1.376)	(1.387)
Constant	0.1067***	0.1065***	-0.0129	-0.0129
	(2.673)	(2.667)	(-1.037)	(-1.038)
Observations	2,266,400	2,266,400	2,265,869	2,265,869
Number of OEMFs	1,306	1,306	1,306	1,306
R^2	.010	.010	.000	.000
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES

Table 2.7. Effect of the Tone of Media Mentions on OEMF Sales and Redemptions

This table reports the panel regression results for OEMF flows based on the existence and frequency of media mentions in a day and controls. The dependent variable is the net percentage flow (*TNFP*) in the regression results reported in columns (1) and (2), percentage of sales (*SaleP*) in the regression results reported in columns (3) and (4), and percentage of redemptions (*RedemP*) in the regression results reported in columns (5) and (6). *PosCnt* (*NegCnt*) is one plus the log of total number of positive (negative) news articles mentioning an OEMF in a given day. Standard errors are clustered at the OEMF level. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. All the regression specifications control for year-fixed effects and OEMF fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

	(1)	(1)	(3)	(3)	(5)	(5)
Variables	***TNFP***	***TNFP***	***SaleP***	***SaleP***	***RedemP***	***RedemP***
PosCnt (L1)	0.0183***		-0.0021		-0.0019	-0.0094
	(2.978)		(-1.529)		(-1.563)	(-1.595)
NegCnt (L1)	0.0085	-0.0305***	-0.0009	-0.0133*	-0.0008	
	(1.972)	(-5.094)	(-1.004)	(-1.899)	(-1.028)	
ArtCnt (L1)		0.0375***		0.0108*		0.0067
		(9.727)		(1.930)		(1.565)
TNFP (L1)	0.0220***	0.0220***	0.1254***	0.1254***	0.0003	0.0003
	(3.438)	(3.441)	(22.150)	(22.135)	(0.737)	(0.728)
FndRet (L1)	-0.0378***	-0.0378***	-0.0022**	-0.0022**	-0.0014	-0.0014
	(-16.705)	(-16.692)	(-2.054)	(-2.056)	(-1.611)	(-1.611)
MonthRet (L1)	0.0263***	0.0264***	-0.0013	-0.0013	-0.0019	-0.0019
	(3.069)	(3.070)	(-1.468)	(-1.465)	(-1.592)	(-1.596)
S&P 500	-0.0084***	-0.0083***	-0.0017*	-0.0017*	-0.0015	-0.0014
	(-8.735)	(-8.675)	(-1.855)	(-1.855)	(-1.549)	(-1.549)
AbsTNF (L1)	0.0044**	0.0044**	-0.0017***	-0.0017***	-0.0009	-0.0009
	(1.986)	(1.984)	(-2.709)	(-2.699)	(-1.531)	(-1.557)
Age (L1)	0.0090	0.0091	-0.4038	-0.4037	-0.3097	-0.3097
	(0.473)	(0.477)	(-0.980)	(-0.980)	(-0.989)	(-0.989)
Size (L1)	-0.1252***	-0.1254***	-0.0886**	-0.0887**	-0.0738*	-0.0739*
	(-7.566)	(-7.571)	(-2.295)	(-2.295)	(-1.771)	(-1.771)
Rating (L1)	-0.0024	-0.0023	0.0038	0.0039	0.0074	0.0074
	(-0.228)	(-0.221)	(1.372)	(1.373)	(1.494)	(1.494)
Net MER	0.0031	0.0053	-0.0113*	-0.0193*	-0.0102	-0.0173
	(0.255)	(0.252)	(-1.902)	(-1.902)	(-1.517)	(-1.517)
FeeWaiver = 1	0.0392***	0.0392***	-0.0136*	-0.0136*	-0.0147	-0.0147
	(3.475)	(3.481)	(-1.845)	(-1.845)	(-1.527)	(-1.527)
Vol (L1)	-0.0014	-0.0012	0.0001	0.0001	-0.0004	-0.0003
	(-0.309)	(-0.275)	(0.044)	(0.070)	(-0.333)	(-0.307)
Funds in Family	-0.0021	-0.0026	0.0020*	0.0018*	0.0018*	0.0016*
	(-0.825)	(-1.008)	(1.882)	(1.854)	(1.711)	(1.706)
Constant	0.0273	0.0228	-0.1547	-0.1326	-0.1194	-0.0996
	(1.034)	(0.652)	(-1.147)	(-1.004)	(-1.151)	(-1.001)
Within R^2	0.008	0.009	0.008	0.008	0.002	0.002
R^2	0.004	0.004	0.000	0.000	0.000	0.000
Clustered SE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES	YES	YES

Table 2.8. Effects of the Directional Tone of Media Mentions on OEMF Flows

This table reports the panel regression results for OEMF flows based on the directional tone (i.e., positive or negative) of media mentions for each OEMF for each day and controls. The dependent variable is the net percentage flows (*TNFP*). *P-NCnt* equals the number of positive minus negative news items covering an OEMF in a given day. *PCntDum* (*NCntDum*) is a dummy variable equal to one when more positive (negative) news covers the OEMF on a given day and is equal to 0 otherwise. The odd and even numbered regression specifications are estimated including MER and not including MER, respectively. All the regression specifications control for year-fixed effects and additionally for OEMF fixed effects in the even numbered columns. Standard errors are clustered at the OEMF level. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) *TNFP*	(2) *TNFP*	(3) *TNFP*	(4) *TNFP*
NCntDum=1	-0.0029	-0.0029		
	(-0.447)	(-0.442)		
PCntDum=1	0.0132**	0.0131**		
	(2.278)	(2.258)		
P-NCnt (L1)			0.0023**	0.0023**
			(2.278)	(2.223)
ArtCnt (L1)	0.0227***	0.0232***		
	(5.029)	(5.125)		
AnyArt (L1) = 1			0.0482***	0.0488***
			(12.365)	(12.471)
TNFP (L1)	0.0220***	0.0220***	0.0220***	0.0219***
	(3.422)	(3.440)	(3.421)	(3.438)
FndRet (L1)	-0.0378***	-0.0378***	-0.0378***	-0.0378***
	(-16.706)	(-16.702)	(-16.697)	(-16.693)
MonthRet (L1)	0.0264***	0.0264***	0.0264***	0.0264***
	(3.072)	(3.071)	(3.072)	(3.071)
S&P 500	-0.0084***	-0.0084***	-0.0083***	-0.0083***
	(-8.681)	(-8.686)	(-8.667)	(-8.672)
AbsTNF (L1)	0.0044**	0.0044**	0.0044**	0.0043**
	(1.992)	(1.979)	(1.982)	(1.969)
Age (L1)	-0.0164*	0.0092	-0.0163*	0.0093
	(-1.720)	(0.484)	(-1.716)	(0.490)
Size (L1)	-0.1209***	-0.1254***	-0.1211***	-0.1257***
	(-7.721)	(-7.574)	(-7.742)	(-7.593)
Rating (L1)	-0.0002	-0.0024	0.0001	-0.0021
	(-0.016)	(-0.228)	(0.008)	(-0.204)
Net MER	-0.0063	0.0055	-0.0064	0.0054
	(-0.278)	(0.260)	(-0.281)	(0.259)
FeeWaiver = 1	0.0383***	0.0391***	0.0384***	0.0392***
	(3.436)	(3.472)	(3.443)	(3.480)
Vol (L1)	-0.0013	-0.0013	-0.0013	-0.0013
	(-0.281)	(-0.290)	(-0.290)	(-0.299)
Funds in Family	-0.0003	-0.0025	-0.0004	-0.0026
	(-0.149)	(-0.965)	(-0.199)	(-1.010)
Constant	0.0368	0.0224	0.0351	0.0209
	(1.035)	(0.639)	(0.987)	(0.595)
Number of OEMFs	1,306	1,306	1,306	1,306
R^2	0.007	0.004	0.007	0.005
Year FE	YES	YES	YES	YES
OEMF FE		YES		YES

Table 2.9. Effect of the Daily Media Mentions and their Sentiment on OEMF Weekly Flows

This table reports the panel regression results for regression models (8) and (13) on OEMF weekly flows from the existence, frequency, and sentiment of daily media mentions and controls based on 2,265,094 observations for 1306 distinct OEMFs. The dependent variable (*TNFP_W*) is the average net percentage flows to the OEMF in the five-day period following the news date. Columns (1) and (2) capture the effects of the existence and frequency of daily media mentions while columns (3) and (4) focus on the sentiment of daily media mentions. *(L1)* after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the OEMF level. All the regression specifications control for OEMF-fixed effects and year-fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***CAF***	**(2)** ***CAF***	**(3)** ***CAF***	**(4)** ***CAF***
AnyArt (L1)	0.0805***			0.0820***
	(4.963)			(5.131)
ArtCnt (L1)		0.0436***	0.0263	
		(2.762)	(1.285)	
NCntDum=1			0.0326	
			(1.296)	
PCntDum=1			0.0571***	
			(2.649)	
P-NCnt (L1)				0.0044
				(1.027)
MonthRet (L1)	0.1048***	0.1048***	0.1048***	0.1048***
	(2.976)	(2.975)	(2.975)	(2.975)
AbsTNF (L1)	0.0196**	0.0196**	0.0196**	0.0196**
	(2.216)	(2.213)	(2.214)	(2.216)
Age (L1)	0.0786	0.0783	0.0786	0.0786
	(0.656)	(0.654)	(0.656)	(0.656)
Size (L1)	-0.6646***	-0.6641***	-0.6642***	-0.6646***
	(-7.974)	(-7.968)	(-7.969)	(-7.974)
Rating (L1)	-0.0147	-0.0151	-0.0150	-0.0147
	(-0.283)	(-0.290)	(-0.290)	(-0.282)
Net MER	0.0240	0.0241	0.0241	0.0239
	(0.232)	(0.232)	(0.232)	(0.230)
FeeWaiver = 1	0.1968***	0.1966***	0.1966***	0.1968***
	(3.518)	(3.516)	(3.516)	(3.519)
Vol (L1)	0.0021	0.0022	0.0021	0.0021
	(0.111)	(0.115)	(0.110)	(0.110)
Funds in Family	-0.0133	-0.0132	-0.0131	-0.0133
	(-1.041)	(-1.028)	(-1.021)	(-1.040)
Income Fund	0.4686***	0.4750***	0.4731***	0.4678***
	(6.770)	(6.854)	(6.830)	(6.762)
Constant	-0.2970*	-0.3001*	-0.2992*	-0.2963*
	(-1.717)	(-1.734)	(-1.729)	(-1.713)
R^2	0.023	0.023	0.023	0.023
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES

Table 2.10. Effect of the Daily Media Mentions and their Sentiment on OEMF Weekly FF-5 benchmark-adjusted returns

This table reports the panel regression results for regression models (9) and (14) on OEMF average 5-day FF-5 benchmark-adjusted returns (*FF-5 ALPHA_W*) from the existence, frequency, and sentiment of daily media mentions and controls based on 2,265,094 observations for 1306 distinct OEMFs. The dependent variable is the average FF-5 benchmark adjusted returns of the OEMF in the five-day period following the news date. Columns (1) and (2) capture the effects of the existence and frequency of daily media mentions while columns (3) and (4) focus on the sentiment of daily media mentions. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the OEMF level. All the regression specifications control for OEMF-fixed effects and year-fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***CAR***	**(2)** ***CAR***	**(3)** ***CAR***	**(4)** ***CAR***
AnyArt (L1)		-0.0040***		
		(-2.720)		
ArtCnt (L1)	0.0001			0.0007
	(0.029)			(0.375)
NCntDum=1			-0.0049**	
			(-1.941)	
PCntDum=1			-0.0002	
			(-0.123)	
P-NCnt (L1)				0.0018***
				(3.249)
MonthRet (L1)	-0.0149***	-0.0149***	-0.0149***	-0.0149***
	(-3.158)	(-3.159)	(-3.159)	(-3.159)
AbsTNF (L1)	0.0007**	0.0008**	0.0008**	0.0007**
	(2.483)	(2.504)	(2.506)	(2.478)
Age (L1)	-0.0734	-0.0735	-0.0734	-0.0734
	(-1.056)	(-1.058)	(-1.057)	(-1.056)
Size (L1)	-0.0586***	-0.0586***	-0.0586***	-0.0586***
	(-11.789)	(-11.765)	(-11.767)	(-11.791)
Rating (L1)	0.0163***	0.0163***	0.0163***	0.0163***
	(4.918)	(4.919)	(4.920)	(4.925)
Net MER	-0.0179	-0.0179	-0.0179	-0.0179
	(-1.559)	(-1.564)	(-1.564)	(-1.564)
FeeWaiver = 1	-0.0085**	-0.0085**	-0.0084**	-0.0085**
	(-2.185)	(-2.177)	(-2.177)	(-2.182)
Vol (L1)	-0.0297***	-0.0297***	-0.0297***	-0.0297***
	(-11.764)	(-11.757)	(-11.755)	(-11.755)
Funds in Family	-0.0008	-0.0007	-0.0007	-0.0008
	(-1.044)	(-0.950)	(-0.945)	(-1.038)
Income Fund	0.1154***	0.1155***	0.1153***	0.1151***
	(28.145)	(28.219)	(28.121)	(28.062)
Constant	-0.0984***	-0.0987***	-0.0985***	-0.0981***
	(-3.702)	(-3.714)	(-3.707)	(-3.692)
R^2	0.004	0.004	0.004	0.004
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES

Table 2.11. Effect of the Existence and Frequency of Monthly Media Mentions on Long-Term OEMF Flows

This table reports the panel regression results for OEMF flows from the long-term measures of media mentions and controls based on 109,333 observations for 1306 distinct OEMFs. The dependent variable (*TNFP*) is the monthly net percentage flows to the OEMF. The measure of news existence is *AnyArt* which is a dummy variable which takes the value of 1 if there are any articles mentioning the OEMF during the month and 0 otherwise. The measures of news frequency are *ArtCnt* which is the log of the total number of news articles mentioning the OEMF plus one in each month and *ArtCnt_6m* which aggregates the values of *ArtCnt* in the six months prior. *News Months* is the number of months with at least one news article covering an OEMF in the six-month prior period. All other variables are defined in Appendix A. The results are estimated using fixed effects panel regressions and all the regression specifications control for year-fixed effects and OEMF fixed effects. *(L1)* after the variable name shows that the variable is lagged by one month. Standard errors are clustered at the OEMF level. The p-values are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***TNFP***	**(2)** ***TNFP***	**(3)** ***TNFP***	**(4)** ***TNFP***
AnyArt (L1)	0.1699***			
	(0.006)			
ArtCnt (L1)		0.0985***		
		(0.000)		
News Months			0.0411**	
			(0.043)	
ArtCnt_6m				0.0255***
				(0.002)
TNFP (L1)	0.5477***	0.5477***	0.5338***	0.5338***
	(0.000)	(0.000)	(0.000)	(0.000)
Return (L1)	1.6862***	1.6871***	1.9959***	1.9944***
	(0.000)	(0.000)	(0.000)	(0.000)
S&P 500	0.9517***	0.9456***	1.0049***	1.0001***
	(0.000)	(0.000)	(0.000)	(0.000)
absTNF (L1)	-0.2310**	-0.2302**	-0.2958***	-0.2964***
	(0.044)	(0.044)	(0.010)	(0.009)
Age (L1)	0.0944	0.0942	0.0626	0.0617
	(0.140)	(0.139)	(0.239)	(0.235)
Size (L1)	-1.0704***	-1.0726***	-1.0255***	-1.0297***
	(0.000)	(0.000)	(0.000)	(0.000)
Rating (L1)	-0.0621	-0.0637	-0.0610	-0.0632
	(0.523)	(0.512)	(0.544)	(0.529)
Net MER	-0.1136	-0.1077	-0.0393	-0.0317
	(0.635)	(0.653)	(0.863)	(0.890)
FeeWaiver = 1	0.2674***	0.2645***	0.2738***	0.2691***
	(0.008)	(0.008)	(0.006)	(0.007)
Vol (monthly)	-0.2945***	-0.2943***	-0.3506***	-0.3566***
	(0.000)	(0.000)	(0.000)	(0.000)
Funds in Family	0.0126	0.0092	0.0061	0.0025
	(0.609)	(0.710)	(0.806)	(0.921)
Income Fund	0.6271***	0.6179***	0.7286***	0.7064***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	4.7559***	4.8045***	4.5656***	4.6520***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	109,333	109,333	103,221	103,221
R^2	0.344	0.345	0.324	0.324
N(OEMF)	1,306	1,306	1,292	1,292

Table 2.12. Effect of the Existence and Frequency of Monthly Media Mentions on Long-Term Performance

This table reports the panel regression results for OEMF FF-5 benchmark adjusted returns from the long-term measures of media mentions and controls. The dependent variable (*FF-5 Alpha*) is the monthly benchmark-adjusted returns of the OEMF. The measure of news existence is *AnyArt* which is a dummy variable which takes the value of 1 if there are any articles mentioning the OEMF during the month and 0 otherwise. The measures of news frequency are *ArtCnt* which is the log of the total number of news articles mentioning the OEMF plus one in each month and *ArtCnt_6m* which aggregates the values of ArtCnt in the prior six months. *News Months* is the number of months with at least one news article covering an OEMF in the prior six-month period. All other variables are defined in Appendix A. The results are estimated using fixed effects panel regressions and all the regression specifications control for year-fixed effects and OEMF fixed effects. (L1) after the variable name shows that the variable is lagged by one month. Standard errors are clustered at the OEMF level. The p-values are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***FF-5 Alpha***	**(2)** ***FF-5 Alpha***	**(3)** ***FF-5 Alpha***	**(4)** ***FF-5 Alpha***
AnyArt (L1)	-0.0023***			
	(0.000)			
ArtCnt (L1)		-0.0013***		
		(0.000)		
News Months			-0.0001	
			(0.630)	
ArtCnt_6m				-0.0000
				(0.938)
Return (L1)	-0.0148***	-0.0148***	-0.0108***	-0.0108***
	(0.000)	(0.000)	(0.000)	(0.000)
S&P 500	0.0168***	0.0169***	0.0203***	0.0203***
	(0.000)	(0.000)	(0.000)	(0.000)
absTNF (L1)	0.0030***	0.0030***	0.0024***	0.0024***
	(0.000)	(0.000)	(0.000)	(0.000)
Age (L1)	-0.0011	-0.0011	-0.0019	-0.0019
	(0.250)	(0.249)	(0.313)	(0.313)
Size (L1)	-0.0058***	-0.0057***	-0.0064***	-0.0065***
	(0.000)	(0.000)	(0.000)	(0.000)
Rating (L1)	0.0030***	0.0030***	0.0031***	0.0032***
	(0.000)	(0.000)	(0.000)	(0.000)
Net MER	-0.0036	-0.0037	-0.0043**	-0.0043**
	(0.110)	(0.104)	(0.033)	(0.032)
FeeWaiver = 1	-0.0019**	-0.0018**	-0.0019**	-0.0019**
	(0.018)	(0.021)	(0.017)	(0.017)
Vol (monthly)	-0.0012	-0.0012	-0.0022***	-0.0022***
	(0.106)	(0.105)	(0.004)	(0.004)
Funds in Family	-0.0001	-0.0000	-0.0001	-0.0001
	(0.555)	(0.753)	(0.531)	(0.514)
Income Fund	0.0236***	0.0237***	0.0226***	0.0226***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.0185*	0.0179	0.0309	0.0308
	(0.089)	(0.100)	(0.123)	(0.125)
Observations	109,333	109,333	103,221	103,221
R^2	0.017	0.017	0.016	0.016
Number of OEMFs	1,306	1,306	1,292	1,292
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES

Table 2.13. Effects of the Directional Tone of Media Mentions on Long-Term OEMF Flows

This table reports the panel regression results for OEMF monthly flows based on the directional tone (i.e. positive or negative) of media mentions for each OEMF and controls. The dependent variable is the monthly net percentage flows (*TNFP*). *P-NCnt* equals the number of positive minus negative news items covering an OEMF in each month and *P-NCnt_6m* aggregates this value over the six-month period. *PCntDum* (*NCntDum*) is a dummy variable equal to one if more positive (negative) news covers the OEMF in each month and is equal to 0 otherwise. *Pos Months* (*Neg Months*) is the number of months with more positive (negative) news covers the OEMF in the prior six-month period. All other variables are defined in Appendix A. All the regression specifications control for year-fixed effects and OEMF fixed effects. Standard errors are clustered at the OEMF level. (L1) after the variable name shows that the variable is lagged by one month. The p-values are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) *TNFP*	(2) *TNFP*	(3) *TNFP*	(4) *TNFP*	(5) *TNFP*
NCntDum=1	-0.1466*				
	(0.070)				
PCntDum=1	0.1114				
	(0.116)				
P-NCnt (L1)		0.0641			
		(0.189)			
P-NCnt_6m			0.0295		
			(0.204)		
Pos Months				0.0326	
				(0.156)	
Neg Months					-0.0097
					(0.697)
TNFP (L1)	0.5477***	0.5511***	0.5104***	0.5477***	0.5478***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MonthRet (L1)	1.6917***	1.5797***	1.8677***	1.6924***	1.6944***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
S&P 500	0.9566***	0.9639***	1.1759***	0.9565***	0.9573***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
absTNF (L1)	-0.2316**	-0.0595	0.3259*	-0.2309**	-0.2312**
	(0.043)	(0.532)	(0.100)	(0.043)	(0.043)
Age (L1)	0.0948	0.0650	0.0395	0.0946	0.0950
	(0.139)	(0.171)	(0.103)	(0.138)	(0.139)
Size (L1)	-1.0695***	-1.1165***	-1.1067***	-1.0716***	-1.0684***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net MER	-0.1113	-0.0762	-0.0549	-0.1138	-0.1085
	(0.643)	(0.720)	(0.841)	(0.634)	(0.650)
FeeWaiver = 1	0.2660***	0.2712**	0.2257	0.2650***	0.2645***
	(0.008)	(0.014)	(0.136)	(0.008)	(0.008)
Vol (monthly)	-0.2936***	-0.0975	-0.0306	-0.2926***	-0.2918***
	(0.000)	(0.127)	(0.673)	(0.000)	(0.000)
Funds in Family	0.0136	0.0065	-0.1135***	0.0128	0.0145
	(0.581)	(0.812)	(0.002)	(0.603)	(0.555)
Income Fund	0.6059***	0.9375***		0.5565***	0.6252***
	(0.000)	(0.000)		(0.000)	(0.000)
Observations	109,333	78,284	41,692	109,333	109,333
R2	0.344	0.346	0.303	0.344	0.344
N(OEMF)	1,306	1,286	1,072	1,306	1,306

Table 2.14. Effects of the Directional Tone of Media Mentions on Long-Term OEMF Performance

This table reports the panel regression results for OEMF monthly FF-5 benchmark adjusted returns based on the directional tone (i.e. positive or negative) of media mentions for each OEMF and controls. The dependent variable (*FF-5 Alpha*) is the monthly FF-5 benchmark adjusted returns of the OEMF. *P-NCnt* equals the number of positive minus negative news items covering an OEMF in each month and *P-NCnt_6m* aggregates this value over the six-month period. *PCntDum* (*NCntDum*) is a dummy variable equal to one if more positive (negative) news covers the OEMF in each month and is equal to 0 otherwise. *Pos Months* (*Neg Months*) is the number of months where more positive (negative) news covers the OEMF in the prior six-month period. All the other variables are defined in Appendix A. All the regression specifications control for year-fixed effects and OEMF fixed effects. Standard errors are clustered at the OEMF level. *(L1)* shows that the variable is lagged by one month. The p-values are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***FF-5 Alpha***	**(2)** ***FF-5 Alpha***	**(3)** ***FF-5 Alpha***	**(4)** ***FF-5 Alpha***	**(5)** ***FF-5 Alpha***
NCntDum=1	-0.0008				
	(0.325)				
PCntDum=1	0.0019***				
	(0.010)				
P-NCnt (L1)		0.0016***			
		(0.002)			
P-NCnt_6m			0.0006**		
			(0.012)		
Pos Months				0.0008***	
				(0.000)	
Neg Months					-0.0007***
					(0.000)
ArtCnt (L1)	-0.0013***				
	(0.000)				
AnyArt (L1)		-0.0026***	-0.0037***		
		(0.001)	(0.001)		
MonthRet (L1)	-0.0147***	-0.0134***	-0.0113***	-0.0108***	-0.0108***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
S&P 500	0.0169***	0.0179***	0.0218***	0.0203***	0.0203***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
absTNF (L1)	0.0030***	0.0022***	0.0036**	0.0024***	0.0024***
	(0.000)	(0.000)	(0.025)	(0.000)	(0.000)
Age (L1)	-0.0011	-0.0011	-0.0014	-0.0019	-0.0019
	(0.250)	(0.369)	(0.341)	(0.314)	(0.315)
Size (L1)	-0.0057***	-0.0058***	-0.0072***	-0.0065***	-0.0065***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Rating (L1)	0.0031***	0.0021***	0.0021*	0.0032***	0.0032***
	(0.000)	(0.006)	(0.050)	(0.000)	(0.000)
Net MER	-0.0038	-0.0053***	-0.0015	-0.0044**	-0.0043**
	(0.101)	(0.001)	(0.430)	(0.029)	(0.036)
FeeWaiver = 1	-0.0018**	-0.0018*	-0.0009	-0.0019**	-0.0020**
	(0.021)	(0.057)	(0.524)	(0.018)	(0.015)
Vol (monthly)	-0.0012	-0.0008	-0.0055***	-0.0021***	-0.0021***
	(0.103)	(0.325)	(0.000)	(0.005)	(0.005)
Funds in Family	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
	(0.707)	(0.504)	(0.790)	(0.497)	(0.467)
Constant	0.0190*	0.0067	0.0504***	0.0328	0.0329
	(0.080)	(0.609)	(0.002)	(0.103)	(0.101)
Observations	109,333	78,284	41,692	103,221	103,221
R^2	0.017	0.017	0.017	0.017	0.016

Table 2.15. Effect of the Existence and Frequency of Daily Cleansed Media Mentions on OEMF Flows

This table reports the panel regression results for regression model (8) on OEMF flows from the existence and frequency of daily cleansed media mentions (i.e. other than its holdings) and controls based on 2,266,400 observations for 1306 distinct OEMFs. The dependent variable (*TNFP*) is the net percentage flows to the OEMF. The measure of news existence is *AnyArt-ex* that is a dummy variable which takes the value of 1 if there are any articles mentioning the OEMF (and not its holdings) during the day and 0 otherwise. The measure of news frequency is *ArtCnt-ex* which is the log of the total number of news articles mentioning the OEMF (and not its holdings) plus one in each day. *NewsPct* is the number of news articles mentioning the OEMF divided by *AggCnt*. *(L1)* after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the OEMF level. All the regression specifications control for year-fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***TNFP***	**(2)** ***TNFP***	**(3)** ***TNFP***
AnyArt-ex (L1)	0.0378***		
	(8.964)		
ArtCnt-ex (L1)		0.0225***	
		(4.861)	
NewsPct (L1)			0.2873***
			(3.743)
AggCnt (L1)	-0.0000***	-0.0000***	
	(-3.472)	(-2.799)	
TNFP (L1)	0.0219***	0.0219***	0.0220***
	(3.441)	(3.437)	(3.439)
FndRet (L1)	-0.0379***	-0.0378***	-0.0380***
	(-16.734)	(-16.717)	(-16.748)
MonthRet (L1)	0.0263***	0.0263***	0.0263***
	(3.069)	(3.069)	(3.070)
S&P 500	-0.0084***	-0.0084***	-0.0084***
	(-8.749)	(-8.742)	(-8.780)
AbsTNF (L1)	0.0043**	0.0043**	0.0044**
	(1.969)	(1.976)	(1.986)
Age (L1)	0.0095	0.0093	0.0083
	(0.498)	(0.490)	(0.433)
Size (L1)	-0.1256***	-0.1254***	-0.1252***
	(-7.585)	(-7.571)	(-7.570)
Rating (L1)	-0.0020	-0.0022	-0.0022
	(-0.195)	(-0.209)	(-0.212)
Net MER	0.0054	0.0053	0.0052
	(0.257)	(0.254)	(0.246)
FeeWaiver = 1	0.0392***	0.0391***	0.0393***
	(3.479)	(3.471)	(3.488)
Vol (L1)	-0.0014	-0.0014	-0.0012
	(-0.311)	(-0.305)	(-0.269)
Funds in Family	-0.0025	-0.0025	-0.0022
	(-0.998)	(-0.981)	(-0.878)
Income Fund	0.0902***	0.0931***	0.0942***
	(6.509)	(6.712)	(6.789)
R^2	0.009	0.009	0.008
Clustered SE	YES	YES	YES
Year FE	YES	YES	YES
OEMF FE	YES	YES	YES

Table 2.16. Effect of Existence/Frequency of Daily Cleansed Media Mentions on OEMF Performance Based on FF-5 benchmark

This table reports the panel regression results for OEMF performance based on the existence/frequency of daily cleansed media mentions (i.e. other than its holdings) and fund performance based on 2,265,869 observations for 1306 distinct OEMFs. The dependent variable (*FF-5 Alpha*) is the Fama-French five-factor-adjusted return (FF-5) of the OEMF or *FF-5 Alpha*. The measure of news existence is *AnyArt-ex* which is a dummy variable which takes the value of 1 if there are any articles for the day mentioning the OEMF (and not its holdings) and 0 otherwise. The measure of news frequency is *ArtCnt-ex* which is the log of the total number of news articles mentioning the OEMF (and not its holdings) plus one in each day. *NewsPct* is the number of news articles mentioning the OEMF divided by *AggCnt*. Standard errors are clustered at the OEMF level. *(L1)* after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. All the regression specifications control for year-fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***FF-5 Alpha***	**(2)** ***FF-5 Alpha***	**(3)** ***FF-5 Alpha***
AnyArt-ex (L1)	-0.0013**		
	(-2.005)		
ArtCnt-ex (L1)		-0.0016***	
		(-2.995)	
NewsPct (L1)			-0.0161
			(-1.322)
AggCnt (L1)	-0.0000***	-0.0000***	
	(-6.285)	(-5.921)	
FndRet (L1)	0.0102***	0.0102***	0.0104***
	(17.437)	(17.436)	(17.507)
MonthRet (L1)	-0.0038***	-0.0038***	-0.0039***
	(-3.446)	(-3.446)	(-3.444)
TNF (L1)	0.0005**	0.0005**	0.0005**
	(2.259)	(2.259)	(2.254)
Age (L1)	-0.0147	-0.0147	-0.0148
	(-1.055)	(-1.056)	(-1.053)
Size (L1)	-0.0119***	-0.0119***	-0.0120***
	(-11.848)	(-11.824)	(-11.872)
Rating (L1)	0.0034***	0.0034***	0.0034***
	(5.193)	(5.198)	(5.155)
Net MER	-0.0035*	-0.0035*	-0.0035*
	(-1.658)	(-1.659)	(-1.675)
FeeWaiver = 1	-0.0019**	-0.0019**	-0.0019**
	(-2.503)	(-2.488)	(-2.510)
Vol (L1)	-0.0063***	-0.0063***	-0.0063***
	(-10.678)	(-10.676)	(-10.666)
Funds in Family	0.0012***	0.0012***	0.0012***
	(6.370)	(6.445)	(6.362)
Income Fund	0.0181***	0.0180***	0.0184***
	(21.082)	(21.180)	(21.697)
Constant	-0.0252***	-0.0254***	-0.0266***
	(-4.749)	(-4.774)	(-4.991)
R^2	0.002	0.002	0.002
Clustered SE	YES	YES	YES
Year FE	YES	YES	YES
OEMF FE	YES	YES	YES

Table 2.17. Effects of the Directional Tone of Cleansed Media Mentions on OEMF Flows and Performances

This table reports the panel regression results for OEMF flows and performances based on the directional tone (i.e., positive or negative) of cleansed media mentions for each OEMF (i.e. not its holdings) for each day and controls. The dependent variables are the net percentage flows (*TNFP*) and *FF-5 Alphas*. *P-NCnt-ex* equals the number of positive minus negative cleansed news items covering an OEMF in a given day. *PCntDum-ex* (*NCntDum-ex*) is a dummy variable equal to one if more positive (negative) cleansed news covers the OEMF on a given day and is equal to 0 otherwise. All the regression specifications control for year and OEMF fixed effects. Standard errors are clustered at the OEMF level. *(L1)* after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) *TNFP*	(2) *TNFP*	(3) *FF-5 Alpha*	(4) *FF-5 Alpha*
NCntDum-ex=1	0.0107		0.0018	
	(1.569)		(1.769)	
PCntDum-ex=1	0.0235***		0.0025**	
	(3.594)		(2.314)	
P-NCnt-ex (L1)		0.0022		-0.0001
		(1.457)		(-0.275)
ArtCnt (L1)		0.0382***		-0.0013**
		(9.121)		(-2.005)
AnyArt (L1)	0.0150**		-0.0025***	
	(2.463)		(-3.640)	
AggCnt (L1)	-0.0000***	-0.0000***	-0.0000***	-0.0000***
	(-2.685)	(-3.561)	(-5.829)	(-6.257)
TNFP (L1)	0.0219***	0.0219***	-0.0005**	-0.0005**
	(3.436)	(3.440)	(-2.409)	(-2.409)
FndRet (L1)	-0.0378***	-0.0379***	0.0103***	0.0103***
	(-16.724)	(-16.735)	(17.481)	(17.484)
MonthRet (L1)	0.0263***	0.0263***	-0.0037***	-0.0037***
	(3.069)	(3.069)	(-3.424)	(-3.425)
S&P 500	-0.0084***	-0.0084***	0.0012***	0.0012***
	(-8.743)	(-8.750)	(4.028)	(4.030)
AbsTNF (L1)	0.0043**	0.0043**	0.0001	0.0001
	(1.976)	(1.970)	(0.901)	(0.882)
Age (L1)	0.0094	0.0095	-0.0147	-0.0147
	(0.494)	(0.499)	(-1.056)	(-1.055)
Size (L1)	-0.1254***	-0.1255***	-0.0119***	-0.0119***
	(-7.572)	(-7.584)	(-11.821)	(-11.845)
Rating (L1)	-0.0023	-0.0022	0.0034***	0.0034***
	(-0.224)	(-0.209)	(5.162)	(5.153)
Net MER	0.0053	0.0054	-0.0035*	-0.0035*
	(0.255)	(0.255)	(-1.652)	(-1.653)
FeeWaiver = 1	0.0391***	0.0392***	-0.0019**	-0.0019**
	(3.472)	(3.480)	(-2.482)	(-2.500)
Vol (L1)	-0.0014	-0.0014	-0.0062***	-0.0062***
	(-0.311)	(-0.311)	(-10.602)	(-10.600)
Funds in Family	-0.0024	-0.0025	0.0013***	0.0012***
	(-0.947)	(-0.985)	(6.533)	(6.398)
R^2	0.009	0.009	0.002	0.002
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 2.18. Effect on Fund Family Flows from the Existence of Media Mentions

This table reports the panel regression results for fund family flows from the existence of media mentions and controls for 740,756 daily observations for 397 distinct fund families. The dependent variable (*TNFP*) is the net percentage flows to the fund family. The measure of news existence is *AnyArt* which is a dummy variable equal to 1 if there are any articles mentioning the fund family and 0 otherwise. Results reported in columns (1), (2) and (3) include the interaction of *AnyArt* with the fund family's age, size, and return volatility, respectively. *(L1)* after the variable name indicates that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the fund family level. All the reported regression results control for family and year-fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***TNFP***	**(2)** ***TNFP***	**(3)** ***TNFP***
AnyArt (L1)	0.0677***	0.0867***	0.0604***
	(3.647)	(2.955)	(4.315)
TNFP (L1)	0.0001	0.0001	0.0000
	(0.933)	(0.502)	(0.103)
FndRet (L1)	-0.0160***	-0.0161***	-0.0160***
	(-4.422)	(-4.436)	(-4.390)
MonthRet (L1)	-0.0080	-0.0080	-0.0079
	(-0.412)	(-0.413)	(-0.406)
S&P 500	-0.0072***	-0.0072***	-0.0072***
	(-3.634)	(-3.626)	(-3.663)
AbsTNF (L1)	0.0005	0.0007	0.0004
	(0.460)	(0.713)	(0.346)
Age (L1)	-0.0373	-0.0450	-0.0457
	(-0.643)	(-0.752)	(-0.752)
Size (L1)	-0.2082**	-0.1991**	-0.2066**
	(-2.159)	(-2.166)	(-2.157)
Rating (L1)	-0.0169	-0.0167	-0.0168
	(-0.607)	(-0.601)	(-0.601)
Vol (L1)	-0.0094	-0.0094	-0.0125
	(-0.926)	(-0.933)	(-1.286)
Funds in Family	0.0157	0.0175	0.0151
	(1.543)	(1.587)	(1.541)
*AnyArt * Age (L1)*	-0.0392*		
	(-1.888)		
*AnyArt * Size (L1)*		-0.0833**	
		(-1.978)	
*AnyArt * Vol (L1)*			0.0289***
			(3.894)
Constant	-0.0807	-0.0861	-0.0793
	(-1.433)	(-1.460)	(-1.420)
Within R^2	0.005	0.006	0.005
R^2	0.001	0.001	0.001
Clustered SE	YES	YES	YES
Year FE	YES	YES	YES
Fund family FE	YES	YES	YES

Table 2.19. Effect on Fund Family Flows from the Frequency of Media Mentions

This table reports the panel regression results for fund family flows from the frequency of media mentions and controls based on 740,756 observations for 397 distinct fund families. The dependent variable (*TNFP*) is the net percentage flows to the fund family. The measure of news frequency is *ArtCnt* which is the log of the total number of news articles mentioning the OEMF plus one in a given day. Results reported in columns (1), (2) and (3) include the interaction of *ArtCnt* with the fund family's age, size, and return volatility, respectively. (L1) after the variable name indicates that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the fund family level. All the models control for fund family and year-fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***TNFP***	**(2)** ***TNFP***	**(3)** ***TNFP***
ArtCnt (L1)	0.0410***	0.0583***	0.0351***
	(5.112)	(3.887)	(6.354)
TNFP (L1)	0.0001	0.0000	0.0000
	(0.985)	(0.390)	(0.313)
FndRet (L1)	-0.0160***	-0.0161***	-0.0160***
	(-4.411)	(-4.427)	(-4.393)
MonthRet (L1)	-0.0080	-0.0080	-0.0078
	(-0.410)	(-0.411)	(-0.400)
S&P 500	-0.0072***	-0.0073***	-0.0073***
	(-3.637)	(-3.631)	(-3.675)
AbsTNF (L1)	0.0005	0.0007	0.0004
	(0.425)	(0.705)	(0.321)
Age (L1)	-0.0394	-0.0454	-0.0458
	(-0.665)	(-0.754)	(-0.753)
Size (L1)	-0.2076**	-0.2017**	-0.2062**
	(-2.161)	(-2.148)	(-2.156)
Rating (L1)	-0.0170	-0.0169	-0.0169
	(-0.611)	(-0.607)	(-0.606)
Vol (L1)	-0.0094	-0.0095	-0.0120
	(-0.927)	(-0.936)	(-1.224)
Funds in Family	0.0157	0.0173	0.0151
	(1.548)	(1.611)	(1.527)
*ArtCnt * Age (L1)*	-0.0255**		
	(-2.476)		
*ArtCnt * Size (L1)*		-0.0517**	
		(-2.559)	
*ArtCnt * Vol (L1)*			0.0212***
			(4.268)
Constant	-0.0792	-0.0846	-0.0777
	(-1.416)	(-1.460)	(-1.396)
Within R^2	0.005	0.005	0.005
R^2	0.001	0.001	0.001
Clustered SE	YES	YES	YES
Year FE	YES	YES	YES
Fund Family FE	YES	YES	YES

Table 2.20. Spillover Effects of Media Mentions on OEMF Flows and Performances

This table reports the panel regression results for the effects on an OEMF's flows and performances from media mentions about other funds managed by an OEMF's management company. The dependent variables are the net percentage flows (*TNFP*) and *FF-5 Alphas*. Mgr*AnyArt* is a dummy variable which takes the value of 1 if there are any articles for the day that mention other funds managed by an OEMF's management company and 0 otherwise. *MgrArtCnt* is the log of the total number of news articles mentioning other funds managed by an OEMF's management company plus one in each day. All the regression specifications control for year and OEMF fixed effects. Standard errors are clustered at the OEMF level. *(L1)* after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) *TNFP*	(2) *TNFP*	(3) *FF-5 Alpha*	(4) *FF-5 Alpha*
MgrAnyArt (L1)	0.0243**		-0.0006	
	(2.310)		(-0.381)	
MgrArtCnt (L1)		0.0164**		-0.0002
		(2.516)		(-0.200)
TNFP (L1)	0.0180***	0.0180***		
	(6.990)	(6.990)		
TNF (L1)			0.0003	0.0003
			(1.531)	(1.531)
FndRet (L1)	-0.0298***	-0.0298***	0.0099***	0.0099***
	(-8.753)	(-8.752)	(12.222)	(12.222)
MonthRet (L1)	0.0359***	0.0359***	-0.0055***	-0.0055***
	(8.855)	(8.858)	(-10.578)	(-10.578)
S&P 500	-0.0071***	-0.0071***		
	(-5.454)	(-5.451)		
AbsTNF (L1)	0.0019	0.0019		
	(1.324)	(1.324)		
Age (L1)	0.0128	0.0128	-0.0028	-0.0028
	(0.560)	(0.561)	(-0.641)	(-0.641)
Size (L1)	-0.1261***	-0.1262***	-0.0124***	-0.0124***
	(-4.341)	(-4.343)	(-7.737)	(-7.736)
Rating (L1)	-0.0123	-0.0123	0.0026**	0.0026**
	(-0.720)	(-0.721)	(2.482)	(2.481)
Net MER	0.0331**	0.0331**	-0.0037	-0.0037
	(2.261)	(2.265)	(-1.341)	(-1.340)
FeeWaiver = 1	0.0321**	0.0321**	-0.0012	-0.0012
	(1.973)	(1.972)	(-1.352)	(-1.346)
Vol (L1)	-0.0015	-0.0015	-0.0076***	-0.0076***
	(-0.333)	(-0.329)	(-16.083)	(-16.083)
Funds in Family	-0.0130***	-0.0130***	0.0014***	0.0014***
	(-3.351)	(-3.352)	(5.129)	(5.128)
Constant	0.0966**	0.0968**	-0.0080*	-0.0080*
	(2.020)	(2.023)	(-1.777)	(-1.779)
Observations	891,634	891,634	891,502	891,502
R^2	0.007	0.007	0.002	0.002
Number of OEMFS	529	529	529	529
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES

Table 3.1. Descriptive Statistics

This table provides the summary statistics of our sample of US stocks trading in NYSE, AMEX, and Nasdaq. All the variables are defined in Appendix A.

Variables	(1) N	(2) Mean	(3) Std. Dev.	(4) Min	(5) Max
MktCap (Million $)	604,230	4,989.529	22,671.717	0.108	1304764.750
Shrout (1000s)	604,230	122,048	431,725	9.000	29206400
Prc ($)	604,230	31.936	73.045	1.000	4,505.000
TrdVol (1000s)	604,230	22413.057	99797.851	0.000	1.900e+7
PQDiff ($)	603,883	0.011	0.288	-0.998	87.735
FF-5 Alpha (%)	580,534	-0.043	0.172	-17.214	22.438
Return (%)	601,347	0.011	0.139	-0.957	19.884
InstCnt	604,230	164.544	239.064	0.000	3,210.000
TopInstCnt	604,230	11.740	8.174	0.000	118.000
BlockCnt	604,230	2.261	1.941	0.000	44.000
InstPct (%)	604,230	51.438	34.907	0.000	979.898
TopPct (%)	604,230	38.058	27.049	0.000	922.909
BlockPct (%)	604,230	18.677	17.553	0.000	738.397
NetChInstPct (%)	580,912	0.123	10.604	-887.966	886.869
NetChTopPct (%)	580,912	0.082	9.277	-857.883	860.824
NetChBlockPct (%)	580,912	0.089	7.661	-705.655	707.519
Agg_Liq	604,230	-0.004	0.042	-0.106	0.102
Agg_Liq_Innov	604,230	0.017	0.041	-0.078	0.131
IBES_Cnt	604,230	5.195	6.626	0.000	51.000
IBES_Up	604,230	0.732	2.109	0.000	45.000
IBES_Down	604,230	1.128	2.811	0.000	47.000
BrdSize	114,731	8.462	2.504	1.000	33.000
CEO_Duality	114,731	0.192	0.394	0.000	1.000
NED	114,731	0.832	0.096	0.000	1.000
BrdTenure	114,731	7.669	4.826	0.000	38.900
TimeRet	114,723	7.295	4.846	-13.500	34.500
Gender Ratio	114,721	0.873	0.115	0.200	1.000

Table 3.2. Correlation Coefficients.

This table reports the correlation coefficients of the variables in the sample. Column (1) reports the correlation coefficients of FF-5 Alphas with stock and market attributes including liquidity, board structure, and analyst reviews. Column (2) reports the correlations between the Percentage of Institutional holdings and the attributes. All the variables are defined in Appendix A.

Variables	(1) FF-5 Alpha	(1) InstPct (%)
MktCap (Million $)	-0.0120***	0.0978***
Prc ($)	-0.0099***	0.1617***
Return (L1m)	-0.0026*	0.0088***
TrdVol	0.0089***	0.0755***
Agg_Liq	0.0044***	0.0080***
Agg_Liq_Innov	-0.0249***	0.0054***
Trd_Liq	-0.0206***	0.0033*
InstPct (L1q)	-0.0153***	0.9554***
TopInstPct (L1q)	-0.0156***	0.9193***
NetChInstPct (%)	0.0440***	0.1404***
NetChTopPct (%)	0.0281***	0.1345***
IBES_Cnt	0.0065***	0.4755***
IBES_Up	0.0328***	0.2192***
IBES_Down	-0.0378***	0.2527***
BrdSize	0.0011	0.1814***
CEO_Duality	0.0771***	0.0428***
NED	-0.0132***	0.1758***
BrdTenure	0.0398***	0.0068*
TimeRet	0.0114***	0.0054
Gender Ratio	0.0785***	-0.1553***

Table 3.3. Interquartile effects of Board Structure on Monthly FF-5 Alphas and Institutional Holdings

This table reports the results of Quantile Regressions of monthly stock FF-5 alphas and Institutional Holdings Percentages on the internal governance measures and controls for 110,225 stock-month observations for the period starting from 2010 to the end of 2019 for 5,974 distinct stocks listed on the NYSE, AMEX, and Nasdaq. The dependent variables is the Fama-French five-factor (FF-5) benchmark-adjusted stock returns calculated using rolling betas computed from the last 5-years of monthly data following the standard FM (1973) approach in Panel A and the percentage of total institutional holdings in Panel B. Columns (1) to (5) report the coefficients corresponding to 10%, 25%, 50%, 75%, and 90% quantiles, respectively. Column (6) reports the interquantile difference between 90% and 10% quantiles. All the variables are defined in Appendix A. The robust t-statistics are reported in the parentheses. Standard errors are clustered at the stock level. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively, to help control for a large number of stock-month observations.

Panel A	**(1)** **FF-5 Alpha** **Q10**	**(2)** **FF-5 Alpha** **Q25**	**(3)** **FF-5 Alpha** **Q50**	**(4)** **FF-5 Alpha** **Q75**	**(5)** **FF-5 Alpha** **Q90**	**(6)** **FF-5 Alpha** **Q90-Q10**
BrdSize	0.0078***	0.0040***	0.0012***	-0.0019***	-0.0067***	-0.0145***
	(28.226)	(20.102)	(7.028)	(-11.168)	(-23.661)	(-47.186)
CEO_Duality = 1	0.0513***	0.0485***	0.0253***	0.0140***	0.0075***	-0.0438***
	(29.700)	(37.905)	(31.071)	(14.437)	(4.930)	(-19.342)
NED	0.0272***	-0.0016	-0.0003	-0.0222***	-0.0606***	-0.0879***
	(3.759)	(-0.294)	(-0.081)	(-4.881)	(-7.796)	(-7.633)
BrdTenure	0.0254***	0.0166***	0.0080***	-0.0004	-0.0102***	-0.0355***
	(25.273)	(26.191)	(17.906)	(-0.737)	(-11.801)	(-29.071)
TimeRet	0.0040***	0.0085***	0.0072***	0.0081***	0.0117***	0.0077***
	(3.972)	(14.448)	(14.619)	(15.048)	(13.344)	(5.734)
Constant	-0.3112***	-0.1660***	-0.0527***	0.0611***	0.2096***	0.5208***
	(-51.758)	(-36.617)	(-15.527)	(16.334)	(36.055)	(56.474)
N	110,225					

Panel B	**(1)** **InstPct (%)** **Q10**	**(2)** **InstPct (%)** **Q25**	**(3)** **InstPct (%)** **Q50**	**(4)** **InstPct (%)** **Q75**	**(5)** **InstPct (%)** **Q90**	**(6)** **InstPct (%)** **Q90-Q10**
BrdSize	1.4289***	2.9799***	2.2496***	0.3521***	-0.0243	-1.4532***
	(27.651)	(46.696)	(33.686)	(6.498)	(-0.612)	(-23.023)
CEO_Duality = 1	4.0348***	8.5740***	4.8877***	1.5464***	0.8092***	-3.2256***
	(10.578)	(20.424)	(14.914)	(9.018)	(5.227)	(-7.530)
NED	7.2146***	43.7976***	77.8559***	53.0179***	26.3370***	19.1224***
	(6.932)	(26.553)	(38.932)	(39.294)	(23.654)	(11.784)
BrdTenure	-0.0129	0.0475	0.1208***	0.0150	-0.1353***	-0.1224***
	(-0.533)	(1.436)	(3.274)	(0.688)	(-6.103)	(-3.572)
TimeRet	-0.0922***	0.1177***	0.2197***	0.1238***	0.1012***	0.1934***
	(-5.620)	(3.100)	(6.205)	(5.615)	(5.287)	(7.728)
Constant	-8.8693***	-33.1705***	-24.8292***	36.9563***	74.6038***	83.4731***
	(-11.430)	(-27.295)	(-15.622)	(31.398)	(73.100)	(60.485)
N	114,723					

Table 3.4. Institutional Investors Count Determinants

This table reports the results of Poisson regressions for the determinants of the number of institutional investors holding stocks of a company based on 193,903 stock-quarter observations for the period starting from 2010 to the end of 2019. The dependent variable is InstCnt, the total number of institutional investors holding shares of a company in a given quarter, in columns (1) and (2), and TopInstCnt, the number of Top Institutional Investors of a stock in a given quarter, in columns (3) and (4). Models (2) and (3) control for board of governance statistics as well as analyst reviews. All the variables are defined in Appendix A. Z-statistics are presented in parentheses. (L1q) shows that the variable is lagged by one quarter. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) InstCnt	(2) InstCnt	(3) TopInstCnt	(4) TopInstCnt
Size (L1q)	1.6122***	1.5866***	1.1354***	1.0706***
	(3,677.927)	(1,473.521)	(233.565)	(49.977)
QPrc ($) (L1q)	0.9998***	0.9998***	0.9995***	0.9995***
	(-102.735)	(-58.332)	(-40.526)	(-18.287)
TrdVol (L1q)	1.0000***	1.0000***	1.0000***	1.0000***
	(49.797)	(47.878)	(-70.144)	(-28.536)
Returns (%) (L1q)	0.9751***	0.9102***	1.0457***	0.8714***
	(-7.826)	(-13.298)	(4.877)	(-6.512)
Vol	0.9863***	0.9895***	0.9934***	0.9795***
	(-74.856)	(-25.204)	(-13.372)	(-17.083)
Agg_Liq_Innov	1.4045***	1.3466***	1.0782***	0.8857***
	(108.865)	(46.363)	(6.389)	(-5.016)
IBES_Up	1.0030***	1.0027***	1.0008***	0.9984***
	(109.517)	(46.597)	(5.351)	(-5.080)
IBES_Down	1.0018***	1.0019***	1.0047***	1.0039***
	(81.479)	(40.888)	(42.742)	(16.803)
CEO_Duality		1.0149***		0.9729***
		(15.976)		(-7.359)
BrdSize		1.0065***		0.9982***
		(36.232)		(-2.596)
NED		1.2755***		1.0654***
		(47.292)		(3.651)
BrdTenure		1.0038***		0.9982***
		(32.934)		(-4.568)
TimeRet		0.9934***		0.9957***
		(-60.495)		(-11.247)
InstPct (%) (L1q)	1.0057***	1.0072***	1.0078***	1.0114***
	(1,502.258)	(660.404)	(1,019.671)	(364.334)
S&P 500 (L1q)	0.9976***	1.0036***	0.9996	0.9940***
	(-24.993)	(17.646)	(-1.221)	(-8.336)
NYSE	1.2177***	1.1195***	1.3742***	1.3615***
	(116.745)	(30.032)	(67.157)	(29.663)
NASDAQ	1.1907***	1.1069***	1.5215***	1.3537***
	(103.782)	(27.159)	(90.605)	(29.815)
Constant	2.6834***	2.3058***	2.2470***	3.2029***
	(508.703)	(137.424)	(144.504)	(61.486)
N	193,903	37,430	193,903	37,430
R^2	.859	.878	.349	.372
χ^2	37314825.9	7707659.5	711591.7	136167.5

Table 3.5. Effect of Institutional Investor Holdings on Monthly FF-5 Alphas

This table reports the results of regressing stock FF-5 alphas on institutional investor holding measures and controls for 559,790 stock-month observations for the period starting from 2010 to the end of 2019 for 8,673 distinct stocks listed on the NYSE, AMEX, and Nasdaq. The dependent variable is the Fama-French five-factor (FF-5) benchmark-adjusted stock returns calculated using rolling betas computed from the last 5-years of monthly data following the standard FM (1973) approach. In Models (1) and (2) we use the aggregate Percentage of shares of a company held by institutional investors, and the aggregate Percentage of shares of a company held by Top institutional investors, as our measure of institutional holdings, while in Models (3) and (4) we use the average percentage of shares of a company held by institutional investors, and Top institutional investors, respectively. All the variables are defined in Appendix A. (L1m) indicates that the variable is lagged for one month while (L1q) shows that the variable is lagged by one quarter. All models control for firm-fixed effects and year-fixed effects. The robust t-statistics are reported in the parentheses. Standard errors are clustered at the stock level. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively, to help control for a large number of stock-month observations.

Variables	(1) FF-5 Alpha	(2) FF-5 Alpha	(3) FF-5 Alpha	(4) FF-5 Alpha
InstPct (L1q)	-0.0002***			
	(-8.252)			
TopInstPct (L1q)		-0.0002***		
		(-8.096)		
AvgHold (L1q)			-0.0014**	
			(-1.989)	
AvgTopHold (L1q)				-0.0005**
				(-2.126)
Agg_Liq_Innov	0.0027***	0.0027***	0.0027***	0.0028***
	(12.182)	(12.206)	(12.228)	(13.026)
IBES_Up	0.0036***	0.0036***	0.0036***	0.0036***
	(29.436)	(29.393)	(29.310)	(29.159)
IBES_Down	-0.0030***	-0.0030***	-0.0030***	-0.0030***
	(-32.640)	(-32.659)	(-32.663)	(-33.170)
FF-5 Alpha (L1m)	-0.0284**	-0.0282**	-0.0277**	-0.0307***
	(-2.495)	(-2.479)	(-2.433)	(-4.393)
Vol	0.0257***	0.0257***	0.0257***	0.0241***
	(9.753)	(9.745)	(9.724)	(8.879)
TrdVol (L1m)	-0.0013	-0.0013	-0.0013	-0.0011
	(-1.109)	(-1.097)	(-1.076)	(-0.989)
Prc (L1m)	0.0001	-0.0000	0.0004	0.0001
	(0.135)	(-0.030)	(0.752)	(0.294)
Size (L1m)	-0.0394***	-0.0403***	-0.0417***	-0.0407***
	(-16.530)	(-17.127)	(-17.100)	(-18.070)
PQDiff (L1m)	-0.0021***	-0.0021***	-0.0021***	-0.0028**
	(-2.746)	(-2.747)	(-2.749)	(-2.445)
S&P 500	-0.0021***	-0.0021***	-0.0021***	-0.0018***
	(-8.209)	(-8.227)	(-8.270)	(-7.112)
Constant	0.0290***	0.0278***	0.0211***	0.0241***
	(4.976)	(4.808)	(3.645)	(4.483)
N	559,790	559,790	559,790	520,784
R^2	0.154	0.154	0.154	0.167
Number of Firms	8,623	8,623	8,623	8,481
Year& Month FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Market FE	YES	YES	YES	YES

Table 3.6. Effect of Changes in Institutional Investor Holdings on Monthly FF-5 Alphas

The following table reports the results of regressing stock FF-5 alphas on changes in institutional investor holding measures and controls, for 563,094 stock-month observations for the period starting from 2010 to end of 2019 for 8,673 distinct stocks listed on NYSE, AMEX, and Nasdaq. The dependent variable is the Fama-French five-factor (FF-5) benchmark-adjusted stock returns. We use the Net Percentage Change in Number of Shares held by Institutional investors in Model (1). In Models (2) and (3) we use the equal-weighted and value-weighted Net Percentage Change in Number of Shares held by institutional investors as a percentage of shares held by those investors in the previous quarter respectively and in Models (4) and (5) we use the equal-weighted and value-weighted Net Percentage Change in Number of Shares held by institutional investors as a percentage of total shares outstanding respectively, as our measure of institutional holdings. All the variables are defined in Appendix A. (L1m) indicates that the variable is lagged for one month while (L1q) shows that the variable is lagged by one quarter. All models control for firm-fixed effects and year-fixed effects. The robust t-statistics are reported in the parentheses. Standard errors are clustered at the stock level. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) FF-5 Alpha	(2) FF-5 Alpha	(3) FF-5 Alpha	(4) FF-5 Alpha	(5) FF-5 Alpha
NetChInstPct (%)	0.0005***				
	(8.924)				
EW_NetChInstPct (%)		0.0000			
		(0.934)			
VW_NetChInstPct (%)			0.0000		
			(0.435)		
EW_NetChStkPct (%)				0.0042***	
				(6.286)	
VW_NetChStkPct (%)					0.0007***
					(3.885)
Agg_Liq_Innov	0.0027***	0.0026***	0.0027***	0.0026***	0.0027***
	(12.200)	(12.029)	(12.674)	(11.905)	(12.607)
IBES_Up	0.0035***	0.0036***	0.0035***	0.0036***	0.0036***
	(29.262)	(29.467)	(29.384)	(29.474)	(29.400)
IBES_Down	-0.0030***	-0.0030***	-0.0030***	-0.0030***	-0.0031***
	(-32.785)	(-32.845)	(-33.301)	(-32.873)	(-33.311)
FF-5 Alpha (L1m)	-0.0283**	-0.0275**	-0.0280**	-0.0277**	-0.0282**
	(-2.491)	(-2.442)	(-2.439)	(-2.457)	(-2.447)
Vol	0.0257***	0.0255***	0.0264***	0.0256***	0.0264***
	(9.763)	(9.872)	(9.864)	(9.900)	(9.874)
TrdVol (L1m)	-0.0013	-0.0013	-0.0013	-0.0013	-0.0013
	(-1.068)	(-1.121)	(-1.102)	(-1.117)	(-1.096)
Prc (L1m)	0.0004	0.0004	0.0005	0.0004	0.0005
	(0.920)	(0.931)	(1.120)	(0.896)	(1.098)
Size (L1m)	-0.0413***	-0.0407***	-0.0426***	-0.0407***	-0.0425***
	(-17.517)	(-17.581)	(-18.440)	(-17.596)	(-18.414)
PQDiff (L1m)	-0.0023***	-0.0021***	-0.0028***	-0.0021***	-0.0027***
	(-2.756)	(-2.740)	(-2.728)	(-2.724)	(-2.724)
S&P 500	-0.0022***	-0.0023***	-0.0023***	-0.0023***	-0.0024***
	(-8.525)	(-9.114)	(-9.425)	(-9.211)	(-9.509)
R^2	0.154	0.152	0.156	0.152	0.156
Year& Month FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Market FE	YES	YES	YES	YES	YES

Table 3.7. Effect of Changes in Top Institutional Investor Holdings on Monthly FF-5 Alphas

The following table reports the results of regressing stock FF-5 alphas on changes in institutional investor holding measures and controls for 559,873 stock-month observations for the period starting from 2010 to end of 2019 for 8,706 distinct stocks listed on NYSE, AMEX, and Nasdaq. The dependant variable is the Fama-French five-factor (FF-5) benchmark-adjusted stock returns. We use the Net Percentage Change in Number of Shares held by Top Institutional Investors of a stock in Model (1). In Models (2) and (3) we use the equal-weighted and value-weighted Net Percentage Change in Number of Shares held by Top Institutional Investors as a percentage of shares held by those investors in the previous quarter respectively and in Models (4) and (5) we use the equal-weighted and value-weighted Net Percentage Change in Number of Shares held by Top Institutional Investors as a percentage of total shares outstanding respectively, as our measure of institutional holding. All the variables are defined in Appendix A. (L1m) indicates that the variable is lagged for one month while (L1q) denotes that the variable is lagged by one quarter. All models control for firm-fixed effects and year-fixed effects. The robust t-statistics are reported in the parentheses. Standard errors are clustered at the stock level. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) FF-5 Alpha	(2) FF-5 Alpha	(3) FF-5 Alpha	(4) FF-5 Alpha	(5) FF-5 Alpha
NetChTopPct (%)	0.0003***				
	(6.436)				
EW_NetChTopInstPct (%)		0.0000			
		(0.767)			
VW_NetChTopInstPct (%)			0.0000		
			(0.432)		
EW_NetChTopStkPct (%)				0.0035***	
				(5.494)	
VW_NetChTopStkPct (%)					0.0006***
					(3.621)
Agg_Liq_Innov	0.0027***	0.0026***	0.0029***	0.0026***	0.0029***
	(12.235)	(12.029)	(13.868)	(11.943)	(13.800)
IBES_Up	0.0036***	0.0036***	0.0036***	0.0036***	0.0036***
	(29.365)	(29.468)	(29.189)	(29.473)	(29.200)
IBES_Down	-0.0030***	-0.0030***	-0.0030***	-0.0030***	-0.0030***
	(-32.798)	(-32.845)	(-33.692)	(-32.867)	(-33.695)
FF-5 Alpha (L1m)	-0.0277**	-0.0275**	-0.0325***	-0.0276**	-0.0326***
	(-2.444)	(-2.442)	(-4.414)	(-2.452)	(-4.430)
Vol	0.0257***	0.0255***	0.0264***	0.0256***	0.0264***
	(9.760)	(9.872)	(9.597)	(9.895)	(9.610)
TrdVol (L1m)	-0.0013	-0.0013	-0.0011	-0.0013	-0.0011
	(-1.071)	(-1.121)	(-0.943)	(-1.119)	(-0.934)
Prc (L1m)	0.0004	0.0004	0.0004	0.0004	0.0004
	(0.791)	(0.929)	(0.775)	(0.903)	(0.746)
Size (L1m)	-0.0413***	-0.0407***	-0.0433***	-0.0407***	-0.0433***
	(-17.526)	(-17.581)	(-19.175)	(-17.584)	(-19.149)
PQDiff (L1m)	-0.0022***	-0.0021***	-0.0057***	-0.0021***	-0.0055***
	(-2.754)	(-2.740)	(-6.755)	(-2.731)	(-6.596)
S&P 500	-0.0021***	-0.0023***	-0.0020***	-0.0023***	-0.0020***
	(-8.346)	(-9.114)	(-8.128)	(-9.177)	(-8.221)
Constant	0.0204***	0.0168***	0.0177***	0.0164***	0.0169***
	(3.480)	(2.968)	(3.290)	(2.893)	(3.146)
R^2	0.154	0.152	0.168	0.152	0.168
Year& Month FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Market FE	YES	YES	YES	YES	YES

Table 3.8. Effect of Changes in Top Institutional Investor Holdings on Monthly FF-5 Alphas

The following table reports the results of regressing stock FF-5 alphas on changes in institutional investor holdings measures and interactions with board of governance statistics for 103,032 stock-month observations for the period starting from 2010 to end of 2019 for 5,822 distinct stocks listed on NYSE, AMEX, and Nasdaq. The dependant variable is the Fama-French five-factor (FF-5) benchmark-adjusted stock returns. We use the value-weighted Net Percentage Change in the Number of Shares held by Top Institutional Investors as our measure of institutional ownership and an interaction term between this variable and one of the five internal governance measures is added in each column. All the variables are defined in Appendix A. (L1m) indicates that the variable is lagged for one month while (L1q) denotes that the variable is lagged by one quarter. All models control for firm-fixed effects and year-fixed effects. The robust t-statistics are reported in the parentheses. Standard errors are clustered at the stock level. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) FF-5 Alpha	(2) FF-5 Alpha	(3) FF-5 Alpha	(4) FF-5 Alpha	(5) FF-5 Alpha
VW_NetChTopInstPct (%)	0.0000**	0.0000***	-0.0000*	-0.0000	0.0000
	(2.144)	(3.537)	(-1.813)	(-0.374)	(0.754)
VW_NetChTopInstPct (%) # CEO_Duality	-0.0000***				
	(-3.148)				
VW_NetChTopInstPct (%) # BrdSize		-0.0000***			
		(-2.875)			
VW_NetChTopInstPct (%) # NED			0.0000**		
			(2.084)		
VW_NetChTopInstPct (%) # BrdTenure				-0.0000**	
				(-2.514)	
VW_NetChTopInstPct (%) # TimeRet					-0.0000
					(-1.280)
Agg_Liq_Innov	0.0049***	0.0049***	0.0049***	0.0049***	0.0049***
	(9.962)	(9.959)	(9.962)	(9.959)	(9.961)
IBES_Up	0.0033***	0.0033***	0.0033***	0.0033***	0.0033***
	(15.271)	(15.265)	(15.270)	(15.266)	(15.267)
IBES_Down	-0.0031***	-0.0031***	-0.0031***	-0.0031***	-0.0031***
	(-18.516)	(-18.520)	(-18.514)	(-18.521)	(-18.517)
FF-5 Alpha (L1m)	-0.0603***	-0.0603***	-0.0603***	-0.0603***	-0.0603***
	(-8.303)	(-8.306)	(-8.304)	(-8.307)	(-8.306)
Vol	0.0165***	0.0165***	0.0165***	0.0165***	0.0165***
	(5.989)	(5.990)	(5.989)	(5.991)	(5.992)
TrdVol (L1m)	-0.0012	-0.0012	-0.0012	-0.0012	-0.0012
	(-1.061)	(-1.060)	(-1.061)	(-1.060)	(-1.062)
Prc (L1m)	0.0004	0.0004	0.0004	0.0004	0.0004
	(0.558)	(0.559)	(0.567)	(0.553)	(0.565)
Size (L1m)	-0.0449***	-0.0449***	-0.0449***	-0.0449***	-0.0449***
	(-12.430)	(-12.425)	(-12.430)	(-12.428)	(-12.421)
PQDiff (L1m)	-0.0121***	-0.0121***	-0.0121***	-0.0121***	-0.0121***
	(-5.230)	(-5.231)	(-5.230)	(-5.231)	(-5.231)
S&P 500	-0.0014**	-0.0014**	-0.0014**	-0.0014**	-0.0014**
	(-2.575)	(-2.571)	(-2.575)	(-2.572)	(-2.573)
Constant	0.0341***	0.0340***	0.0341***	0.0340***	0.0341***
	(2.611)	(2.608)	(2.609)	(2.608)	(2.610)
R^2	0.180	0.180	0.180	0.180	0.180
Year& Month FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Market FE	YES	YES	YES	YES	YES

Table 3.9. Effect of Institutional Investor Holding Measures on Monthly FF-5 Alphas

This table reports the results of regressing stock FF-5 alphas on institutional investor holding change measures and controls based on 571,105 stock-month observations for the period starting from 2010 to end of 2019 for 8,706 distinct stocks listed on NYSE, AMEX, and Nasdaq. NetCnt is the difference between the number of institutional investors increasing the size of their positions in a stock and those decreasing the size of their positions. S1(5)_Net is the difference between the number of institutional investor position increases and decreases greater than 1%(5%) of the shares outstanding of the stock. L50_Net is the number of investor position increases greater than 50% of the position size minus the number of position decreases greater than 50%. All the variables are defined in Appendix A. All the variables are defined in Appendix A. (L1m) indicates that the variable is lagged for one month while (L1q) denotes that the variable is lagged by one quarter. All models control for firm-fixed effects and year-month fixed effects. The robust t-statistics are reported in the parentheses. Standard errors are clustered at the stock level. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) FF-5 Alpha	(2) FF-5 Alpha	(3) FF-5 Alpha	(4) FF-5 Alpha
NetCnt	0.0001***			
	(19.093)			
S1_Net		0.0009***		
		(14.060)		
S5_Net			0.0019***	
			(4.660)	
L50_Net				0.0002***
				(19.255)
Agg_Liq_Innov	-0.0019***	-0.0019***	-0.0018***	-0.0019***
	(-7.656)	(-7.481)	(-7.380)	(-7.788)
IBES_Up	0.0035***	0.0035***	0.0035***	0.0032***
	(26.675)	(26.993)	(26.951)	(25.255)
IBES_Down	-0.0024***	-0.0025***	-0.0025***	-0.0022***
	(-25.219)	(-25.621)	(-25.744)	(-23.480)
FF-5 Alpha (L1m)	0.0897***	0.0905***	0.0913***	0.0811***
	(7.872)	(7.926)	(8.000)	(7.147)
Vol	0.0176***	0.0177***	0.0176***	0.0185***
	(7.340)	(7.399)	(7.339)	(7.677)
TrdVol (L1m)	-0.0016	-0.0011	-0.0012	-0.0012
	(-1.234)	(-0.863)	(-0.968)	(-1.017)
Prc (L1m)	-0.0118***	-0.0121***	-0.0120***	-0.0097***
	(-4.149)	(-4.133)	(-4.119)	(-4.199)
Size (L1m)	-0.0819***	-0.0814***	-0.0821***	-0.0753***
	(-28.574)	(-28.113)	(-28.425)	(-27.409)
PQDiff (L1m)	-0.0017**	-0.0016**	-0.0016**	-0.0017**
	(-2.560)	(-2.524)	(-2.488)	(-2.569)
S&P 500	-0.0029***	-0.0027***	-0.0026***	-0.0032***
	(-11.367)	(-10.716)	(-10.356)	(-12.468)
Constant	0.0242***	0.0267***	0.0251***	0.0309***
	(3.020)	(3.331)	(3.130)	(3.882)
R^2	0.050	0.050	0.049	0.056
Year& Month FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Market FE	YES	YES	YES	YES

Table 3.10. Effect of Top Institutional Investor Holding Measures on Monthly FF-5 Alphas

This table reports the results of regressing stock FF-5 alphas on top institutional investor holding change measures and controls. NetCntTop is the difference between the number of Top Institutional Investors increasing the size of their positions in a stock and those decreasing the size of their positions. L50_TopInc (Dec) is the number of institutional investors increasing (decreasing) the size of their positions by more than 50% of the position size. L50_TopNet is the number of institutional investor position increases greater than 50% of their position size minus the number of position size decreases greater than 50%. All the variables are defined in Appendix A. (L1) indicates that the variable is lagged for one month while (L1q) shows that the variable is lagged by one quarter. All models control for firm-fixed effects and year-fixed effects. The robust t-statistics are reported in the parentheses. Standard errors are clustered at the stock level. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) FF-5 Alpha	(2) FF-5 Alpha	(3) FF-5 Alpha	(4) FF-5 Alpha
NetTopCnt	0.0006***			
	(10.767)			
L50_TopInc		0.0028***		
		(28.539)		
L50_TopDec			-0.0002***	
			(-18.086)	
L50_TopNet				0.0003***
				(18.434)
Agg_Liq_Innov	-0.0018***	-0.0019***	-0.0016***	-0.0016***
	(-7.375)	(-7.865)	(-6.501)	(-6.473)
IBES_Up	0.0035***	0.0034***	0.0036***	0.0036***
	(27.087)	(26.706)	(27.386)	(27.397)
IBES_Down	-0.0025***	-0.0024***	-0.0026***	-0.0026***
	(-25.775)	(-25.221)	(-26.503)	(-26.543)
Alpha (L1m)	0.0913***	0.0875***	0.0869***	0.0861***
	(7.998)	(7.689)	(7.600)	(7.529)
Vol	0.0175***	0.0178***	0.0183***	0.0184***
	(7.322)	(7.412)	(7.572)	(7.609)
TrdVol (L1m)	-0.0013	-0.0012	-0.0006	-0.0005
	(-1.018)	(-0.954)	(-0.593)	(-0.535)
Prc (L1m)	-0.0118***	-0.0113***	-0.0099***	-0.0096***
	(-4.132)	(-4.149)	(-4.177)	(-4.188)
Size (L1m)	-0.0817***	-0.0794***	-0.0744***	-0.0734***
	(-28.390)	(-27.985)	(-26.206)	(-25.911)
PQDiff (L1m)	-0.0018**	-0.0018***	-0.0017***	-0.0017***
	(-2.566)	(-2.577)	(-2.578)	(-2.579)
S&P 500	-0.0027***	-0.0029***	-0.0023***	-0.0024***
	(-10.568)	(-11.577)	(-9.095)	(-9.127)
Constant	0.0249***	0.0256***	0.0367***	0.0379***
	(3.110)	(3.204)	(4.591)	(4.736)
R^2	0.049	0.052	0.052	0.052
Year& Month FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Market FE	YES	YES	YES	YES

Table 3.11. Event Study of Abnormal Benchmark-Adjusted Daily Returns Around Report Dates

The following table shows the results using an event window starting one-day before the news articles are published up to and including the 4 days after in Panel A, starting one day before the news articles are published up to and including the 4 days after in Panel B, and starting one day before the news articles are published up to and including the first day after in Panel C. The estimation window is the 55 trading days of the stock prior to the event window, i.e. [-56,-2]. The CAAR or cumulative average abnormal returns are the summation of the AARs for each day of the event window. The abnormal returns are calculated using Mean-adjustments, Market model, FF-3, and FF-5 models. The five columns show the results for all events, positive & >5% events, positive events, negative events, and negative & >5% events respectively. The t-statistics are reported in parentheses. Positive (Negative) events are for news dates where the total reported change in shares held by institutional investors is positive (negative). Positive (Negative) & >5% events correspond to report dates where the net percentage increase (decrease) in holdings of the Top Institutional Investors is greater than 5% of shares outstanding of the stock at the time of the report.

Variables	**(1)** **All Events**	**(2)** **Positive & >5%**	**(3)** **Positive**	**(4)** **Negative&>5%**	**(5)** **Negative**
Panel A: Dependent variable is CAAR[-1:4]					
Mean-Adj. Ret	0.4335***	0.6088***	0.6108***	0.1280	0.3533***
	(8.697)	(9.961)	(11.442)	(0.971)	(2.883)
Market Model	0.0547	0.1069**	0.1378***	-0.1349	0.0711
	(1.359)	(2.175)	(3.189)	(-1.278)	(0.698)
FF-3	0.0749*	0.1741***	0.2258***	-0.3900***	-0.0343
	(1.860)	(3.576)	(5.319)	(-3.545)	(-0.325)
FF-5	0.0824**	0.1692***	0.2258***	-0.3066***	0.0307
	(1.999)	(3.403)	(5.209)	(-2.752)	(0.291)
N	30,564	18,533	24,308	5,666	4,852
R^2	0.000	0.000	0.000	0.000	0.000
Panel B: Dependent variable is CAAR[0:4]					
Mean-Adj. Ret	0.5501***	0.7369***	0.7197***	0.2228*	0.4276***
	(11.909)	(13.125)	(14.566)	(1.812)	(3.699)
Market Model	0.1140***	0.1678***	0.1869***	-0.0474	0.1132
	(3.157)	(3.885)	(4.852)	(-0.492)	(1.196)
FF-3	0.0566	0.1556***	0.1891***	-0.3476***	-0.0399
	(1.563)	(3.666)	(5.024)	(-3.376)	(-0.394)
FF-5	0.0654*	0.1537***	0.1893***	-0.2587**	0.0243
	(1.743)	(3.479)	(4.864)	(-2.448)	(0.236)
N	30,564	18,533	24,308	5,666	4,852
R^2	0.000	0.000	0.000	0.000	0.000
Panel C: Dependent variable is CAAR[0:1]					
Mean-Adj. Ret	0.2464***	0.3429***	0.3473***	0.0558	0.2738***
	(9.308)	(10.449)	(12.456)	(0.761)	(3.676)
Market Model	0.0014	0.0273	0.0513**	-0.0951	0.0588
	(0.057)	(0.898)	(1.998)	(-1.322)	(0.828)
FF-3	0.0014	0.0960***	0.1182***	-0.1897**	0.0361
	(0.057)	(3.155)	(4.588)	(-2.556)	(0.494)
FF-5	0.0427	0.0921***	0.1149***	-0.1542**	0.0655
	(1.618)	(2.901)	(4.269)	(-1.978)	(0.849)
N	30,564	18,533	24,308	5,666	4,852
R^2	0.000	0.000	0.000	0.000	0.000

Table 3.12. Event Study of Abnormal Daily Volume Around Report Dates

The following table shows the abnormal volumes for three different event windows, starting one-day before the news articles are published up to and including the 4 days after , i.e. [-1:4], starting one day before the news articles are published up to and including the 4 days after, i.e. [0:4], and starting one day before the news articles are published up to and including the first day after, i.e. [0:1]. The estimation window is the 55 trading days of the stock prior to the event window, i.e. [-56,-2]. The Cumulative Average Abnormal Trading Volume is calculated as the summation of the abnormal trading volumes for each day of the event window. The abnormal trading volumes are calculated using mean-adjustments model. The five columns show the results for all events, positive & >5% events, positive events, negative events, and negative & >5% events respectively. The t-statistics are reported in parentheses. Positive (Negative) events are for news dates where the total reported change in shares held by institutional investors is positive (negative). Positive (Negative) & >5% events correspond to report dates where the net percentage increase (decrease) in holdings of the Top Institutional Investors is greater than 5% of shares outstanding of the stock at the time of the report.

Variables	**(1)** **All Events**	**(2)** **Positive & >5%**	**(3)** **Positive**	**(4)** **Negative&>5%**	**(5)** **Negative**
[-1:4]	376.842*** (3.650)	377.746*** (2.587)	258.609*** (3.052)	722.907* (1.731)	297.904 (1.400)
[0:4]	351.932*** (3.772)	350.197*** (2.623)	239.277*** (3.240)	695.073* (1.794)	322.641* (1.711)
[0:1]	137.867*** (3.589)	97.468* (1.845)	102.385*** (2.792)	241.984* (1.821)	214.855** (2.314)
N	30,564	18,533	24,308	5,666	4,852
R^2	0.000	0.000	0.000	0.000	0.000

Table 4.1. Descriptive Statistics.

This table presents some summary statistics for our main regression variables including institutional ownership extracted from FactSet and Thompson Reuters, and ESG data from ASSET4 and MSCI ESG databases. All the variables are defined in Appendix A.

Variables	(1) N	(2) Mean	(3) SD	(4) P25	(5) P50	(6) P75
Prc	2,843	40.759	123.492	3.884	14.333	42.409
Shrout (Mil)	2,844	128.253	431.084	19.680	41.872	92.654
MktCap (Mil $)	2,844	7,987.532	41,912.983	119.510	609.139	2,797.561
Avg Ret (%)	2,843	-1.852	1.757	-2.678	-1.820	-1.126
Return	2,839	-36.790	33.566	-51.329	-39.061	-27.677
TrdVol (Mil)	2,844	51.620	153.215	3.353	11.786	40.364
Financial Ratios						
B2M	2,673	0.733	4.271	0.201	0.429	0.795
ROA	2,805	-0.066	0.541	-0.081	0.076	0.140
ROE	2,639	-1.970	88.637	-0.289	0.031	0.140
Cash	2,587	0.087	0.133	0.013	0.037	0.092
Cash Ratio	2,655	2.296	4.714	0.203	0.607	2.114
OCF	2,642	-0.013	0.227	-0.009	0.016	0.052
LT Debt	2,822	0.145	0.203	0.004	0.080	0.218
ST Debt	2,663	0.060	0.899	0.004	0.014	0.041
R&D/Sales	2,822	2.868	33.016	0.000	0.000	0.117
Labor Expenses/Sales	2,598	0.113	2.201	0.000	0.000	0.000
FactSet IO						
NumInst_Q3_19	2,841	288.663	426.246	54.000	166.000	316.000
InstPct_Q3_19 (%)	2,841	62.352	33.661	32.154	70.777	91.275
T10Pct_Q3_19 (%)	2,841	25.300	17.464	8.168	27.114	38.903
NumInst	2,837	293.852	446.036	57.000	168.000	311.000
InstPct (%)	2,837	62.224	34.503	32.475	70.909	90.771
Top10Pct (%)	2,837	27.242	18.196	9.880	29.726	41.324
NCP_Inst_Q (%)	2,841	-0.750	11.860	-2.322	-0.352	1.153
NCP_Inst_S (%)	2,841	-0.215	12.563	-2.847	-0.087	2.305
Thompson Reuters IO						
NumInst_Q3_19	2,780	153.826	250.626	30.000	79.000	180.500
InstPct_Q3_19 (%)	2,780	49.163	34.047	18.457	45.764	82.406
T10Pct_Q3_19 (%)	2,780	34.218	21.043	16.561	34.403	51.113
BlkPct_Q3_19 (%)	2,780	20.883	17.645	6.829	17.232	33.164
NumInst	2,780	226.629	351.856	46.500	126.000	242.500
InstPct (%)	2,780	61.285	31.710	36.086	71.024	87.142
T10Pct (%)	2,780	40.913	19.956	28.319	44.562	54.566
BlockPct (%)	2,346	30.329	15.373	19.377	29.186	39.322
HHI_Q3_19	2,780	0.192	0.185	0.059	0.120	0.264
NCP_Inst_Q (%)	2,780	9.695	22.425	-2.274	0.063	9.410
NCP_Inst_S (%)	2,780	12.028	25.836	-1.999	1.031	15.989
ASSET4 ESG						
ESG	1,440	35.688	19.154	20.945	31.695	46.205
E	1,440	19.243	25.967	0.000	5.520	33.385
S	1,440	38.954	21.409	22.470	35.745	51.555

G	1,440	44.624	22.684	26.150	43.775	63.310
Emissions Score	1,440	19.685	28.800	0.000	0.000	33.830
Resource Use Score	1,440	21.855	31.140	0.000	0.000	39.635
Community Score	1,440	55.110	23.905	36.750	53.540	70.000
Human Rights Score	1,440	19.525	29.101	0.000	0.000	39.190
Workforce Score	1,440	37.967	25.943	16.495	33.095	54.640
Shareholders Score	1,440	49.606	28.497	24.885	48.950	74.285
Management Score	1,440	49.038	28.928	23.550	48.085	74.620
Product Responsibility Score	1,440	38.156	26.941	18.350	33.150	54.500
TRDIR Score	303	51.911	9.252	45.000	50.750	58.500
MSCI ESG						
ENV Score	1,633	0.022	0.048	0.000	0.000	0.000
SOC Score	1,633	0.098	0.112	0.000	0.071	0.143
GOV Score	1,633	0.035	0.145	0.000	0.000	0.000
LST Score	1,633	0.441	0.508	0.000	0.500	0.611
COM Score	1,633	0.023	0.198	0.000	0.000	0.000
HUM Score	1,633	0.023	0.117	0.000	0.000	0.000
EMP Score	1,633	0.060	0.116	0.000	0.000	0.111
DIV Score	1,633	0.314	0.372	0.000	0.500	0.500
PRO Score	1,633	0.008	0.072	0.000	0.000	0.000
Total Raw Score	1,633	1.596	2.014	0.000	1.000	2.000

Table 4.2. Stock returns and ASSET4 ESG pillar Scores

This table reports the effects of a firm's Environmental (E), Social (S) and Governance (G) pillar scores and total ESG score extracted from the ASSET4 database on the cross-section of stock returns. The dependent variable is the buy and hold returns of firms (Return) during the period from February 19 to March 20, 2020, where there was a major decline in all stock market indices. Column 1 reports the effects of the ESG scores on the cross-section of stock returns. Columns 2 to 4 report the results of regressions of stock returns on E, S, and G. In Columns 5 and 6 firm characteristics and FFC4 factors are added to complete the model. In Columns 7 and 8, the effects of E & S are estimated using the complete model. Industry dummies are included in the model to control for the differential effect of the pandemic on firms in different industries. The t-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***
ESG	0.0743*				0.0959*	0.0921*		
	(1.910)				(1.820)	(1.753)		
E		0.0640**					0.0712*	
		(2.184)					(1.836)	
S			0.0733**					0.0823*
			(2.235)					(1.959)
G				0.0236				
				(0.695)				
Size					0.3267	0.4901	0.5089	0.4787
					(0.574)	(0.834)	(0.891)	(0.842)
B2M					1.6621	2.1386*	2.0654	2.2108*
					(1.325)	(1.648)	(1.588)	(1.709)
LT Debt					-29.7193***	-27.5278***	-27.4779***	-27.5910***
					(-5.399)	(-4.951)	(-4.943)	(-4.963)
ST Debt					39.0435**	29.7756*	29.4370*	31.0519**
					(2.500)	(1.905)	(1.882)	(1.994)
Cash					12.4213*	12.3796*	12.6683*	12.2591*
					(1.748)	(1.724)	(1.761)	(1.709)
OCF					11.3005	11.1479	11.0096	11.6126
					(0.977)	(0.971)	(0.960)	(1.011)
ROA					-1.8874	-1.8503	-1.6939	-1.5273
					(-0.481)	(-0.472)	(-0.432)	(-0.389)
Beta MKT						-7.7248***	-7.5609***	-7.7212***
						(-4.733)	(-4.622)	(-4.732)
Beta SMB						-0.6782	-0.5545	-0.7253
						(-0.656)	(-0.533)	(-0.703)
Beta HML						-1.1936	-1.3723	-1.0355
						(-0.905)	(-1.033)	(-0.786)
Beta UMD						2.1285	2.2027	2.0832
						(1.456)	(1.504)	(1.427)
N (Obs.)	1,542	1,542	1,542	1,542	1,271	1,271	1,271	1,271
Adj. R^2	0.196	0.197	0.197	0.194	0.251	0.268	0.268	0.269
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4.3. Stock returns and MSCI ESG Scores

This table reports the effects of a firm's Environmental (ENV), Social (SOC), Governance (GOV), and LST (2017) scores extracted from the MSCI ESG database on the cross-section of stock returns. The dependent variable is the buy and hold returns of firms (*Return*) during the period from February 19 to March 20, 2020, where there was a major decline in all stock market indices. Column 1 reports the effects of ESG scores on the cross-section of stock returns. Columns 2 to 4 report the results of regressions of stock returns on ENV, SOC, and GOV. In Columns 5 and 6 firm characteristics and FFC4 factors are added to complete the model. In Columns 7 and 8, the effects of ENV & SOC are estimated using the complete model. Industry dummies are included in the model to control for the differential effect of the pandemic on firms in different industries. The t-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***
LST Score	0.2291**				0.0078	0.0426		
	(2.482)				(0.074)	(0.408)		
ENV		0.5833***					0.2006	
		(2.973)					(0.870)	
SOC			0.2856***					0.1331
			(3.520)					(1.434)
GOV				-0.0552				
				(-0.879)				
Size					1.9460***	1.3277***	1.2197***	1.1690***
					(5.043)	(2.984)	(2.631)	(2.602)
B2Met					1.5790	4.1799***	4.1506***	4.1298***
					(1.235)	(3.023)	(3.005)	(2.993)
LT Debt					-26.4927***	-25.3772***	-25.4881***	-24.9517***
					(-7.053)	(-6.746)	(-6.789)	(-6.620)
ST Debt					-8.5139	-13.7680	-13.9925	-13.8556
					(-0.679)	(-1.102)	(-1.121)	(-1.111)
Cash					13.5374***	12.2266**	12.3877**	11.4781**
					(2.613)	(2.323)	(2.364)	(2.175)
OCF					17.2541**	15.1653*	15.3912*	14.7023*
					(2.139)	(1.886)	(1.915)	(1.829)
ROA					-0.2613	0.0121	0.0122	0.0794
					(-0.207)	(0.010)	(0.010)	(0.063)
Beta MKT						-2.5253*	-2.4386*	-2.5939*
						(-1.859)	(-1.794)	(-1.911)
Beta SMB						-1.7443*	-1.7341*	-1.8032*
						(-1.849)	(-1.839)	(-1.911)
Beta HML						-3.3201***	-3.3804***	-3.4092***
						(-3.036)	(-3.084)	(-3.115)
Beta UMD						5.7959***	5.8505***	5.9229***
						(5.053)	(5.093)	(5.154)
N (Obs.)	1,604	1,604	1,604	1,604	1,373	1,373	1,373	1,373
Adj. R^2	0.316	0.318	0.319	0.314	0.369	0.383	0.384	0.384
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4.4. Institutional Ownership and ESG Scores

This table reports the effects of a firm's Environmental (E), Social (S), and Governance (G) pillar scores and total ESG scores extracted from the ASSET4 database on the cross-section of stock returns. The dependent variable is the quarterly (semi-annual) change in the percentage of shares of a stock held by its institutional investors in models 1-3 (4-6) and the quarterly (semi-annual) change in the percentage of shares of a stock held by its Top 10 institutional investors in models 7-9 (10-12). FFC4 factors and proxies of the financial flexibility of firms are controlled for. Industry dummies are included in the model to account for the differential effect of the pandemic on firms in different industries. The t-statistics are reported in the parentheses. ∗∗∗, ∗∗, and ∗ indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables		***NCP_Inst_Q***			***NCP_Inst_S***	
ESG	0.0006*			0.0009		
	(1.801)			(1.380)		
E		0.0008***			0.0016***	
		(3.381)			(3.471)	
S			0.0007***			0.0010**
			(2.694)			(2.077)
N (Obs.)	1,531	1,531	1,531	1,531	1,531	1,531
Adj. R^2	0.148	0.153	0.150	0.141	0.148	0.143
	(7)	(8)	(9)	(10)	(11)	(12)
		NCP_T10_Q			***NCP_T10_Q***	
ESG	0.0039			0.0052		
	(1.110)			(1.289)		
E		0.0044*			0.0059**	
		(1.700)			(2.015)	
S			0.0054*			0.0071**
			(1.928)			(2.230)
N (Obs.)	1,528	1,528	1,528	1,528	1,528	1,528
Adj. R^2	0.037	0.038	0.039	0.153	0.155	0.156
Controls	Yes	Yes	Yes	Yes	Yes	Yes
FFC4 Factors	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 4.5. Investment Horizons and ESG Scores

This table reports the effects of long-term and short-term IO on a firm's Environmental (E), Social (S), and Governance (G) pillar scores and total ESG scores extracted from the ASSET4 database. LT IO (ST IO) is the aggregate number of shares of a given stock held by its long-term (short-term) investors. LT Pct (ST Pct) is the percentage of shares of a given stock held by its long-term (short-term) investors. FFC4 factors and proxies of the financial flexibility of firms are controlled for. Industry dummies are included in the model to account for the differential effect of the pandemic on firms in different industries. The t-statistics are reported in the parentheses. ∗∗∗, ∗∗, and ∗ indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Variables	***ESG***	***ESG***	***E***	***E***	***S***	***S***	***G***	***G***
LT IO	0.0000***		0.0000***		0.0000		0.0000*	
	(2.961)		(3.317)		(1.482)		(1.877)	
ST IO	-0.0000		-0.0000		-0.0000		-0.0000**	
	(-1.562)		(-0.985)		(-0.171)		(-2.177)	
LT Pct (%)		0.0866**		0.1111**		0.0361		0.3002***
		(2.281)		(2.171)		(0.762)		(5.762)
ST Pct (%)		-0.1216***		-0.1514***		-0.0584*		-0.1942***
		(-4.710)		(-4.349)		(-1.812)		(-5.480)
N(Obs.)	1,292	1,292	1,292	1,292	1,292	1,292	1,292	1,292
Adj. R^2	0.597	0.600	0.605	0.610	0.505	0.503	0.435	0.454
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FFC4 Factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4.6. The effect of ESG scores on returns before, during, and after COVID-19

This table reports the effects of a firm's Environmental (E), Social (S) and Governance (G) pillar scores and total ESG scores extracted from the ASSET4 database on COVID, Pre_Cov and Post_Cov stock returns. Columns 1-4 (5-8) capture the effects of the ESG, E, S, and G scores on stock returns, respectively. COVID is a dummy variable equal to 1 in the first quarter of 2020 and 0 otherwise. Pre_Cov (Post_Cov) is a dummy variable equal to 1 in the last quarter of 2019 (2nd and 3rd quarters of 2020) and 0 otherwise. We include interactions of each CSR measure with the COVID period in models 1-4 and include interactions with Pre_Cov and Post_Cov in models 5-8. FFC4 factors and proxies of a firm's financial flexibility are controlled for, and firm-fixed effects and time-fixed effects are included in the model. The t-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***
ESG	0.2375*				0.2455*			
	(1.651)				(1.760)			
*ESG * COVID*	0.0208				0.0107			
	(0.307)				(0.163)			
*ESG * Pre-Cov*					-0.0087			
					(-0.117)			
*ESG * Post-Cov*					-0.0607			
					(-0.308)			
E		-0.0974				-0.1099		
		(-0.987)				(-1.063)		
*E * COVID*		0.2459***				0.2562***		
		(6.225)				(5.754)		
*E * Pre-Cov*						0.1542*		
						(1.881)		
*E * Post-Cov*						0.0069		
						(0.071)		
S			0.1669				0.1763	
			(1.329)				(1.467)	
*S * COVID*			0.2634**				0.2499**	
			(2.409)				(2.305)	
*S * Pre-Cov*							0.0820	
							(1.293)	
*S * Post-Cov*							-0.1183	
							(-0.957)	
G				0.1475*				0.1333*
				(1.865)				(1.731)
*G * COVID*				-0.1936**				-0.1743**
				(-2.494)				(-2.410)
*G * Pre-Cov*								-0.1273**
								(-1.984)
*G * Post-Cov*								0.1598
								(0.638)
Size (L1)	-35.9659***	-43.4726***	-35.9684***	-35.8677***	-35.9596***	-43.4740***	-35.9409***	-35.7850***
	(-8.732)	(-5.197)	(-8.728)	(-8.707)	(-8.698)	(-5.151)	(-8.694)	(-8.762)
B2M	4.5451	3.4219	4.6490	4.6116	4.5050	3.5229	4.4781	4.5212
	(0.665)	(0.355)	(0.679)	(0.675)	(0.663)	(0.366)	(0.658)	(0.653)
LT Debt	-14.9391*	-22.9270	-14.9792*	-14.6595*	-14.8351*	-22.8789	-14.9255*	-14.8815*
	(-1.737)	(-1.411)	(-1.735)	(-1.715)	(-1.692)	(-1.412)	(-1.723)	(-1.655)
ST Debt	-14.4609	-1.0408	-14.5223	-14.1831	-14.2400	-1.4994	-14.3669	-14.3049
	(-0.623)	(-0.025)	(-0.623)	(-0.609)	(-0.608)	(-0.036)	(-0.615)	(-0.610)

Cash	14.3437**	38.8129**	14.4625**	14.0502**	14.1134**	39.0322**	14.2648**	14.4789**
	(2.098)	(2.440)	(2.108)	(2.060)	(1.997)	(2.412)	(2.065)	(1.994)
ROA	-32.2648***	-34.5155	-32.2458***	-32.5504***	-32.1678***	-34.6511	-32.1477***	-32.6677***
	(-2.879)	(-0.725)	(-2.874)	(-2.866)	(-2.867)	(-0.726)	(-2.868)	(-2.881)
N (Obs.)	26,568	16,422	26,563	26,573	26,568	16,422	26,563	26,573
Adj. R^2	0.072	0.058	0.072	0.072	0.072	0.058	0.072	0.072
N (Firms)	2,000	1,301	2,000	2,001	2,000	1,301	2,000	2,001
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4.7. The effect of changes in IOs on stock returns during COVID-19

This table reports the combined effect of ESG and the levels of and changes to institutional ownership (IO) on quarterly stock returns (*Return*). Models 1 (2) test the effects of InstPct (T10Pct), the percentage of shares of a company held by institutional investors (Top 10 institutional investors) on stock returns. In models 3, 4 (5, 6) we regress quarterly stock returns on the interaction of COVID with the net percentage change in institutional ownership (Top 10 investors ownership). COVID is a dummy variable equal to 1 in the first quarter of 2020 and 0 otherwise. FFC4 factors and proxies of a firm's financial flexibility are controlled for, and firm-fixed effects and quarter-fixed effects are included in the model. The t-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***
COVID	-25.3631**	-32.5047***	-36.9800***	-37.9559***	-38.3065***	-38.0312***
	(-2.239)	(-3.230)	(-16.398)	(-16.944)	(-15.898)	(-10.921)
ESG	0.2317	0.2537*	0.2473*	0.2316	0.2459*	0.2344*
	(1.588)	(1.741)	(1.734)	(1.629)	(1.712)	(1.651)
InstPct (%)	0.2552*					
	(1.713)					
InstPct (L1)				0.2666		0.2365
				(0.874)		(0.761)
T10Pct (%)		-0.2088**				
		(-1.967)				
*NCP_Inst * COVID*			0.8312*	1.4098***		
			(1.659)	(2.682)		
NCP_T10 (%)					0.5954**	
					(2.278)	
*NCP_T10 * COVID*						-0.7757
						(-0.639)
Size (L1)	-37.4900***	-35.4804***	-35.8426***	-37.8580***	-35.8898***	-37.7355***
	(-8.673)	(-8.386)	(-8.477)	(-6.196)	(-8.470)	(-6.155)
B2M	4.4173	5.0994	5.6340	4.1984	5.1807	4.0865
	(0.639)	(0.730)	(0.768)	(0.554)	(0.744)	(0.541)
LT Debt	-13.8733	-14.4680	-14.1617	-13.8792	-14.6199*	-14.3407*
	(-1.563)	(-1.634)	(-1.560)	(-1.638)	(-1.650)	(-1.702)
ST Debt	-15.0251	-14.7646	-14.5398	-15.9433	-14.5805	-15.6296
	(-0.629)	(-0.620)	(-0.600)	(-0.657)	(-0.610)	(-0.644)
Cash	12.3975*	14.8212**	14.5933**	12.1413*	14.1916**	12.5511*
	(1.715)	(2.055)	(2.110)	(1.840)	(1.987)	(1.915)
ROA	-33.2663***	-31.6371***	-31.5605***	-33.8982***	-31.8678***	-33.7079***
	(-2.719)	(-2.674)	(-2.696)	(-2.799)	(-2.686)	(-2.786)
N (Obs.)	25,572	25,572	25,572	25,511	25,572	25,511
Adj. R^2	0.072	0.072	0.072	0.072	0.072	0.072
N (Firms)	1,790	1,790	1,790	1,790	1,790	1,790
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 4.8. The effect of ESG scores on institutional holdings (IOs) during COVID-19

This table reports the results of difference-in-difference analyses of institutional ownership (IO) on various ESG measures using: $\Delta IO = a + b_1 * ESG + b_2 * COVID + b_3 * ESG * COVID + \varepsilon$. Models 1-4 (5-8) capture the differential impact of ESG, E, S, and G on InstPct (%) (T10Pct (%)) during the COVID-19 crisis, respectively. COVID is a dummy variable equal to 1 in the first quarter of 2020 and 0 otherwise. All models control for the holding changes in the previous quarter to remove the effect of negative serial correlation in the IO measures. FFC4 factors and proxies of a firm's financial flexibility are controlled for, and firm-fixed effects and quarter-fixed effects are included in the model. The t-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	***NCP_Inst***	***NCP_Inst***	***NCP_Inst***	***NCP_Inst***	***NCP_T10***	***NCP_T10***	***NCP_T10***	***NCP_T10***
ESG	-0.2217**				-0.0690			
	(-2.017)				(-1.248)			
*ESG * COVID*	0.4428***				0.1678***			
	(11.569)				(8.934)			
E		-0.0329				0.0008		
		(-0.285)				(0.015)		
*E * COVID*		0.1846***				0.0389*		
		(4.595)				(1.961)		
S			-0.1140				-0.0394	
			(-1.262)				(-0.879)	
*S * COVID*			0.2502***				0.0821***	
			(7.295)				(4.760)	
G				-0.2701***				-0.1062***
				(-4.914)				(-3.810)
*G * COVID*				0.4050***				0.1771***
				(12.732)				(10.735)
NCP_Inst (L1)	-0.1202***	-0.1024***	-0.1098***	-0.1200***				
	(-7.670)	(-4.995)	(-6.880)	(-7.726)				
NCP_T10 (L1)					-0.1461***	-0.1381***	-0.1409***	-0.1479***
					(-8.602)	(-5.785)	(-8.187)	(-8.842)
Size (L1)	1.0019*	1.4161	1.0183*	1.0879**	0.5928	0.3031	0.6021	0.6349
	(1.873)	(1.583)	(1.853)	(1.992)	(1.489)	(0.448)	(1.491)	(1.583)
B2M	-2.0362**	-2.0212**	-1.8458**	-2.4934***	-0.5838	-1.0868	-0.5262	-0.7751
	(-2.573)	(-2.025)	(-2.300)	(-3.074)	(-1.057)	(-1.530)	(-0.941)	(-1.387)
LT Debt	-3.8854	-5.2046	-4.5063*	-3.8167	-1.3126	-2.5394	-1.5906	-1.2219
	(-1.626)	(-1.256)	(-1.819)	(-1.586)	(-0.934)	(-1.110)	(-1.116)	(-0.869)
ST Debt	4.1672	5.6454	4.6713	0.9448	3.3540	4.6304	3.4690	1.9854
	(0.655)	(0.547)	(0.734)	(0.144)	(0.822)	(0.746)	(0.849)	(0.482)
Cash	3.1274	3.7589	1.6847	2.2653	0.8970	3.0808	0.3141	0.6467
	(1.286)	(0.546)	(0.666)	(0.926)	(0.566)	(0.776)	(0.195)	(0.408)
ROA	-3.1376**	-4.7742	-4.3840***	-1.7434	-2.0906**	-2.1577	-2.5225**	-1.4544
	(-2.329)	(-0.871)	(-3.131)	(-1.269)	(-2.134)	(-0.607)	(-2.551)	(-1.484)
N (Obs.)	11,518	6,890	11,518	11,518	11,518	6,890	11,518	11,518
Adj. R^2	0.237	0.306	0.219	0.240	0.195	0.271	0.185	0.202
N (Firms)	1,649	1,047	1,649	1,649	1,649	1,047	1,649	1,649
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

APPENDICES

Appendix A: Variable Description

Variable	Definition
AbsTNF	The total value of all sales and redemptions of OEMF in a given day.
Age	The OEMF's age based on its oldest share class.
Agg_Liq	Pastor and Stambaugh's (2003) measure of aggregate market liquidity.
Agg_Liq_Innov	Pastor and Stambaugh's (2003) measure of innovations in aggregate market liquidity.
AggCnt	The total number of news articles covering any US mutual fund in each trading day.
AgGrth	A dummy variable which equals "1" if an OEMF's prospectus objective is "Aggressive Growth" and 0 otherwise.
AMEX	A dummy variable equal to 1 if the stock is traded on AMEX and 0 otherwise
AnyArt	A dummy variable which equals "1" if there are any articles mentioning the OEMF in a given day (month) and "0" otherwise.
AnyArt-ex	A dummy variable which equals "1" if there are any articles mentioning the OEMF (and not its holdings) in a given day (month) and "0" otherwise.
ArtCnt	The log of the total number of news articles mentioning the OEMF plus one in a given day.
ArtCnt_6m	The aggregate value of ArtCnt in a given six-month period.
ArtCnt-ex	The log of the total number of news articles mentioning the OEMF (and not its holdings) plus one in a given day.
AUM	The total assets under management of an OEMF in a given day.
AvgHold	The average percentage holdings of institutions in a stock
AvgTopHold	The average percentage holdings of Top Institutional Investors in a stock
B2M	A company's book value divided by its market value.
BlockCnt	The total number of blockholders (>5% of shares) of a stock in a given month.
BlockPct	The percentage of shares of a company held by Blockholders.
BrdSize	The total number of directors on the board of directors of a company
BrdTenure	Average time spent on board of a company's board of directors.
Cash	The amount of a firm's cash holdings and marketable securities divided by its assets.
CEO_Duality	A dummy variable equal to 1 if the CEO of a company is chairman of board and 0 otherwise.
Count	The total number of news articles mentioning the OEMF plus one in a given day.
DistFee	The distribution fees of the OEMF which are part of the MER.
E	The Environmental Score of a given firm extracted from Asset4 or MSCI ESG.
ESG	The ESG Score of a given firm extracted from Asset4 or MSCI ESG.
FdAUM	The forward-demeaned assets under management of the OEMF calculated using Pastor and Stambaugh (2015) approach.
FeeWaiver	A dummy variable which takes the value of 1 if gross MER does not equal Net MER and 0 otherwise.
FF-5 Alpha	The Fama-French 5-factor (FF-5) Benchmark-adjusted return of a stock in a given month.
FFC4 Alpha	The FFC4 (Fama-French-Carhart 4) Benchmark-adjusted return of a stock in a given day.
FndRet	The percentage daily increase in the NAV of the OEMF in a given day compared to the previous observation day.
Funds in Family	The total number of funds operating in the same fund family.
G	The Governance Score of a given firm extracted from Asset4 or MSCI ESG.
Gender Ratio	The percentage of male directors on the board of directors of a company.

Growth	A dummy variable which equals "1" if an OEMF's prospectus objective is "Growth" and 0 otherwise.
HML	The return of a zero-cost long-short book-to-market ratio-based portfolio that is long stocks with high book-to-market ratios and short stocks with low book-to-market ratios
IBES_Cnt	The total number of quarterly estimates by analysts in a given month.
IBES_Down	The number of estimates lowered compared to the last monthly cycle.
IBES_Up	The number of estimates raised compared to the last monthly cycle.
Income	A dummy variable which equals "1" if an OEMF's prospectus objective is "Income" and 0 otherwise.
InstCnt	The total number of institutional investors holding positions in a stock in a given month.
InstOwn	The total number of shares of company held by institutional investors.
InstPct	The aggregate percentage of shares of a company held by institutional investors.
LT Debt	The amount of long-term debt divided by assets.
MgrAnyArt	A dummy variable which equals "1" if there are any articles mentioning other funds managed by an OEMF's management company in a given day and "0" otherwise.
MgrArtCnt	The log of the total number of news articles mentioning other funds managed by an OEMF's management company plus one in a given day.
MktCap	The total market capitalization of a stock in a given month.
MktCap	The total market capitalization of a stock in a given month.
MktRF	The excess stock return on the contemporaneous excess return of the market portfolio.
MonthRet	The percentage increase in the NAV of the OEMF compared to the previous month.
Nasdaq	A dummy variable equal to 1 if the stock is traded on NASDAQ and 0 otherwise.
NCntDum	A dummy variable equal to one if there is more negative news covering the OEMF in a given day and is equal to 0 otherwise.
NCP_Block	Net Percentage Quarterly Change in Number of Shares of a stock held by Blockholders.
NCP_Inst	Net Percentage Quarterly Change in Number of Shares of a stock held by institutional investors.
NCP_T10	Net Percentage Quarterly Change in Number of Shares of a stock held by Top Institutional Investors.
NED	The percentage of non-executive directors on board of directors of a company.
Neg Months	The number of months where more negative news covers the OEMF in the prior six-month period.
NegCnt	The log of the total number of news articles mentioning the OEMF plus one in a given day.
Net MER	The management expense ratio of the OEMF.
NetChBlockPct	Net Percentage Change in Number of Shares of a stock held by Blockholders.
NetChInstPct	Net Percentage Change in Number of Shares of a stock held by institutional investors.
NetChTopPct	Net Percentage Change in Number of Shares of a stock held by Top Institutional Investors.
NetCnt	The difference between the number of institutional investors increasing and decreasing the size of their positions in a stock
NetCntTop	The difference between the number of Top Institutional Investors increasing and decreasing the size of their positions in a stock
News Months	The number of months with at least one news article covering an OEMF in the prior six-month period.
NewsPct	The number of news articles mentioning the OEMF divided by AggCnt.
NYSE	A dummy variable equal to 1 if the stock is traded on NYSE and 0 otherwise.
OCF	The amount of operational cash flows of a firm divided by its assets.
PCntDum	A dummy variable equal to one if there is more positive news covering the OEMF in a given day and is equal to 0 otherwise.
P-NCnt	Number of positive minus negative (negative minus positive) news items covering an OEMF in a given day.
P-NCnt_6m	Number of positive minus negative news items covering an OEMF in a given six-month period.

Pos Months	The number of months where more positive news covers the OEMF in the prior six-month period.
PosCnt	The log of the total number of positive news articles mentioning the OEMF plus one in a given day.
PQDiff	The difference between monthly stock price at the end of a given month and the end of the previous quarter.
Prc	End of month share price.
QPrc	End of quarter share price.
Qshrout	Total number of shares outstanding of a stock at the end of a given quarter.
Rating	The weighted average of Morningstar 5-star Ratings of the share classes of an OEMF.
RedemP	The percentage of OEMF sales in a given day divided by the AUM of the previous observation day.
Return	The net return of a stock in a given month.
ROA	A company's net income in a given period divided by its assets.
S	The Social Score of a given firm extracted from Asset4 or MSCI ESG.
S&P 500	A dummy variable equal to 1 if stock is a constituent of the Standard and Poor's 500 Index and 0 otherwise.
SaleP	The percentage of OEMF redemptions in a given day divided by the AUM of the previous observation day.
Shrout	Total number of shares outstanding of a stock at the end of a given period.
Shrout	Total number of shares outstanding of a stock at the end of a given month.
Size	The log of total market capitalization of a stock or AUM of an OEMF in a given month.
SMB	The return of a zero-cost long-short size-based portfolio that is long stocks with low market capitalization and short stocks with high market capitalization
ST Debt	The amount of debt in current liabilities divided by assets.
TimeRet	Average Time to Retirement of board of directors.
TNF	The total net dollar flows to/from an OEMF on a given day.
TNFP	The net percentage flow of an OEMF on a given day which is calculated by dividing the TNF by the AUM of the previous observation day.
Top10Pct	The percentage of shares of a company held by its top 10 institutional investors.
TopInstCnt	The total number of Top Institutional Investors of a stock in a given month.
TopPct	The percentage of shares of a company held by Top Institutional Investors.
Trd_Liq	Pastor and Stambaugh's (2003) measure of traded market liquidity.
TrdVol	The total trading volume of a stock in a given month.
UMD	The return of a portfolio that is long stocks with high momentum and short stocks with low momentum
Vol	The volatility of monthly returns of a given stock calculated using the past 60 monthly returns.

Table A2.1. OEMF Performance based on excess returns for funds differentiated by Investment Objectives

The table reports the panel regression results for OEMF performance where the dependent variable is the excess return of the OEMF on top of the daily risk-free rate. The returns for the factors in the 5-factor Fama-French model are included as explanatory covariates. Column (1) reports the results of all OEMFs. Columns (2), (3), and (4) focus on OEMFs with Investment objectives of Income, Growth, and Aggressive Growth, respectively. Standard errors are clustered at the OEMF level. All the variables are defined in Appendix A. All the columns control for year-fixed effects. The t-statistics are reported in parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***All Funds***	**(2)** ***Income***	**(3)** ***Growth***	**(4)** ***Aggressive Growth***
Mkt-RF	0.9579***	0.8531***	0.9676***	1.0192***
	(3,254.938)	(959.190)	(3,126.194)	(434.460)
SMB	0.0995***	-0.0508***	0.1127***	0.1936***
	(195.222)	(-32.833)	(210.423)	(47.644)
HML	-0.0132***	0.0772***	-0.0201***	-0.1808***
	(-20.617)	(39.708)	(-29.967)	(-35.392)
RMW	-0.0131***	0.0749***	-0.0202***	-0.1567***
	(-15.901)	(29.858)	(-23.205)	(-23.568)
CMA	0.0091***	0.2065***	-0.0089***	-0.1586***
	(8.921)	(66.348)	(-8.331)	(-19.490)
Constant	-0.0109***	-0.0182***	-0.0102***	-0.0061***
	(-45.475)	(-24.924)	(-40.649)	(-3.189)
Observations	2,556,243	234,962	2,277,658	43,623
R^2	0.852	0.830	0.857	0.870
F-Stat	2930518	230103.1	2728078	58527.98

Table A2.2. Summary Statistics for Net and FF-5 Benchmark-Adjusted Returns and Factor Sensitivities
This table reports summary cross-sectional averages for daily unconditional returns based on the time-series statistics for each individual OEMF. Panels (A), (B), and (C) report the cross-sectional summary statistics for net returns, Fama-French 5-factor benchmark-adjusted returns, and the corresponding sensitivities to each of the 5 Fama-French factors (ExMktRet, SMB, HML, RMW, and CMA), respectively.

Panel A: Net Returns

Fund Group	Average	Median	Std. dev.	Min	Max
Income	0.0237***	0.0496	0.8557	-2.5605	2.2366
Growth	0.0379***	0.0740	1.0030	-2.9735	2.5919
Aggressive Growth	0.0460***	0.0913	1.0998	-3.2162	2.8510
All	0.0368***	0.0723	0.9921	-3.2162	2.8510

Panel B: Benchmark-Adjusted Returns (Alpha)

Fund Group	Average	Median	Std. dev.	Min	Max
Income	-0.0195***	-0.0113	0.3137	-0.9237	0.7616
Growth	-0.0105***	-0.0050	0.3102	-0.8845	0.7883
Aggressive Growth	-0.0059**	-0.0024	0.3369	-0.9135	0.8600
All	-0.0112***	-0.0055	0.3111	-0.9237	0.8600

Panel C: Sensitivities (betas) to Fama-French 5 factors

Coefficient	Average	Median	Std. dev.	Min	Max
β_{Mkt}	0.9631***	0.9892	0.1296	-3.2533	7.3726
β_{SMB}	0.0827***	-.0047	0.2564	-7.4341	7.6130
β_{HML}	-0.0271***	-0.0103	0.2311	-6.8611	6.3865
β_{RMW}	-0.0221***	0.0003	0.2053	-11.2055	9.0371
β_{CMA}	-0.0079***	0.0108	0.2422	-11.2670	12.9747

Table A2.3. Tests of Count Determinants using Distribution Fees

This table reports test results on the determinants of media coverage based on 2,276,126 observations for 1306 distinct OEMFs. The dependent variable is the number of articles published about an OEMF in a given year. Columns (1) and (2) report results using a Poisson and a Negative Binomial Regression, respectively. Both columns control for year-fixed effects. Since *exponential coefficients* are reported in both columns, a value less than one indicates a negative relation with the dependent variable. Z-statistics are presented in parentheses. (L1) after the variable name shows that the variable is lagged by one trading day. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively. All the variables are defined in Appendix A.

	(1) Poisson		**(2) Negative Binomial**	
Variables	***Count***		***Count***	
Count (L1)	1.0572***	(1,110.950)	1.3759***	(287.389)
ArtCnt (L1)				
FndRet (L1)	0.9357***	(-34.114)		(-20.944)
MonthRet (L1)	0.9068***	(-88.402)	0.9347***	(-24.962)
AbsTNF (L1)	1.0034***	(16.721)	1.0000	(-0.023)
Size (L1)	1.0738***	(64.519)	1.0912***	(34.067)
DistFee	1.0313***	(57.756)	1.2950***	(26.552)
FeeWaiver	1.9308***	(288.892)	1.4056***	(69.857)
S&P 500 (L1)	1.0601***	(29.926)	1.0605***	(14.886)
Rating (L1)	0.8907***	(-117.158)	0.9162***	(-37.942)
Age (L1)	1.0354***	(38.539)	1.0283***	(12.397)
Vol (L1)	0.8859***	(-114.398)	0.9213***	(-35.088)
Funds in Family	1.0592***	(475.661)	1.0442***	(132.244)
Constant	0.2135***	(-579.535)	0.1642***	(-299.142)
Chi-Squared			2321673.545	
(Pseudo) R^2	0.159		0.074	
Alpha			4.562***	

Table A2.4. Determinants of Media Coverage Based on Panel Regressions

This table reports Panel regression results for the determinants of media coverage. The dependent variable is log of one plus the total number of articles published about an OEMF in a given year. All the variables are defined in Appendix A. Results reported in column (1) are based on a random effects regression. Results reported in column (2) are based on random effects with standard errors clustered at the OEMF level. Results reported in column (3) are based on OEMF fixed effects with clustered standard errors. (L1) after the variable name shows that the variable is lagged by one trading day. All the reported results control for year-fixed effects. The t-statistics are reported in parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively. All the variables are defined in Appendix A.

Variables	**(1)** ***ArtCnt***	**(2)** ***ArtCnt***	**(3)** ***ArtCnt***
ArtCnt (L1)	0.5700***	0.5700***	0.3864***
	(1,043.955)	(49.669)	(45.839)
FndRet (L1)	-0.0035***	-0.0035***	-0.0038***
	(-5.584)	(-5.153)	(-5.918)
MonthRet (L1)	-0.0015***	-0.0015**	-0.0017***
	(-4.624)	(-2.568)	(-2.962)
AbsTNF (L1)	0.0014***	0.0014	0.0003
	(4.658)	(1.186)	(0.513)
Size (L1)	0.0112***	0.0112***	0.0103
	(29.767)	(2.623)	(1.589)
Net MER	0.0060***	0.0060	-0.0036
	(18.088)	(1.542)	(-0.820)
FeeWaiver = 1	0.0398***	0.0398***	0.0043
	(61.527)	(6.426)	(0.894)
S&P 500 (L1)	0.0038***	0.0038***	0.0038***
	(6.021)	(5.439)	(5.879)
Rating (L1)	-0.0089***	-0.0089**	0.0019
	(-27.378)	(-2.405)	(0.534)
Age (L1)	0.0044***	0.0044	-0.0133***
	(13.658)	(1.328)	(-5.246)
Vol (L1)	-0.0009**	-0.0009	-0.0009
	(-2.311)	(-0.718)	(-1.570)
Funds in Family	0.0054***	0.0054***	0.0110***
	(125.634)	(9.601)	(8.969)
Growth Fund	-0.0051**	-0.0051	0.0131***
	(-2.228)	(-0.232)	(2.635)
Income Fund	0.0056**	0.0056	
	(2.252)	(0.229)	
Constant	-0.0264***	-0.0264	-0.0563***
	(-10.370)	(-1.178)	(-5.391)
Within R^2			0.178
R^2	.366	.366	.343
Year FE	YES	YES	YES
Clustered SE		YES	YES
OEMF FE			YES

Table A2.5. Determinants of Media Coverage for OEMF Types Based on Panel Regressions

This table reports panel regression results for the determinants of media coverage based on the investment objectives of the OEMFs. The dependent variable is the log of one plus the total number of articles published about an OEMF in a given year. All the variables are defined in Appendix A. Column (1) reports the results of all OEMFs. Columns (2), (3), and (4) focus on OEMFs with Investment objectives of Income, Growth, and Aggressive Growth, respectively. (L1) after the variable name shows that the variable is lagged by one trading day. All the models control for year-fixed effects. The t-statistics are reported in parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively. All the variables are defined in Appendix A.

Variables	**(1)** ***All Funds***	**(2)** ***Income***	**(3)** ***Growth***	**(4)** ***Aggressive Growth***
ArtCnt (L1)	0.3864***	0.3415***	0.3923***	0.3513***
	(45.839)	(14.175)	(43.293)	(8.164)
FndRet (L1)	-0.0038***	-0.0015	-0.0040***	-0.0046
	(-5.918)	(-0.590)	(-5.915)	(-1.492)
MonthRet (L1)	-0.0017***	-0.0048***	-0.0016***	0.0016
	(-2.962)	(-2.977)	(-2.808)	(0.664)
AbsTNF (L1)	0.0003	0.0009	0.0001	0.0013
	(0.513)	(0.529)	(0.285)	(0.163)
Size (L1)	0.0103	0.0360*	0.0066	0.0525
	(1.589)	(1.828)	(0.946)	(0.711)
Net MER	-0.0062	-0.0202	0.0002	-0.0596
	(-0.820)	(-1.264)	(0.024)	(-1.266)
FeeWaiver = 1	0.0043	0.0038	0.0042	0.0216
	(0.894)	(0.267)	(0.805)	(0.769)
S&P 500 (L1)	0.0038***	0.0008	0.0042***	0.0067**
	(5.879)	(0.362)	(5.898)	(2.719)
Rating (L1)	0.0019	0.0119	0.0008	0.0173
	(0.534)	(0.903)	(0.202)	(0.553)
Age (L1)	-0.0133***	-0.0439*	-0.0112***	-0.3351***
	(-5.246)	(-1.975)	(-4.330)	(-3.127)
Vol (L1)	-0.0009	-0.0070***	-0.0006	-0.0002
	(-1.570)	(-3.333)	(-1.022)	(-0.046)
Funds in Family	0.0110***	0.0188***	0.0098***	0.0635***
	(8.969)	(5.671)	(7.488)	(4.716)
Constant	-0.0494***	-0.0900**	-0.0355**	-0.4168**
	(-3.535)	(-2.327)	(-2.104)	(-2.629)
Observations	2,266,400	207,726	2,017,729	40,945
Number of OEMFs	1,306	125	1,162	20
Within R^2	0.178	0.153	0.182	0.170
R^2	0.344	0.256	0.359	0.119
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES

Table A2.6. Effect of the Existence and Frequency of Daily Media Mentions on OEMF Flows

This table reports the panel regression results on OEMF flows from the existence and frequency of daily media mentions and controls based on 1,517,571 observations for 1306 distinct OEMFs. The dependent variable is the net percentage flows to the OEMF. The measure of news frequency is ArtCnt which is the log of the total number of news articles mentioning the OEMF plus one in a given day. The measure of news existence is AnyArt that is a dummy variable which takes the value of 1 if there are any articles mentioning the OEMF during the day and 0 otherwise. Results reported in columns (1) and (2) capture the effects of the existence of at least one daily media mention and results reported in columns (3) and (4) focus on the frequency of daily media mentions. The odd and even numbered column results are estimated using random effects and fixed effects, respectively. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the OEMF level. All the reported results control for year-fixed effects. The t-statistics are reported in parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

	(1)	(2)	(3)	(4)
Variables	***TNFP***	***TNFP***	***TNFP***	***TNFP***
AnyArt (L1)	0.0482***	0.0492***		
	(10.348)	(10.483)		
ArtCnt (L1)			0.0235***	0.0242***
			(5.978)	(6.106)
TNFP (L1)	0.0199***	0.0199***	0.0199***	0.0199***
	(4.340)	(4.369)	(4.343)	(4.372)
FndRet (L1)	-0.0396***	-0.0396***	-0.0397***	-0.0396***
	(-13.516)	(-13.513)	(-13.516)	(-13.512)
MonthRet (L1)	0.0252**	0.0252**	0.0252**	0.0252**
	(2.366)	(2.364)	(2.366)	(2.363)
S&P 500	-0.0089***	-0.0089***	-0.0089***	-0.0089***
	(-7.509)	(-7.521)	(-7.533)	(-7.545)
AbsTNF (L1)	0.0030*	0.0030*	0.0030*	0.0030*
	(1.808)	(1.787)	(1.820)	(1.798)
Age (L1)	-0.0078	0.0179	-0.0079	0.0177
	(-0.800)	(0.727)	(-0.808)	(0.720)
Size (L1)	-0.1295***	-0.1377***	-0.1293***	-0.1375***
	(-6.828)	(-6.735)	(-6.812)	(-6.720)
Rating (L1)	0.0011	-0.0050	0.0009	-0.0051
	(0.087)	(-0.372)	(0.072)	(-0.384)
DistFee	-0.0017	-0.0019	-0.0017	-0.0019
	(-0.558)	(-0.619)	(-0.551)	(-0.613)
FeeWaiver = 1	0.0370***	0.0370***	0.0369***	0.0369***
	(2.769)	(2.735)	(2.762)	(2.727)
Vol (L1)	-0.0033	-0.0034	-0.0033	-0.0034
	(-0.596)	(-0.613)	(-0.586)	(-0.603)
Funds in Family	-0.0014	-0.0050	-0.0013	-0.0048
	(-0.599)	(-1.494)	(-0.546)	(-1.451)
Growth Fund	0.0918*		0.0900*	
	(1.899)		(1.871)	
Income Fund	0.2273***		0.2260***	
	(3.908)		(3.903)	
Constant	-0.0727	0.0562	-0.0692	0.0577
	(-1.359)	(1.539)	(-1.299)	(1.583)
Overall R^2	0.008	0.004	0.008	0.004
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE		YES		YES

Table A2.7. Effect of Existence and Frequency of Daily Media Mentions on OEMF Performance

The table reports the panel regression results for OEMF performance based on the existence/frequency of daily media mentions and controls based on 1,517,571 observations for 1306 distinct OEMFs. The dependent variable is the net return of the OEMF. The measure of news existence is AnyArt which is a dummy variable which takes the value of 1 if there are any articles for the day mentioning the OEMF and 0 otherwise. The measure of news frequency is ArtCnt which is the log of the total number of news articles mentioning the OEMF plus one in a given day. Results reported in columns (1) and (2) capture the effects of the existence of at least one news article for the fund during a day and the results reported in columns (3) and (4) focus on the frequency of daily media mentions for the fund. The results reported in the odd and even numbered columns are estimated using random effects and fixed effects, respectively. Standard errors are clustered at the OEMF level. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. All the reported results control for year-fixed effects. The t-statistics are reported in parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

	(1)	(2)	(3)	(4)
Variables	***FndRet***	***FndRet***	***FndRet***	***FndRet***
AnyArt (L1)	-0.0009	-0.0020**		
	(-1.115)	(-2.343)		
ArtCnt (L1)			-0.0006	-0.0014**
			(-1.134)	(-2.352)
FndRet (L1)	0.0207***	0.0206***	0.0207***	0.0206***
	(28.286)	(27.692)	(28.286)	(27.690)
TNF (L1)	0.0002	0.0002	0.0002	0.0002
	(0.826)	(1.231)	(0.824)	(1.228)
MonthRet (L1)	-0.0069***	-0.0079***	-0.0069***	-0.0079***
	(-2.970)	(-2.936)	(-2.970)	(-2.936)
S&P 500	0.9199***	0.9197***	0.9199***	0.9197***
	(227.449)	(227.296)	(227.450)	(227.297)
Age (L1)	0.0017***	-0.0076	0.0017***	-0.0076
	(4.645)	(-0.787)	(4.643)	(-0.788)
Size (L1)	-0.0019***	-0.0151***	-0.0019***	-0.0151***
	(-3.765)	(-11.438)	(-3.775)	(-11.438)
Rating (L1)	0.0060***	0.0041***	0.0060***	0.0041***
	(12.862)	(4.006)	(12.877)	(4.014)
DistFee	0.0009***	0.0009***	0.0009***	0.0009***
	(4.817)	(5.761)	(4.805)	(5.771)
FeeWaiver = 1	-0.0008	-0.0020	-0.0008	-0.0020
	(-0.986)	(-1.626)	(-0.978)	(-1.617)
Vol (L1)	-0.0095***	-0.0119***	-0.0095***	-0.0119***
	(-8.779)	(-8.920)	(-8.779)	(-8.920)
Funds in Family	0.0001**	0.0013***	0.0001**	0.0013***
	(2.037)	(5.143)	(2.034)	(5.156)
Growth Fund	-0.0086***		-0.0086***	
	(-5.546)		(-5.539)	
Income Fund	-0.0243***		-0.0243***	
	(-12.406)		(-12.414)	
Constant	0.0346***	0.0103***	0.0345***	0.0102***
	(15.756)	(2.745)	(15.764)	(2.722)
Within R^2		0.839		0.839
R^2	0.839	0.838	0.839	0.838
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE		YES		YES

Table A2.8. Effect of Existence and Frequency of Daily Media Mentions on OEMF Performance

This table reports the panel regression results for OEMF performance based on the existence/frequency of daily media mentions and controls based on 2,266,400 observations from 1306 distinct OEMFs. The dependent variable is the excess return of the OEMF over the daily risk-free rate. The measure of news existence is AnyArt which is a dummy variable which takes the value of 1 if there are any articles for the day mentioning the OEMF and 0 otherwise. The measure of news frequency is ArtCnt which is the log of the total number of news articles mentioning the OEMF plus one in a given day. Results presented in columns (1) and (2) capture the effects of the existence of at least one news article for the fund during a day and those presented in columns (3) and (4) focus on the frequency of daily media mentions for the fund. The results reported in the odd and even numbered columns are estimated using random effects and fixed effects, respectively. Standard errors are clustered at the OEMF level. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. All the models control for year-fixed effects. The t-statistics are reported in parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***ExFndRet***	**(2)** ***ExFndRet***	**(3)** ***ExFndRet***	**(4)** ***ExFndRet***
AnyArt (L1)	-0.0011	-0.0025***		
	(-1.587)	(-3.263)		
ArtCnt (L1)			-0.0007	-0.0018***
			(-1.628)	(-3.395)
FndRet (L1)	0.0206***	0.0205***	0.0206***	0.0205***
	(31.883)	(31.183)	(31.882)	(31.181)
TNF (L1)	0.0003	0.0004*	0.0003	0.0004*
	(1.373)	(1.687)	(1.371)	(1.684)
MonthRet (L1)	-0.0075***	-0.0087***	-0.0075***	-0.0087***
	(-3.855)	(-3.794)	(-3.855)	(-3.793)
S&P 500	0.9133***	0.9130***	0.9133***	0.9130***
	(261.070)	(260.741)	(261.071)	(260.740)
Age (L1)	0.0019***	-0.0134	0.0019***	-0.0134
	(5.913)	(-0.929)	(5.914)	(-0.929)
Size (L1)	-0.0018***	-0.0146***	-0.0018***	-0.0146***
	(-4.407)	(-12.187)	(-4.423)	(-12.190)
Rating (L1)	0.0053***	0.0033***	0.0053***	0.0033***
	(13.508)	(4.267)	(13.524)	(4.285)
Net MER	0.0001	-0.0025**	0.0001	-0.0025**
	(0.189)	(-2.358)	(0.189)	(-2.358)
FeeWaiver = 1	-0.0001	-0.0024**	-0.0001	-0.0024**
	(-0.193)	(-2.322)	(-0.181)	(-2.312)
Vol (L1)	-0.0101***	-0.0128***	-0.0101***	-0.0128***
	(-11.279)	(-11.234)	(-11.278)	(-11.233)
Funds in Family	0.0001**	0.0011***	0.0001**	0.0011***
	(2.543)	(5.055)	(2.528)	(5.063)
Growth Fund	-0.0090***	0.0239***	-0.0090***	0.0237***
	(-5.988)	(23.386)	(-5.981)	(23.270)
Income Fund	-0.0244***		-0.0244***	
	(-13.274)		(-13.273)	
Constant	0.0344***	-0.0106**	0.0344***	-0.0105**
	(17.278)	(-2.128)	(17.270)	(-2.117)
Within R^2		0.834		0.834
R^2	0.833	0.833	0.833	0.833
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE		YES		YES

Table A2.9. Effect of Directional Tone Intensity of Media Mentions on OEMF Sales and Redemptions

This table reports the panel regression results for OEMF flows based on the directional tone intensity of media mentions for each day and controls. The dependent variable is the net percentage flows (*TNFP*). *PCntDum≥i* is a dummy variable equal to one if the number of positive minus negative news items covering an OEMF in a given day is greater or equal to *i* (*i* = 2 or 3) and is equal to 0 otherwise. Similarly, *NCntDum≥i* is a dummy variable equal to one if the number of negative minus positive news items covering an OEMF in a given day is greater or equal to *i* and is equal to 0 otherwise. Standard errors are clustered at the OEMF level. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. The t-statistics are reported in parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***TNFP***	**(2)** ***TNFP***
NCntDum>=2	0.0047	
	(0.535)	
PCntDum>=2	0.0140	
	(1.619)	
NCntDum>=3		-0.0089
		(-0.929)
PCntDum>=3		-0.0024
		(-0.188)
TNFP (L1)	0.0199***	0.0200***
	(4.337)	(4.339)
FndRet (L1)	-0.0397***	-0.0397***
	(-13.525)	(-13.526)
MonthRet (L1)	0.0251**	0.0251**
	(2.364)	(2.363)
S&P 500	-0.0089***	-0.0090***
	(-7.577)	(-7.597)
AbsTNF (L1)	0.0031*	0.0031*
	(1.839)	(1.839)
Age (L1)	-0.0088	-0.0089
	(-0.907)	(-0.913)
Size (L1)	-0.1289***	-0.1288***
	(-6.795)	(-6.792)
Rating (L1)	0.0005	0.0006
	(0.044)	(0.046)
DistFee	-0.0016	-0.0016
	(-0.548)	(-0.544)
FeeWaiver = 1	0.0372***	0.0373***
	(2.780)	(2.786)
Vol (L1)	-0.0034	-0.0034
	(-0.609)	(-0.609)
Funds in Family	-0.0009	-0.0009
	(-0.389)	(-0.381)
Constant	0.0324	0.0322
	(1.161)	(1.153)
R^2	0.006	0.006
Clustered SE	YES	YES
Year FE	YES	YES

Table A2.10. Effect of the Daily Media Mentions and their Sentiment on OEMF Cumulative Flow Percentages

This table reports the panel regression results for regression models (8) and (13) on OEMF Cumulative 5-day flow percentages from the existence, frequency, and sentiment of daily media mentions and controls based on 2,259,874 observations for 1304 distinct OEMFs. The dependent variable is the 5-day cumulative net percentage flows to the OEMF excluding the first day. Columns (1) and (2) capture the effects of the existence and frequency of daily media mentions while columns (3) and (4) focus on the sentiment of daily media mentions. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the OEMF level. All the regression specifications control for OEMF-fixed effects and year-fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***CAFn***	**(2)** ***CAFn***	**(3)** ***CAFn***	**(4)** ***CAFn***
AnyArt (L1)		0.0258**	0.0154	
		(2.033)	(0.940)	
ArtCnt (L1)	0.0463***			0.0472***
	(3.549)			(3.677)
NCntDum=1			0.0210	
			(1.052)	
PCntDum=1			0.0320*	
			(1.850)	
P-NCnt (L1)				0.0028
				(0.800)
MonthRet (L1)	0.0807***	0.0807***	0.0807***	0.0807***
	(2.952)	(2.952)	(2.951)	(2.951)
AbsTNF (L1)	0.0146**	0.0146**	0.0146**	0.0146**
	(2.217)	(2.215)	(2.215)	(2.217)
Age (L1)	0.0666	0.0664	0.0666	0.0666
	(0.682)	(0.681)	(0.683)	(0.682)
Size (L1)	-0.5358***	-0.5356***	-0.5356***	-0.5358***
	(-8.026)	(-8.022)	(-8.023)	(-8.026)
Rating (L1)	-0.0115	-0.0117	-0.0117	-0.0114
	(-0.276)	(-0.281)	(-0.280)	(-0.275)
Net MER	0.0186	0.0186	0.0186	0.0185
	(0.223)	(0.223)	(0.224)	(0.222)
FeeWaiver = 1	0.1570***	0.1568***	0.1569***	0.1570***
	(3.510)	(3.508)	(3.509)	(3.511)
Vol (L1)	0.0005	0.0006	0.0005	0.0005
	(0.035)	(0.038)	(0.035)	(0.034)
Funds in Family	-0.0086	-0.0085	-0.0085	-0.0086
	(-0.846)	(-0.838)	(-0.833)	(-0.845)
Income Fund	0.3703***	0.3739***	0.3729***	0.3697***
	(6.690)	(6.747)	(6.732)	(6.683)
Constant	-0.2450*	-0.2467*	-0.2463*	-0.2445*
	(-1.767)	(-1.779)	(-1.777)	(-1.764)
R^2	0.020	0.020	0.020	0.020
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES

Table A2.11. Effect of the Daily Media Mentions and their Sentiment on OEMF Cumulative Abnormal Returns

This table reports the panel regression results for regression models (9) and (14) on OEMF cumulative abnormal returns from the existence, frequency, and sentiment of daily media mentions and controls based on 2,257,989 observations for 1304 distinct OEMFs. The dependent variable is the cumulative abnormal returns of the OEMF adjusted using the FF-5 benchmark for the five-day period following the news date excluding the first day. Columns (1) and (2) capture the effects of the existence and frequency of daily media mentions while columns (3) and (4) focus on the sentiment of daily media mentions. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the OEMF level. All the regression specifications control for OEMF-fixed effects and year-fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***CARn***	**(2)** ***CARn***	**(3)** ***CARn***	**(4)** ***CARn***
AnyArt (L1)		-0.0023*	-0.0025*	
		(-1.903)	(-1.762)	
ArtCnt (L1)	0.0018			0.0024
	(1.140)			(1.495)
NCntDum=1			-0.0011	
			(-0.489)	
PCntDum=1			0.0034	
			(1.356)	
P-NCnt (L1)				0.0016***
				(3.460)
MonthRet (L1)	-0.0105***	-0.0105***	-0.0105***	-0.0105***
	(-3.063)	(-3.063)	(-3.063)	(-3.063)
AbsTNF (L1)	0.0005*	0.0005*	0.0005*	0.0005*
	(1.691)	(1.711)	(1.712)	(1.687)
Age (L1)	-0.0587	-0.0588	-0.0588	-0.0587
	(-1.057)	(-1.058)	(-1.058)	(-1.057)
Size (L1)	-0.0466***	-0.0465***	-0.0465***	-0.0466***
	(-11.745)	(-11.720)	(-11.723)	(-11.747)
Rating (L1)	0.0131***	0.0131***	0.0131***	0.0131***
	(4.934)	(4.931)	(4.932)	(4.942)
Net MER	-0.0143	-0.0144	-0.0144	-0.0144
	(-1.544)	(-1.549)	(-1.550)	(-1.550)
FeeWaiver = 1	-0.0069**	-0.0069**	-0.0069**	-0.0069**
	(-2.222)	(-2.215)	(-2.216)	(-2.218)
Vol (L1)	-0.0231***	-0.0231***	-0.0231***	-0.0231***
	(-12.267)	(-12.260)	(-12.255)	(-12.257)
Funds in Family	-0.0006	-0.0006	-0.0006	-0.0006
	(-1.013)	(-0.912)	(-0.911)	(-1.006)
Income Fund	0.0923***	0.0925***	0.0923***	0.0920***
	(28.148)	(28.249)	(28.153)	(28.058)
Constant	-0.0801***	-0.0804***	-0.0802***	-0.0798***
	(-3.755)	(-3.771)	(-3.761)	(-3.745)
R^2	0.003	0.003	0.003	0.003
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES

Table A2.12. Effect of the Daily Media Mentions and their Sentiment on OEMF Average 5-day Flows

This table reports the panel regression results for regression models (8) and (13) on OEMF Average 5-day flows from the existence, frequency, and sentiment of daily media mentions and controls based on 2,265,094 observations for 1306 distinct OEMFs. The dependent variable is the average net percentage flows to the OEMF in the five-day period following the news date. Columns (1) and (2) capture the effects of the existence and frequency of daily media mentions while columns (3) and (4) focus on the sentiment of daily media mentions. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the OEMF level. All the regression specifications control for OEMF-fixed effects and year-fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***TNFP-W***	**(2)** ***TNFP-W***	**(3)** ***TNFP-W***	**(4)** ***TNFP-W***
AnyArt (L1)		0.0086***	0.0053	
		(2.732)	(1.289)	
ArtCnt (L1)	0.0160***			0.0163***
	(4.941)			(5.113)
NCntDum=1			0.0062	
			(1.219)	
PCntDum=1			0.0112***	
			(2.592)	
P-NCnt (L1)				0.0009
				(1.092)
MonthRet (L1)	0.0218***	0.0218***	0.0218***	0.0218***
	(3.031)	(3.031)	(3.031)	(3.031)
AbsTNF (L1)	0.0037**	0.0037**	0.0037**	0.0037**
	(2.215)	(2.213)	(2.213)	(2.215)
Age (L1)	0.0151	0.0150	0.0151	0.0151
	(0.637)	(0.635)	(0.638)	(0.637)
Size (L1)	-0.1316***	-0.1315***	-0.1316***	-0.1316***
	(-7.899)	(-7.893)	(-7.894)	(-7.899)
Rating (L1)	-0.0016	-0.0017	-0.0017	-0.0016
	(-0.152)	(-0.159)	(-0.158)	(-0.151)
Net MER	0.0044	0.0044	0.0044	0.0044
	(0.210)	(0.210)	(0.210)	(0.208)
FeeWaiver = 1	0.0393***	0.0393***	0.0393***	0.0393***
	(3.498)	(3.496)	(3.496)	(3.499)
Vol (L1)	0.0006	0.0007	0.0006	0.0006
	(0.163)	(0.167)	(0.162)	(0.162)
Funds in Family	-0.0026	-0.0026	-0.0026	-0.0026
	(-1.030)	(-1.018)	(-1.010)	(-1.029)
Income Fund	0.0909***	0.0921***	0.0917***	0.0907***
	(6.538)	(6.620)	(6.597)	(6.529)
Constant	-0.0567	-0.0574	-0.0572	-0.0566
	(-1.625)	(-1.642)	(-1.637)	(-1.621)
R^2	0.023	0.023	0.023	0.023
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES

Table A2.13. Effect of the Daily Media Mentions and their Sentiment on OEMF Average Weekly FF-5 benchmark-adjusted returns

This table reports the panel regression results for regression models (9) and (14) on OEMF average 5-day FF-5 benchmark-adjusted returns from the existence, frequency, and sentiment of daily media mentions and controls based on 2,265,094 observations for 1306 distinct OEMFs. The dependent variable is the average FF-5 benchmark adjusted returns of the OEMF in the five-day period following the news date. Columns (1) and (2) capture the effects of the existence and frequency of daily media mentions while columns (3) and (4) focus on the sentiment of daily media mentions. (L1) after the variable name shows that the variable is lagged by one trading day. All the variables are defined in Appendix A. Standard errors are clustered at the OEMF level. All the regression specifications control for OEMF-fixed effects and year-fixed effects. The t-statistics are reported in the parentheses. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	**(1)** ***FF-5 Alpha-W***	**(2)** ***FF-5 Alpha-W***	**(3)** ***FF-5 Alpha-W***	**(4)** ***FF-5 Alpha-W***
AnyArt (L1)		-0.0007**	-0.0010***	
		(-2.545)	(-2.846)	
ArtCnt (L1)	0.0001			0.0002
	(0.284)			(0.621)
NCntDum=1			0.0003	
			(0.498)	
PCntDum=1			0.0010*	
			(1.799)	
P-NCnt (L1)				0.0004***
				(3.183)
MonthRet (L1)	-0.0028***	-0.0029***	-0.0029***	-0.0029***
	(-3.183)	(-3.183)	(-3.183)	(-3.183)
AbsTNF (L1)	0.0001**	0.0001**	0.0001**	0.0001**
	(2.045)	(2.065)	(2.068)	(2.040)
Age (L1)	-0.0150	-0.0150	-0.0150	-0.0150
	(-1.059)	(-1.060)	(-1.060)	(-1.059)
Size (L1)	-0.0116***	-0.0116***	-0.0116***	-0.0116***
	(-11.658)	(-11.634)	(-11.637)	(-11.660)
Rating (L1)	0.0033***	0.0033***	0.0033***	0.0033***
	(4.949)	(4.949)	(4.950)	(4.956)
Net MER	-0.0036	-0.0036	-0.0036	-0.0036
	(-1.571)	(-1.576)	(-1.575)	(-1.576)
FeeWaiver = 1	-0.0018**	-0.0018**	-0.0018**	-0.0018**
	(-2.279)	(-2.272)	(-2.272)	(-2.276)
Vol (L1)	-0.0061***	-0.0061***	-0.0061***	-0.0061***
	(-12.423)	(-12.418)	(-12.416)	(-12.415)
Funds in Family	-0.0001	-0.0001	-0.0001	-0.0001
	(-0.924)	(-0.828)	(-0.820)	(-0.918)
Income Fund	0.0235***	0.0235***	0.0234***	0.0234***
	(28.534)	(28.617)	(28.513)	(28.449)
Constant	-0.0202***	-0.0202***	-0.0202***	-0.0201***
	(-3.749)	(-3.762)	(-3.756)	(-3.740)
R^2	0.004	0.004	0.004	0.004
Clustered SE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
OEMF FE	YES	YES	YES	YES

Table A2.14.
Panel A shows the results of the t-test on the difference in means of *TNFP* for observation with or without any positive news articles. Panel B shows the results of the t-test on the difference in means of *TNFP* for observation with or without any negative news articles. Panel C shows the results of the t-test of the difference of means of TNFP for observations with net positive news articles and those with net negative news articles.

Group	Observations	Mean	Std. Err.	Std. Dev.
Panel A: Positive Articles				
(0) PosCnt (L1) = 0	2,362,994	0.0153	0.0002	0.3615
(1) PosCnt (L1) > 0	193,845	0.0229	0.0010	0.4603
Combined	2,556,839	0.0159	0.0002	0.3700
Difference = mean(0) - mean(1)		-0.0075	0.0008	
H0: Difference = 0	t = - 8.612		Reject	
H0: Difference < 0	Pr (T < t) = 0.0000		Accept	
H0: Difference > 0	Pr (T > t) = 1.0000		Reject	
H0: Difference ≠ 0	Pr (|T| > |t|) = 0.0000		Accept	
Panel B: Negative Articles				
(0) NegCnt (L1) = 0	2,312,042	0.0155	0.0002	0.3590
(1) NegCnt (L1) > 0	244,797	0.0193	0.0009	0.4561
Combined	2,556,839	0.0159	0.0002	0.3700
Difference = mean(0) - mean(1)		-0.0037	0.0007	
H0: Difference = 0	t = - 4.792		Reject	
H0: Difference < 0	Pr (T < t) = 0.0000		Accept	
H0: Difference > 0	Pr (T > t) = 1.0000		Reject	
H0: Difference ≠ 0	Pr (|T| > |t|) = 0.0000		Accept	
Panel C: Positive vs. Negative Articles				
(0) N-PCntDum (L1) > 0	200,088	0.0090	0.0027	1.2204
(1) P-NCntDum (L1) > 0	125,203	0.0291	0.0035	1.2607
Combined	325,291	0.0167	0.0021	1.2361
Difference = mean(0) - mean(1)		-0.0201	0 .0044	
H0: Difference = 0	t = - 4.526		Reject	
H0: Difference < 0	Pr (T < t) = 0.0000		Accept	
H0: Difference > 0	Pr (T > t) = 1.0000		Reject	
H0: Difference ≠ 0	Pr (|T| > |t|) = 0.0000		Accept	

Table A3.1. Differential Returns on Quarter Ends

This Table reports the results of the t-test on the difference in means of net returns at the end-of-quarter month against other months of the year. Panel A shows the results of the t-test on the difference in means of returns of all firms. Panel B shows the results of the t-test of the difference of means of returns of stocks traded on Nasdaq. Panel C shows the results of the t-test of the difference of means of returns of small firms which are defined as those with market capitalizations less than the 1st quintile of the distribution. Panel D shows the results of the t-test of the difference of means of returns of big firms which are defined as those with market capitalizations more than the 3rd quintile of the distribution.

Group	Observations	Mean	Std. Err.	Std. Dev.
Panel A: Total firms				
(0) Quarter-End = 0	400,378	1.036	0.022	13.998
(1) Quarter-End = 1	200,969	1.347	0.030	13.851
Combined	601,347	1.140	0.017	13.949
Difference = mean(0) - mean(1)		-0.311	0.038	
H0: Difference = 0	t = - 8.166		Reject	
H0: Difference < 0	Pr (T < t) = 0.0000		Accept	
H0: Difference > 0	Pr (T > t) = 1.0000		Reject	
H0: Difference ≠ 0	Pr (|T| > |t|) = 0.0000		Accept	
Panel B: Nasdaq Firms				
(0) Quarter-End = 0	201,650	1.124	0.035	16.100
(1) Quarter-End = 1	101,421	1.586	0.049	15.883
Combined	303,071	1.279	0.029	16.029
Difference = mean(0) - mean(1)		-0.462	0.061	
H0: Difference = 0	t = - 7.495		Reject	
H0: Difference < 0	Pr (T < t) = 0.0000		Accept	
H0: Difference > 0	Pr (T > t) = 1.0000		Reject	
H0: Difference ≠ 0	Pr (|T| > |t|) = 0.0000		Accept	
Panel C: Small Firms				
(0) Quarter-End = 0	100,035	0.241	0.055	17.705
(1) Quarter-End = 1	50,015	0.423	0.082	18.484
Combined	150,050	0.301	0.046	17.969
Difference = mean(0) - mean(1)		-0.182	0.098	
H0: Difference = 0	t = - 1.852		No Reject	
H0: Difference < 0	Pr (T < t) = 0.0319		No Reject	
H0: Difference > 0	Pr (T > t) = 0.9681		No Reject	
H0: Difference ≠ 0	Pr (|T| > |t|) = 0.0639		No Reject	
Panel D: Big Firms				
(0) Quarter-End = 0	100,325	1.706	0.034	10.973
(1) Quarter-End = 1	50,466	1.284	0.037	8.463
Combined	150,791	1.565	0.026	10.204
Difference = mean(0) - mean(1)		0.421	0.055	
H0: Difference = 0	t = 7.566		Reject	
H0: Difference < 0	Pr (T < t) = 1.0000		Reject	
H0: Difference > 0	Pr (T > t) = 0.0000		Accept	
H0: Difference ≠ 0	Pr (|T| > |t|) = 0.0000		Accept	

Table A3.2. Differential Returns based on Size and Market

This table reports the results of the t-test on the difference in means of net returns based on size and listing market. Panel A shows the results of the t-test on the difference in means of returns of small and big firms. Small (Big) firms are defined as those with market capitalizations less (more) than the 1st (3rd) quintile, as calculated at the end of the previous quarter. Panel B shows the results of the t-test of the difference of means of returns of stocks traded on NYSE and stocks traded on Nasdaq.

Group	Observations	Mean	Std. Err.	Std. Dev.
Panel A: Small vs. Big Firms				
(0) Small Firms	150,115	0.302	0.046	17.970
(1) Big Firms	150,790	1.565	0.026	10.204
Combined	300,905	0.935	0.026	14.618
Difference = mean(0) - mean(1)		-1.262	0.053	
H0: Difference = 0	t = - 23.708		Reject	
H0: Difference < 0	Pr (T < t) = 0.0000		Accept	
H0: Difference > 0	Pr (T > t) = 1.0000		Reject	
H0: Difference ≠ 0	Pr (|T| > |t|) = 0.0000		Accept	
Panel B: Nasdaq vs NYSE Stocks				
(0) NYSE	266,423	0.964	0.020	10.545
(1) Nasdaq	303,071	1.279	0.029	16.029
Combined	569,494	1.131	0.018	13.740
Difference = mean(0) - mean(1)		-0.314	0.036	
H0: Difference = 0	t = - 8.630		Reject	
H0: Difference < 0	Pr (T < t) = 0.0000		Accept	
H0: Difference > 0	Pr (T > t) = 1.0000		Reject	
H0: Difference ≠ 0	Pr (|T| > |t|) = 0.0000		Accept	

Table A3.3. Effect of Institutional Manager Holdings on FF-5 Alphas

This table reports the results of regressing stock FF-5 alphas on institutional investor holding measures and controls for 563,094 observations in the period starting from 2010 to the end of 2019 for stocks listed on the NYSE, AMEX, and Nasdaq. The dependent variable is the Fama-French five-factor (FF-5) benchmark-adjusted stock returns calculated using rolling betas computed from the last 5-years of data following the standard FM (1973) approach. In Model (1) we use the aggregate percentage of shares of a company held by Blockholders, in Models (2) and (3) we use the aggregate percentage of shares of a company held by their ten and five biggest institutional investors, respectively, and in Model (4) we use the percentage of shares of a company held by their biggest institutional investors. All the variables are defined in Appendix A. All models control for firm-fixed effects and month-fixed effects. The t-statistics are reported in the parentheses. Standard errors are clustered at the stock level. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively, to help control for a large number of stock-month observations.

Variables	**(1)** **FF-5 Alpha**		**(2)** **FF-5 Alpha**		**(3)** **FF-5 Alpha**		**(4)** **FF-5 Alpha**	
BlockPct (L1q)	-0.0003***	(-6.639)						
Top10Pct (L1q)			-0.0000**	(-2.044)				
Top5Pct (L1q)					-0.0000**	(-2.145)		
MaxPct (L1q)							-0.0000***	(-4.210)
InstCnt (L1q)	-0.0350***	(-30.754)	-0.0374***	(-35.526)	-0.0374***	(-35.499)	-0.0374***	(-35.548)
PQDiff ($)	-0.0071***	(-2.684)	-0.0070***	(-2.673)	-0.0070***	(-2.673)	-0.0070***	(-2.673)
Shrout (L1)	-0.0000	(-0.918)	-0.0000	(-0.916)	-0.0000	(-0.915)	-0.0000	(-0.915)
Size (L1)	-0.0359***	(-28.400)	-0.0352***	(-28.045)	-0.0352***	(-28.051)	-0.0352***	(-28.042)
TrdVol (L1)	0.0000	(0.901)	0.0000	(0.985)	0.0000	(0.984)	0.0000	(0.984)
S&P 500	-0.0008***	(-12.045)	-0.0008***	(-12.032)	-0.0008***	(-12.032)	-0.0008***	(-12.032)
NYSE	-0.0430***	(-4.665)	-0.0437***	(-4.740)	-0.0437***	(-4.739)	-0.0437***	(-4.741)
Nasdaq	-0.0607***	(-6.313)	-0.0607***	(-6.312)	-0.0607***	(-6.312)	-0.0607***	(-6.312)
Constant	0.4191***	(38.071)	0.4198***	(38.189)	0.4198***	(38.193)	0.4198***	(38.189)
N	563,094		563,094		563,094		563,094	
R^2	0.035		0.035		0.035		0.035	
Number of Firms	8,673		8,673		8,673		8,673	
Firm FE	YES		YES		YES		YES	
Year FE	YES		YES		YES		YES	

Table A3.4. Effect of Changes in Institutional Investor Holdings on Stock Performance in Different Markets

The following table reports the results of regressing stock FF-5 alphas on institutional investor holding measures and controls for stocks listed on the NYSE, AMEX, and Nasdaq, respectively, for the period starting from 2010 to the end of 2019. The dependent variable is the Fama-French five-factor (FF-5) benchmark-adjusted stock returns. We use the Net Percentage Change in Number of Shares held by Institutional investors as our measure of change in institutional holdings. Models (1), (2), and (3) report results based on all institutional investors, while models (4), (5), and (6) report results based on Top Institutional Investors. We use the Net Percentage Change in Number of Shares held by Institutional investors as our measure of change in institutional holdings. All the variables are defined in Appendix A. (L1m) indicates that the variable is lagged for one month while (L1q) shows that the variable is lagged by one quarter. All models control for firm-fixed effects and year-fixed effects. The robust t-statistics are reported in parentheses. Standard errors are clustered at the stock level. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

	(1)		(3)		(5)	
Variables	**FF-5 Alpha NYSE**		**FF-5 Alpha AMEX**		**FF-5 Nasdaq**	
NetChInstPct (%)	0.0002***	(4.207)	0.0019***	(6.909)	0.0005***	(7.988)
InstCnt (L1q)	-0.0022**	(-2.367)	-0.0111**	(-2.079)	-0.0082***	(-5.195)
AvgHold (L1q)	-0.0031	(-1.575)	0.0020	(0.288)	-0.0011	(-1.494)
PQDiff ($)	-0.0017	(-1.005)	-0.0199**	(-2.285)	-0.0112**	(-2.020)
Shrout (L1m)	0.0000	(1.507)	0.0000	(1.513)	0.0000*	(1.905)
Size (L1m)	-0.0230***	(-22.015)	-0.0557***	(-6.817)	-0.0273***	(-18.314)
TrdVol (L1m)	-0.0000	(-0.386)	-0.0000	(-0.830)	-0.0000**	(-2.399)
S&P 500	-0.0007***	(-10.184)	-0.0006	(-1.168)	-0.0004***	(-3.617)
Constant	0.1857***	(22.813)	0.3129***	(8.059)	0.1922***	(22.165)
N	252,086		29,543		281,465	
R^2	0.237		0.061		0.098	
	(4)		(5)		(6)	
NetChTopPct (%)	0.0001**	(2.254)	0.0016***	(5.599)	0.0003***	(4.590)
InstCnt (L1q)	-0.0034***	(-3.872)	-0.0143***	(-2.727)	-0.0102***	(-6.577)
AvgHold (L1q)	-0.0036*	(-1.792)	0.0015	(0.226)	-0.0015**	(-2.132)
PQDiff ($)	-0.0015	(-0.873)	-0.0188**	(-2.192)	-0.0108**	(-2.017)
Shrout (L1m)	0.0000	(1.519)	0.0000	(1.457)	0.0000*	(1.921)
Size (L1m)	-0.0227***	(-21.898)	-0.0545***	(-6.713)	-0.0269***	(-18.161)
TrdVol (L1m)	-0.0000	(-0.431)	-0.0000	(-0.841)	-0.0000**	(-2.495)
S&P 500	-0.0007***	(-10.073)	-0.0006	(-1.129)	-0.0004***	(-3.477)
Constant	0.1904***	(23.424)	0.3196***	(8.222)	0.1991***	(23.043)
N	252,086		29,543		281,465	
R^2	0.236		0.060		0.097	
Number of Firms	3,550		621		4,797	
Year& Month FE	YES		YES		YES	
Firm FE	YES		YES		YES	

Table A3.5. Effect of Changes in Top and Non-Top Institutional Investor Holdings on FF-5 alphas

The following table reports the results of regressing stock FF-5 alphas on changes in institutional investor holding measures and controls for the period starting from 2010 to end of 2019 for 8,568 distinct stocks listed on NYSE, AMEX, and Nasdaq. The dependant variable is the Fama-French five-factor (FF-5) benchmark-adjusted stock returns. In Models (1) and (3) we use the equal-weighted Net Percentage Change in Number of Shares held by Top and Non-Top Institutional Investors as a percentage of shares held by those investors in previous quarter respectively and in Models (2) and (4) we use the equal-weighted Net Percentage Change in Number of Shares held by Top and Non-Top Institutional Investors as a percentage of total shares outstanding respectively, as our measure of institutional holdings. All the variables are defined in Appendix A. (L1m) indicates that the variable is lagged for one month while (L1q) denotes that the variable is lagged by one quarter. All models control for firm-fixed effects and year-fixed effects. The robust t-statistics are reported in parentheses. Standard errors are clustered at the stock level. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) FF-5 Alpha	(2) FF-5 Alpha	(3) FF-5 Alpha	(4) FF-5 Alpha
NetChTopInstPct (%)	0.0000			
	(1.053)			
NetChTopStkPct (%)		0.0050***		
		(4.303)		
NetChNonTopInstPct (%)			0.0000	
			(0.307)	
NetChNonTopStkPct (%)				-0.0039
				(-0.167)
Agg_Liq_Innov	0.0027***	0.0027***	0.0027***	0.0027***
	(12.880)	(12.848)	(12.237)	(12.241)
IBES_Up	0.0036***	0.0036***	0.0036***	0.0036***
	(29.317)	(29.315)	(29.448)	(29.449)
IBES_Down	-0.0030***	-0.0030***	-0.0030***	-0.0030***
	(-33.531)	(-33.536)	(-32.868)	(-32.874)
FF-5 Alpha (L1m)	-0.0330***	-0.0331***	-0.0281**	-0.0281**
	(-4.699)	(-4.709)	(-2.497)	(-2.497)
Vol	0.0257***	0.0257***	0.0259***	0.0259***
	(9.759)	(9.776)	(9.941)	(9.941)
TrdVol (L1m)	-0.0012	-0.0012	-0.0013	-0.0013
	(-1.053)	(-1.053)	(-1.120)	(-1.120)
Prc (L1m)	0.0003	0.0003	0.0005	0.0005
	(0.670)	(0.666)	(1.052)	(1.052)
Size (L1m)	-0.0410***	-0.0410***	-0.0414***	-0.0414***
	(-18.432)	(-18.452)	(-17.910)	(-17.905)
PQDiff (L1m)	-0.0044***	-0.0044***	-0.0023***	-0.0023***
	(-5.800)	(-5.748)	(-2.689)	(-2.690)
S&P 500	-0.0019***	-0.0019***	-0.0023***	-0.0023***
	(-7.645)	(-7.666)	(-8.906)	(-8.907)
Constant	0.0184***	0.0182***	0.0169***	0.0169***
	(3.307)	(3.282)	(3.023)	(3.029)
N	531,785	531,785	568,820	568,820
R^2	0.164	0.164	0.154	0.154
Number of Firms	8,568	8,568	8,698	8,698
Year& Month FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Market FE	YES	YES	YES	YES

Table A3.6. Institutional Investors Count Determinants using Negative Binomial Regressions

This table reports the results of Negative Binomial regressions for the determinants of the number of institutional investors holding stocks of a company based on 193,903 stock-quarter observations for the period starting from 2010 to the end of 2019. The dependent variable is InstCnt, the total number of institutional investors holding shares of a company in a given quarter, in columns (1) and (2), and TopInstCnt, the number of Top Institutional Investors of a stock in a given quarter, in columns (3) and (4). Models (2) and (3) control for board of governance statistics as well as analyst reviews. All the variables are defined in Appendix A. Z-statistics are presented in parentheses. (L1q) shows that the variable is lagged by one quarter. ∗, ∗∗, and ∗∗∗ indicate statistical significance at the 5%, 1%, and 0.1% level, respectively.

Variables	(1) InstCnt	(2) InstCnt	(3) TopInstCnt	(4) TopInstCnt
Size (L1q)	1.5733***	1.5318***	1.0466***	1.0346***
	(445.994)	(189.856)	(61.789)	(21.107)
QPrc ($) (L1q)	0.9998***	0.9998***	0.9997***	0.9998***
	(-9.051)	(-7.258)	(-22.436)	(-9.234)
TrdVol (L1q)	1.0000***	1.0000***	1.0000***	1.0000**
	(21.637)	(12.227)	(-5.476)	(-2.099)
Returns (%) (L1q)	1.0593***	1.0803**	1.1448***	1.0646***
	(3.776)	(2.496)	(11.455)	(2.613)
Vol	1.0006	1.0065***	0.9860***	0.9789***
	(0.742)	(3.931)	(-21.733)	(-15.241)
Agg_Liq_Innov	1.4940***	1.5503***	0.9123***	0.8632***
	(18.380)	(10.501)	(-5.916)	(-5.104)
IBES_Up	1.0009***	1.0028***	0.9979***	0.9983***
	(2.698)	(4.669)	(-10.505)	(-4.557)
IBES_Down	0.9965***	0.9988***	0.9989***	0.9993**
	(-14.348)	(-2.612)	(-7.115)	(-2.443)
CEO_Duality		1.0292***		1.0097**
		(4.425)		(2.189)
BrdSize		1.0047***		1.0009
		(3.914)		(1.118)
NED		1.0471		0.8662***
		(1.620)		(-6.988)
BrdTenure		1.0022***		0.9971***
		(3.305)		(-6.228)
TimeRet		0.9921***		0.9975***
		(-12.654)		(-5.579)
InstPct (%) (L1q)	1.0108***	1.0129***	1.0203***	1.0182***
	(234.370)	(130.395)	(577.553)	(250.688)
S&P 500 (L1q)	0.9999	1.0093***	0.9957***	0.9956***
	(-0.153)	(7.726)	(-9.330)	(-5.234)
NYSE	1.1647***	1.0174	1.0673***	1.1345***
	(24.534)	(1.322)	(11.832)	(10.967)
NASDAQ	1.0943***	1.0179	1.1419***	1.1665***
	(15.031)	(1.441)	(24.753)	(13.818)
Constant	2.4265***	2.5958***	2.3558***	3.4183***
	(110.312)	(33.587)	(127.523)	(56.597)
N	193,903	37,430	193,903	37,430
R^2	0.143	0.153	0.202	0.205
χ^2	337728.4	71384.3	272870.5	54186.8
Alpha	0.278	0.209	0.048	0.025

Table A4.1. Stock returns and ASSET4 ESG pillar Scores during the Fever Period

This table reports the effects of a firm's Environmental (E), Social (S) and Governance (G) pillar scores and total ESG scores extracted from the ASSET4 database on the cross-section of stock returns. The dependent variable is the buy and hold return of a firm (*Return*) during the period from February 24 to March 20, 2020, where there was a major decline in all stock market indices. Column 1 reports the effects of ESG scores on the cross-section of stock returns. Columns 2 to 4 report the results of regressions of stock returns on E, S, and G. In Columns 5 and 6 firm characteristics and FFC4 factors are added to complete the model. In Columns 7 and 8, the effects of E & S are estimated using the complete model. Industry dummies are included in the model to control for the differential effect of the pandemic on firms in different industries. The t-statistics are reported in the parentheses. ∗∗∗, ∗∗, and ∗ indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***
ESG	0.0886***				0.0504	0.0520		
	(2.660)				(1.089)	(1.123)		
E		0.0718***					0.0656*	
		(2.861)					(1.923)	
S			0.0737***					0.0375
			(2.622)					(1.003)
G				0.0412				
				(1.418)				
Size					1.0136**	0.8554*	0.6656	0.9144*
					(2.069)	(1.699)	(1.365)	(1.866)
B2M					1.8635*	3.0595***	2.9328***	3.1095***
					(1.735)	(2.716)	(2.601)	(2.767)
LT Debt					-29.9354***	-26.7427***	-26.8370***	-26.7243***
					(-6.104)	(-5.390)	(-5.416)	(-5.386)
ST Debt					0.1141	-6.5342	-7.7610	-5.6984
					(0.008)	(-0.472)	(-0.561)	(-0.413)
Cash					13.9666**	11.3057*	11.9047*	11.1404*
					(2.199)	(1.755)	(1.848)	(1.732)
OCF					6.1127	4.8069	5.2653	4.8822
					(0.600)	(0.473)	(0.519)	(0.480)
ROA					4.6931	4.8407	4.9881	4.9792
					(1.350)	(1.386)	(1.430)	(1.424)
Beta MKT						-3.2928**	-3.1242**	-3.2953**
						(-2.312)	(-2.191)	(-2.313)
Beta SMB						-1.0258	-0.8501	-1.0635
						(-1.130)	(-0.930)	(-1.174)
Beta HML						-3.3317***	-3.5328***	-3.2518***
						(-2.853)	(-3.012)	(-2.787)
Beta UMD						4.0270***	4.1371***	3.9934***
						(3.114)	(3.198)	(3.089)
N (Obs.)	1,543	1,543	1,543	1,543	1,274	1,274	1,274	1,274
Adj. R^2	0.245	0.246	0.245	0.242	0.291	0.302	0.303	0.302
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A4.2. Stock returns and ASSET4 ESG pillar Scores during the Collapse period

This table reports the effects of a firm's Environmental (E), Social (S) and Governance (G) pillar scores and total ESG scores extracted from the ASSET4 database on the cross-section of stock returns. The dependent variable is the buy and hold return (*Return*) of a firm during the period from February 03 to March 23, 2020, where there was a major decline in all stock market indices. Column 1 reports the effects of ESG scores on the cross-section of stock returns. Columns 2 to 4 report the results of regressions of stock returns on E, S, and G. In Columns 5 and 6 firm characteristics and FFC4 factors are added to complete the model. In Columns 7 and 8, the effects of E & S are estimated using the complete model. Industry dummies are included in the model to control for the differential effect of the pandemic on firms in different industries. The t-statistics are reported in the parentheses. ∗∗∗, ∗∗, and ∗ indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***
ESG	0.0200				0.4056	0.4318*		
	(0.130)				(1.612)	(1.712)		
E		0.0350					0.3346*	
		(0.302)					(1.800)	
S			0.0997					0.4024**
			(0.767)					(1.982)
G				-0.0751				
				(-0.558)				
Size					-4.9497*	-5.1512*	-5.0342*	-5.3449**
					(-1.835)	(-1.849)	(-1.865)	(-1.974)
B2M					-4.5064	-0.3078	-0.6287	0.0023
					(-0.749)	(-0.049)	(-0.100)	(0.000)
LT Debt					-26.1973	-11.0976	-10.7266	-11.4627
					(-0.989)	(-0.413)	(-0.399)	(-0.427)
ST Debt					31.9552	0.1782	-1.4055	5.3896
					(0.428)	(0.002)	(-0.019)	(0.072)
Cash					1.0841	-11.4721	-10.3067	-11.8113
					(0.032)	(-0.328)	(-0.295)	(-0.339)
OCF					115.0422**	109.4985**	108.7180**	112.7398**
					(2.080)	(1.984)	(1.972)	(2.040)
ROA					-60.0843***	-58.3806***	-57.7451***	-56.8479***
					(-3.181)	(-3.077)	(-3.043)	(-2.994)
Beta MKT						-21.1687***	-20.4481***	-21.1007***
						(-2.705)	(-2.607)	(-2.698)
Beta SMB						-0.8068	-0.2156	-0.9908
						(-0.164)	(-0.043)	(-0.201)
Beta HML						-13.9396**	-14.8028**	-13.2113**
						(-2.194)	(-2.315)	(-2.083)
Beta UMD						17.1092**	17.5065**	16.9020**
						(2.410)	(2.461)	(2.384)
N (Obs.)	1,542	1,542	1,542	1,542	1,270	1,270	1,270	1,270
Adj. R^2	0.024	0.024	0.025	0.024	0.038	0.050	0.050	0.051
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A4.3. The effect of MSCI ESG scores on returns before, during, and after COVID-19

This table reports the effects of a firm's Environmental (ENV), Social (SOC), Governance (GOV), and LST (2017) scores extracted from the MSCI ESG database on COVID, Pre_Cov and Post_Cov stock returns. Columns 1-4 (5-8) capture the effect of E, S, and G scores on stock returns, respectively. COVID is a dummy variable equal to 1 in the first quarter of 2020 and 0 otherwise. Pre_Cov (Post_Cov) is a dummy variable equal to 1 in the last quarter of 2019 (2nd and 3rd quarters of 2020) and 0 otherwise. We include the interaction of our CSR measure with COVID period in models 1-4 and additionally include interactions with Pre_Cov and Post_Cov in models 5-8. FFC4 factors and proxies of firms' financial flexibility are controlled for, and firm-fixed effects and time-fixed effects are included in the model. The t-statistics are reported in the parentheses. ∗∗∗, ∗∗, and ∗ indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(2)	(3)	(4)	(6)	(7)	(8)
Variables	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***
ENV	-0.2661			-0.2680		
	(-1.462)			(-1.486)		
*ENV * COVID*	0.5786**			0.3556		
	(2.076)			(1.356)		
*ENV * Pre-Cov*				-0.2096		
				(-0.910)		
*ENV * Post-Cov*				-1.4702***		
				(-2.989)		
SOC		-0.2372**			-0.2548**	
		(-2.217)			(-2.123)	
*SOC * COVID*		0.4167***			0.4373***	
		(2.817)			(3.643)	
*SOC * Pre-Cov*					0.0417	
					(0.376)	
*SOC * Post-Cov*					0.1153	
					(0.262)	
GOV			-0.0370			0.0004
			(-0.681)			(0.007)
*GOV * COVID*			-0.0169			-0.0756
			(-0.180)			(-0.820)
*GOV * Pre-Cov*						0.0186
						(0.274)
*GOV * Post-Cov*						-0.3929***
						(-2.637)
Size (L1)	-27.3936***	-27.4037***	-27.3758***	-27.3853***	-27.4151***	-27.3802***
	(-10.465)	(-10.476)	(-10.460)	(-10.461)	(-10.351)	(-10.457)
LT Debt	-12.3419**	-12.2735**	-12.3782**	-12.3002**	-12.2642**	-12.5874**
	(-2.415)	(-2.406)	(-2.423)	(-2.411)	(-2.403)	(-2.447)
ST Debt	14.0272	14.1149	13.9411	14.9859	14.0174	14.0928
	(0.722)	(0.727)	(0.717)	(0.774)	(0.717)	(0.725)
Cash	7.8612	7.7114	7.6824	7.3460	7.6810	7.6888
	(1.350)	(1.327)	(1.317)	(1.257)	(1.317)	(1.319)
ROA	-46.8033**	-46.8163**	-46.8250**	-46.5875**	-46.8198**	-46.7931**
	(-1.974)	(-1.976)	(-1.972)	(-1.968)	(-1.979)	(-1.971)
N (Obs.)	25,638	25,638	25,638	25,638	25,638	25,638
Adj. R^2	0.121	0.122	0.121	0.122	0.122	0.122
N (Firms)	1,799	1,799	1,799	1,799	1,799	1,799
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes

Table A4.4. The effect of ESG scores on combined institutional holdings

This table reports the results of difference-in-difference analyses of institutional ownership on ESG measures using: $\Delta IO = a + b_1 * ESG + b_2 * COVID + b_3 * ESG * COVID + \varepsilon$. In this table we merge institutional ownership measures from FactSet and Thompson Reuters database to increase the size of our sample and validity of our results. Models 1-4 (5-8) capture the differential impact of ESG, E, S, and G on InstPct (%) (T10Pct (%)) during COVID-19 crisis, respectively. COVID is a dummy variable equal to 1 in the first quarter of 2020 and 0 otherwise. All models control for the holding changes in the previous quarter to remove the effect of negative serial correlation in the IO measures. FFC4 factors and proxies of firms' financial flexibility are controlled for, and firm-fixed effects and time-fixed effects are included in the model. The t-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	***NCP_Inst***	***NCP_Inst***	***NCP_Inst***	***NCP_Inst***	***NCP_T10***	***NCP_T10***	***NCP_T10***	***NCP_T10***
ESG	-0.0181**				-0.0060			
	(-2.231)				(-1.300)			
*ESG * COVID*	0.0010				0.0099**			
	(0.128)				(2.421)			
E		0.0023				0.0005		
		(0.430)				(0.137)		
*E * COVID*		0.0043				0.0012		
		(0.832)				(0.370)		
S			-0.0102				-0.0065	
			(-1.564)				(-1.560)	
*S * COVID*			0.0045				0.0047	
			(0.746)				(1.355)	
G				-0.0131***				-0.0020
				(-2.686)				(-0.717)
*G * COVID*				-0.0013				0.0072*
				(-0.163)				(1.799)
NCP_Inst (L1)	-0.1052***	-0.1135***	-0.1050***	-0.1054***				
	(-4.472)	(-3.543)	(-4.463)	(-4.485)				
NCP_T10 (L1)					-0.0296**	-0.0410**	-0.0297**	-0.0295**
					(-2.339)	(-2.002)	(-2.346)	(-2.334)
Size (L1)	0.0815	-0.0228	0.0788	0.0840	-0.0073	-0.1042	-0.0036	-0.0095
	(0.528)	(-0.092)	(0.511)	(0.545)	(-0.103)	(-0.903)	(-0.050)	(-0.133)
B2M	-1.6507***	-1.4043***	-1.6532***	-1.6468***	-0.6152***	-0.5848***	-0.6137***	-0.6181***
	(-6.886)	(-4.686)	(-6.893)	(-6.869)	(-4.781)	(-3.539)	(-4.762)	(-4.807)
LT Debt	-0.2502	0.7815	-0.2182	-0.2693	0.1240	0.8778	0.1370	0.1214
	(-0.367)	(0.729)	(-0.319)	(-0.395)	(0.331)	(1.614)	(0.365)	(0.324)
ST Debt	-1.0294	0.2686	-1.1320	-0.9870	-0.8428	0.5907	-0.8701	-0.8434
	(-0.635)	(0.109)	(-0.697)	(-0.609)	(-1.062)	(0.504)	(-1.095)	(-1.065)
Cash	-1.4212**	-3.4061***	-1.4211**	-1.4153**	-0.1616	-0.5693	-0.1623	-0.1651
	(-1.997)	(-2.899)	(-1.999)	(-1.989)	(-0.405)	(-0.848)	(-0.407)	(-0.413)
ROA	-2.4111***	-1.8706	-2.4359***	-2.3502***	-0.7607***	-0.2439	-0.7665***	-0.7524***
	(-4.656)	(-1.109)	(-4.700)	(-4.541)	(-3.043)	(-0.338)	(-3.070)	(-2.994)
N (Obs.)	25,440	15,986	25,435	25,445	25,440	15,986	25,435	25,445
Adj. R^2	0.030	0.030	0.030	0.030	0.018	0.018	0.018	0.018
N (Firms)	1,794	1,221	1,794	1,795	1,794	1,221	1,794	1,795
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A4.5. Stock returns and ESG Scores using FF-5 as the benchmark model

This table reports the effects of a firm's Environmental (E), Social (S) and Governance (G) pillar scores and total ESG score extracted from the ASSET4 database and a firm's Environmental (ENV), Social (SOC), Governance (GOV), and LST (2017) scores extracted from the MSCI ESG database on the cross-section of stock returns. The dependent variable is the buy and hold return of a firm (*Return*) during the period from February 19 to March 20, 2020, where there was a major decline in all stock market indices. Column 1 reports the effects of the ESG scores on the cross-section of stock returns. Columns 2 to 4 report the results of regressions of stock returns on E, S, and G. Column 5 reports the effects of ESG scores on the cross-section of stock returns. Columns 6 to 8 report the results of regressions of stock returns on ENV, SOC, and GOV. Control variables and Industry dummies are included in the model to control for the differential effect of the pandemic on firms in different industries. The t-statistics are reported in the parentheses. ∗∗∗, ∗∗, and ∗ indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Variables	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***	***Return***
ESG	0.0866*							
	(1.662)							
E		0.0654*						
		(1.713)						
S			0.0763*					
			(1.825)					
G				0.0348				
				(0.928)				
LST Score					0.0115			
					(0.111)			
ENV						0.2038		
						(0.907)		
SOC							0.0913	
							(0.988)	
GOV								-0.0516
								(-0.746)
MktRf	-5.6406***	-5.4999***	-5.6386***	-5.7105***	-1.8472	-1.7784	-1.9153	-1.8653
	(-3.802)	(-3.698)	(-3.802)	(-3.846)	(-1.420)	(-1.368)	(-1.472)	(-1.436)
SMB	-1.2353	-1.1387	-1.2785	-1.3321	-2.7859***	-2.7763***	-2.8214***	-2.7884***
	(-1.294)	(-1.187)	(-1.341)	(-1.395)	(-3.300)	(-3.290)	(-3.340)	(-3.304)
HML	-0.0097	-0.1698	0.0903	0.0274	-2.9175***	-2.9875***	-2.9857***	-2.8626***
	(-0.007)	(-0.128)	(0.069)	(0.021)	(-2.904)	(-2.968)	(-2.968)	(-2.846)
CMA	-89.3411	-94.0046	-84.6990	-85.0453	176.8547***	174.1716***	170.9660***	179.4225***
	(-1.110)	(-1.165)	(-1.054)	(-1.056)	(3.163)	(3.117)	(3.046)	(3.212)
RMW	-136.6105	-144.4404*	-127.3258	-130.1626	-162.5897**	-165.545***	-161.3449**	-163.6918**
	(-1.620)	(-1.704)	(-1.515)	(-1.544)	(-2.559)	(-2.604)	(-2.540)	(-2.577)
N (Obs.)	1,270	1,270	1,270	1,270	1,426	1,426	1,426	1,426
Adj. R^2	0.266	0.266	0.267	0.265	0.397	0.397	0.397	0.397
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A4.6. Global Financial crisis stock returns and ASSET4 ESG pillar Scores

This table reports the effects of a firm's Environmental (E), Social (S) and Governance (G) pillar scores and total ESG score extracted from the ASSET4 database on the cross-section of stock returns. The dependent variable is the buy and hold return of a firm (*Return*) during the period from August 2008 to March 2009. Column 1 reports the effects of the ESG scores on the cross-section of stock returns. Columns 2 and 3 report the results of regressions of stock returns on E and G. In Columns 4 and 5 firm characteristics and FFC4 factors are added to complete the model. In Column 6, the effect of E is estimated using the complete model. Industry dummies are included in the model to control for the differential effect of the pandemic on firms in different industries. The t-statistics are reported in the parentheses. ∗∗∗, ∗∗, and ∗ indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Variables	**(1)** ***Return***	**(2)** ***Return***	**(3)** ***Return***	**(4)** ***Return***	**(5)** ***Return***	**(6)** ***Return***
ESG	0.1462**			-0.0182	0.0145	
	(2.366)			(-0.223)	(0.166)	
E		0.1330*				-0.0330
		(1.805)				(-0.370)
G			0.1860**			
			(2.588)			
Size				2.7831*	2.1630	2.5199*
				(1.845)	(1.277)	(1.785)
B2M				-16.4649**	-6.1200	-7.2117
				(-1.986)	(-0.650)	(-0.764)
LT Debt				-47.6546*	-49.6250*	-52.1255**
				(-1.856)	(-1.924)	(-2.008)
ST Debt				14.1019	34.4506	39.7511
				(0.299)	(0.726)	(0.816)
Cash				2.8748	14.4753	13.8717
				(0.076)	(0.369)	(0.353)
OCF				101.9698	93.4338	97.9070
				(1.181)	(1.088)	(1.136)
ROA				-2.4783	17.6533	14.7767
				(-0.087)	(0.578)	(0.491)
Beta MKT					-2.3429	-3.0148
					(-0.382)	(-0.508)
Beta SMB					1.1308	1.0185
					(0.290)	(0.266)
Beta HML					-5.4874**	-5.2793**
					(-2.329)	(-2.306)
Beta UMD					-2.5086	-2.8395
					(-0.616)	(-0.688)
Constant	-13.3766	-12.1406	-19.1252	-23.6349	-13.8505	-12.7975
	(-0.708)	(-0.634)	(-0.992)	(-1.057)	(-0.561)	(-0.515)
N (Obs.)	236	236	236	196	196	196
Adj. R^2	0.618	0.611	0.620	0.717	0.734	0.735
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes