Does Media Coverage of Stocks Affect Mutual Funds' Trading and Performance?*

November, 2011

Lily H. Fang
INSEAD

Joel Peress
INSEAD

Lu Zheng
University of California, Irvine

Abstract

We study the relation between mutual fund trades and mass-media coverage of stocks. Stocks receiving media coverage are more heavily bought by funds in the aggregate. Funds exhibit heterogeneity in their propensity to buy media-covered stocks, and this propensity is negatively related to future fund performance. Funds in the highest propensity decile underperform funds in the lowest propensity decile by 1.5% to 2% per year. These results do not extend to fund sells, likely due to funds' inability to sell short. Funds with high propensity to buy media-coverage stocks do so persistently. These results suggest that professional investors are subject to limited attention, and such behavior harms their investment performance.

---

* The paper was previously circulated under the title "Stock media coverage, mutual fund trading and performance". We thank seminar participants at the 2011 AFA meeting, INSEAD, and Hong Kong University for helpful comments. We thank William Fisk, Shirish Tatikonda, Pradeed Mittal, Ananda Kumar, Sriram Ganesan, and Sriram Subramaniam for assistance with the data collection process. Huiping Zhang and Chunmei Lim provided excellent research assistance. Lily H. Fang is at INSEAD; email: lily.fang@insead.edu. Joel Peress is at INSEAD; email: joel.peress@insead.edu. Lu Zheng is at Paul Merage School of Business, University of California, Irvine; email: luzheng@uci.edu.

Introduction

Mass media disseminates information to a broad audience, much more so than traditional corporate channels such as company disclosures or analyst reports. Thus, mass media coverage is a good proxy for the amount of attention market participants pay to a particular event, even if it does not contain the latest news. In fact, corporate news is typically first released on business newswires and often appears in mass media only with a delay. The recent literature provides increasing evidence of a connection between media and the stock market.[1] Does mass media coverage affect the investment behavior of professional investors? In this paper, we investigate how the media coverage of stocks affects mutual funds' trading and performance. Specifically, we analyze funds' propensity to buy and sell stocks covered by the media. We then examine whether the cross-sectional variation in this propensity predicts fund performance.

It is easy to see how individual investors' investment decisions may be influenced by the media. Buying and selling a stock involve a sequence of decisions that require the investor's attention, a scarce cognitive resource (Kahneman (1973)). After all, an investor is unlikely to "pull the trigger" on a stock trade unless he has paid some attention to the stock. For individual investors who typically lack the capabilities to learn about many securities, media coverage can play a significant role in familiarizing them with certain stocks and putting these stocks on their radar screen. There is increasing evidence that individual investors are more likely to trade "attention grabbing" stocks such as those featured in the media (e.g., Barber and Odean (2008)).

How mass media affects the behaviors of mutual fund managers, however, is much less clear. Due to lead-times in the editorial process, mass print media—in contrast to professional newswires—is unlikely to convey genuine news to the market. In an efficient market, fund

[1] Fang and Peress (2009), Tetlock (2011), and Engelberg et al (2011) are examples of a growing literature that examines the relation between media coverage and the stock market. Section 1 contains a more detailed literature review.

managers are thus unlikely to be able to generate superior returns by reacting to articles in *The Wall Street Journal*, for example, and as such, their trades and performance may not be related to mass-media coverage at all. This is our null hypothesis.

On the other hand, moving away from informational efficiency, there are two opposing reasons why professional traders may favor highly covered stocks. First, if fund managers—like retail investors—suffer from limited attention, then their investment decisions could be influenced by "attention-grabbing" media coverage. Identifying stocks to buy from thousands of potential names involves a high search cost. By drawing attention to the mentioned stocks, mass media lowers the search cost associated with these stocks, making investors more likely to trade them than those out of the media lime light. But because such trading behavior is not motivated by superior information and instead reflects a shortage of cognitive resources, we expect this trading pattern to be associated with *inferior* investment performance. We call this the "limited attention hypothesis". Under this hypothesis, we also expect the correlation between media coverage and trades to be stronger for buys than for sells, because of the presence of short-sale constraints: while the manager needs to identify buy opportunities from the universe of listed stocks, he can only sell what is already in his portfolio, a much smaller set for which limited-attention should be less of a problem.

Alternatively, fund managers may attempt to exploit behavioral biases exhibited by less sophisticated investors, such as individuals, who trade mostly attention-grabbing stocks heavily covered by the media. If such attention-driven trades lead to price anomalies, then fund managers may rationally concentrate their trades in the same high-coverage stocks in order to profit from the mispricing. In this case, as with the limited attention hypothesis, we expect fund managers to buy and sell high-coverage stocks more than low-coverage stocks. But in this

instance, the trading pattern should be associated with *superior* fund performance. We label this the "smart funds hypothesis". Note that it is not clear *a priori* how the correlation between trades and stocks' media coverage will differ between buys and sells under this hypothesis. On the one hand, high-coverage stocks tend to earn lower returns on average than low-coverage stocks (Fang and Peress (2009)), which suggests that sophisticated investors on the look for pricing anomalies will probably find more sell than buy opportunities involving high-coverage stocks. On the other hand, the short sale constraints inhibit funds' ability to fully implement a strategy of selling stocks to exploit any potential overpricing.

In this paper, we examine whether mutual fund trades are related to media coverage of stocks, and if so, how this impacts fund performance. We have two main empirical findings. First, in the aggregate, funds' buys are significantly affected by stocks' media coverage: stocks receiving more media coverage tend to be bought more heavily by funds, even after controlling for size and a number of other stock characteristics that have previously been shown to influence funds' trades. Funds' sells, on the other hand, are not significantly related to stocks' media coverage.

Second, funds exhibit heterogeneity in their propensity to buy highly-covered stocks. When we sort funds on their propensity to buy media stocks ("buy media" for short), we find a negative relation between this propensity and fund performance. Funds in the highest propensity decile underperform funds in the lowest decile by 1.5% to 2% per year depending on the performance metric used. High-propensity funds also significantly underperform passive benchmark models, whereas low-propensity funds do not. In other words, mutual funds' underperformance relative to passive benchmarks is concentrated among funds that display a high propensity to buy media stocks. These findings support the limited attention hypothesis.

These results mainly pertain to funds' buys, but not to their sells. Funds' propensity to sell media stocks ("sell media" for short) is largely unrelated to their performance. This asymmetry between buys and sells is also consistent with the limited attention hypothesis and could be related to funds' short-sale constraints which makes the search cost for sells lower than that for buys.

Further supporting the notion that a high propensity to buy media stocks reflects a lack of cognitive resources, we find that this propensity is relatively persistent: The top 20% of funds with the highest propensity to buy media continue to display a higher propensity in the five years after initial sorting. An additional test shows that the negative relation between funds' propensity to buy media and future fund performance is due to funds' buying high-media coverage stocks rather than merely holding these stocks.

Overall, our findings are consistent with the notion that even professional investors suffer from limited attention: their preference for buying high-coverage stocks reflects limited attention, and such behavior hurts their investment performance. This observation contributes to our understanding of the connections between the media and capital markets. Several papers document that the overall amount of attention a stock receives affects its valuation (e.g. DellaVigna and Pollet (2009), Hirshleifer et al. (2009), Fang and Peress (2009)). But so far, attention-driven trading has mainly been established for individual investors, who collectively have a limited influence on market-wide pricing beyond the very short term and small stocks.[2] Documenting that limited attention extends to mutual fund managers—who collectively control more than 20% of the U.S. stock market—and hurts their performances helps strengthen the link between attention-driven trading and asset pricing patterns.

[2] Individuals' buying pressure can influence stock prices, but the effect documented in the literature is typically short-term. The literature review section contains a more detailed discussion.

The rest of the paper is organized as follows. Section 1 reviews related literature. Section 2 describes our data. Section 3 examines stocks' media coverage and aggregate fund trading. Section 4 studies the cross-sectional relation between funds' propensity to trade media-coverage stocks and future fund performance. Section 5 concludes.

1. Related Literature

Our paper relates to two main strands of literature. First, it contributes to the stream of research that studies the influence of attention, and more specifically the media, on stock market outcomes. Second, it contributes to the literature on mutual fund performance.

According to classic theory, mass print media should have no effect on the stock market because it typically does not reveal genuinely new information. The growing evidence in favor of a significant media impact on the stock market is therefore better understood in light of theories involving limited investor attention. Attention is a scarce cognitive resource; it is selective and requires effort (Kahneman (1973)). Even if stories about companies in mass print media contain no genuine news, the coverage shifts the stocks onto investors' radar screen, lowering the search cost of identifying which stocks to trade. As a case in point, Huberman and Regev (2001) report that the trading volume and stock price of EntreMed (a drug company) soared on the day that a *New York Times* article reported on a new cancer drug from the company, even though the same story had been published in *Nature* and other newspapers five months before. This example suggests that media coverage can affect both the trading and pricing of securities simply by drawing attention to them.

The recent theoretical literature has examined consequences of investor limited attention. Hirshleifer, Lim, and Teoh (2011) provide a model in which limited attention explains both over-

and under-reaction to different earnings components. DellaVigna and Pollet (2007) present theory and evidence that investors exhibit inattention to distant future and this behavior leads to predictable returns based on known demographic trends. Peng and Xiong (2006) argue that limited attention leads to category-learning behavior, i.e., investors tend to process market and sector-wide information rather than firm-specific information. Hirshleifer and Teoh (2003) show that when investors have limited attention, firms' methods for presenting information (keeping information constant) can affect market prices.

Empirical evidence that attention limitations affect trading, especially among retail investors, is accumulating. Barber and Odean (2008) show that individual investors tend to purchase stocks that grab their attention, such as stocks in the news, stocks experiencing high abnormal trading volume, and stocks with extreme one-day returns. Engelberg and Parsons (2011) compare the trading behavior of investors who have access to differing coverage of the event, and conclude that media reporting has a causal impact on investor trades. Solomon et al. (2011) show that stocks' media coverage affects how investors allocate capital to mutual funds: fund flows are more sensitive to underlying stock returns when the stocks have been featured in the media.

A number of papers indicate that attention limitations also impact asset pricing. Individual investors' trading attributable to limited attention is found to be typically related to short-term price movements. Da et al. (2011) show that search frequency in Google captures individual investor attention and is related to short-term stock price patterns. Tetlock (2011) finds that stale news stories (stories that are textually similar to previous stories about the same firm) nonetheless trigger trading by retail investors and short-term price movements. Engelberg et al. (2011) report short-term price spikes after stocks are recommended by Jim Cramer on the

popular TV show Mad Money. In the context of earnings announcements, DellaVigna and Pollet (2009), Hirshleifer et al. (2009) and Peress (2008) find that the post-earnings announcement drift strengthens while the event-return and trading volume weaken, when the announcement is issued respectively on a Friday, or days when there are numerous earnings releases by other firms and accompanies by more media coverage. Regarding long-term returns, Fang and Peress (2009) document that stocks highly covered by mass media have significantly lower returns than stocks not covered by media, even after controlling for other risk factors. The authors attribute this pattern to Merton's investor recognition hypothesis, which can be rooted in investors' limited attention. Hou, Peng and Xiong (2006) report that the momentum effect is stronger when there is more intense investor attention. They use trading volume as a proxy for investor attention.

We contribute to the literature on media and limited attention by documenting how professional investors' trading and performance are affected by media coverage. Our findings complement the existing evidence in two ways. First, we extend the evidence on attention-driven behavior from individuals to professional investors. Besides our paper, Corwin and Coughenour (2008) is a notable exception that documents limited attention among professionals. They show that NYSE specialists reduce the provision of liquidity for some of their assigned stocks when they are distracted by events affecting other stocks. Their context does not allow for the analysis of how limited attention impacts investment performance. Second we find evidence that limited attention can impact fund performance beyond the very short run.

Our paper is also related to the literature on mutual fund performance. One strand of this literature indicates that manager and fund characteristics are related to skill. For example, Chevalier and Ellison (1999) document that younger managers and managers who attended colleges with higher average SAT scores earn higher returns. Chen, Hong, Huang, and Kubik

(2002) indicate that smaller funds tend to out-perform larger funds due to diseconomies of scale in the fund management industry. Cremers and Petajisto (2009) show that funds that deviate most from their benchmark indices outperform their benchmarks both before and after expenses. We are careful to control for known fund characteristics such as size and age that are associated with performance.

A number of recent papers indicate that superior performance can stem from superior information. Kacperczyk, Sialm, and Zheng (2005) find that mutual fund managers who hold industry-concentrated portfolios perform better after controlling for risk and style differences. Nanda, Wang, and Zheng (2004) provide evidence that fund families following more focused investment strategies across funds perform better. These papers suggest that portfolio concentration may be driven by superior information, which translates into superior risk-adjusted performance. But the source of the superior information is not clear. One possibility is that superior information is "endowed": some managers may just have higher innate ability (Chevalier and Ellison (1999)) or better access to information thanks to connections (Cohen, Frazzini, and Malloy (2008)). An alternative explanation is that attention is limited: under scarce cognitive resources, managers may be better able to develop special knowledge by focusing attention on a narrow set of stocks. Consistent with this explanation, Coval and Moskowitz (1999, 2001) show that mutual funds exhibit a strong investment preference for locally headquartered firms for which they appear to have an informational advantage. This suggests that familiarity and proximity could be a source of superior information. In contrast, our evidence suggests that familiarity associated with media coverage is not a source of superior information and is likely related to investors' limited attention.

Our result is related to Kacperczyk and Seru (2007) in which the authors quantify the extent to which funds' trades are influenced by changes in consensus analyst recommendations, which they call Reliance on Public Information (RPI). They find that RPI has a negative relation with fund performance. Broadly speaking, our paper and Kacperczyk and Seru (2007) both support the notion that fund performance is negatively related to managers' tendency to rely on public information. But not only is mass media more mainstream than analyst coverage, we also show that the *number* of newspaper articles about a stock alone can affect trading and performance. Our empirical setup thus offers a direct way to gauge the effect of limited attention on fund trades and performance.

2. Data and Descriptive Statistics

For the purpose of this study, we build a dataset that combines information on stocks' media coverage with mutual fund performance and holdings.

We collected comprehensive media coverage data from NexisLexis for all NYSE stocks and 500 randomly selected Nasdaq stocks for the period 1/1/1993 - 12/31/2002.[3] We include articles published about our sample stocks in four major daily newspapers with nationwide circulation: *USA Today*, the *Wall Street Journal*, the *New York Times,* and the *Washington Post*. Together, they account for 11% of the average weekday newspaper circulation in the U.S.. Fang and Peress (2009) argue that coverage in these four national papers is likely to be representative of most of the coverage of the corporate sector.[4] In each calendar quarter of the 10-year period, we count the total number of articles published in the four newspapers about each firm in our

[3] These data are the same as those used in Fang and Peress (2009).

[4] LexisNexis classifies the relevance of an article to a company by a variable called the "relevance score". We consider articles that have relevance scores of above 90%, which constitute "major references" to a company according to LexisNexis. Scores in the 80% - 89% range are described as "Strong Passing References" and those in the 50% - 79% range as "Weak Passing References".

sample.[5] The stocks in our media sample are then matched by name to the CRSP stock database and to mutual fund holdings data.

Our mutual fund sample is constructed by merging the CRSP Survivorship Bias Free Mutual Fund Database with the Thompson Financial CDA/Spectrum holdings database using MFLink provided by WRDS. The CRSP mutual fund database includes information on fund returns, total net assets, fees, investment objectives, fund age and other fund characteristics. The CDA/Spectrum database provides stockholdings of individual mutual funds, collected from the funds' SEC filings or voluntary reports. We restrict our analysis to open-end domestic equity mutual funds. Specifically, we include in the sample the funds that are classified as aggressive growth (AG), growth (G), growth and income (GI) by CDA/Spectrum; index funds are excluded. For funds with multiple share classes, we eliminate the duplicated funds and compute the fund-level variables by aggregating across the different share classes.[6] We also exclude funds which hold less than 10 stocks and those which manage less than $5 million. Fund holdings are merged with the CRSP monthly stock file and the Compustat database to obtain stock-level information, such as market capitalization, B/M ratio, etc. Our data is adjusted for stock splits and dividends.

Table 1 shows descriptive statistics for our media data. Panel A tabulates the fraction of firms covered by all four major newspapers combined, as well as by each paper separately. Coverage is measured on a quarterly basis, and then averaged across quarters in a given year. One striking observation is that media coverage overall is not very high: even among our sample stocks which primarily consists of large NYSE stocks, only about 80% of stocks get some coverage during an average quarter. The *Wall Street Journal* provides the most coverage – about

---

[5] We use calendar quarter as the frequency of our analysis throughout this paper. The 1st-4th quarters of each year are defined by report dates (Rdate) equaling April, July, October, and January (of the next year) respectively.

[6] For most variables, we use a value-weighted average for the fund-level observation. For fund age, we use the oldest of all share classes.

60% of stocks get some coverage during a quarter. Coverage by the *New York Times* is comparable at 55%. Coverage by the *Washington Post* and *USA Today* is considerably lower, at 11% and 3% respectively. Panel B shows statistics conditional on being covered. This panel reveals that media coverage is skewed: The median number of articles about a stock is 2 per quarter, whereas the mean is about 4, closer to the 75th percentile. Finally, Panel C shows a transition matrix among media coverage types from quarter to quarter. Each quarter, we divide the sample of stocks into no-, low-, and high-media coverage bins. No-coverage stocks are first identified and the remaining stocks are then split into two equal-size groups, the high- (above median) and low- (below median) coverage groups. The transition matrix indicates that the intensity of media coverage is persistent, as the diagonal elements in this matrix are much larger than the off-diagonal elements. In other words, stocks with no- (low-, high) coverage tend to continue to have no- (low-, high) coverage. These patterns are consistent with those reported in Fang and Peress (2009).

Table 2 provides summary statistics on the mutual fund sample. Because we do not have media data for all stocks held by all funds – we searched all NYSE stocks and 500 randomly selected NASDAQ stocks – we exclude funds that do not hold any of the stocks from our searched list. One question is therefore whether the resulting fund sample differs from the fund universe. Panel A of Table 2 compares our fund sample to the overall CRSP fund universe. Results here indicate that our screening resulted in a sample of funds that are similar in terms of performance, but a little larger and older, with slightly lower expense ratios and turnover than the CRSP universe. We will control for these fund characteristics and fund investment styles in the regression analysis.

Panel B tabulates the proportion of funds' buys and sells that are accounted for by our searched stocks. For each quarter *t*, we calculate the dollar value of fund *f*'s buys and sells in stock *i* as follows:

$$\$buy_{f,i,t} = price_{i,t} \times (nshares_{f,i,t} - nshares_{f,i,t-1}) \text{ if } nshares_{f,i,t} >= nshares_{f,i,t-1} \quad (1a)$$

$$\$sell_{f,i,t} = -price_{i,t} \times (nshares_{f,i,t} - nshares_{f,i,t-1}) \text{ if } nshares_{f,i,t} < nshares_{f,i,t-1} \quad (1b)$$

where $price_{i,t}$ is stock *i*'s price at the end of quarter *t*, $nshares_{f,i,t}$ and $nshares_{f,i,t-1}$ fund *f*'s holdings in stock *i* at the end of quarter *t* and *t*-1, respectively.[7] Overall, the stocks for which we collected media coverage information represent roughly 70% of funds' trades. Interestingly, the proportion is highest for GI funds (about 84%), followed by growth funds (66%) and aggressive growth funds (58%). These differences may be driven by the fact that aggressive growth funds tend to be smaller and more concentrated in small-cap stocks, and our stock sample with media coverage data consists mainly of large NYSE stocks. Overall, these numbers indicate that stocks in our dataset account for a significant portion of funds' trades.

3. Fund Trading and Media Coverage in the Aggregate

In this section, we analyze whether fund trading in the aggregate is related to media coverage. Table 3 tabulates the uni-variate relation between aggregate fund trading and the amount of media coverage a stock receives. Each quarter, we divide the sample of stocks into no-, low-, and high-media coverage groups. As before, no-coverage stocks are first identified and the remaining stocks are split into the high-coverage and low-coverage groups using the median as the cutoff. For each stock, we calculate the total dollar amount of buys and sells in

[7] Stock prices and number of shares data are all adjusted for stock splits and dividends. Specifically, we merge mutual fund holding data with CRSP stock data and use the cumulative adjustment factor to make the necessary adjustments.

each quarter by all funds in the sample. These stock-level trading amounts are then aggregated by media-coverage type to measure the value of aggregate trading for all stocks of a particular media-coverage type. Finally, the resulting numbers are scaled by the funds' aggregate holdings of the same set of stocks at the end of the previous quarter. This scaling is important because it removes biases that could arise due to differences in firm size and prior holdings. Thus the numbers reported answer the following question: "What are the percentages of buys/sells in these stocks relative to their total prior positions held by the funds?"

Results in Table 3 indicate that in the aggregate, mutual funds trade high-coverage stocks more than low-, or no-coverage stocks. For example, total buys in high-coverage stocks is on average 4.51% of funds' aggregate prior holdings, whereas total buys in low- and no-coverage stocks are 2.41% and 1.52% of holdings, respectively. Thus, buying in high-coverage stocks is almost three times as intense as in no-coverage stocks. Similar patterns holds for sells. Panels B-D indicate that Aggressive Growth, Growth, and Grown/Income funds all exhibit this tendency to trade high-coverage stocks; but the strength of this "preference" is somewhat different. Growth/Income funds seem to exhibit the strongest preference for high-coverage stocks, while Aggressive Growth funds exhibit the weakest such preference.

In Table 4, we isolate the impact of media coverage on fund trades from that of other stock characteristics by estimating panel regressions of funds' buys and sells on stocks' media coverage proxies and a list of control variables. Four proxies of coverage are used. In Model 1 we use the log of (one plus) the number of newspaper articles about a firm in a given quarter. In Model 2 uses a discrete variable "coverage type", which equals 0, 1, and 2 for no, low-, and high-coverage types, respectively. In Model 3 we use two binary variables. The "covered indicator" equals 1 if the stock received media coverage and 0 otherwise; the "High coverage

indicator" equals 1 if the stock received above-median coverage and 0 otherwise. The control variables include firm size, size squared (to capture potential non-linearity in the relationship between trading and firm size), book-to-market ratio, and past returns. We include quarter and fund fixed effects, and cluster the standard errors by stock.

Results in this table indicate that more media coverage is associated with more fund buys even after controlling for relevant firm characteristics. The different proxies for coverage are positively and statistically significant across all models. The effect is economically large: Since the dependent variable is amount of buys in millions of dollars, the coefficient in Model 3 indicates that on average a fund buys $100,000 more of a stock with media coverage than of a stock without media coverage in a quarter. Since we have close to 1,000 funds each quarter, this means that funds' aggregate buy of a stock with media coverage exceed that of a stock without media coverage by about $100 million! The estimation also shows that stocks receiving high (above-median) coverage are bought even more.

In contrast to buys, funds' aggregate sells are not strongly influenced by media coverage, once other firm characteristics are controlled for in the regression. Panel B shows that the media coverage proxies are generally insignificant in the regression for sells – though most of their signs are positive. Only in Model 3 is the coverage dummy significant; but the high (above-median) coverage dummy has no incremental impact.

Overall, results in this section indicate that, in the aggregate, stocks with more coverage are bought more heavily by mutual funds than stocks with less coverage. This pattern is much weaker with sells, presumably because short-sell constraints restrict the set of stocks funds can sell to those which they already own and therefore pay attention to. Notably, funds' preference for buying high-coverage stocks does not just reflect a bias toward large-cap stocks as size is

controlled for; moreover, our universe of stocks consists of mainly NYSE stocks which are large compared to the overall stock universe to begin with. Our finding that mutual fund buys are positively related to a stock's media coverage is linked to, but distinct from Falkenstein (1996) who documents that mutual fund *holdings* are positively related to a stock's "visibility" proxied by its media coverage.[8]

The trading patterns we document—the positive influence of media coverage on buys and its weak impact on sells–are consistent with the notion that funds' attention is limited. Indeed, limited attention will manifest more clearly in buys than sells, since constrained investors can only sell the stocks that they already hold while needing to choose stocks to buy from a huge universe – in other words, the search costs are lower for sells than for buys. However, this evidence is not sufficient to conclude that funds suffer from limited attention. If the propensity to trade media-coverage stocks is indeed symptomatic of funds' limited attention, then it should also be associated with poor performance; if instead it reflects funds' attempts to benefit from pricing anomalies among stocks traded by inattentive investors, then we expect it to be associated with superior performance. We further distinguish between the two hypotheses in the next section by examining fund performance.

4. Cross-sectional Analysis

4.1. Funds' Propensity to Buy and Sell Media Stocks

The previous section shows that aggregate fund buys are positively related to stocks' media coverage in the recent past. In this section, we analyze the cross-sectional variation in

[8] Falkenstein (1996) uses the number of news stories reported in major newspapers, including the ones used in our study.

funds' propensities to buy and sell highly covered stocks, and how such propensities are related to future fund performance.

For each fund and quarter, we calculate the fund's propensity to buy media stocks (PROPENSITY_BUY_MEDIA) by first estimating the following regression:

$$\$Buy_{f,i,t} = \beta^1_{f,t} * Coverage_{i,t-1} + \beta^2_{f,t} * Coverage_{i,t-2} + \beta^3_{f,t} Size_{i,t-1} + \varepsilon_{f,i,t}, \quad (2)$$

where $\$buy_{f,i,t}$ is the dollar amount of fund *f*'s buy in stock *i* during quarter *t*, and $Coverage_{i,t-q}$ is the (log of) the number of articles published about stock *i* during quarter *t-q,* $Size_{i,t-1}$ is the (log of) market capitalization of equity at the end of quarter t-1.[9] We use lagged values for the explanatory variables so that they are exogenous to this quarter's trading activity.[10] To ensure that a representative sample of trades is used for the estimation, we use only fund quarters for which media data is available for at least 50% of the fund's trades measured by dollar amount.

We include firm size in equation (2) because media coverage is closely related to firm size (Fang and Peress (2009)) and size may also significantly influence funds' trades. If size is excluded from the equation, one concern would be that the media variables may simply be picking up a size effect. In order to isolate the explanatory power of the lagged media coverage variables for trades *over and above* that of firm size, we use the partial R^2 of the media variables. Specifically, fund *f*'s propensity to buy media stocks (PROPENSITY_BUY_MEDIA) for quarter *t* is calculated as:

$$Propensity\_BuyMedia_{f,t} = PartialR2_{lag1} + PartialR2_{lag2} \quad (3)$$

---

[9] Results reported here use the past two quarters of media coverage. In unreported robustness checks (available upon request), we use the past three and four quarters and find qualitatively similar results. Quantitatively, the effects are slightly stronger using three or four lags of media data.

[10] Using lagged media helps alleviate the reverse causality problem in which stocks are featured in the media in a given quarter because funds heavily trade them in that quarter.

where $PartialR2_{lag1}$ and $PartialR2_{lag2}$ denote the partial R^2 associated with the two lagged media variables. For each explanatory variable, the partial R^2 measures the proportion of unexplained variation in the dependent variable (fund buys or sells) that is explained with the addition of that variable. Therefore PROPENSITY_BUY_MEDIA calculated in equation (3) captures the explanatory power of media coverage *alone* for fund's buys after controlling for size. If we used the total R^2 from equation (2), we would overstate the explanatory power of media coverage by including the effect of size. The fund's propensity to sell media-coverage stocks (PROPENSITY_SELL_MEDIA) is defined analogously.

Repeating the above procedure, we obtain a PROPENSITY_BUY_MEDIA and a PROPENSITY_SELL_MEDIA for each fund in each quarter. We then examine how the funds' future performances in the cross-section are related to these measures. Our PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA measures are similar in spirit to the "Reliance on Public Information" (RPI) measure used in Kacperczyk and Seru (2007), defined as the R^2 of a regression of changes in fund holdings on lagged changes in consensus analyst stock recommendations.

Table 5 reports statistics for funds' PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA measures. Panel A shows the distribution of the coefficient estimates on the lagged media variables in equation (2), and the associated partial R^2. The statistics are calculated using the cross-section of funds in each quarter, and then averaged across quarters. On average, the beta estimates are positive, which is consistent with the findings in the previous section. But the panel reveals considerable heterogeneity in the effects of the media variables in Equation (2). We also observe that both the coefficients on the media variables and the PROPENSITY_BUY_MEDIA and the PROPENSITY_SELL_MEDIA measures are

positively skewed, indicating that the impact of coverage on trade is very strong for some funds. In unreported calculations, we find that PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA are positively correlated, but the correlation is only 10%, indicating that funds have different motives for sells from buys.

Table 6 reports the relation between funds' PROPENSITY_BUY_MEDIA, PROPENSITY_SELL_MEDIA and other fund characteristics. We sort funds into deciles based on the propensity measures, and tabulate average fund characteristics for each decile. The table indicates that PROPENSITY_BUY_MEDIA is positively related to fund expenses and turnover, and negatively related to fund size, age, and new money growth. These patterns suggest that funds with high propensity to buy media-coverage stocks incur higher costs for portfolio turnover; they tend to be smaller and younger funds which may have access to fewer resources. On the other hand, PROPENSITY_SELL_MEDIA is negatively related to turnover and positively related to new money growth. The asymmetry between the two measures in their relation to other fund variables again suggests that different factors are driving funds' tendencies to buy and sell high-coverage stocks.

4.2. Propensity to Buy/Sell with Media Coverage and Fund Performance

In this section, we examine the relation between funds' propensities to buy and sell media-coverage stocks and future fund performance. Under the limited attention hypothesis, fund managers trade high-coverage stocks for the same reasons that individual investors do: these stocks are on their radar screen. Since such trading is not motivated by superior information or insight, we expect this behavior to be related to inferior fund performance. On the other hand, under the smart funds hypothesis, managers trade high-coverage stocks to take

advantage of any mispricing generated by less attentive investors. Such trading should be related to superior performance.

To test these hypotheses, we begin by sorting funds into deciles based on their PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA measures each quarter and compare various fund performance measures in the subsequent quarter. The performance measures we examine include the CAPM alpha, Fama-French 3-factor alpha, Carhart 4-factor alpha, the conditional 4-factor alpha based on Ferson and Schadt (1996), and the manipulation-proof measure proposed by Ingersoll et al. (2007).

The alphas from the factor models have been widely used in the fund literature. To calculate alphas, for each fund each month, we estimate factor loadings from the time-series regressions of excess fund returns on factor returns using the previous 30 months of data. Alphas are then calculated as the realized fund return minus the expected fund return.

Ingersoll et al. (2007) show that popular performance measures such as the alpha and the Sharpe ratio can be gamed, and that a non-skilled fund manager may appear skillful based on these measures. They propose a manipulation-proof measure based on historical fund returns as follows:

$$\hat{\theta} = \frac{1}{(1-\rho)\Delta t} \ln\left(\frac{1}{T} \sum_{t=1}^{T} \left[(1+r_t)/(1+r_{ft}) \right]^{1-\rho} \right) \tag{4}$$

where T is the total number of observations over the performance evaluation period, Δt is the length of time between observations (i.e., 1/12 for our monthly return sample), r_t is a fund's rate of return for month t , and r_{ft} is the risk-free rate at month t. ρ can be viewed as a relative risk-aversion coefficient, to make holding the benchmark portfolio optimal for uninformed managers.

The authors estimated that ρ is between 2 and 4 if the CRSP value-weighted return is the benchmark portfolio. Our test results are qualitatively similar when we use ρ = 2 to 4 respectively. For brevity, we report results using ρ = 3 in the tables. Thus, the manipulation-proof performance measure is calculated using monthly fund return and risk-free rate with a relative risk-aversion coefficient of 3.

Table 7 reports the results. In Panels A and B, funds are sorted according to PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA, respectively. We find a strong negative relation between PROPENSITY_BUY_MEDIA and fund performance. Using various performance measures, Decile 1 (low PROPENSITY_BUY_MEDIA) funds out-perform Decile 10 (high PROPENSITY_BUY_MEDIA) funds by 11 (the conditional 4-factor alpha) to 21 (the CAPM alpha) basis points per month. These differences are statistically significant and imply annual return differences ranging from 1.3% to 2.5%. The manipulation-proof measure yields a performance difference of 17 basis points per month or slightly over 2% per year.

To visualize this effect, we plot in Figure 1a funds' average monthly returns in the quarter after portfolio formation against their PROPENSITY_BUY_MEDIA decile ranks. A clear negative relation emerges between PROPENSITY_BUY_MEDIA and subsequent fund performance, regardless of the performance measure used. In addition to comparing the relative performance across deciles, we also compare each decile to its respective benchmarks. In unreported tests, we find that while the various performance metrics of Decile 1 funds (funds with low propensity to buy media stocks) are statistically indistinguishable from zero, the same metrics for Decile 10 funds (funds with high propensity to buy media-coverage stocks) are significantly negative. Thus, a high propensity to buy media-coverage stocks is related to under-performance in the cross-section, as well as under-performance relative to standard benchmarks.

In contrast, Panel B of Table 7 shows that there is no negative relation between PROPENSITY_SELL_MEDIA and future fund performance. The performance differences between high and low PROPENSITY_SELL_MEDIA funds are indistinguishable from zero. Figure 1b, which plots fund performance against PROPENSITY_SELL_MEDIA deciles, reveals a basically flat relation. In fact, if anything, Decile 10 (high PROPENSITY_SELL_MEDIA) funds here seem to perform slightly better than other funds (though the difference is statistically insignificant). Thus, there is an asymmetry between buys and sells: while there is a strong negative relation between funds' propensity to buy media-coverage stocks and funds' performance, such a pattern is not discernible in sells. This asymmetry echoes the asymmetry between buys and sells documented earlier that fund aggregate buys are significantly affected by media coverage, while their aggregate sells are not. These asymmetries are consistent with the limited attention hypothesis in the presence of short-sale constraints, which predicts that the correlation of stocks' media coverage with fund buys should be higher than with fund sells, and that the propensity to buy media-stocks should be negatively related to performance.

Table 8 uses panel regressions to further investigate the relation between funds' propensity to buy or sell high-media stocks and future fund performance. The dependent variables are funds' monthly alphas and the main independent variable are funds' PROPENSITY_BUY_MEDIA decile rank (Panel A) and PROPENSITY_SELL_MEDIA decile rank (Panel B). We group funds into deciles rather than rely on the point estimate of the propensity measures in order to reduce estimation noise. As control variables we include fund size, log of fund size (to allow for non-linear relation between fund size and return), fund expense ratio, turnover, age (measured in 2005), style indicators, the average size of stocks held by the funds, and also the fund's "active share" (Cremers and Petajisto (2009)).

Regression results in Table 8 confirm the robustness of the negative relation between PROPENSITY_BUY_MEDIA and fund performance. The coefficient on the propensity decile rank is negative and significant in all regressions. Since the results are reported in basis points, the coefficient of negative 1.35 in the 4-factor model indicates that a 10% increase in PROPENSITY_BUY_MEDIA rank is associated with a reduction in monthly 4-factor alpha by 1.35 basis points. Thus, funds in the top PROPENSITY_BUY_MEDIA decile underperform funds in the lowest decile by 1.46% (1.35*9*12) per year. Also consistent with the uni-variate results, we find that there is generally no relation between PROPENSITY_SELL_MEDIA and fund performance.

Coefficients on the control variables are generally of the expected sign. For example, we find that fund expense ratio is significantly negatively related to fund performance. Funds' active share on the other hand is generally positively related to performance. These results are consistent with prior evidence.

In summary, we find a strong negative relation between a fund's propensity to buy high-coverage stocks and the fund's subsequent performance. The 10% of the funds with the highest propensity to buy media-coverage stocks under-perform the 10% of the funds with the lowest such propensity by about 2% per year depending on the performance metric. On the other hand there is little relation between the fund's propensity to sell high-coverage stocks and its subsequent performance. These findings support the view that a high propensity to buy media-coverage stocks is a consequence of limited attention among some fund managers.

5. Additional analysis

5.1. Persistence in propensity to buy media-coverage stocks

If funds' propensity to buy high-coverage stocks reflects their limited attention, we expect this propensity to be a persistent fund characteristic. Table 9 presents evidence on the persistence of PROPENSITY_BUY_MEDIA.[11] In Panel A, we examine persistence within a year by regressing funds' current-quarter PROPENSITY_BUY_MEDIA on its lagged values in the past four quarters. The coefficient estimates indicate that the current propensity is significantly positively predicted by all four lags, suggesting persistence. The economic magnitude is sizeable: increasing a fund's rank by one unit over the previous year leads to a rise in the current rank of approximately 0.4. Panel B shows transition matrices between PROPENSITY_BUY_MEDIA quintile ranks one, two, and five years after the initial sorting. If PROPENSITY_BUY_MEDIA ranks are not persistent, we expect to see 20% across the cells. We find evidence of persistence especially among funds with the highest PROPENSITY_BUY_MEDIA measures (quintile 5). After one year, 31% of quintile-5 funds remain in quintile 5 (50% more than a random sort would produce), 54% of them are in either quintile 4 or quintile 5 (35% more than a random sort would produce). Even after five years, 26% remain in quintile 5 and 46% are in either quintile 4 or quintile 5.

Figure 2 plots the evolution of funds' PROPENSITY_BUY_MEDIA ranks over five years. After we sort funds into PROPENSITY_BUY_MEDIA quintiles each quarter, we trace each cohort and report their average subsequent quintile ranks over time. While there is clearly

[11] For brevity, in this draft we do not report persistence results on PROPENSITY_SELL_MEDIA. We also focus on buys in the reported results here because Section 4 shows that while propensity to buy media stocks is negatively related to fund performance, the relation between propensity to sell media stocks and fund performance is weak. In unreported analysis we find that PROPENSITY_SELL_MEDIA is also persistent, with similar patterns to PROPENSITY_BUY_MEDIA.

evidence of mean-reversion, quintile 5 funds tend to have higher PROPENSITY_BUY_MEDIA ranks than all other quintiles over the entire five year period.

Collectively, the evidence in this section suggests that funds' propensity to buy media-coverage stocks is persistent, especially among high-propensity and thus under-performing funds.

5.2 Trading vs. Holding

Section 4 documents a strong negative relation between PROPENSITY_BUY_MEDIA and future fund performance. One may wonder whether the inferior performance of high-PROPENSITY_BUY_MEDIA funds does not result from these funds *actively buying* high coverage stocks, but is simply due to their *passive holding* of such stocks. Fang and Peress (2009) document that there is a significant return dispersion between high-coverage and low-coverage stocks, with low-coverage stocks earning a risk premium over high-coverage stocks (3% per year on average). It could be that high-PROPENSITY_BUY_MEDIA funds simply hold high-coverage stocks which yield lower returns.

To investigate this hypothesis, we measure funds' propensity to hold media-coverage stocks, PROPENSITY_HOLD_MEDIA, in an analogous fashion to the way we calculated PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA, replacing trades with holdings. Table 10 reports alphas for funds sorted on their PROPENSITY_HOLD_MEDIA measures. If funds' holdings explain a significant portion of the return differences we documented earlier, we expect to observe the same negative relationship between PROPENSITY_HOLD_MEDIA and alpha as reported between PROPENSITY_BUY_MEDIA and alpha.

Table 10 reveals that sorting funds based on their propensity to hold media-coverage stocks generates virtually no return difference in the cross-section. The difference in the 1-, 3-, 4-factor, and conditional 4-factor alphas between the top and bottom decile funds are *positive,* 2, 14, 7, and 7 basis points per month respectively, none of which are statistically significant. Thus, we conclude that our results pertaining to PROPENSITY_BUY_MEDIA are not driven by funds simply holding high coverage stocks; rather they are driven by funds buying high-coverage stocks.

6. Conclusions

Recent research offers increasing evidence that media affects individual investors' trading behavior by drawing their limited attention to certain assets.

In this paper, we extend the analysis by asking whether and how mass media influences the way professional managers trade. To do so, we construct a measure of each mutual fund's propensity to buy or sell stocks covered in the media. Our empirical findings suggest that, on average, funds tend to buy stocks with media coverage more heavily than those without. Funds sells on the other hand, are less influenced by media. In the cross-section, we find that funds with a high propensity to buy media-coverage stocks perform significantly worse relative to both funds with a low propensity and to passive benchmarks by about 1.3%-2% per year. This performance differential is strong among fund buys but virtually inexistent among sells. We also document that funds with a high propensity to buy media-coverage stocks exhibit persistence in this trading behavior. We confirm that the under-performance of these funds are not driven by these funds simply holding high-coverage stocks which have been documented to earn lower returns; but rather, their under-performance is due to their buys of high-coverage—and

presumably attention-grabbing—stocks. Overall these findings indicate that professional fund managers, at least a subset of them, are subject to limited attention and rely on mass media to bring certain stocks onto their radar screen, and that such behavior harms their performance.

References

Barber, Brad, and Terry Odean, 2008, All that glitters: The effect of attention on the buying behavior of individual and institutional investors, *Review of Financial Studies* 21, 785-818.

Carhart, M. M., 1997, On persistence in mutual fund performance, *Journal of Finance* 52, 57–82.

Chen, J., H. Hong, M. Huang, and J. Kubik, 2004, Does fund size erode performance? Liquidity, organizational diseconomies and active money management, *American Economic Review* 94(5), 1276-1302.

Chevalier, Judith and Glenn Ellison, 1999. Are some mutual fund managers better than others? Cross-sectional patterns in behavior and performance, *Journal of Finance* 54(3), pages 875-899.

Cohen, L., A. Frazzini, and C. Malloy, 2008, The small world of investing: Board connections and mutual fund returns, Journal of Political Economy 116, 951-979.

Coval, Joshua D., and Tobias J. Moskowitz, 1999, Home bias at home: Local equity preference in domestic portfolios, *Journal of Finance* 54, 2045–2074.

Coval, Joshua D., and Tobias J. Moskowitz, 2001, The geography of investment: informed trading and asset prices, *Journal of Political Economy* 109 (4), 811–841.

Corwin, S. and J. Coughenour, 2008, Limited attention and the allocation of effort in securities trading, *Journal of Finance* 63, 3031-3067.

Cremers, Martijn and Petajisto, Antti, 2009, How active is your fund manager? A new measure that predicts performance, *Review of Financial Studies* 22, 3329-3365.

Da, Z., J. Engelberg, and P. Gao, In search of attention, *Journal of Finance* 66, 1461-1499.

DellaVigna, S. & J. Pollet, 2007, Demographics and Industry Returns, *American Economic Review* 97, 1667-1702.

DellaVigna, S., and J. Pollet, 2009, Investor inattention and Friday earnings announcements. *Journal of Finance* 64: 709-749.

Engelberg, J., and C. Parsons, 2011, The causal impact of media in financial markets, *Journal of Finance* 66, 67-97.

Engelberg, J., C. Sasseville, and J. Williams, 2011, Market madness? The case of Mad Money, *Management Science*, forthcoming.

Falkenstein, E., 1996, Preferences For stock characteristics as revealed by mutual fund portfolio holdings, *Journal of Finance* 51(1), 111-135.

Fang, Lily H. and Peress, Joel, 2009, Media coverage and the cross-section of stock returns, *Journal of Finance*, 64, 2023-2052.

Fama, E. F. and K. R. French, 1993, Common risk factors in the return on bonds and stocks, *Journal of Financial Economics* 33, 3-53.

Ferson, Wayne E., and Rudi W. Schadt, 1996, Measuring Fund Strategy and Performance in Changing Economic Conditions, *Journal of Finance* 51, 425-461.

Hirshleifer, D. and S. H. Teoh, 2003, Limited attention, information disclosure, and financial reporting*, Journal of Accounting & Economics* 36, 337-386.

Hirschleifer, D., S. Lim, S. Teoh, 2009. Driven to distraction: Extraneous events and underreaction to earnings news. *The Journal of Finance* 64, 2289-2235.

Hirshleifer, D., S. Lim, and S. H. Teoh, 2011, Limited investor attention and stock market misreactions to accounting information, *Review of Asset Pricing Studies,* forthcoming.

Hou, K., Peng, L., and Xiong, W., 2006, A Tale of Two Anomalies: The Implication of Investor Attention for Price and Earnings Momentum, Working Paper.

Huberman, G., and T. Ragev, 2001, Contagious Speculation and a Cure for Cancer: A Non-Event that Made Stock Prices Soar, *Journal of Finance* 56, 387-396.

Ingersoll, J., M. Spiegel, W. Goetzmann, and I. Welch. 2007. Portfolio Performance Manipulation and Manipulation-proof Performance Measures, *Review of Financial Studies* 20: 1503-46.

Kacperczyk, M., and Seru, A., 2007, Fund manager user of public information: New evidence on managerial skills, *Journal of Finance*, 485-528.

Kacperczyk, M. C. Sialm, and L. Zheng, 2005, On the industry concentration of actively managed equity mutual funds, *Journal of Finance* 60, 1983-2012.

Kahneman, 1973, Attention and Effort, Prentice-Hall, Englewood, NJ.

Nanda, V., Z. J. Wang, and L. Zheng, 2004, "Family Values and the Star Phenomenon: Strategies of Mutual Fund Families," *Review of Financial Studies* 17(3), 667-698.

Peress, Joel, 2008, Media coverage and investors' attention to earnings announcements. Working paper, INSEAD.

Peng, L. and W. Xiong, 2006, Investor attention, overconfidence and category learning, *Journal of Financial Economics* 80, 563-602.

Solomon, D., E. Soltes, and D. Sosyura, 2011, The perils of public failure: the effect of portfolio holdings and media coverage on mutual fund flows, working paper.

Tetlock, Paul C., 2011, All the news that's fit to reprint: Do investors react to stale information? *Review of Financial Studies* 24, 1481-1512.

Figure 1.a PROPENSITY_BUY_MEDIA and subsequent fund performance

This figure plots the performance in the subsequent quarter for the deciles of funds sorted by the funds'propensity to buy media coverage stocks (PROPENSITY_BUY_MEDIA). PROPENSITY_BUY_MEDIA is calculated according to equations (2) and (3) for each fund-quarter. We measure fund performance using the CAPM alpha, Fama and French 3-factor alpha, Carhart 4-factor alpha, Ferson and Schadt conditional alpha, and a manipulation-proof performance measure (Ingersoll et al., 2007). We report the average monthly performance during the quarter.

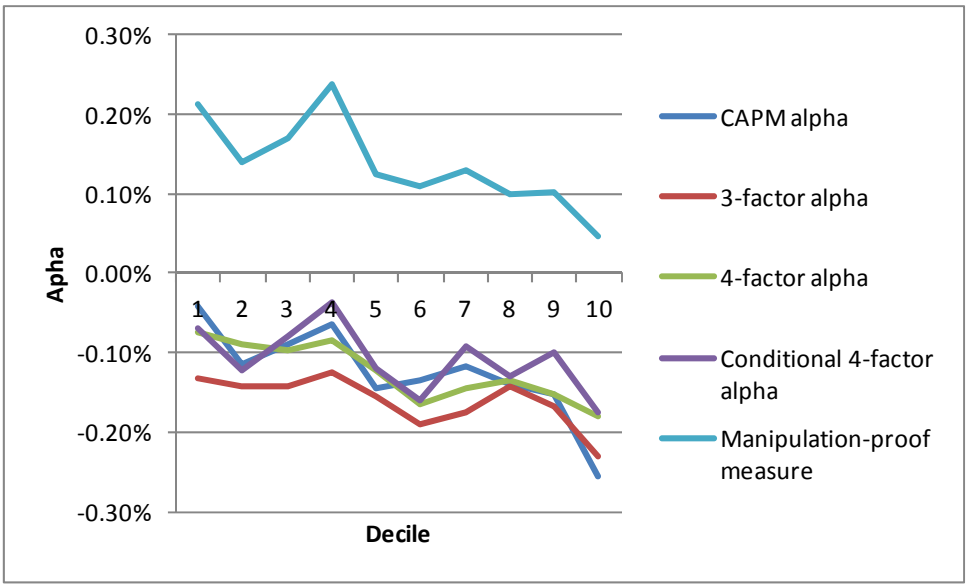

Figure 1.b PROPENSITY_SELL_MEDIA and subsequent fund performance

This figure plots the average performance for the deciles of funds sorted by their propensity to sell media coverage stocks (PROPENSITY_SELL_MEDIA). PROPENSITY_SELL_MEDIA is calculated according to equations (2) and (3) for each fund-quarter. We measure fund performance using the CAPM alpha, Fama and French 3-factor alpha, Carhart 4-factor alpha, Ferson and Schadt conditional alpha, and a manipulation-proof performance measure (Ingersoll et al., 2007). We report the average monthly performance during the quarter.

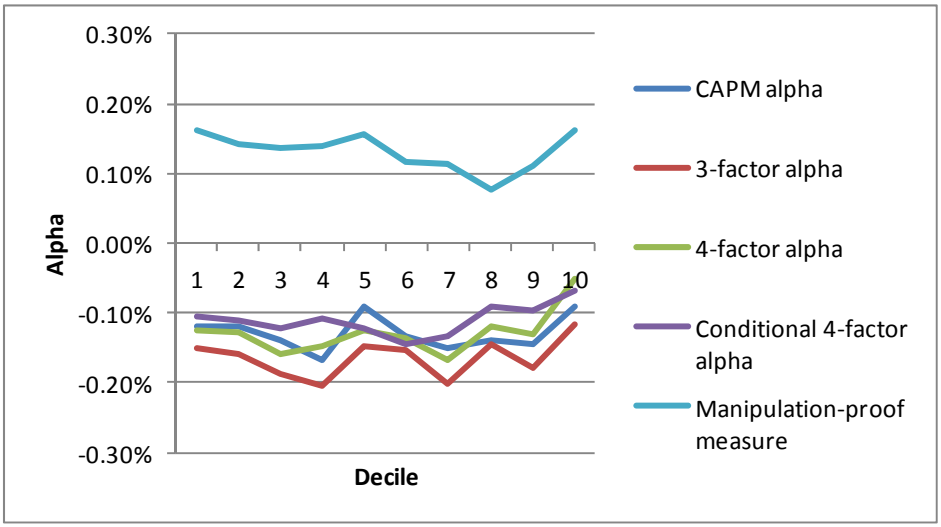

Figure 2. Evolution of PROPENSITY_BUY_MEDIA

This figure shows evolution of funds' propensity to buy media coverage stocks (PROPENSITY_BUY_MEDIA) in the five years after initial sorting. PROPENSITY_BUY_MEDIA is calculated according to equations (2) and (3) for each fund-quarter. We then sort funds into PROPENSITY_BUY_MEDIA quintiles and trace each quintile cohorts' subsequent average PROPENSITY_BUY_MEDIA quintile rank number over the next five years.

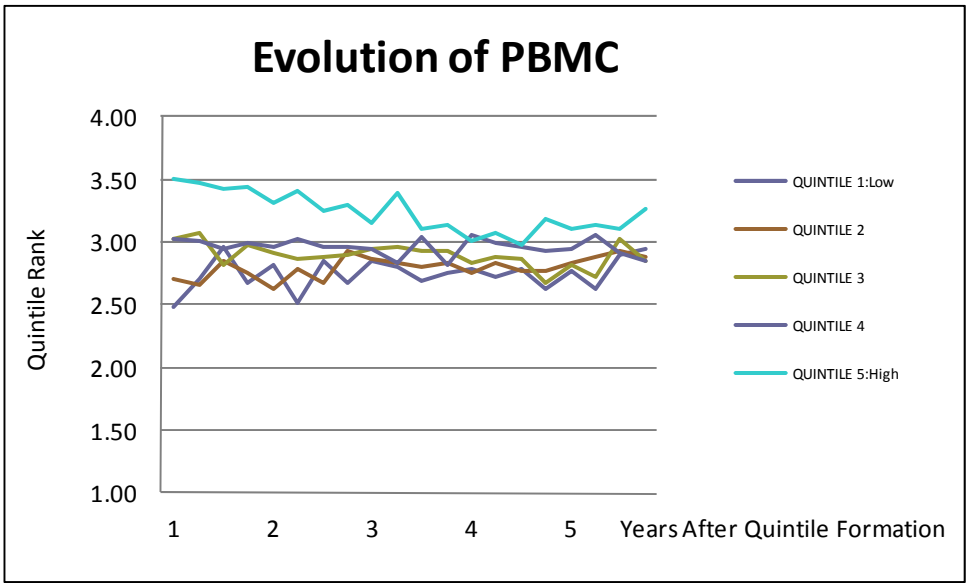

Figure 3: Fund Alphas and Propensity to Hold High Media-Coverage Stocks (PHMC)

This figure plots the average performance for the deciles of funds sorted according to their propensities to hold media-coverage stocks (PROPENSITY_HOLD_MEDIA) in the previous quarter. PROPENSITY_HOLD_MEDIA is calculated similar to PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA for each fund-quarter. We measure fund performance using the CAPM alpha, Fama and French 3-factor alpha, Carhart 4-factor alpha, Ferson and Schadt conditional alpha, and a manipulation-proof performance measure (Ingersoll et al., 2007). We report the average monthly performance during the quarter.

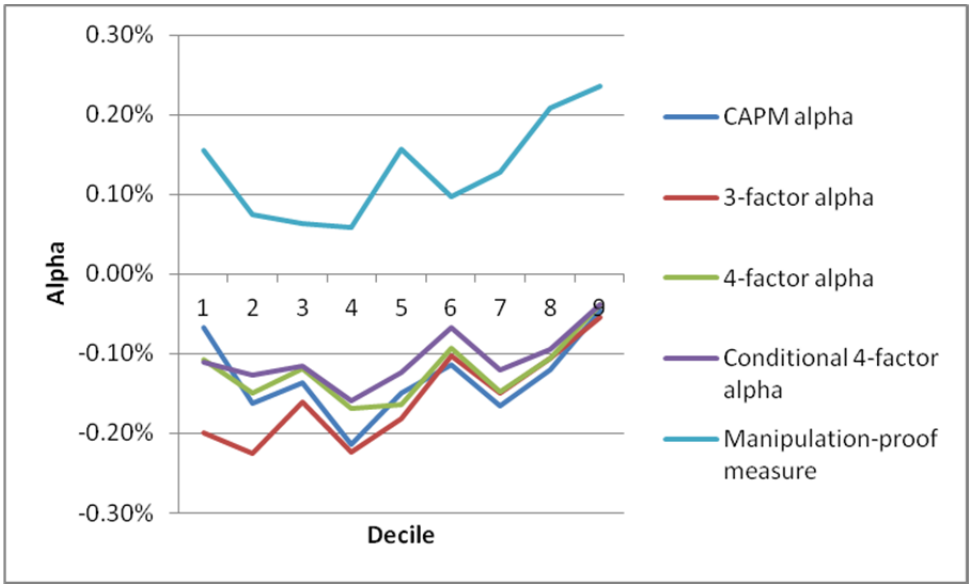

Table 1. Media Data Descriptive Statistics

This table presents quarterly media coverage statistics. Panel A tabulates the percentage of our searched firms covered in a quarter by any of the four major newspapers combined, and each of the newspapers separately. Panel B tabulates number of articles per stock per quarter conditioned on having coverage. For brevity, we tabulate these statistics for select individual years – 1993, 1996, 1999, and 2002, and the overall average. Panel C tabulates the transition matrix between coverage types between consecutive quarters.

Panel A: % of stocks covered by:

	Any Newspaper	WSJ	NYT	WP	UT
1993	85.44%	61.77%	53.59%	9.36%	3.94%
1996	85.52%	54.77%	65.48%	9.32%	3.20%
1999	80.82%	66.69%	45.29%	12.96%	3.04%
2002	75.59%	57.73%	44.91%	15.59%	3.15%
All Years	81.84%	60.24%	52.32%	11.80%	3.33%

Panel B: Conditional Coverage Statistics

	Mean	Median	75 Percentile	Max
1993	3.88	2	4	164
1996	3.72	2	4	108
1999	4.29	2	4	109
2002	4.93	2	5	88
All Years	4.21	2	4	117

Panel C: Transition Matrix between Coverage Types

	No-coverag	Low-coverage	High-coverage
No Coverage	53.12%	40.01%	6.87%
Low-coverag	12.91%	66.85%	20.23%
High-coverag	3.51%	29.73%	66.77%

Table 2. Comparing Our Sample with Overall Fund Universe

This table presents statistics pertaining to the representativeness of our sample. Media coverage data is collected from LexisNexis for all NYSE stocks and 500 randomly selected Nasdaq stocks. Because this set of stocks (which we call our "searched universe") does not contain all listed stocks, we exclude funds that do not hold any of the stocks in the searched universe. Panel A compares key fund characteristics between the overall fund CRPS/Thomson Financial fund universe and our fund sample. Panel B tabulates the mean percentage of funds' trades (dollar value) accounted by our searched universe of stocks in each quarter. *, **, *** indicates significance at the 10%, 5%, 1% levels, respectively.

Panel A: Comparing All-funds Universe with Our Sample

	Fund Universe	Our Sample	t-stat	
NAV	866	983	-2.22	**
Expense Ratio	0.0132	0.0125	5.92	***
Turnover	0.93	0.81	5.69	**
Age	20.18	20.95	-3.51	***
1-Factor Alpha	-0.0006	-0.0010	0.70	
3-Factor Alpha	-0.0013	-0.0015	0.82	
4-Factor Alpha	-0.0015	-0.0012	-0.51	

Panel B: Percentage of Trades Accounted for by Searched Stocks

	All Funds	Aggressive Growth	Growth	Growth/Income
Buys	70.81%	58.89%	66.30%	84.80%
Sells	71.35%	58.42%	66.71%	84.51%

Table 3: Media Coverage and Trading Activity: Univariate Comparison

This table reports funds' buys and sells in stocks with different amount of media coverage. Percentage buys/sells is calculated as dollar amount of buys/sells, as in Equations 1a and 1b scaled by the fund's holdings of the same set of stocks at the end of the previous quarter. Funds buys and sells are inferred from quarterly changes in fund holdings. Each quarter, we divide the sample of stocks into no-, low-, and high-media coverage groups. No-coverage stocks are first identified and the remaining stocks are then split into two equal-size groups, the high and low coverage groups. The fund investment styles, e.g. Aggressive Growth, Growth, Growth/Income) are defined in the CDA/Spectrum mutual fund holdings data. *, **, *** indicates significance at the 10%, 5%, 1% levels, respectively.

	Percentage Trading In:			*t*-stats for Differences					
	No-media Stocks	Low-media Stocks	High-media Stocks	No - Low		Low - High		No - High	
Panel A: All Funds									
Buys	1.52%	2.41%	4.51%	-8.22	***	-11.94	***	-18.17	***
Sells	1.75%	2.93%	4.53%	-12.58	***	-10.39	***	-18.15	***
Panel B: Aggressive Growth Funds									
Buys	2.44%	4.03%	3.64%	-6.00	***	0.91		-2.85	***
Sells	1.97%	3.22%	3.60%	-5.98	***	0.64		-2.79	***
Panel C: Growth Funds									
Buys	2.00%	3.11%	4.75%	-6.69	***	-6.48	***	-11.75	***
Sells	1.65%	2.56%	4.17%	-7.26	***	-6.13	***	-9.45	***
Panel D: Growth/Income Funds									

Table 4: Media Coverage and Trading Activity: Regression Analysis

This table reports panel regression results of mutual fund trades on media coverage types. The dependent variable is fund buys (Panel A) and sells (Panel B) during a quarter, inferred from quarterly changes in fund holdings. Media 1-4 are four different measures of a stock's media coverage. All media measures are lagged and reflect the previous quarter's media coverage. *Log(number of articles)* is log of one plus the number of articles about a stock in the past quarter. *Coverage type* is a discrete variable equaling 0, 1, and 2 if the stocks has no, low, or high coverage in the past quarter, respectively. *Covered indicator* is a dummy variable equaling 1 if the stock has media coverage and 0 otherwise in the past quarter. *High coverage indicator* is a dummy variable equaling 1 if the stocks has above-medium coverage and 0 otherwise in the past quarter. Size is the natural log of 1 plus the market capitalization of equity, measured at the end of the previous quarter. Size Squared is the square of size. B/M is the book-to-market ratio of the stock measured at the end of the previous quarter. Past return is a discrete variable indicating the decile rank of the stock's return in the previous quarter; 1 indicates the lowest return decile and 10 indicates the highest return decile. Standard errors are clustered at the stock level. *, **, *** indicates significance at the 10%, 5%, 1% levels, respectively.

Panel A: Buys						
	Model 1		Model 2		Model 3	
Media 1 - Log(Number of articles)	0.094	2.06 **				
Media 2 - Coverage type			0.1164	2.88 ***		
Media 3 - Covered indicator					0.1042	2.28 **
Media 4 - High coverage indicator					0.1281	2.26 **
Size	-4.1568	-9.45 ***	-4.2668	-9.93 ***	-4.2628	-9.84 ***
Size Squared	0.1697	10.91 ***	0.1737	11.51 ***	0.1736	11.39 ***
B/M	-0.0036	-0.97	-0.0035	-0.94	-0.0035	-0.95
Past Return	0.0344	3.74 ***	0.0340	3.74 ***	0.0340	3.74 ***
Quarter Fixed Effects	Yes		Yes		Yes	
Fund Fixed Effects	Yes		Yes		Yes	
Clustered by Firm	Yes		Yes		Yes	
Number of Observations	1,890,837		1,890,837		1,890,837	
R-squared	0.162		0.162		0.162	
Panel B: Sells						
	Model 1		Model 2		Model 3	
Media 1 - Log(Number of articles)	-0.0215					
Media 2 - Coverage type			0.0542			
Media 3 - Covered indicator					0.166	2.16 **
Media 4 - High coverage indicator					-0.0512	-0.65
Size	-5.7962	-7.89 ***	-5.8185	-8.01 ***	-5.8504	-8.01 ***
$Size^2$	0.2424	9.51 ***	0.2424	9.68 ***	0.2436	9.67 ***
B/M	-0.0103	-1.23	-0.0102	-1.20	-0.01	-1.18
Past Return	0.0813	6.57 ***	0.0827	6.59 ***	0.0824	6.58 ***
Quarter Fixed Effects	Yes		Yes		Yes	
Fund Fixed Effects	Yes		Yes		Yes	
Clustered by Firm	Yes		Yes		Yes	
Number of Observations	921,193		921,193		921,193	
R-squared	0.193		0.193		0.193	

Table 5. Statistics of PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA

This table reports the summary statistics for funds' propensities to buy and sell media coverage stocks. Each quarter, we estimate cross-sectional regressions of funds' buys and sells of individual stocks on the stocks past media coverage and size according to the following equations:

$$Buy_{f,i,t} = \beta^1_{f,t} * Coverage_{i,t-1} + \beta^2_{f,t} * Coverage_{i,t-2} + \beta^3_{f,t} * Size_{i,t-1} + \varepsilon_{f,i,t}$$

$$Sell_{f,i,t} = \beta^1_{f,t} * Coverage_{i,t-1} + \beta^2_{f,t} * Coverage_{i,t-2} + \beta^3_{f,t} * Size_{i,t-1} + \varepsilon_{f,i,t}$$

where $\$buy_{f,i,t}$ ($\$sell_{f,i,t}$) is the dollar amount of fund *f*'s purchases (sales) of individual stock *i* during quarter *t*; $Coverage_{i,t-1}$ and $Coverage_{i,t-2}$ the log number of media articles about a stocks in the previous two quarters, respectively; $Size_{i,t-1}$ is the stock's market capitalization at the end of the previous quarter. We then calculate PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA as the sum of the partial R-squared of the two lagged media variables. Coef_lag1 and Coef_lag2 are the regression coefficients of the 1st and 2nd lagged media variables, respectively. Partial R-squared Lag1 and Partial R-squared Lag2 are the partial R-squared associated with each lagged media variable, respectively. The reported statistics are calculated using the cross-section of funds in each quarter, and then averaged across quarters.

Panel A: Buys					
	Mean	Std Dev.	P25	P50	P75
Coef_lag1	129.61	4292.89	-101.34	4.32	160.91
Coef_lag2	24.41	4481.84	-123.09	0.89	137.28
Partial R-squared Lag 1	0.06	0.10	0.01	0.02	0.07
Partial R-squared Lag 2	0.05	0.10	0.00	0.01	0.04
PROPENSITY_BUY_MEDIA	0.10	0.16	0.02	0.06	0.12
Panel B: Sells					
	Mean	Std Dev.	P25	P50	P75
Coef_lag1	224.83	20457.23	-180.86	3.84	246.58
Coef_lag2	64.38	17620.44	-202.72	-0.29	199.12
Partial R-squared Lag 1	0.13	0.21	0.01	0.04	0.14
Partial R-squared Lag 2	0.11	0.21	0.01	0.03	0.11
PROPENSITY_SELL_MEDIA	0.24	0.33	0.04	0.11	0.27

Table 6. Relation between Propensity to Buy and Sell Media-stocks and Other Fund Characteristics

In this table we present statistics of select fund characteristics for different PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA deciles and the correlation between PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA with these statistics. Propensity is the average propensity measure for each decile. Expenses is the funds' expense ratio. Turnover is the funds' annual turnover. Fund Size is the log of the fund's TNA. Fund Age is years since fund inception, measured in 2005. New Money Growth is the percentage flow of funds into a mutual fund in a quarter, calculated as the difference between current TNA and lagged TNA multiplied by the fund return, scaled by lagged TNA. *, **, *** indicates significance at the 10%, 5%, 1% levels, respectively.

Panel A: Buys						
PROPENSITY_BUY_MEDIA Decile	Propensity	Expense	Turnover	Fund Size	Age	New Money Growth
Decile 1 (Low)	0.0035	1.20%	78.34%	5.29	21.72	25.59
Decile 2	0.0111	1.21%	77.00%	5.29	21.52	23.35
Decile 3	0.0199	1.19%	76.98%	5.26	21.21	15.85
Decile 4	0.0309	1.20%	78.64%	5.22	21.53	12.45
Decile 5	0.0438	1.21%	75.95%	5.23	21.47	27.08
Decile 6	0.0594	1.21%	85.06%	5.29	20.94	25.45
Decile 7	0.0798	1.24%	81.04%	5.26	21.09	23.85
Decile 8	0.1095	1.23%	81.40%	5.15	19.66	23.35
Decile 9	0.1575	1.24%	85.90%	5.14	20.05	27.59
Decile 10 (High)	0.3618	1.37%	86.70%	4.74	19.64	6.20
High - Low	0.3583	0.17%	8.37%	-0.55	-2.08	-19.39
t -stat (High - Low)	44.62	5.98	2.14	-9.90	-2.59	-2.39
Correaltion with PBMC	1.00	0.11	0.02	-0.09	-0.04	-0.01
Significance of correlation		***	***	***	***	**
Panel B: Sells						
PROPENSITY_SELL_MEDIA Decile	Propensity	Expense	Turnover	Fund Size	Age	New Money Growth
Decile 1 (Low)	0.0072	1.18%	95.44%	5.44	21.78	13.98
Decile 2	0.0221	1.20%	92.35%	5.42	21.49	23.08
Decile 3	0.0401	1.20%	93.82%	5.38	21.22	7.81
Decile 4	0.0618	1.21%	85.12%	5.43	21.34	19.48
Decile 5	0.0894	1.22%	86.94%	5.43	21.55	-0.55
Decile 6	0.1247	1.24%	87.23%	5.34	20.84	35.81
Decile 7	0.1774	1.22%	84.03%	5.23	20.82	24.05
Decile 8	0.2627	1.25%	75.56%	5.08	20.53	25.67
Decile 9	0.4472	1.24%	62.90%	4.93	19.98	35.10
Decile 10 (High)	1.0518	1.33%	47.10%	4.39	19.57	23.68
High - Low	1.0445	0.15%	-48.34%	-1.05	-2.21	9.69
t -stat (High - Low)	69.74	6.62	-18.29	-16.20	-1.83	0.96
Correaltion with PSMC	1.00	0.06	-0.13	-0.16	-0.03	0.02
Significance of correlation		***	***	***	***	**

Table 7. Propensity to Buy and Sell Media Stocks and Future Fund Performance: Uni-variate Sorts

This table reports various measures of future fund performance for fund deciles sorted by the funds' propensity to buy media coverage stocks (PROPENSITY_BUY_MEDIA), and by the funds' propensity to sell media coverage stocks (PROPENSITY_SELL_MEDIA). PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA are estimated according to equations (2) and (3) for each fund-quarter. Performance measures for the next quarter are tabulated. Figures are reported in decimal points per month.

Panel A: Sorting by PROPENSITY_BUY_MEDIA					
	CAPM Alpha	Fama-French Alpha	4-factor Alpha	Conditional 4-factor Alpha	Manipulation - proof Measure
Decile 1 (Low)	-0.0004	-0.0013	-0.0007	-0.0007	0.0021
Decile 2	-0.0011	-0.0014	-0.0009	-0.0012	0.0014
Decile 3	-0.0009	-0.0014	-0.0010	-0.0008	0.0017
Decile 4	-0.0006	-0.0012	-0.0008	-0.0004	0.0024
Decile 5	-0.0015	-0.0016	-0.0012	-0.0012	0.0012
Decile 6	-0.0014	-0.0019	-0.0017	-0.0016	0.0011
Decile 7	-0.0012	-0.0018	-0.0015	-0.0009	0.0013
Decile 8	-0.0014	-0.0014	-0.0014	-0.0013	0.0010
Decile 9	-0.0015	-0.0017	-0.0015	-0.0010	0.0010
Decile 10 (High)	-0.0026	-0.0023	-0.0018	-0.0018	0.0005
High - Low	-0.0021	-0.0010	-0.0011	-0.0011	-0.0017
t-stat (High - low)	-3.5444	-2.0836	-2.1553	-1.8953	-2.9269
Panel B: Sorting by PROPENSITY_SELL_MEDIA					
	CAPM Alpha	Fama-French Alpha	4-factor Alpha	Conditional 4-factor Alpha	Manipulation - proof Measure
Decile 1 (Low)	-0.0012	-0.0015	-0.0012	-0.0010	0.0016
t-stat	-1.0752	-2.8085	-1.9902	-1.7331	0.3040
Decile 2	-0.0012	-0.0016	-0.0013	-0.0011	0.0014
Decile 3	-0.0014	-0.0019	-0.0016	-0.0012	0.0014
Decile 4	-0.0017	-0.0020	-0.0015	-0.0011	0.0014
Decile 5	-0.0009	-0.0015	-0.0012	-0.0012	0.0016
Decile 6	-0.0013	-0.0015	-0.0014	-0.0015	0.0012
Decile 7	-0.0015	-0.0020	-0.0017	-0.0013	0.0011
Decile 8	-0.0014	-0.0014	-0.0012	-0.0009	0.0008
Decile 9	-0.0014	-0.0018	-0.0013	-0.0010	0.0011
Decile 10 (High)	-0.0009	-0.0012	-0.0005	-0.0007	0.0016
High - Low	0.0003	0.0003	0.0007	0.0004	0.0000
t-stat (High - low)	0.3727	0.5936	1.6660	0.7736	-0.0155

Table 8: Propensity to Buy and Sell Media-coverage Stocks and Future Fund Performance: Panel Regressions

This table examines the relation between funds' propensity to buy media-coverage stocks (PROPENSITY_BUY_MEDIA, Panel A), and funds' propensity to sell media-coverage stocks (PROPENSITY_SELL_MEDIA, Panel B) and future fund performance using panel regression setting. PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA are estimated according to equations (2) and (3) for each fund quarter, and decile ranks are used in the regression. The dependent variables are measures of funds' performance in the next quarter, measured in basis points per month. Propensity_decile is the decile rank of the relevant propensity measure. Fund size is the natural log of 1 plus the fund's TNA. Fund family size is the natural log of one plus the fund family TNA. Expense is the fund's expense ratio. Turnover is the funds' annual turnover. Fund age is years since fund inception, measured in 2005. AG and G are indicator variables for Aggressive Growth, and Growth funds, respectively. Active Share is the funds' share of portfolio holdings that differ from benchmark index (Cremers and Petajisto (2009)). Average Firm Size is the average size score (in a scale between 1-small cap stocks to 5-large cap stocks) of the stocks that the fund holds. All independent variables are lagged by one quarter. The *t*-statistics reported are based on robust standard errors clustered by fund. *, **, *** indicates significance at the 10%, 5%, 1% levels, respectively.

Panel A: PROPENSITY_BUY_MEDIA and future fund performance										
	CAPM Alpha		3-Factor Alpha		4-Factor Alpha		Cond'l 4-Factor Alpha		Manipulation -proof	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
PROPENSITY Decile	-1.7830	-4.36 ***	-0.8310	-2.64 ***	-1.3510	-4.33 ***	-0.7290	-2.09 **	-2.1170	-4.84 ***
Fund Size	0.0010	0.71	0.0030	3.48 ***	0.0010	0.92	0.0010	0.65	0.0010	1.20
Fund Family size	0.0000	-0.38	-0.0020	-2.70 ***	-0.0010	-1.06	0.0000	-0.32	0.0000	-0.57
Expense	-1.3930	-4.33 ***	-0.7890	-3.18 ***	-1.4230	-5.80 ***	-1.1980	-4.36 ***	-0.9130	-2.76 ***
Turnover	-0.0010	-1.00	0.0000	-0.43	-0.0050	-4.90 ***	-0.0030	-2.88 ***	-0.0070	-4.64 ***
Age	-0.0090	-3.52 ***	-0.0070	-3.85 ***	-0.0070	-3.67 ***	-0.0060	-2.66 ***	-0.0060	-2.32 **
Aggressive Growth	-0.0090	-1.57	0.0050	1.14	-0.0210	-5.18 ***	-0.0030	-0.70	-0.0300	-5.21 ***
Growth	-0.0020	-0.82	0.0070	3.51 ***	-0.0070	-3.47 ***	-0.0010	-0.50	-0.0130	-4.46 ***
Active Share	0.0090	1.31	-0.0140	-2.69 ***	0.0200	3.97 ***	0.0170	3.06 ***	0.0050	0.78
Average Firm Size	-0.0080	-4.63 ***	0.0010	1.02	-0.0030	-1.83 *	0.0030	1.92 *	-0.0070	-3.77 ***
Intercept	0.0360	2.62 ***	-0.0140	-1.34	0.0090	0.88	-0.0040	-0.37	0.2470	17.1 ***
Number of observations	18,634		18,634		18,634		18,634		21,439	
R-squared	0.137		0.075		0.097		0.058		0.784	

Panel B: PROPENSITY_SELL_MEDIA and future fund performance										
	CAPM Alpha		3-Factor Alpha		4-Factor Alpha		Cond'l 4-Factor Alpha		Manipulation -proof	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
PROPENSITY Decile	-0.0106	-0.25	0.0504	1.56	0.0188	0.59	-0.0074	-0.21	-0.0726	-1.62
Fund Size	0.0001	0.61	0.0003	3.21 ***	0.0001	0.68	0.0000	0.55	0.0001	1.21
Fund Family size	-0.0000	-0.22	-0.0001	-1.93 *	-0.0000	-0.40	0.0000	0.01	-0.0000	-0.55
Expense	-0.1347	-4.14 ***	-0.0742	-2.96 ***	-0.1385	-5.59 ***	-0.1193	-4.30 ***	-0.0846	-2.53 **
Turnover	-0.0002	-1.26	-0.0000	-0.20	-0.0005	-4.81 ***	-0.0003	-2.74 ***	-0.0007	-4.95 ***
Age	-0.0008	-3.32 ***	-0.0007	-3.65 ***	-0.0007	-3.36 ***	-0.0006	-2.64 ***	-0.0006	-2.17 **
Aggressive Growth	-0.0009	-1.71 *	0.0004	0.88	-0.0023	-5.47 ***	-0.0004	-0.93	-0.0031	-5.25 ***
Growth	-0.0003	-0.96	0.0007	3.24 ***	-0.0008	-3.79 ***	-0.0002	-0.76	-0.0014	-4.69 ***
Active Share	0.0007	1.00	-0.0016	-3.07 ***	0.0018	3.51 ***	0.0016	2.80 ***	0.0004	0.56
Average Firm Size	-0.0009	-5.01 ***	0.0001	0.55	-0.0003	-2.45 **	0.0002	1.48	-0.0008	-4.24 ***
Intercept	0.0030	2.15 **	-0.0021	-1.95 *	0.0003	0.27	-0.0005	-0.43	0.0244	16.57 ***
Number of observations	18,367		18,367		18,367		18,367		21,086	
R-squared	0.137		0.076		0.097		0.059		0.784	

Table 9. Persistence in Funds Propensity to Buy Media-coverage Stocks

This table presents evidence related to the persistence of PROPENSITY_BUY_MEDIA. In Panel A, we regress funds' PROPENSITY_BUY_MEDIA quintile rank in the current quarter on its lagged measures in the past four quarters. In Panel B, we present transition matrices between PROPENSITY_BUY_MEDIA quintiles one-, two-, and five-years after initial sorting. *, **, *** indicates significance at the 10%, 5%, 1% levels, respectively.

Panel A: Predicting PROPENSITY_BUY_MEDIA	
	PBMC
Lag 1	0.1282***
	(17.32)
Lag 2	0.1063***
	(14.28)
Lag 3	0.0866***
	(11.61)
Lag 4	0.0930***
	(12.52)
Intercept	1.7245***
	(47.83)

Panel B: PROPENSITY_BUY_MEDIA Transition Matrices

1 year

To:	Q1	Q2	Q3	Q4	Q5	Total
From:						
Q1	24%	26%	21%	16%	13%	100%
Q2	24%	22%	22%	18%	15%	100%
Q3	21%	20%	18%	23%	19%	100%
Q4	20%	19%	22%	19%	21%	100%
Q5	14%	13%	19%	23%	31%	100%

2 year

To:	Q1	Q2	Q3	Q4	Q5	Total
From:						
Q1	27%	21%	22%	18%	12%	100%
Q2	20%	24%	21%	20%	16%	100%
Q3	23%	19%	22%	19%	17%	100%
Q4	22%	19%	17%	23%	19%	100%
Q5	15%	17%	24%	19%	27%	100%

5 year

To:	Q1	Q2	Q3	Q4	Q5	Total
From:						
Q1	23%	20%	20%	20%	17%	100%
Q2	21%	22%	22%	18%	17%	100%
Q3	26%	19%	17%	19%	19%	100%
Q4	21%	21%	20%	19%	19%	100%
Q5	17%	16%	22%	19%	26%	100%

Table 10: Holding and Performance

This table tabulates various measures of performance in the following quarter for fund deciles sorted by their propensity to hold media-coverage stocks (PROPENSITY_HOLD_MEDIA). PROPENSITY_HOLD_MEDIA is defined analogously to PROPENSITY_BUY_MEDIA and PROPENSITY_SELL_MEDIA, by replacing fund buys and sells with fund holdings. Performance measures are reported in decimal points per month.

PROPENSITY Decile	CAPM Alpha	Fama-French Alpha	4-factor Alpha	Conditional 4-factor alpha	Manipulation - proof Measure
Decile 1 (Low)	-0.0007	-0.0020	-0.0011	-0.0011	0.0015
Decile 2	-0.0009	-0.0021	-0.0015	-0.0014	0.0010
Decile 3	-0.0016	-0.0022	-0.0015	-0.0013	0.0007
Decile 4	-0.0014	-0.0016	-0.0012	-0.0012	0.0006
Decile 5	-0.0021	-0.0022	-0.0017	-0.0016	0.0006
Decile 6	-0.0015	-0.0018	-0.0016	-0.0012	0.0016
Decile 7	-0.0011	-0.0010	-0.0009	-0.0007	0.0010
Decile 8	-0.0017	-0.0015	-0.0015	-0.0012	0.0013
Decile 9	-0.0012	-0.0011	-0.0011	-0.0009	0.0021
Decile 10 (High)	-0.0005	-0.0006	-0.0004	-0.0004	0.0024
High - Low	0.0002	0.0014	0.0007	0.0007	0.0008
t-stat (High - Low)	0.0920	1.4784	0.6804	0.7442	0.4080