Does Your Fund Manager Trade On the News?

Media Coverage, Mutual Fund Trading and Performance*

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Abstract

We study the relation between mutual fund trades and media coverage of stocks. We find that on average mutual funds tend to trade high-coverage stocks. Meanwhile, funds display substantial cross-sectional heterogeneity in terms of their propensity to trade high-coverage stocks. The more likely is a fund to trade high-coverage stocks, the lower is the fund's various measures of alpha. Moreover, these propensities are relatively persistent over time, and they help predict future fund alphas.

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Introduction

Media has a significant influence on many aspects of people's lives, including financial and economic decisions. To what extent does mass media coverage of stocks affect the investment behavior of mutual fund managers? On the one hand, market efficiency suggests that trading based on public pronouncement of information, such as that released in mass-circulating newspapers, does not generate abnormal returns. Thus, it is unlikely that fund managers could exploit the information content of mass-media coverage. As such, to the extent that professional fund managers are sophisticated investors, their trades should not be influenced by mass-media coverage. On the other hand, a large body of research in psychology and economics demonstrates that attention is a scare cognitive resource. This research outlines the economic consequences of limited attention, and shows that they extend to investors' trading behavior and asset price dynamics. It suggests two reasons why fund managers' trades may depend on media coverage. First, fund managers, like most people, suffer from limited attention. How they allocate attention to various securities and consequently their investment decisions could be affected by "attention-grabbing" media coverage. Second, if less sophisticated investors (e.g. individual investors) exhibit behavioral biases and trade highly-covered, attention-grabbing stocks more intensely, fund managers may choose to trade the same stocks to exploit any mispricing resulting from these less sophisticated investors' biases. Thus, managers may trade stocks covered in the media because of their own or other investors' attention constraints.

In this paper, we investigate whether or not fund managers' trades are influenced by media coverage, and if so, attempt to shed light on their motives. These are interesting empirical questions because their answers shed light on how managers use information, and may have implications for their performance. Specifically, we measure funds' propensity to trade with

media coverage. We then examine whether the cross-sectional variation in this propensity predicts fund performance. To the best of our knowledge, these questions have not been studied before.

Attention is arguably a scarce resource for all investors, fund managers included, given the immensity of the investment universe and the huge amount of information it entails. As a result, media coverage may influence investors' behavior by drawing their attention to certain securities. Equivalently, one can view investors' trading decisions as the outcome of their collection of information. They can carry out thorough but expensive analyses based on proprietary data or techniques. Alternatively, they can rely on cheap public information such as that released through the media. Thus, the media may influence the behavior of investors because it provides an inexpensive source of information. Both interpretations (limited attention / costly information) suggest that fund managers' trades may depend on media coverage. They also imply that funds with a higher propensity to trade with media should perform worse. In this paper, we do not further distinguish between these two interpretations and group them together under the heading "limited attention / costly information hypothesis".

Recent evidence is consistent with both interpretations. Barber and Odean (2007) document that individual investors' stock purchasing decisions are affected by attention-grabbing events, such as news coverage. Corwin and Coughenour (2005) report that attention constraints of NYSE specialists affect the liquidity provision of their assigned stocks. Kacperczyk and Seru (2007) show that skilled managers tend to rely less on public information, such as analysts' recommendations. Fang and Peress (2008) find that stocks with no media coverage outperform stocks with high media coverage by 3 percent per year after controlling for commonly recognized risk factors. These findings suggest that investors, including fund managers, would

earn higher abnormal returns by trading "hidden gems" – stocks of obscure companies – rather than well-known stocks covered in the media.

An alternative strategy is for fund managers to take advantage of any mispricing caused by inattentive investors. There is indeed ample evidence suggesting that investors suffer not only from limited attention (e.g. Barber and Odean (2007)) but also from various behavioural biases such as overconfidence and extrapolative expectations. Naturally, these biases have a greater impact on stocks that grab investors' attention, such as stocks in the media. This may lead to systematic mispricing in these securities, which fund managers may attempt to exploit. As an illustration of the interaction of limited attention with behavioral biases, Hou, Peng and Xiong (2006) argue that the price momentum effect – the observation first made by Jegadeesh and Titman (1993) that buying stocks that recently outperformed while simultaneously shorting stocks that recently underperformed yields excess profits – is more pronounced among stocks that attract more investor attention. Consistent with their hypothesis, they document that price momentum profits reverse in the long run, indicating that they result from investors' overreaction, and moreover that they increase with trading volume, a proxy for investors' attention. Under this scenario, fund managers focus their trades on stocks that are the most exposed to biases, i.e. high-coverage stocks, and earn superior returns. Thus, in contrast to the "limited attention / costly information hypothesis", we should observe a positive relation between fund managers' propensity to trade with media coverage and their overall performance

We test the above hypotheses in this paper. First, we analyze a fund's Propensity to Trade with Media Coverage (PTMC) using a fund's buy and sell trades respectively. We then examine the cross-sectional variation and time-series persistence in funds' PTMC measures, and relate

them to fund-specific and family-specific characteristics. Finally, in our main test, we study the predictability of PTMC for future fund performance.

Using unique hand-collected data on media coverage from 1/1/93 to 12/31/2002 and U.S. mutual fund data for the corresponding period, we analyze funds' propensity to trade with media. The empirical evidence indicates that on average funds tend to trade high media coverage stocks more intensily. Moreover, funds in general display a stronger tendency to buy than to sell high media coverage stocks. Further analysis indicates that mutual funds differ substantially in their propensity to trade with media, with some funds trading high-media coverage stocks infrequently and others trading them heavily. We also document strong persistence in the PTMC measures over time, suggesting that the propensity to trade with media coverage reflects persistent fund-specific factors.

In our main test, we show that the cross-sectional variation in PTMC is strongly related to future fund performance. The empirical findings provide strong evidence that the PTMC measures can help predict future fund performance. When we sort funds into quintiles according to their PTMC measures, we find a near-monotonic and negative relation between PTMC and future fund alpha. The subsequent performance difference between the top and bottom PTMC quintiles is 6.12 percent per year for buys and 3 percent per year for sells based on the Carhart 4-factor alpha. Additional analysis using multivariate regressions and the Fama-MacBeth approach further confirm the predictability of the PTMC measures. In general, the finding is consistent with the hypothesis that managers with informational advantages or with less limited attention trade less with media. The finding is not consistent with the notion that fund managers trade high media-coverage stocks to take advantage of the behavioral biases (limitations) of individual investors. Overall, our results indicate that he *average* professional manager faces information

or attention constraints just like individual investors. This manager heavily trades high-coverage stocks and does not overperform. But a sub-set of managers exhibit a low propensity to trade with media, possibly due to their informational or resource advantages, and these factors translate into higher measurable fund alpha.

The rest of the paper is organized as follows. Section 1 reviews related literature. Section 2 describes our data and methodology. Section 3 presents our main empirical results. Section 4 concludes.

1. Related Literature

The effect of media coverage on financial markets has received increasing attention among researchers. Klibanoff, Lamont, and Wizman (1998) find that country-specific news reported on the front page of the *New York Times* are associated with price movements that are more closely related to fundamentals. The authors argue that news events lead some investors to react more quickly. Tetlock (2007) is the first to analyze the linguistic content of the mass media, and finds that media pessimism predicts downward pressure and a subsequent reversal. Tetlock, Saar-Tsechansky, and Macskassy (2007) document further that the fraction of negative words used in news stories predicts earnings and stock returns, controlling for analysts' forecasts and historical accounting data. Fang and Peress (2008) document that, in the cross-section, stocks highly covered by mass print media have significantly lower returns than stocks not covered by media, even after controlling for commonly accepted risk factors. The authors show that Merton's investor recognition hypothesis provides a plausible explanation to the pricing pattern.

This paper contributes to the longstanding literature of evaluating mutual fund performance and identifying managers with superior investment skills. A growing stream of papers explores the cross-sectional differences in fund performance and proposes ways to

identify skilled managers. 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 outperform larger funds due to diseconomies of scale. 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, likely due to their informational advantages. Cremers and Petajisto (2007) show funds that deviate most from their benchmark indices outperform their benchmarks both before and after expenses. Kacperczyk and Seru (2007) document a strong inverse relation between the extent to which fund managers respond to analysts' recommendations and future fund performance.

Several recent papers present methods that help predict fund performance. Cohen, Coval and Pastor (2005) propose to judge a fund manager's skill by how similar her portfolio holdings are to those of managers with superior performance records. Mamaysky, Spiegel and Zhang (2007, 2008) show a simple back testing procedure dramatically improves a panel data model's ability to produce out of sample forecasts. Kacperczyk, Sialm, and Zheng (2008) use a return gap measure to capture the unobserved actions taken by mutual fund managers and find that the return gap predicts future fund performance. Recent research also provides evidence on the underlying sources of information funds use in their investment decision making process. Coval and Moskowitz (1999, 2001) show that mutual funds exhibit a strong preference for investing in locally headquartered firms where they appear to have informational advantages. Kacperczyk, Sialm, and Zheng (2005) suggest that mutual fund managers concentrate their holdings in industries where they have informational advantages. Kacperczyk and Seru (2007) show the

importance of having non-public information sources. Our paper proposes a new way to detect skilled managers and predict fund performance by examining funds' propensity to trade with media coverage.

A growing literature explores the possible effect of limited attention on asset prices and investor behavior. Theoretical models include, for example, Hirshleifer and Teoh (2003), Hirshleifer, Lim and Teoh (2004), Peng and Xiong (2006), and DellaVigna and Pollet (2007). These models suggest that limited attention of investors affects security prices, return volatility, asset price co-movements, and the speed of incorporating information. A number of empirical findings, for example, that stock prices do not full incorporate public information in a timely manner, are consistent with limits to attention.[1] Some studies examine the effect of limited attention by analyzing how investors react to attention-grabbing news events. Barber and Odean (2008) show that individual investors tend to purchase stocks with attention-grabbing news events. Yuan (2008) finds that market-wide attention-grabbing events affect the trading behavior of individual investors and stock market returns. Our paper contributes to this strand of literature by examining whether professional investors are also subject to limited attention or whether they exploit other investors' inattention..

2. Data and Descriptive Statistics

For the purpose of this study, we build a unique dataset that combines hand-collected media coverage data with mutual fund performance and holdings data.

[1] Consistent with the limited attention hypothesis, Hirshleifer, Lim and Teoh (2008) find that a greater number of earnings announcements on the same day is associated with less price reaction and stronger post-earnings announcement drift.

The source of our media coverage data is LexisNexis. We obtain comprehensive media coverage data from 1/1/1993 to 12/31/2002 for all NYSE stocks and 500 randomly chosen NASDAQ stocks. The availability of media data restricts our subsequent analysis of fund performance to this 10-year period. For this period, we focus on articles 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. LexisNexis classifies the relevance of an article to a company by a variable called "relevance score". For our study, we only count articles that have relevance scores of above 90%, which constitute "major references" to a company according to LexisNexis.[2] In each calendar quarter[3] of the 10-year period, we count the total number articles published in the four newspapers about each firm in our sample. The stocks in our media sample are then matched by name to the CRSP stocks database and to the 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, different types of fees, investment objectives, and other fund characteristics. The CDA/Spectrum database provides stockholdings of individual mutual funds, collected both from reports filed by mutual funds with the SEC and from voluntary reports generated by the funds. We focus our analysis on open-end domestic equity mutual funds. Specifically, we include in the sample funds that are classified as aggressive growth (AG),

[2] Scores in the 80% - 89% range are described as "Strong Passing References" and those in the 50% - 79% range as "Weak Passing References".

[3] 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.

growth (G), growth and income (GI) by CDA/Spectrum. For funds with multiple share classes, we eliminate the duplicated funds and compute the fund-level variables by aggregating across the different share classes.[4] We also exclude funds which hold less than 10 stocks and those which manage less than $5 million. Fund holdings data is linked to the CRSP monthly stock file and the Compustat database to obtain stock level information, and we adjust 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 the 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. Wall Street Journal provides the most coverage – about 60% of stocks get some coverage during a quarter. Coverage by New York Times is comparable at 55%. Coverage by Washington Post and USA Today are considerably less, at 11% and 3% respectively. Panel B shows statistics conditional on having coverage. This panel reveals that media coverage is highly 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. This matrix indicates that the intensity of media coverage has some persistence, as the diagonal elements in this matrix are much larger than the off-diagonal elements. In other words, stocks with no- (low-, high)

[4] 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.

coverage tend to continue to have no- (low-, high) coverage. These results are consistent with those reported in Fang and Peress (2008).

Our goal is to analyze the relation between media coverage of individual stocks, fund trades in these stocks, and ultimately relate the tendency to trade with media to fund performance. But since we searched media coverage data only for NYSE stocks and 500 randomly selected Nasdaq stocks, which is a subset of funds holdings, an obvious question is whether the restricted stock (holdings) sample represents a meaningful portion of the funds' trades, so that our results have general implications. To examine this issue, we examine the percentage of total trades, buys and sells that are accounted for by stocks in our media sample. In each quarter *t*, we calculate the dollar value of fund *f*'s trade in stock *i* as follows:

$$\$trade_{f,i,t} = price_{i,t} \times (nshares_{f,i,t} - nshares_{f,i,t-1}) \qquad (1)$$

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.[5] Positive quantities from eq. (1) indicate fund buys, negative ones indicate sells, and we compute total fund trades as the sum of the absolute values of buys and sells. Table 2 shows that, overall, the stocks for which we searched media coverage information represent roughly 70% of the funds' trading. Interestingly, the proportion is highest for GI funds (about 84%), followed by growth funds (66%) and aggressive growth funds (58%). These differences are probably driven by the fact that aggressive growth funds tend to be smaller and more concentrated in small-cap stocks, and our stock sample

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

with media coverage data consist mainly of large NYSE stocks. Overall these numbers indicate that stocks in our dataset account for a significant portion of funds' trades.

Another implication of the limited scope of our media data is that we need to restrict our fund universe by eliminating funds that do not hold any of the stocks in our media sample at all. This reduces the average number of funds each year in our sample from 2,771 to 2,379. One concern about this additional screening is whether our resulting sample is still representative of the overall CRSP mutual fund sample. Table 3 provides statistics for the two samples, and shows that the resulting sample is virtually identical to the original one in terms of key fund characteristics such as fund size (NAV), expense ratio, turnover, and age.

3. Empirical Results

3.1. Funds' Propensity to Trade with Media Coverage (PTMC)

We construct two measures of a fund's Propensity to Trade with Media Coverage (PTMC) based on a fund's buy and sell trades respectively, as follows:

$$PTMC\_buy_{f,t} = \sum_i Coverage_{i,t} * \frac{\$buy_{f,i,t}}{Total\$buy_{f,t}} = \frac{1}{Total\$buy_{f,t}} * \sum_i Coverage_{i,t} * \$buy_{f,i,t} \quad (4)$$

$$PTMC\_sell_{f,t} = \sum_i Coverage_{i,t} * \frac{\$sell_{f,i,t}}{Total\$sell_{f,t}} = \frac{1}{Total\$sell_{f,t}} * \sum_i Coverage_{i,t} * \$sell_{f,i,t} \quad (5)$$

Where $\$buy_{f,i,t}$ is the dollar amount of fund *f*'s purchases of individual stock *i* during quarter *t*, $Total\$buy_{f,t}$ is the sum of the dollar amount of fund *f*'s purchases in individual stocks[6] during quarter *t*, and $Coverage_{i,t}$ is the number of articles published about stock *i* during quarter *t*. PTMC_buy can be viewed as the average number of articles published for stocks purchased by a mutual fund. The higher is the number, the more likely is a fund to purchase stocks with high

6 Only stocks for which we have media coverage data are included in this analysis.

media coverage. We construct an analogous measure for fund sells. PTMC_sell thus measures the average number of articles published for stocks sold by a mutual fund.

For each fund in our sample, we obtain a time-series of PTMC_buy and PTMC_sell measures (one for each quarter). The overall PTMC_buy and PTMC_sell measures for a fund are then taken to be the time-series average of the quarterly measures:

$$PTMC\_buy_f = \frac{1}{T}\sum_{t=1}^{T} PTMC\_buy_{f,t} \qquad (6)$$

$$PTMC\_sell_f = \frac{1}{T}\sum_{t=1}^{T} PTMC\_sell_{f,t} \qquad (7)$$

Table 4 reports summary statistics of the PTMC measures. PTMC_buy displays a mean of 12.22, a median of 10.61, a standard deviation of 13.56; while PTMC_sell displays a mean of 4.67, a median of 3.09 and a standard deviation of 5.78. Given that the average number of articles published conditional on coverage is about 4, the summary statistics suggest that funds on average tend to trade stocks with high media coverage. A related finding is documented by Falkenstein (1996), who studies mutual funds' preferences for stock characteristics by analyzing their stock holdings. Falkenstein finds that aggregate manager holdings are positively related to the number of news articles published regarding the stock. Moreover, we find that the tendency to trade in high media coverage stocks is much more pronounced among buys than sells. The observed difference in the buying and selling behavior is consistent with the notion that investors face more search problem in buying than selling and thus tend to buy more attention-grabbing stocks than selling them (Barber and Odean 2007).

Table 4 also indicates a large cross-sectional variation in the PTMC measures across funds. When we sort funds into quintiles based on their PTMC measures. The lowest quintile displays a PTMC_buy measure of lower than 0.82 and a PTMC_sell measure of lower than 0.15;

while the highest quintile displays a PTMC_buy measure of higher than 29.53 and a PTMC_sell measure of higher than 13.08. These numbers indicate that while some funds trade little with the media others trade a lot with media. In follow-up research, we will examine what fund or fund family characteristics lead to the differences in the tendency to trade with media. The determinants will shed light on the possible explanations for why some funds trade stocks with high media coverage.

It is interesting to ask whether the cross-sectional variation among funds' PTMC is persistent over time. To this end, we first sort funds into quintiles based on their PTMC measures during the 1st quarter of 1993. We then resort the funds each quarter based on their PTMC measures in that quarter, and track their quintile numbers over time. Finally, we compute, for each quarter in our sample, the average quintile numbers among funds in each of the original 1st-quarter 1993 quintiles. The results are graphed in Figure 1. This figure illustrates the evolution of funds' PTMC rankings overtime. This figure shows that the funds' PTMC ranking is relatively stable over time, especially for the two quintiles with the lowest PTMC rankings (quintiles 1 and 2). Funds in these two quintiles maintain the lowest PTMC rankings throughout the period, and their relative positions are always preserved as the lines never cross. The rankings are more variable among the higher quintiles 3-5, as these three lines are clustered and cross each other frequently. These results indicate that if a fund has a low PTMC measure, this is likely to be a persistent fund characteristic, such as informational advantage or limited attention constraints. It is possible that the difference is less dramatic once a certain level of the media coverage is reached, thus less persistence among the higher PTMC quintiles.

3.2. PTMC Measures and Fund Alpha

Our main empirical question is whether the cross-sectional variation in funds' PTMC is related to the cross-sectional variation in funds' alpha, and whether ultimately we can predict fund performance using PTMC measures.

To investigate this issue, we sort funds into quintiles based on their PMTC measures, and report the average contemporaneous fund alpha for each quintile. We use four benchmark models to calculate alphas: the CAPM, the Fama French 3-factor model, and the Carhart 4-factor model. Results are reported in Table 5 and Figure 2. We see a clear negative relationship between PTMC and funds' alpha. Funds in lower PTMC quintiles have positive alphas while funds in higher PTMC quintiles have negative alphas. Based on the 4-factor alphas, the performance spread between the top and the bottom quintile is 24 basis points per month (2.88 percent per year) sorting on the PTMC_buy measure and 36 basis points per month (4.32 percent per year) sorting on the PTMC_sell measure. This finding suggests funds that are more likely to trade with media coverage generate lower alphas. The result is consistent with the hypothesis that funds trade high-media coverage stocks due to limited information resources or limited attention; it is inconsistent with the notion that funds trade high-media coverage stocks to take advantage of other investors' behavioral biases and the resulting mispricing..

Table 6 extends the analysis to the multivariate regression setting, allowing for other control variables. We follow the Fama-MacBeth approach. For each quarter, we estimate the cross-sectional regression of fund performance on the PTMC measure and other fund characteristics. We then use the time series means of the estimated coefficients to derive the final regression results. Besides the key variable of interest, PTMC, the independent variables include various other fund characteristics, such as fund size, fund style, turnover ratio, expense ratio,

new money growth, and fund family size. Again, the regression results show that for both buys and sells, higher PTMC is associated with lower fund alpha. The coefficient on PTMC is negative and statistically significant for the buys and sells respectively. Using the 4-factor alpha, a one standard deviation increase in PTMC_buy is associated with a 12 basis points decrease in fund performance per month, and a one standard deviation increase in PTMC_sell is associated with a 11 basis points decrease in fund monthly alpha. Given the roughly 3-standard deviation spread in the PTMC measures across the quintiles, the magnitude of the effect reported in the regressions are comparable to that shown in the univariate portfolio sorting analysis.

Finally, we examine whether the PTMC measure can predict future fund performance. If a fund's tendency to trade with media indicates its informational advantage/disadvantage or its limited attention constraint, can investors use the PTMC measure to find skilled fund managers?

Table 7 and Figure 3 report the alpha in the subsequent quarter for the PTMC quintiles. The empirical results show a strong negative correlation between the PTMC measure and future alpha. We see a near monotonic decrease in fund alpha from the lowest PTMC quintile to the highest PTMC quintile. The differences in alphas between quintile 1 and quintile 5 are substantial. Using the 4-factor alpha, the performance spread is 51 basis points per month (6.12 percent per year) sorting on PTMC_buy and 25 basis points per month (3 percent per year) sorting on PTMC_sell. These numbers are statistically and economically significant, indicating that the funds' PTMC measures can be used to forecast fund performance and select among funds.

Table 8 reports the Fama-MacBeth regression results of future fund alphas on PTMC and other fund characteristics. The findings are consistent with the evidence in Table 7. The coefficient is negative and significant on PTMC buys and sells. Using the 4-factor alpha, a one

standard deviation increase in PTMC_buy is associated with a 14 basis points decrease in fund performance per month, and a one standard deviation increase in PTMC_sell is associated with a 9 basis points decrease in fund monthly alpha. The magnitude of the effect is again comparable to that shown in the univariate portfolio sorting analysis.

In summary, we find funds that are more likely to trade with media perform worse. Furthermore, funds' PTMC measures are relatively persistent, and can be used to forecast fund performance and help investors select among funds.

4. Additional Work

Given the magnitude of the effect, PTMC likely captures managerial investment skills over and above the return spread found in no-media coverage vs. high media coverage stocks as document in Fang and Peress (2008). In other words, the PTMC measure is an indication of a broader set of skills; the low PTMC funds are not simply buying and holding low-coverage stocks but actively trading them. We plan to investigate the sources of the return spread and include the results in the paper. Specifically, is the return spread due to stock selection, style bias, or style timing? We plan to examine the Daniel, Grinblatt, Titman and Wermers (1997) decomposed performance measures to help answer these questions. We also plan to study the performance property of the part of a fund's portfolio that is not covered by the media sample. This offers a natural "out-of-sample" check of our finding, and helps us see whether the skill differential exhibited by some funds in the sub-sample of stocks also carries over to the bigger sample. Finally, we plan to relate PTMC measures to other, exogenous fund/manager characteristics that could be indicative of skill/aptitude (such as educational background).

5. Conclusions

The effect of media is ubiquitous. Recent research shows that media affect investors' trading behavior by drawing their attention to certain investment vehicles. Moreover, recent empirical evidence indicates that media coverage matters to stock pricing. Does media coverage influence the trading behavior of professional mutual fund managers?

We examine the propensity to trade high media coverage stocks by mutual funds. Specifically, we measure the average media coverage of stocks bought and sold by funds. The empirical findings suggest that, on average, funds tend to trade stocks with significant media coverage. Furthermore, the tendency to purchase high media coverage stocks is much stronger than the tendency to sell such stocks. We document a substantial cross-sectional variation in funds' propensity to trade with media coverage, with some funds trading predominantly on stocks with no media coverage and others trading mostly on stocks with extensive media coverage. Further analysis shows that the cross-sectional differences are persistent over time, suggesting that the propensity to trade with media is a stable fund characteristic rather than a random factor.

We find that funds with a lower propensity to trade with media perform significantly better. This finding is robust to different risk adjustment models and prevails after controlling for other fund characteristics. The result is consistent with the hypothesis that funds with informational advantage and/or funds with less limited attention constraints trade less with media coverage. Overall, the empirical evidence suggests that the propensity to trade with media coverage is a useful measure in predicting fund performance and selecting among the vast universe of funds with heterogonous skills.

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Table 1. Media Data Descriptive Statistics

This table presents descriptive statistics for the media coverage data. Panel A tabulates the percentage of firms covered by any of the four major newspapers combined, and each of the newspapers separately. Panel B tabulates coverage statistics conditioned on having coverage. Panel C tabulates the transition matrix between coverage types. All data are measured on quarterly basis.

Panel A:

% of stocks covered by:

	Any Newspaper	WSJ	NYT	WP	UT
1993	85.44%	61.77%	53.59%	9.36%	3.94%
1994	86.71%	61.01%	58.54%	10.13%	4.00%
1995	86.94%	58.24%	63.17%	8.86%	3.72%
1996	85.52%	54.77%	65.48%	9.32%	3.20%
1997	87.45%	56.24%	66.89%	9.79%	3.49%
1998	87.60%	57.40%	67.00%	11.33%	3.10%
1999	80.82%	66.69%	45.29%	12.96%	3.04%
2000	76.92%	61.76%	45.59%	11.50%	3.33%
2001	78.47%	63.34%	43.78%	13.18%	3.36%
2002	75.59%	57.73%	44.91%	15.59%	3.15%
All Years	83.15%	59.89%	55.42%	11.20%	3.43%

Panel B:

Statistics conditional on coverage:

	Min	Median	Mean	75 Percentile	Max
1993	1	2	3.88	4	164
1994	1	2	3.98	4	122
1995	1	2	3.84	4	98
1996	1	2	3.72	4	108
1997	1	2	3.66	4	70
1998	1	2	3.77	4	80
1999	1	2	4.29	4	109
2000	1	2	4.52	4	157
2001	1	2	4.52	4	107
2002	1	2	4.93	5	88
All Years	1	2	4.11	4	110

Panel C:

Transition Matrix:

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

Table 2. Percentage of Funds' Trades Accounted for By our Searched Stock List

This table reports the percentage of funds' trades (dollar value) accounted by our searched stock list. Panel A, B, and C show the percentage numbers for total trades (absolute values of buys and sells), buys and sells, respectively. All stands for all domestic equity funds. AG stands for aggressive growth funds. G stands for growth funds. GI stands for growth and income funds.

Panel A: % of Total Trading Accounted for by Searched List				
	All	AG	G	GI
1993	83.96%	72.99%	80.78%	89.59%
1994	75.21%	61.37%	70.15%	85.58%
1995	73.47%	62.01%	67.69%	86.31%
1996	72.50%	59.06%	68.34%	87.58%
1997	70.65%	59.62%	68.35%	86.19%
1998	69.58%	62.07%	67.70%	84.89%
1999	62.60%	50.25%	60.11%	79.26%
2000	61.38%	49.66%	59.38%	78.91%
2001	65.88%	59.37%	66.13%	84.81%
2002	66.33%	59.00%	66.78%	84.86%
All Years	70.16%	59.54%	67.54%	84.80%
Panel B: % of Buys Accounted for by Searched List				
	All	AG	G	GI
1993	74.85%	57.53%	69.06%	84.42%
1994	75.14%	61.70%	68.47%	86.21%
1995	75.11%	63.57%	68.71%	87.82%
1996	72.59%	57.63%	66.61%	86.85%
1997	72.42%	59.62%	68.06%	86.29%
1998	71.14%	61.38%	66.44%	84.80%
1999	67.96%	56.91%	64.52%	82.70%
2000	65.00%	55.03%	61.96%	80.38%
2001	66.46%	56.22%	64.02%	84.33%
2002	67.41%	59.33%	65.13%	84.21%
All Years	70.81%	58.89%	66.30%	84.80%
Panel C: % of Sells Accounted for by Searched List				
	All	AG	G	GI
1993	75.66%	62.65%	70.02%	85.04%
1994	75.72%	61.57%	70.73%	84.93%
1995	74.21%	60.07%	66.92%	85.78%
1996	75.23%	59.17%	69.50%	89.02%
1997	72.76%	58.81%	68.21%	85.13%
1998	72.77%	61.10%	68.38%	84.86%
1999	64.18%	49.30%	58.87%	79.61%
2000	62.39%	49.00%	57.70%	78.56%
2001	69.93%	60.94%	68.04%	85.38%
2002	70.65%	61.55%	68.70%	86.79%
All Years	71.35%	58.42%	66.71%	84.51%

Table 3. Descriptive Statistics of the Fund Sample

This table compares the fund characteristics, including TNA, expense ratio, turnover and fund age, of the all US domestic equity fund sample covered in CRSP and the Spectrum holdings data with those of our sample.

Panel A: All US Domestic Equity Funds

	TNA				Expense Ratio				Turnover				Age			
	AG	G	GI	All	AG	G	GI	All	AG	G	GI	All	AG	G	GI	All
1993	379	455	652	514	0.016	0.013	0.012	0.013	1.27	0.78	0.70	0.80	28.21	24.56	28.50	25.15
1994	340	452	698	525	0.016	0.013	0.012	0.013	1.42	0.82	0.70	0.81	23.32	22.89	27.40	23.20
1995	368	542	845	594	0.017	0.013	0.011	0.013	1.98	0.87	0.63	0.87	20.50	21.43	27.12	21.51
1996	842	661	1,184	757	0.016	0.013	0.011	0.013	1.73	0.90	0.58	0.89	21.10	20.38	25.64	20.42
1997	897	746	1,587	893	0.016	0.013	0.012	0.014	1.37	0.91	0.59	0.88	19.00	18.51	23.63	18.84
1998	954	844	1,929	1,008	0.016	0.013	0.012	0.014	1.52	0.97	0.58	0.92	17.51	17.27	22.08	17.66
1999	1,238	970	2,250	1,133	0.016	0.013	0.012	0.014	1.75	0.93	0.60	1.00	16.40	16.14	21.24	16.65
2000	1,796	1,212	2,165	1,298	0.016	0.013	0.012	0.013	2.88	1.00	0.66	1.15	16.13	15.55	20.46	15.93
2001	972	993	1,892	1,066	0.018	0.014	0.011	0.014	2.15	1.05	0.71	1.16	14.74	14.78	19.31	15.03
2002	681	825	1,657	917	0.019	0.014	0.011	0.014	2.61	1.02	0.61	1.17	14.24	14.31	18.33	14.56
All Years	899	805	1,578	910	0.017	0.013	0.012	0.014	1.93	0.94	0.63	0.98	18.11	17.92	22.80	18.20

Panel B: Funds in Our Universe after Applying the "searched" screen

	TNA				Expense Ratio				Turnover				Age			
	AG	G	GI	All	AG	G	GI	All	AG	G	GI	All	AG	G	GI	All
1993	379	456	652	515	0.016	0.013	0.012	0.013	1.27	0.78	0.70	0.80	28.21	24.56	28.50	25.15
1994	341	452	698	526	0.016	0.013	0.012	0.013	1.42	0.82	0.70	0.81	23.32	22.89	27.40	23.23
1995	368	542	845	595	0.017	0.013	0.011	0.013	1.98	0.87	0.63	0.88	20.50	21.43	27.12	21.56
1996	849	661	1,184	761	0.015	0.013	0.011	0.013	1.74	0.91	0.58	0.89	21.16	20.38	25.63	20.46
1997	898	746	1,587	900	0.016	0.013	0.012	0.013	1.37	0.91	0.59	0.88	19.01	18.51	23.63	18.90
1998	954	844	1,929	1,015	0.016	0.013	0.012	0.013	1.52	0.97	0.58	0.92	17.51	17.27	22.08	17.72
1999	1,238	971	2,255	1,150	0.016	0.013	0.012	0.014	1.75	0.93	0.60	0.99	16.40	16.15	21.27	16.71
2000	1,805	1,215	2,175	1,326	0.016	0.013	0.012	0.013	1.87	1.00	0.66	1.08	16.16	15.57	20.51	16.02
2001	980	997	1,899	1,093	0.017	0.014	0.011	0.014	2.08	1.06	0.71	1.16	14.74	14.81	19.35	15.12
2002	687	827	1,669	934	0.018	0.014	0.011	0.014	2.61	1.02	0.61	1.17	14.05	14.32	18.41	14.62
All Years	850	806	1,582	922	0.016	0.013	0.012	0.013	1.82	0.94	0.63	0.98	18.09	17.93	22.82	18.26

Panel C: T-stat for difference between All Funds Universe and Our Sample

	TNA				Expense Ratio				Turnover				Age			
	AG	G	GI	All	AG	G	GI	All	AG	G	GI	All	AG	G	GI	All
1993	0.00	-0.02	0.00	-0.04	0.00	-0.02	0.00	0.17	0.00	-0.08	0.00	0.00	0.00	0.00	0.00	-0.02
1994	-0.03	0.00	0.00	-0.04	-0.05	0.00	0.00	0.33	-0.09	0.00	0.00	-0.01	0.00	0.00	0.00	-0.22
1995	0.00	0.00	0.00	-0.05	0.00	0.00	0.00	0.73	0.00	0.00	0.00	-0.09	0.00	0.00	0.00	-0.30
1996	-0.07	-0.01	0.00	-0.13	1.29	0.48	0.00	1.52	-0.04	-0.03	-0.01	-0.24	-0.13	0.01	0.03	-0.28
1997	-0.01	0.00	0.00	-0.25	0.34	0.00	0.00	0.55	-0.02	0.00	0.00	-0.28	-0.02	0.00	0.00	-0.55
1998	0.00	-0.01	0.00	-0.22	0.00	0.01	0.01	0.56	0.00	0.15	0.00	-0.04	0.00	-0.01	-0.01	-0.55
1999	0.00	-0.02	-0.03	-0.50	0.01	-0.09	0.00	0.65	-0.01	-0.02	0.05	0.16	0.01	-0.05	-0.09	-0.66
2000	-0.05	-0.05	-0.06	-0.73	-0.02	-0.20	-0.04	0.66	3.08	-0.05	0.00	2.38	-0.10	-0.13	-0.16	-0.91
2001	-0.10	-0.07	-0.05	-0.88	1.11	-0.11	-0.03	1.47	0.66	-0.17	-0.09	0.05	0.01	-0.19	-0.11	-0.95
2002	-0.10	-0.04	-0.10	-0.66	2.04	-0.05	0.11	2.07	-0.04	-0.08	0.25	-0.29	0.64	-0.10	-0.24	-0.60
All Years	-0.04	-0.02	-0.03	-0.35	0.47	0.00	0.01	0.87	0.35	-0.03	0.02	0.16	0.04	-0.05	-0.06	-0.50

Table 4. Summary Statistics of Propensity to Trade with Media Coverage (PTMC) Measures

This table reports the summary statistics for the PTMC (Propensity to Trade with Media Coverage) measures based on a fund's buy and sell trades, where

$$PTMC\_buy_{f,t} = \sum_i Coverage_{i,t} * \frac{\$buy_{f,i,t}}{Total\$buy_{f,t}} = \frac{1}{Total\$buy_{f,t}} * \sum_i Coverage_{i,t} * \$buy_{f,i,t}$$

$$PTMC\_sell_{f,t} = \sum_i Coverage_{i,t} * \frac{\$sell_{f,i,t}}{Total\$sell_{f,t}} = \frac{1}{Total\$sell_{f,t}} * \sum_i Coverage_{i,t} * \$sell_{f,i,t}$$

where $\$buy_{f,i,t}$ is the dollar amount of fund *f*'s purchases of individual stock *i* during quarter *t*, $Total\$buy_{f,t}$ is the sum of the dollar amount of fund *f*'s purchases in individual stocks during quarter *t*, and $Coverage_{i,t}$ is the number of articles published about stock *i* during quarter *t*.

	PTMC1_buy	PTMC1_sell
Mean	12.22	4.67
Median	10.61	3.09
Standard Deviation	13.56	5.78
Min	0.00	0.00
Max	320.00	110.01
Cutoff points:		
Quintile 1 (Low)	0.82	0.15
Quintile 2	3.54	0.91
Quintile 3	10.51	3.05
Quintile 4	16.67	6.17
Quintile 5 (High)	29.53	13.08

Table 5. Propensity to Trade with Media Coverage (PTMC) and Contemporaneous Fund Performance

This table reports the mean monthly alpha for quintiles of mutual funds sorted according to the contemporaneous PTMC measures. The PTMC_buy and PTMC_sell measures are defined in equation (4) and (5). We use the one-factor alpha of Jensen (1968), the three-factor alpha of Fama and French (1993), and the four-factor alpha of Carhart (1997), to measure fund performance. The table also reports the differences in the alphas between the top and the bottom quintiles and the corresponding t-statistics. The sorting in Panel A is based on PTMC_buy and the sorting in Panel B is based on PTMC_sell.

Panel A: Using Funds' Buys (PTMC_buy)

	CAPM Alpha	Fama-French Alpha	Four-factor Alpha
1 (Low)	0.0043	0.0009	0.0010
2	0.0054	0.0021	0.0016
3	0.0000	0.0002	0.0006
4	-0.0013	-0.0010	-0.0008
5 (High)	-0.0017	-0.0012	-0.0013
High - Low	-0.0060	-0.0021	-0.0024
t-stat	*-6.051*	*-2.453*	*-2.813*

Panel B: Using Funds' Sells (PTMC_sell)

PTMC Quintile	CAPM Alpha	Fama-French Alpha	Four-factor Alpha
1 (Low)	0.0046	0.0014	0.0016
2	0.0061	0.0019	0.0016
3	0.0006	0.0001	0.0003
4	-0.0013	-0.0014	-0.0011
5 (High)	-0.0015	-0.0021	-0.0019
High - Low	-0.0060	-0.0035	-0.0036
t-stat	*-5.388*	*-3.887*	*-3.899*

Table 6. Propensity to Trade with Media Coverage (PTMC) and Contemporaneous Fund Alpha: Regression Analysis

This table presents the Fama-Macbeth regression analysis of the relation between PTMC and fund alpha. The Dependent variable is fund performance. Independent variables include PTMC, log of TNA, fund style dummy, family size, turnover, new money growth, and expense ratio. We use the one-factor alpha of Jensen (1968), the three-factor alpha of Fama and French (1993), and the four-factor alpha of Carhart (1997), to measure fund performance. The PTMC_buy and PTMC_sell measures are defined in equation (4) and (5). Panel A and B report the regression coefficients and the t-statistics for PTMC_buy and PTMC_sell respectively.

Panel A: Using Funds' Buys (PTMC_buy)

	CAPM Alpha		FF Alpha		Carhart Alpha	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
PTMC_buy	-0.00016	-2.09	-0.00008	-1.91	-0.00009	-2.44
Log NAV	-0.00029	-0.82	-0.00014	-0.50	-0.00040	-1.61
AG Dummy	0.00365	1.09	0.00245	1.27	-0.00100	-0.52
G Dummy	0.00298	1.56	0.00219	1.94	0.00070	0.63
Family Size	0.00013	0.66	-0.00005	-0.28	-0.00020	-1.07
Turnover	0.00192	1.56	0.00201	2.66	-0.00013	-0.18
New Money Growth	0.00000	1.15	0.00000	1.60	0.00000	1.93
Expense	0.11610	0.73	-0.00877	-0.10	-0.12650	-1.68
Constant	-0.00092	-0.17	0.00002	0.01	0.00674	2.97
Average N	385		385		385	
Average R2	0.15		0.10		0.09	

Panel B: Using Funds' Sells (PTMC_sell)

	CAPM Alpha		FF Alpha		Carhart Alpha	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
PTMC_sell	-0.00020	-1.82	-0.00017	-3.24	-0.00019	-3.26
Log NAV	-0.00020	-0.40	0.00000	0.00	-0.00031	-0.80
AG Dummy	0.00486	1.40	0.00371	1.14	0.00150	0.46
G Dummy	0.00354	2.01	0.00186	1.56	0.00105	0.81
Family Size	0.00084	2.83	0.00039	1.46	0.00030	1.12
Turnover	0.00356	2.07	0.00168	1.46	-0.00066	-0.60
New Money Growth	0.00000	1.51	0.00000	1.83	0.00001	2.37
Expense	0.25528	1.56	0.11151	1.07	-0.00833	-0.08
Constant	-0.01120	-2.06	-0.00542	-1.60	0.00155	0.51
Average N	141		141		141	
Average R2	0.20		0.15		0.15	

Table 7. Predictability: Propensity to Trade with Media Coverage (PTMC) and Future Fund Alpha

This table reports the mean monthly alpha for quintiles of mutual funds sorted according to the lagged one-quarter PTMC measures. The PTMC_buy and PTMC_sell measures are defined in equation (4) and (5). We use the one-factor alpha of Jensen (1968), the three-factor alpha of Fama and French (1993), and the four-factor alpha of Carhart (1997) to measure fund performance. The table also reports the differences in the alphas between the top and the bottom quintiles, the corresponding t-statistics, the correlation between the PTMC measure and alpha and the Spearman rank correlations. The sorting in Panel A is based on PTMC_buy and the sorting in Panel B is based on PTMC_sell.

Panel A: Using Funds' Buys (PTMC_buy)

PTMC Quintile in Quarter t	CAPM Alpha t+1	Fama-French Alpha t+1	4-factor Alpha t+1
1 - Low	0.0069	0.0039	0.0031
2	0.0037	0.0020	0.0014
3	-0.0003	-0.0007	-0.0006
4	-0.0018	-0.0013	-0.0014
5 - High	-0.0013	-0.0013	-0.0020
High - Low	-0.0082	-0.0052	-0.0051
t-stat High-Low	*-2.100*	*-2.568*	*-2.483*
Correlation (PTMC, Alpha)	-0.66	-0.71	-0.78
Spearman Rank Correlation (PTMC Quintile, Alpha)	-0.87	-0.96	-0.98

Panel B: Using Funds' Sells (PTMC_sell)

PTMC Quintile in Quarter t	CAPM Alpha t+1	Fama-French Alpha t+1	4-factor Alpha t+1
1 - Low	0.0047	0.0017	0.0011
2	0.0042	0.0017	0.0014
3	-0.0002	-0.0003	-0.0001
4	-0.0013	-0.0013	-0.0006
5 - High	-0.0025	-0.0023	-0.0014
High - Low	-0.0072	-0.0040	-0.0025
t-stat High - Low	*-2.356*	*-2.031*	*-1.286*
Correlation (PTMC, Alpha)	-0.82	-0.88	-0.90
Spearman Rank Correlation (PTMC Quintile, Alpha)	-0.92	-0.92	-0.85

Table 8: Predictability: Propensity to Trade with Media Coverage (PTMC) and Future Fund Alpha

This table presents the Fama-Macbeth regression analysis of the relation between PTMC and subsequent fund alpha. The Dependent variable is fund performance. Independent variables include PTMC, log of TNA, fund style dummy, and expense ratio. We use the one-factor alpha of Jensen (1968), the three-factor alpha of Fama and French (1993), and the four-factor alpha of Carhart (1997), to measure fund performance. The PTMC_buy and PTMC_sell measures are defined in equation (4) and (5). Panel A and B report the regression coefficients and the t-statistics for PTMC_buy and PTMC_sell respectively.

Panel A: Using Funds' Buys (PTMC_buy)

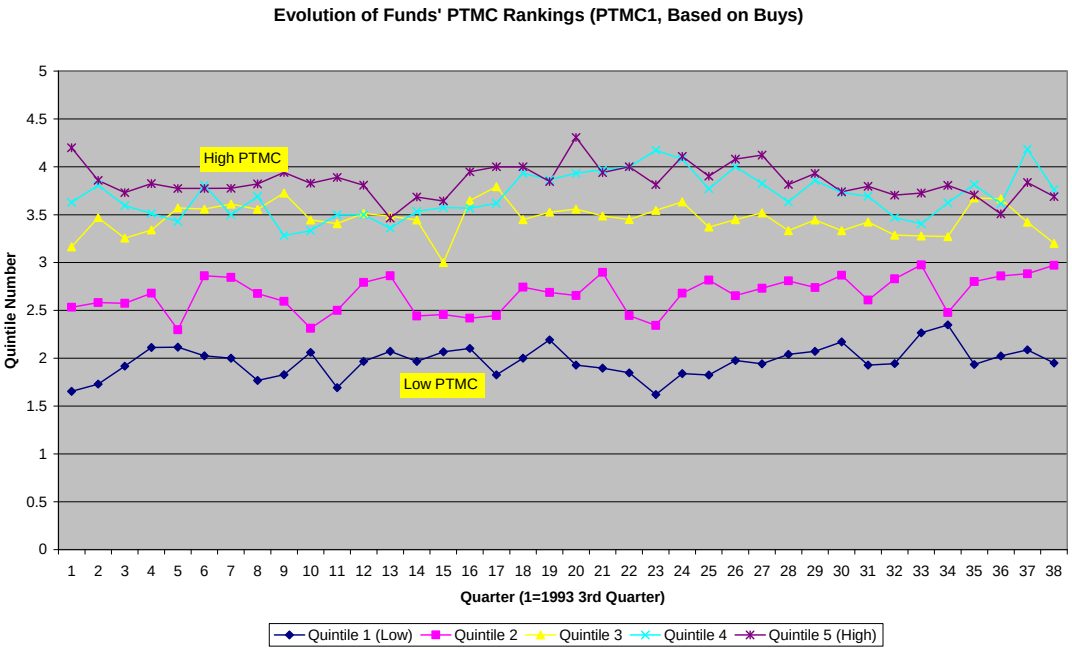
	CAPM Alpha t+1	Fama-French Alpha t+1	4-factor Alpha t+1
Intercept	0.00909	0.00674	0.00203
	(1.82)	*(2.17)*	*(0.63)*
$PTMC_t$	-0.00015	-0.00007	-0.00010
	(-1.59)	*(-1.65)*	*(-2.64)*
NAV_t	-0.00000	-0.00000	-0.00000
	(-2.24)	*(-1.47)*	*(-2.42)*
$Objective_t$	-0.00339	-0.00251	0.00038
	(-1.43)	*(-2.22)*	*(0.35)*
Expense $Ratio_t$	0.13599	0.03394	-0.10575
	(0.97)	*(0.43)*	*(-1.48)*
Adjusted R-square	0.1246	0.0497	0.0424

Panel B: Using Funds' Sells (PTMC_sell)

	CAPM Alpha t+1	Fama-French Alpha t+1	4-factor Alpha t+1
Intercept	0.00721	0.00767	0.00604
	(1.66)	*(2.18)*	*(1.73)*
$PTMC_t$	-0.00030	-0.00014	-0.00015
	(-2.00)	*(-1.94)*	*(-1.93)*
NAV_t	0.00000	0.00000	-0.00000
	(0.44)	*(0.10)*	*(-0.73)*
$Objective_t$	-0.00401	-0.00302	-0.00111
	(-1.84)	*(-2.27)*	*(-0.90)*
Expense $Ratio_t$	0.26114	-0.04301	-0.17675
	(1.72)	*(-0.48)*	*(-1.82)*
Adjusted R-square	0.1057	0.0468	0.0437

Figure 1. Stability of Funds' Propensity to Trade with Media Coverage (PTMC) Rankings

This figure shows the average PTMC measure in the subsequent quarters for the quintiles of funds sorted according to the PTMC measure in the 1st quarter of 1993. The PTMC_buy and PTMC_sell measures are defined in equation (4) and (5). Panel A and B report the analysis for PTMC_buy and PTMC_sell respectively.



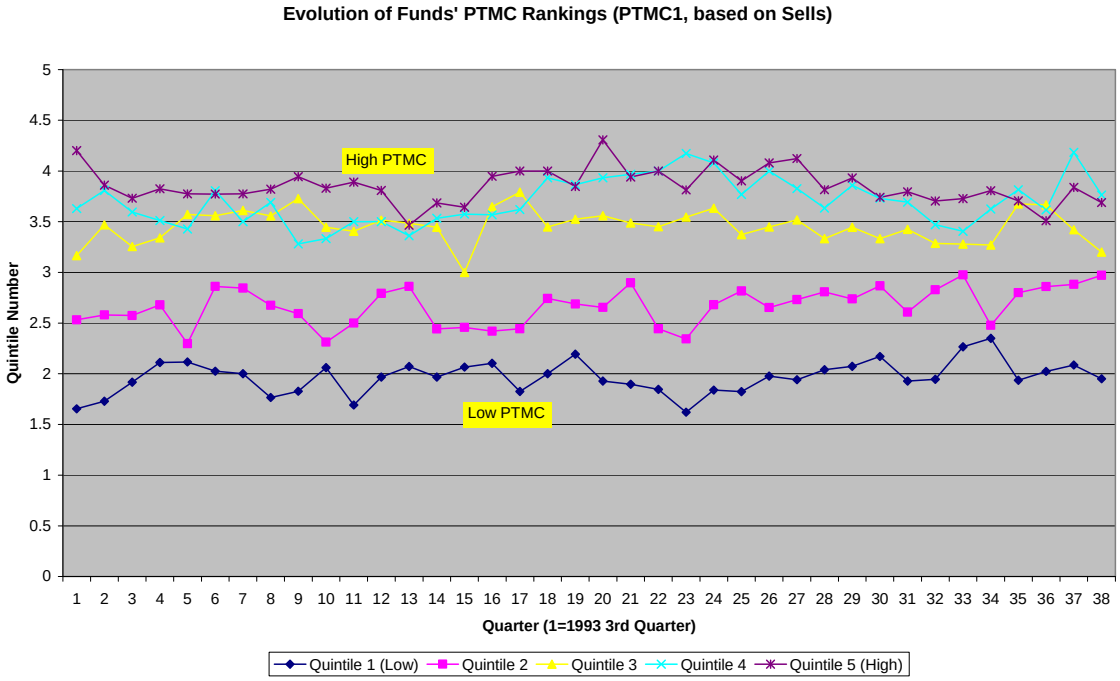
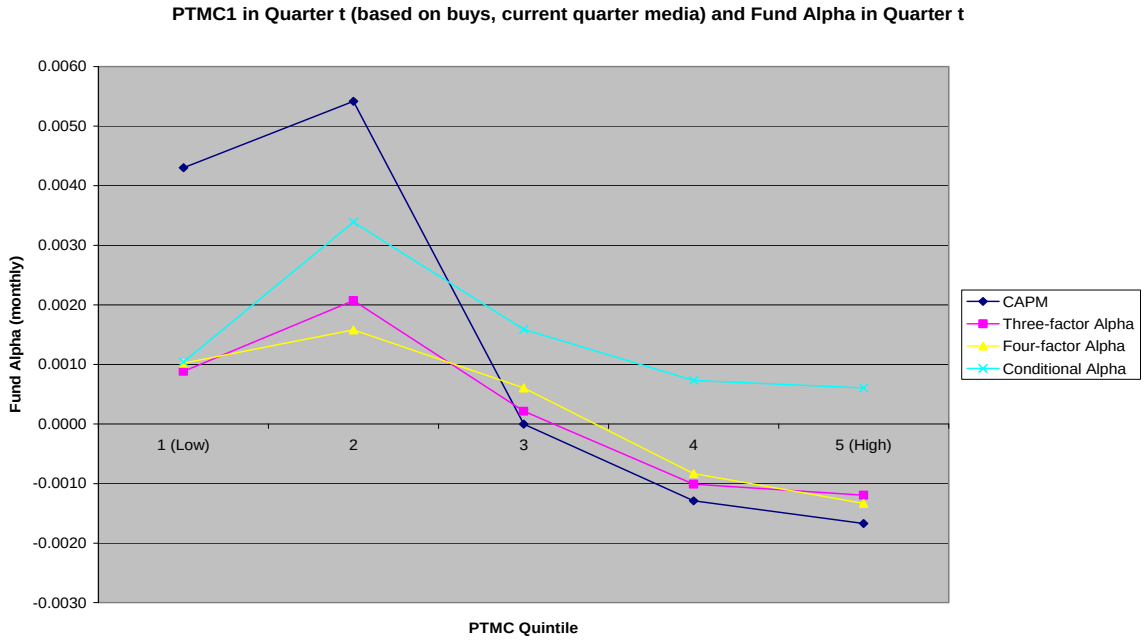


Figure 2. Propensity to Trade with Media Coverage (PTMC) and Contemporaneous Fund Alpha

This figure shows the average monthly abnormal returns for the quintile portfolios that are formed based on the concurrent PTMC_buy (Panel A) and the concurrent PTMC_sell (Panel B). We use the one-factor alpha of Jensen (1968), the three-factor alpha of Fama and French (1993), and the four-factor alpha of Carhart (1997), to measure fund performance.



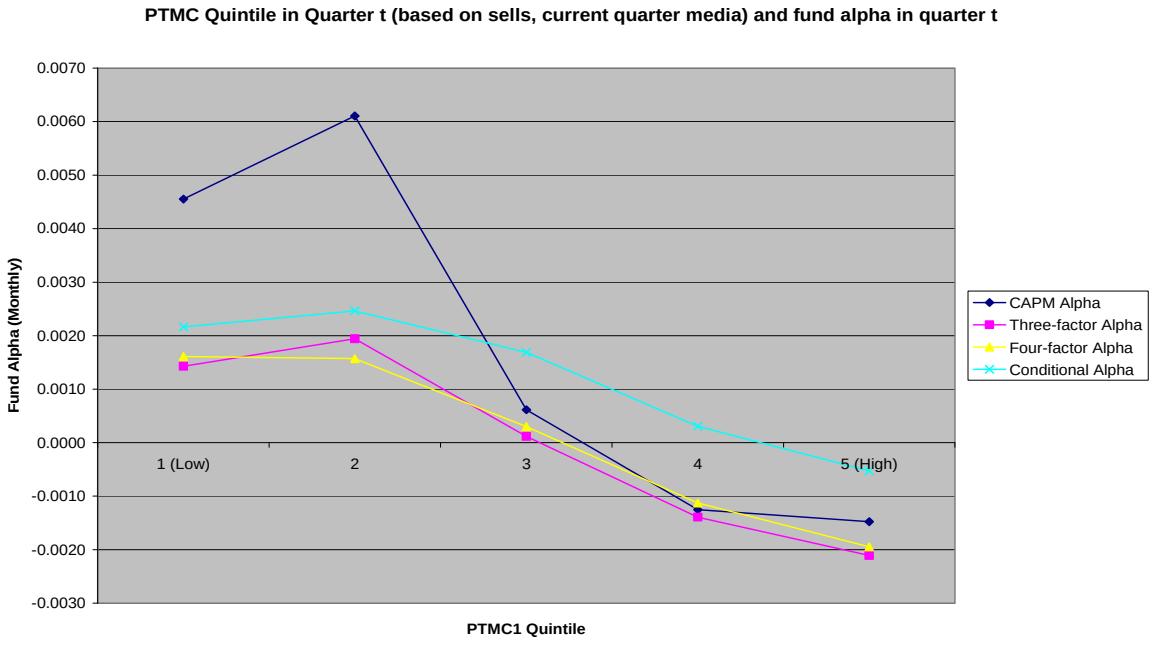


Figure 3. Performance Predictability: Current Propensity to Trade with Media Coverage (PTMC) and Future Alpha

This figure shows the average monthly abnormal returns for the quintile portfolios that are formed based on the lagged one-quarter PTMC_buy (Panel A) and the lagged-one quarter PTMC_sell (Panel B). We use the one-factor alpha of Jensen (1968), the three-factor alpha of Fama and French (1993), and the four-factor alpha of Carhart (1997), to measure fund performance.