

**Winners in the Spotlight:**  
**Media Coverage of Fund Holdings as a Driver of Flows**

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**Abstract**

We show that media coverage of mutual fund holdings affects how investors allocate money across funds. Controlling for fund performance, fund holdings with high past returns attract extra flows only if these stocks were recently featured in the media. In contrast, holdings that were not covered in major newspapers do not affect flows. We present evidence that media coverage tends to amplify investors' chasing of past returns rather than facilitate the processing of useful information in fund portfolios. Fund managers exploit this behavior by purchasing media-covered past winners at reporting dates, a strategy most prevalent among poorly performing funds. Our evidence suggests that media coverage can exacerbate investor biases and that it is the primary mechanism that makes window-dressing effective.

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The business press plays a key role in disseminating information in financial markets. Yet it is less clear whether media coverage enables investors to make better investment decisions. On the one hand, media may reduce the cost of information acquisition and lessen the information asymmetry between firms and investors (Tetlock 2010a). On the other hand, media coverage can exacerbate investor biases (Barber and Odean, 2008) and create perverse incentives for manipulation (Gurun and Butler, 2010). These two alternatives have very different implications for whether media coverage will make capital allocation more efficient.

This paper distinguishes between these views by studying the effect of media coverage on investors' flows to mutual funds. These investment vehicles account for the majority of financial assets of the average household and provide rich data on the information environment, capital allocations, and subsequent outcomes. We use this research setting to study whether and how media coverage of fund holdings affects capital allocations across funds.

Our focus on fund holdings is motivated by several reasons. First, portfolio holdings provide perhaps the richest source of public information, which can improve capital allocation (e.g., Kacperczyk, Sialm and Zheng, 2008), but can also lead to misinterpretation, for example, if holdings' returns are confused with fund returns. Second, fund holdings are a subject of regulated disclosure, and it is important to understand how it affects investors' decisions. Finally, investor surveys and industry evidence indicate that investors follow fund holdings, particularly those of well-publicized stocks.<sup>1</sup> However, we know relatively little about how investors evaluate fund holdings and what role media coverage plays in their investment decisions. Our paper seeks to provide evidence in this direction.

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<sup>1</sup> For example, according to Morningstar, 42 percent of retail investors would like to have portfolio holdings disclosed more often than quarterly. Similarly, the interviews of fund managers in the business press acknowledge not only investors' interest in fund holdings but even the pressure to hold "hot", widely-publicized stocks in fund portfolios (Moeller 1999; McDonald 2000). Finally, the academic literature provides indirect evidence that fund holdings influence investors' decisions by showing that fund managers "window dress" their holdings before reporting them to investors despite the transaction costs (Lakonishok, Shleifer, Thaler and Vishny, 1991; Musto 1999).

Our main finding is that media coverage of fund holdings has a significant effect on investors' capital allocation decisions. In particular, investors' capital flows respond to holdings' past returns, but *only* if these holdings were covered in the widely-circulated newspapers in the preceding quarter. Investors allocate significantly more (less) capital to funds holding media-covered stocks with high (low) past returns, after controlling for fund returns and other fund characteristics. In other words, if a fund holds shares in a high-profile failure such as Enron, it will face greater outflows than an identical fund holding a stock with a similarly low return but without newspaper coverage.

The incremental effect of holdings' media coverage on flows is substantial – a one standard deviation increase in the market-adjusted returns of media-covered holdings (8.47%) predicts additional flows next quarter of 0.72%, over and above the effect of fund returns. This effect is about 23% as large as the effect of the fund's own market-adjusted returns on capital inflows. In contrast, the returns of holdings that were not covered in major newspapers in the trailing quarter have no relation to future fund flows.

We examine two plausible interpretations for investors' reaction to media-covered holdings. One possibility is that media coverage reduces the cost of gathering information in a systematic analysis of fund holdings, for example, by allowing investors to identify skilled managers who anticipate the arrival of important news. Another view is that media coverage increases the salience of certain holdings, thus amplifying return-chasing by investors, regardless of whether the stocks were purchased before or after the arrival of the news.

To distinguish between these views, we study the following three questions. First, does investors' preference for media-covered holdings vary with the measures of holdings' informativeness or with the measures of salience and limited attention? Second, do investors increase their subsequent returns by this strategy? Third, does this investor preference create a strategic response of fund managers that is not fully accounted for by investors?

In response to the first question, we present evidence that investors' reaction to holdings with media coverage is related to the greater salience of media-covered stocks, rather than the information content of media coverage. Investors react more strongly to holdings' past returns when the fund holds fewer stocks, consistent with limited attention. In addition, the response to media covered holdings is around 28% larger for articles that feature the firm's name in the headline, and more than twice as large for articles that appeared in the month of holdings' filing than for articles in earlier months. Both of these attributes are likely to make the article more salient to investors at the time when holdings are filed. By contrast, the response to holdings is *not* significantly reduced when the holdings are less informative of the fund's current strategy (e.g., holdings reported with a longer time lag or holdings of funds with high turnover). Collectively, this evidence indicates that holdings' media coverage in major newspapers appears to generate a temporary increase in their salience to retail investors rather than provide investors with valuable information used in the analysis of the fund's strategy.

Next, we investigate whether investors receive higher returns by investing in funds with media-covered past winners, and find little evidence that they do. The returns of media-covered holdings are weakly related to future fund returns due to correlation with momentum strategies, but even this effect disappears after controlling for past fund returns. If fund returns are evaluated relative to a three- or four-factor model, the predictive power of holdings' returns for future fund performance is insignificant, and in some specifications has the opposite sign. Therefore, at a minimum, investors do not earn higher returns by following this strategy, even before considering transaction costs.

Finally, we explore whether investors' reaction to media-covered holdings creates perverse incentives for fund managers. In particular, investors' preference for funds that report holdings with high past returns and high media coverage may create incentives for funds to 'game' their portfolios at reporting dates, a phenomenon known as 'window-dressing' (Lakonishok, Shleifer, Thaler and Vishny,

1991; Musto 1999). This strategy typically involves buying stocks with high trailing returns shortly before reporting dates to convey the impression that they were purchased before appreciating in value.

To investigate the strategic response of mutual funds to investors' preferences, we construct several measures of window-dressing (discussed in the empirical section) based on the difference between the realized return of the fund and that of its reported holdings. Using these measures, we find that window-dressing funds tilt their portfolios more toward past winners that were prominently featured in major newspapers than toward stocks with similarly high returns that lacked newspaper coverage. A one standard deviation increase in window-dressing is associated with a 3.42% increase in the reported returns of media-covered holdings, versus a 2.87% increase in returns of non-media-covered holdings.

We also study whether the media-based window-dressing generates flows. If investors examine fund holdings to extract useful information about the fund's portfolio strategy, they are likely to detect the window-dressing behavior, rendering it ineffective and likely harmful for fund flows. In contrast, if investors react to the salience of stocks in a fund's portfolio, a fund's tilt toward media-covered winners at reporting dates should attract flows, even if the stocks were purchased after the arrival of good news. Our evidence supports the latter view. We do not find evidence that investors detect window-dressing funds by reacting less to the returns of their holdings or by penalizing them with lower flows. Directionally, greater window-dressing (when fund holdings overstate actual fund returns) is associated with a stronger response of investors' flows to the returns of media-covered stocks.

The window-dressing strategies that rely on media coverage appear to attract flows, but require frequent turnover, since media coverage shifts significantly in time. Given the convex relationship between fund performance and flows, we conjecture that this tactic is beneficial for underperforming funds, for which the performance drag from portfolio rebalancing has a less significant effect on flows (i.e. funds in the flatter part of the performance-flow curve). Consistent with this explanation, we find

that the tilt toward media-favored stocks at reporting dates is concentrated among funds with higher turnover and weak performance records.

One important consideration in interpreting our evidence is the possibility that our results are related to unobserved or omitted variables that may be correlated with media coverage. We address this issue in several ways. First, our empirical design focuses not on firm characteristics (which may be correlated with media coverage) but on the flows accruing to funds that invest in these firms. We examine whether the increased sensitivity to holdings' returns is present for other variables correlated with media coverage such as firm size, analyst coverage, and valuation, and find that none of these variables shows any relation with fund flows. Second, the majority of fund-level factors (e.g., style, category, etc.) and firm-level attributes (e.g., size, industry, analyst coverage, etc.) are relatively stable in time, but newspaper coverage of stocks changes significantly from quarter to quarter. By using fund- and style-fixed effects, we control for time-invariant observable and unobservable characteristics, and rely on the temporary shift in media coverage as our identification strategy.

Overall, our paper has several implications. First, we provide one of the first pieces of evidence on the role of media coverage of fund holdings in attracting flows. Second, to our knowledge, our paper is the first to demonstrate that media coverage is the necessary condition underlying the efficacy of window-dressing. Third, our findings show that media coverage can amplify investor biases and create distortionary incentives for money managers, leading them to trade for reasons unrelated and likely detrimental to fund performance.

The rest of the paper is as follows. Section 1 describes related literature. Section 2 discusses the data and summary statistics. Section 3 presents the main results on the relation between fund holdings, media coverage, and fund flows. Section 4 examines the response of fund managers to investor behavior. Section 5 considers alternative explanations. The article concludes with a summary and commentary.

## 1 Related Literature

Our paper adds to the growing literature on the role of media in financial markets. We examine a central question in this area – the effect of media coverage on capital allocation decisions. Theoretical models offer diverging predictions about this media effect. Under the *information* view, media coverage may improve investment decisions by reducing the cost of information acquisition (Grossman and Stiglitz, 1980; Verrecchia 1982) and increasing investors’ awareness of financial assets (Merton 1987). Consistent with this view, media coverage has been associated with a more rapid incorporation of information into stock prices (DellaVigna and Pollet, 2009), lower cost of capital (Fang and Peress, 2009), and lower information asymmetry between investors and the firm (Tetlock 2010a).

An alternative is the *saliency* view, according to which media coverage merely shifts investor attention across securities, resulting in a transitory increase in investors’ demand for salient stocks covered in the news (Daniel, Hirshleifer, and Subrahmanyam, 1998; Hong and Stein, 1999). Consistent with this view, several studies show that media coverage can generate short-lived upward price pressure on stocks in the news (Chan 2003; Vega 2006; Barber and Odean, 2008) and argue that this investor behavior represents an overreaction to salient events (Huberman and Regev, 2001; Tetlock 2010b).

Our paper seeks to distinguish between these views by studying whether and how the decisions of mutual fund investors vary with the media coverage of fund holdings. Our findings support the saliency view. In particular, our evidence suggests that media coverage of fund holdings appears to amplify investors’ preference for return chasing rather than facilitate the processing of useful information contained in fund holdings.

Another strand of the media literature shows that media coverage exhibits political and economic biases towards the media customers (Mullainathan and Shleifer, 2005; Gentzkow and Shapiro 2006, 2010), advertisers (Reuter and Zitzewitz, 2006; Kaniel, Starks, and Vasudevan 2007; Gurun and Butler, 2010), the clients of investor relation firms (Bushee and Miller, 2007; Solomon 2010), governments

(Besley and Prat, 2006), and firms engaging in strategic disclosure (Ahern and Sosyura, 2010). Rather than focusing on the biases in *media* reporting, we show that media coverage amplifies biases in *investors* – namely, the chasing of past winners. We also find that the preference of retail investors for stocks in the media has a tangible effect on the trading decisions of money managers.

Our paper is also related to the literature on mutual funds. Earlier studies argue that funds purchase stocks with high past returns before reporting dates, presumably to appeal to fund clienteles (e.g., Lakonishok, Shleifer, Thaler and Vishny, 1991; Meier and Schaumburg, 2006). A critical assumption in this literature, previously untested, is that investors react to holdings' returns, even though these returns are neither reported by funds nor included in regulatory filings. Our evidence suggests that media coverage serves as an important channel through which investors learn about stock returns and that window-dressing strategies work only for stocks featured in widely-circulated newspapers.

Our findings also provide one plausible explanation that connects two pieces of evidence reported in prior studies. In particular, Falkenstein (1996) shows that fund portfolios hold stocks with greater news coverage, and Chae and Lewellen (2004) find that portfolio managers follow momentum strategies in foreign markets where momentum is *not* profitable. Our evidence suggests that funds likely hold stocks with high past returns featured in the news in order to attract investors rather than only to follow momentum and that this strategy has a significant positive effect on capital flows beyond that of holdings' returns.

We also contribute to the literature on information processing by mutual fund investors. Previous research has studied the implications of investor attention in the context of mutual fund fees (Elton, Gruber and Busse 2004; Barber, Odean and Zheng, 2005). Our paper extends this literature by providing evidence on how investors react to mutual fund information in a new context – portfolio holdings. In this respect, portfolio holdings are particularly important for two reasons. First, fund holdings comprise perhaps the richest information set available to investors in public domain, which can be used to infer

fund manager's quality (e.g., Kacperczyk and Seru 2007; Cremers and Petajisto 2009; Kacperczyk, Sialm and Zheng 2005, 2008; Fang, Peress and Zheng, 2010). Second, as discussed earlier, mutual fund holdings are a subject of regulated (and costly) disclosure, and we know relatively little about how this information is evaluated by investors. Our evidence suggests that retail investors appear to react to the salience of portfolio holdings rather than their information content and that the investment value of disclosure is diluted by the strategic response of fund managers to this investor behavior. Interpreted broadly, these findings highlight one mechanism that contributes to the arguably less sophisticated, return-chasing mutual fund flows referred to as "dumb money" (Frazzini and Lamont, 2008).

Finally, our study provides new evidence on how mutual funds are marketed to and evaluated by investors. Previous research has documented the importance of fund advertising (Jain and Wu, 2000; Cronqvist 2006) and fund recommendations in the press (Reuter and Zitzewitz, 2006; Kaniel, Starks, and Vasudevan, 2007) for attracting flows. However, these channels are typically unavailable to the overwhelming majority of fund managers, since only about 10% of funds receive positive mentioning in the press (Kaniel, Starks, and Vasudevan, 2007) and even fewer funds are advertised by their families. Our paper demonstrates an alternative strategy used by mutual funds to benefit from media exposure – establishing positions in past winners that received prominent coverage in the national press.

## **2. Data and Summary Statistics**

### *2.1 Mutual Funds*

We begin our sample construction with the universe of open-end mutual funds covered by the CRSP Mutual Fund Database between January 1999 and December 2008, inclusive. Our choice of the time period is motivated by the availability of media coverage data in Factiva, which tends to be significantly sparser in earlier years.

As a first filter in our sample construction, we limit our analysis to domestic actively-managed equity funds, thus excluding international funds, index funds, and funds specialized in bonds, precious metals, and other asset classes.<sup>2</sup> We focus on domestic rather than international funds because foreign securities receive relatively little media coverage in the U.S. Next, to address the incubation bias, we exclude fund observations before the starting year reported in CRSP, as well as any funds with a missing name or total net assets below \$5 million in the previous quarter. Finally, to control for spurious fund flows that may arise from an error in the value of total net assets, we also exclude funds for which quarterly flows exceed +50% or -50% of total net assets (TNA) in any quarter during our sample period.

Our sample of mutual funds includes 1,720 open-end domestic equity funds, whose combined assets under management totaled \$1.7 trillion in December 2008. During our sample period, an average (median) fund managed \$1.8 billion (\$347 million) in assets, charged an expense ratio of 1.41% (1.40%), earned net quarterly returns of 0.75 (1.60) percent, had quarterly capital flows of 4.42 (-0.88) percent, and experienced annual turnover of 89 (70) percent. Panel A of Table I provides summary statistics for the mutual fund sample.

## *2.2 Portfolio Holdings*

The data on fund holdings come from Thomson Reuters, a database that compiles mutual fund portfolio disclosures filed with the Securities and Exchange Commission. Since May of 2004, funds are required to report their holdings on a quarterly basis. In earlier periods, funds were required to report semiannually, but the majority of them voluntarily disclosed on a quarterly basis (Wermers, Yao and Zhao, 2008).

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<sup>2</sup> Specifically, we drop observations for which the Thomson Investment Objective Code falls into any of the following categories: International, Municipal Bonds, Bond & Preferred, Balanced, Metals, and Unclassified, as well as observations where this information is missing. We exclude index funds based on the inclusion of the name 'Index' or names of common indices (e.g. 'S&P 500' or variants).

We merge the set of portfolio holdings with our sample of mutual funds by using the MFLinks table developed by Russ Wermers and made available via Wharton Research Data Services. The main unit of fund analysis is the ‘wfcfn’ identifier from MFLinks. Since the CRSP ‘fundno’ identifier lists each fund share class as a separate series, we aggregate multiple ‘fundno’ share classes into a single wfcfn. In particular, to derive Total Net Assets (TNA), we sum over all fundnos that share the same ‘wfcfn’. To compute returns and fund flows, we take the average over all fundnos with the same ‘wfcfn’.

After matching the two samples, we impose several additional filters to eliminate observations with errors. We exclude observations for which the number of shares held by a fund exceeds the number of shares outstanding for the stock and observations for which the value of shares held by a fund (price\*shares held) exceeds the value of fund assets reported by Thomson Reuters. We also eliminate observations with significant differences between the total assets reported by Thomson Reuters and the sum of assets for all share classes reported in CRSP.<sup>3</sup> This screen also serves as another control to eliminate funds that may hold a significant portion of their portfolios in non-equity assets.

Panel B of Table I reports summary statistics for mutual fund portfolio holdings. During our sample period, the average (median) fund held 109 (72) stocks. The average (median) weight of each holding in a fund’s portfolio was 0.6 percent (0.2 percent) percent of the fund’s total net assets. The measure ReportGap, which captures the time lag between the SEC filing date and the date for which the holdings are reported, shows that majority of funds reported their most recent set of holdings (median ReportGap = 0), but there was a significant variation in this measure ( $\sigma = 65$  days), suggesting a large heterogeneity in the informativeness of reported holdings for the funds’ current portfolio strategy.

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<sup>3</sup> Specifically, we drop an observation if the combined CRSP TNA is greater than 200% or less than 50% of the assets in Thomson Reuters.

### 2.3 Media Coverage

Our data on media coverage comprise the widely-circulated national newspapers: *The Wall Street Journal*, *USA Today*, *The New York Times*, and *The Washington Post*. This sample is intended to approximate the news that reaches the typical retail investor who reads the national press either online or in print. We obtain the entire text of these publications from Factiva between January 1999 and December 2008, inclusive. Overall, our media sample includes 1.7 million newspaper articles, of which 39 percent come from *The New York Times*, 35 percent appear in *USA Today*, and 18 percent come from *The Wall Street Journal*. *The Washington Post* accounts for the remaining 8 percent of articles in our sample. Our dataset includes the full text of the article, its source, title, author, date of appearance, and page number where the article appeared in a given newspaper.

To match newspaper articles to firms, we search for the variations of the company's name in the headline, the lead paragraph, or the tail paragraphs of each article, using a similar approach to that in Tetlock, Saar-Tsechansky and Macskassy (2008). All news coverage is measured at quarterly frequency to control for firms' quarterly disclosures, such as earnings announcements, and to match the frequency of mutual fund portfolio reporting. These data are supplemented by the information on stock prices from CRSP and firm financials from Compustat.

Panel C of Table I shows that media coverage of firms in the national newspapers is relatively rare. Approximately 30.8 percent of CRSP stocks are featured in at least one of the four newspapers in our sample in a given quarter, and the average number of articles per firm is 4.10. Among the stocks with some newspaper coverage, the average number of articles is 11.8 per quarter. As expected, stocks held by mutual funds receive more media attention. Over 53 percent of mutual fund holdings are featured in at least one of the four national newspapers per quarter. For stocks held by at least one fund (at least ten funds) in our sample, the average number of articles in the national newspapers is 10.0 (11.3) per quarter. For stocks that are held by at least one fund (at least ten funds) and that appear in at

least one media outlet, the average number of articles is 20.3 (21.1) per quarter. The average returns of media-covered holdings (2.11 percent per quarter) are very similar to the average returns of holdings in general (2.13 percent per quarter).

### 3. Mutual Fund Holdings, Media Coverage, and Capital Flows

#### 3.1 Returns of Media-Covered Holdings and Fund Flows

In this section, we study whether media coverage of fund holdings affects investors' capital flows. In particular, we examine whether investors react to holdings' returns after controlling for the return of the fund, and whether this relation varies with holdings' media coverage.

We begin our analysis with a set of panel regressions, in which the dependent variable is the quarterly fund flow, defined as the percentage change in TNA that is not driven by fund returns.<sup>4</sup> The regression model is specified by the following equation:

$$\begin{aligned} Flow_{i,t} = & a + b_1 * NewsHoldRetMkt_{t-1} + b_2 * HoldRetMkt_{t-1} + b_3 * FundRet_{t-1} + b_4 * FundRetMkt_{t-1} + b_5 * \\ & FundRetSq_{t-1} + b_6 * FundRetMktSq_{t-1} + b_7 * Age + b_8 * LogAssets + b_9 * FundRet_{t-2} + b_{10} * FundRetMkt_{t-2} + \\ & b_{11} * FundRetSq_{t-2} + b_{12} * FundRetMktSq_{t-2} + b_{13} * Yeardum_{1998-2008} + b_{14} * IOCdum_{2-3} \end{aligned} \quad (1)$$

The two main independent variables of interest are  $HoldRetMkt_{t-1}$  and  $NewsHoldRetMkt_{t-1}$ .  $HoldRetMkt_{t-1}$  is the average return for the fund's holdings over the trailing quarter, adjusted for the return on the CRSP value-weighted index.<sup>5</sup> For instance, fund flows between June 30<sup>th</sup> and September 30<sup>th</sup> are regressed on the average market-adjusted returns between March 31<sup>st</sup> and June 30<sup>th</sup> earned by portfolio holdings reported as of June 30<sup>th</sup>.

<sup>4</sup> Formally,  $Flow_{i,t-1:t} = [TNA_t - TNA_{t-1} * Return_{t-1:t}] / TNA_{t-1}$

<sup>5</sup> Our results are very similar in both magnitude and significance if we use raw holdings' returns rather than market-adjusted returns.

$NewsHoldRetMkt_{t-1}$  is the average market-adjusted returns of the holdings covered in at least one of the four national newspapers over the trailing quarter. This variable is analogous to a dummy indicator for media coverage interacted with the holdings' returns, but for the fund average. Intuitively, this term captures the effect of the returns of media-covered stocks on fund flows, over and above the effect of the holdings' returns in general.

Other independent variables include the fund's raw and market-adjusted returns ( $FundRet$  and  $FundRetMkt$ , respectively), as well as their squared terms ( $FundRetSq$  and  $FundRetMktSq$ ), which are intended to account for the convexity in the flow-return relation. Among other controls, we also include the fund's age in years since the initiation date reported in CRSP ( $Age$ ), and the size of the fund's asset base, defined at the natural logarithm of TNA ( $LogAssets$ ). All standard errors are clustered by fund and quarter.

Panel A in Table II shows that the returns of holdings positively affect fund flows, and that this effect is significantly larger for stocks featured in the media. Before adding controls, in column 1,  $HoldRetMkt_{t-1}$  has a coefficient of 0.197 (significant at the 1% level with a t-statistic of 2.72), while  $NewsHoldRetMkt_{t-1}$  has a coefficient of 0.195 (significant at the 1% level with a t-statistic of 2.78). These coefficients suggest that the response of flows to the returns of media-covered holdings ( $0.197 + 0.195 = 0.382$ ) is more than twice as large as the response to holdings not covered in the media (0.195).

In columns 2-5 of Panel A in Table II, we test whether holdings' returns have any incremental effect on flows over and above the performance of the fund and other fund characteristics. The base effect of all holdings ( $HoldRetMkt$ ) disappears once we account for fund's returns and market-adjusted returns. In contrast, the effect of media-covered holdings remains largely unchanged in both magnitude and significance after adding these controls, as shown by the coefficient on the variable  $NewsHoldRetMkt_{t-1}$  (coefficient of 0.197 with a t-statistic of 3.13). In other words, the apparent effect of the returns of non-covered holdings is mainly explained by the returns of the fund itself. In contrast, the

effect of media-covered holdings is incremental to fund returns and other fund characteristics, and remains reliably significant after adding the full set of controls (t-statistic of 3.36 in column 5).

The evidence in Table II indicates that investors' capital flows appear to react only to the returns of holdings covered in the national press, and that these holdings attract extra flows over and above the returns of the fund. The magnitude of this effect is substantial. Based on the coefficients in column 4 of Table II, a one standard deviation increase in the market-adjusted returns of media-covered holdings (8.47%) is associated with an increase in the quarterly fund flows of 0.72 percentage points or \$13.4 million for the average fund in our sample. To provide a relative comparison, the effect of the returns of media-covered holdings on future flows is about 23% as large as the effect of the actual fund returns.<sup>6</sup>

In Panel B, we explore how the effects vary with the quantity of media coverage. If media coverage affects investor decisions, the information and salience views predict that greater quantities of media coverage should have larger effects. To this end, we replace the overall effect of news ( $NewsHoldRetMkt_{t-1}$ ) with two variables that capture high and low coverage stocks: the average returns of holdings with coverage levels above the median for that quarter, and the returns of holdings with coverage below the median. Medians are taken over the set of firms with at least one article. In a second specification, we examine four variables – the returns of holdings with media coverage in quartiles 1 through 4 based on the frequency of coverage (quartiles are taken over the stocks with at least one article).

These results are presented in Panel B of Table II. The effects on flows are larger for holdings that received more media coverage. When holdings are split at the median according to the amount of media coverage, the high coverage stocks have a coefficient of 0.082 (significant at the 1% level), while the low coverage stocks have a coefficient of 0.039, significant at the 10% level. When coverage is split

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<sup>6</sup> We derive this relation by dividing the magnitude of the effect of media-covered stocks ( $0.137 - 0.052 = 0.085$ ) by the coefficient on the market-adjusted returns of the fund (0.366) as follows:  $0.085 / 0.366 = 0.23$

by quartiles, the effects are monotonically increasing in the amount of coverage – from a statistically insignificant coefficient of 0.013 in the lowest quartile to a coefficient of 0.045 (significant at the 5% level) in the highest quartile.

In sum, the evidence in this section indicates that past returns of stocks covered in the media have significant predictive power for future fund flows, over and above the average returns of all portfolio holdings and the returns of the fund itself. In addition, a greater amount of media coverage has a larger effect on flows.

### *3.2 Informativeness and Salience of Holdings*

In this section, we study how the role of media coverage of fund holdings varies with the proxies of salience and information relevance. This analysis is intended to distinguish between the salience and information views of media coverage in investors' decisions.

If investors' reaction to media-covered holdings is related to a shift in attention toward more salient stocks, then the effect of holdings' returns is likely to be related to other measures of investor attention. We examine this conjecture by using two proxies of information salience. The first proxy is the number of stocks in a fund's portfolio. Under the salience view, a large number of stocks in a portfolio is likely to dilute investor attention and reduce the salience of holdings' returns.

The second proxy for salience is the mentioning of the company's name in the article's headline. We conjecture that the articles that display a company's name in the headline are likely to be more prominent to a casual reader and elicit a stronger association with a particular firm. To test this conjecture, we examine the returns of holdings that received media coverage and were mentioned in the article's headline, and test whether these returns have a larger effect than the base effect of media coverage.

Alternatively, if the reaction to media-covered holdings is driven by information, it is likely to vary with measures of informativeness of fund holdings. We consider two proxies of the information relevance of fund holdings: (1) staleness of reported holdings and (2) turnover of fund holdings.

Our measure of holdings' staleness is the time period that has elapsed between the date for which the holdings are reported and the date when these holdings are disclosed, a proxy which we label *ReportGap*. The SEC disclosure regulations stipulate that mutual funds report their holdings within 60 days from the end of the reporting period, thus permitting significant variation in the timeliness of portfolio disclosure. In particular, while about 51% of fund-quarter observations are reported as of the filing date, the remaining reports come with a significant time lag, with the overall standard deviation of 65 days. As a result, portfolio holdings with a longer *ReportGap* are likely to be more stale and less informative of a fund's portfolio strategy.

Our second measure of the informativeness of portfolio disclosure is holdings' turnover, measured by the variable *TurnRatio* in percent per year. We conjecture that a snapshot of portfolio holdings is less informative of a fund's strategy if a fund changes its holdings more frequently. *TurnRatio* in our sample has an inter-quartile range of 38 percent to 115.5 percent and a standard deviation of 81 percent, indicating significant variation in stock holding periods across funds.

To study how investors' capital allocations vary with the measures of holdings' informativeness and salience, we estimate panel regressions of fund flows. The set of independent variables includes our four measures of salience and information and all the control variables in equation (1). The key variables of interest in this regression are the interaction terms of the measures of salience and informativeness with the variables *HoldRetMkt<sub>t-1</sub>* and *NewsHoldRetMkt<sub>t-1</sub>*. These interactions examine whether and how the effect of holdings' returns and media coverage varies with proxies of salience and information. All regressions include year- and fund-style fixed effects, and the standard errors are clustered by fund and quarter.

The results in Table III indicate that investors' response to fund holdings is affected by the measures of salience, but is not affected by the measures of holdings' informativeness. Funds that hold more stocks show a decreased sensitivity of flows to their average holdings' returns, as shown by the negative and significant coefficient on the interaction term of *HoldRetMkt* and *NumStocks*. The reduction in this sensitivity is weakly smaller for holdings that received media coverage, indicating that media-covered stocks retain relatively greater salience as the number of stocks increases (as shown by the positive coefficient on *NewsHoldRetMkt \* NumStocks*). Overall, an increase in the number of stocks appears to dilute investors' reaction to media-covered holdings, as indicated by the negative sum of the two interaction coefficients. The effect of the number of stocks is about 60% less for holdings with media coverage.

To provide a perspective on economic magnitudes, consider the following illustration. For a fund at the 25<sup>th</sup> percentile rank on the number of holdings (48), a 10% increase in the average returns for media-covered holdings is associated with an increase in fund flows of 67 basis points per quarter.<sup>7</sup> For a fund at the 75<sup>th</sup> percentile rank on the number of holdings (110), a 10% increase in the average returns for media-covered holdings is associated with an increase in fund flows of 51 basis points.

In addition, media-coverage that features the company name in the headline has a significantly larger effect on flows. The coefficient for media-covered holdings featured in the headline is 0.030, significant at the 5% level. This effect is in addition to the base effect of media covered holdings, which in this specification is 0.109. In other words, the incremental effect of media coverage is around 28% larger when the firm is mentioned in the headline.

By contrast, the impact of holdings' returns does not appear to be reduced when the holdings are less informative. Investors do not show significantly weaker reactions to stale holdings, as shown by the

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<sup>7</sup> This estimate is derived from the following coefficients:  $0.111 - 0.032 - 0.679*0.049 + 0.421*0.049 = 0.067$ , which multiplied by 10% returns gives flows of 0.67%

coefficients on the interaction terms *NewsHoldRetMkt\*ReportGap* or *HoldRetMkt\*ReportGap*, which are not significant and have opposite signs. For high turnover funds, investors pay somewhat less attention to media-covered holdings specifically (as seen in the marginally significant coefficient of -0.120 on *NewsHoldRetMkt\*Turnover*), but this is more than offset by a larger response to holdings returns in general (as seen in the coefficient of 0.165 on *HoldRetMkt\*Turnover*). In aggregate, investors do not seem to reduce their attention to the holdings returns of high turnover funds.

Overall, the evidence in Table III indicates that media coverage appears to capture investors' attention and increase the salience of particular stocks rather than serve as a source of useful information. In particular, investors respond stronger to the media effect when the number of stocks is small and easier to remember and when the media coverage mentions the company name more prominently. In contrast, variables proxying for the informativeness of holdings do not affect investors' behavior, suggesting that either investors do not respond to the information contained in media reports or that such reports provide little useful information.

### *3.3 The Impact of Media Coverage at Different Horizons*

In this section, we investigate how the timing of media coverage affects investors' capital allocation decisions. The significant temporal variation in newspaper coverage of stocks allows us to distinguish the media effect from time-invariant firm characteristics and to differentiate further between the salience and information views. If newspaper articles increase the salience of particular holdings to mutual fund investors, we expect the media effect to be driven by the more recent (and thus more salient) news, and to be associated with a transitory shift in investors' attention. In other words, the salience view predicts that investors' reaction to holdings in the news should fade away quickly as the media shifts to a different set of "hot" stocks. In contrast, if the news coverage of stocks held by mutual funds facilitates the processing of useful information about a fund's strategy, we expect that it will have a longer-term

effect on capital allocations, for example, by helping investors identify high-ability managers for the long run.

To investigate the temporal effects of media coverage, we introduce three variables, which identify the stocks that were featured in the four national newspapers in the month of filing (*NewsMth1HoldRetMkt*), one month before the filing month (*NewsMth2HoldRetMkt*) and two months before the filing month (*NewsMth3HoldRetMkt*). We add these variables to the set of independent terms in our base specification (equation 1 and Table II) and estimate panel regressions of quarterly fund flows, as in the previous two models. The results of this estimation are summarized in Table IV.

Table IV shows that the effect of media attention is primarily driven by newspaper coverage in the month of filing, as shown by the coefficient on *NewsMth1HoldRetMkt*, which is reliably significant at the 1% level with a full set of controls. The effect of media coverage fades away rapidly after two months, as indicated by the coefficients on *NewsMth2HoldRetMkt* and *NewsMth3HoldRetMkt*, which drop in magnitude and lose statistical significance.

We also control for the possibility that some stocks with older news coverage may be featured in the news in the filing month. In the extreme case, some stocks may receive newspaper coverage every month of the quarter. To account for this possibility, we estimate the effect of all three temporal variables simultaneously in column 4. The results in this column confirm that the media effect is driven by the coverage in the month of filing. In particular, the coefficient on *NewsMth1HoldRetMkt* increases in both magnitude and significance, while the coefficients on news coverage two and three months ago drop in magnitude and remain insignificant, with a further reduction in t-statistics.

The results in this section indicate that media coverage has a short-lived effect on investors' allocations, an outcome consistent with greater salience of recent news and limited retention of earlier articles. Additionally, this evidence suggests that the media effect cannot be explained by firm-level characteristics that are correlated with media coverage but remain invariant over several months.

### 3.4 Media-Covered Holdings and Future Fund Returns

Next, we consider whether investors appear to improve their performance by allocating flows as a function of the returns of media-covered holdings. In particular, if the returns on media-covered holdings predict future fund performance, then this would tend to support the information view, as media coverage of stocks would be correlated with greater returns to the investor. There are reasons to suspect that this may be true, as stocks with high past returns are likely to have higher future returns due to the momentum effect of Jegadeesh and Titman (1993), and Chan (2003) finds that momentum is stronger among stocks that received media coverage. A relationship between media-covered holdings and future fund performance would imply that the reaction of investors to media-covered stock returns is entirely rational.

We investigate this possibility in Table V by considering whether the returns of media-covered holdings predict future fund returns. In Panel A, the dependent variable is quarterly market-adjusted fund returns, and the independent variables are the same as in Table II (the previous quarter's holdings returns, media-covered holdings returns, and so on). This examines whether market-adjusted fund returns are predictable using information in the past returns of holdings. In Panel B, we form portfolios of fund returns sorted on levels of *NewsHoldRetMkt*, and regress them on a three-factor and four-factor model, using Mkt-Rf, SMB, HML and UMD portfolios from Ken French's website. This allows a comparison of whether the returns of media-covered can predict future abnormal fund returns, and controls better for standard risk factors.

Table V shows that past media-covered holdings' returns have little predictive power for future fund returns. In Panel A, *NewsHoldRetMkt* has a coefficient of 0.063 and t-statistic of 1.81 after controlling for *HoldRetMkt* (column 1). In column 4, adding raw and market-adjusted fund returns (and squared returns) at two lags reduces the *NewsHoldRetMkt* coefficient to 0.021 with a t-statistic of 0.80, suggesting that much of the apparent effect of past holdings returns is actually picking up the effect of

past fund returns. Adding in style and year fixed effects in column 5 reduces the *NewsHoldRetMkt* effect further, to 0.009 with a t-statistic of 0.32.

For calendar time portfolios in Panel B, the results are even weaker. Monthly funds returns are sorted into quintiles and deciles based on levels of *NewsHoldRetMkt* (using the most recent reporting within over the previous quarter). We consider the top and bottom deciles of *NewsHoldRetMkt* (and the difference between the two) in the first three rows. High values represent media-covered holdings with high past returns. The results in Panel B show that all of the portfolios sorted on *NewsHoldRetMkt* have small and statistically insignificant three-factor or four-factor alphas, with the patterns across levels of *NewsHoldRetMkt* being inconsistent in direction.

Overall, the results in this section indicate that past returns of media covered holdings do not help predict future fund performance. Therefore, capital allocations based on this criterion do not generate value for investors. These findings are consistent with the salience view and undermine the information hypothesis.

#### **4. Media Coverage and Window Dressing**

In the previous section we established an effect of media on investors' capital allocation decisions. We also showed that these decisions are likely an outcome of the familiarity effect rather than a systematic analysis of funds' investment strategies. Since such investor behavior increases flows into funds loading highly on media-covered stocks with high past returns, fund managers may strategically hold such stocks in their portfolios. In this section we relate these incentives to window dressing strategies of funds, i.e. strategies that aim to convey an impression of superior investment decisions while having little, or even negative, effect on fund performance. In particular, we seek to distinguish between funds that purchased well-performing stocks *before* they appreciated ("stock pickers") and those that purchased them *after* ("window dressers"). We then relate this analysis to future fund flows to

understand whether media-based window dressing is an effective strategy to attract flows or whether it is exposed or even penalized by investors.

If investors are reacting to useful information contained in media-covered fund holdings, then a sophisticated investor ought to only respond to the returns of holdings when the holdings appear to represent the fund's actual returns. Window dressing is something that investors should be able to check by comparing the returns of holdings and the returns of the fund. If investors suspect the fund is window dressing, they should react less to the returns of the fund's holdings and the window dressing will be unsuccessful, an idea we test below. We also examine whether funds take advantage of attention to media-covered stocks when window dressing. If a fund is engaging in window dressing, then the previous results suggest that funds would prefer to have higher returns in stocks with media coverage than in stocks without coverage.

#### *4.1 Measures of Window Dressing*

To measure window dressing, we seek to identify funds buying high past performing stocks immediately before reporting in order to disguise poor fund performance. This will result in the past returns of the fund's holdings being larger than the past returns of the fund itself. Nonetheless, there are reasons other than window dressing why fund returns and holdings returns may differ. Kacperczyk, Sialm and Zheng (2008) ('KSZ') examine the 'returns gap' – the difference between fund returns and holdings returns (in the period after the holdings were disclosed). They describe this gap as being driven by window dressing, transaction costs, and the value of unobserved trades between reporting dates (Puckett and Yan (2010)).

Window dressing by buying past winners will make the *past* returns of holdings high, but will only generate higher *future* holdings returns through weaker effects like momentum. Importantly, the other components of the returns gap (unobserved trades, transaction costs) are likely to be similar both

before and after reporting dates. Hence we measure window dressing as the difference between a returns gap using the holdings returns before disclosure (“backward-looking”), and a returns gap using holdings returns after disclosure (“forward-looking”).

We illustrate this in Figure 1. Suppose that a fund discloses holdings on March 31 and June 30. The KSZ return gap compares fund returns from March 31 to June 30 with the returns between March 31 and June 30 of holdings filed on March 31. Consider a backwards-looking return gap that compares fund returns from March 31 to June 30 with the returns between March 31 and June 30 of holdings filed on June 30. Window dressing will have a larger effect on this gap, as the June 30 stocks were bought due to their high returns between March 31 and June 30, but may not have high returns after June 30. Other components of the return gap (transaction costs, the value of trades between March 31 and June 30) should be similar for both measures. Hence we measure window dressing as the backward-looking returns gap minus the forward-looking returns gap<sup>8</sup>. We lag the forward-looking KSZ return gap by one quarter, so that the returns component does not cancel out. Figure 1 illustrates this. In the example above, we have:

$$RetGapKSZ_{Jun30} = FundReturn_{Mar31-Jun30} - Holdings_{Mar31}Return_{Mar31-Jun30}$$

$$RetGapBack_{Sep30} = FundReturn_{Jun30-Sep30} - Holdings_{Sep30}Return_{Jun30-Sep30}$$

$$WindowDress_{Sep30} = RetGapBack_{Sep30} - RetGapKSZ_{Jun30}.$$

We also consider a second version of window dressing that controls for other possible reasons why funds may buy stocks after high returns, such as turnover, following a momentum or post-earnings announcement drift strategy, and other fund characteristics. We construct percentile measures of each stock’s market capitalization, book-to-market ratio<sup>9</sup>, momentum (cumulative returns between month t-12

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<sup>8</sup> All the results on window dressing are similar (and slightly larger) if the backwards-looking return gap is used instead of the backward-looking minus forward-looking window dressing measure.

<sup>9</sup> This similar to Fama and French (1992) as the market value of equity in the previous December divided by the Compustat book value of shareholder’s equity in the previous fiscal year, after allowing a minimum six-month gap between reporting dates and the stock return.

and  $t-2$ ), and a dummy variable for whether the stock had a Compustat earnings announcement in the month of reporting. For each holdings portfolio, we then take the mean and standard deviation of the percentile value of each variable (to capture both an average tilt towards a characteristic, and a level of concentration in that characteristic). We then regress the window dressing measure on these variables, as follows:

$$WindowDress_t = a + b_1*Turnover + b_2*MktCapMean + b_3*BMMean + b_4*MomMean + b_5*EarnMean + b_6*MktCapStd + b_7*BMStd + b_8*MomStd + b_9*EarnStd + \varepsilon \quad (2)$$

The residual of this regression,  $\varepsilon = WindowDressResid$ , is taken as a second measure of window dressing that is orthogonal to fund turnover and the portfolio characteristics above.

#### 4.2 Window Dressing and the Returns of Media-Covered Holdings

An indirect test between the information and attention hypotheses is to examine the actions of funds who engage in window dressing. Suppose funds perceive that the larger reaction to media-covered holdings is driven mainly by a naïve response to the salience and attention directed to those stocks. In such a case, funds who wish to engage in window dressing will be more likely to hold high return media-covered stocks, as such stocks will generate a larger investor response.<sup>10</sup> On the other hand, suppose that funds perceive that the larger reaction to media-covered holdings is driven by sophisticated investors who have a greater understanding of the stocks and their role in the fund's strategy. In this case, there is less incentive to window dress with media-covered stocks, as investors are unlikely to be fooled by such actions.

In Table VI, consider whether funds engaging in window dressing are more likely to tilt their portfolios more towards high-return media-covered stocks than high-return stocks without media coverage. The dependent variables are the returns of holdings that received media coverage

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<sup>10</sup> Fang, Peress and Zheng (2009) show that mutual funds appear to trade based on media coverage of stocks. The idea that funds pay attention to media coverage when window dressing is consistent with this evidence.

(*NewsHoldRet*) the returns of holdings with no media coverage (*NoNewsHoldRet*), and the difference between the two (*NewsDiffHoldRet*). This is regressed on the various measures of window dressing – in Panel A, *WindowDress* and *WindowDressResid*, and in Panel B, *frac10retmup*. When *WindowDressResid* is included instead, the additional controls from (2) are included as well. Standard errors are clustered by fund and quarter. The regression is:

$$\begin{aligned} \text{NewsDiffHoldRet}_{i,t} = & a + b_1 * \text{WindowDress} + b_2 * \text{FundRet}_{t-1} + b_3 * \text{FundRetMkt}_{t-1} + b_4 * \text{FundRetSq}_{t-1} + \\ & b_5 * \text{FundRetMktSq}_{t-1} + b_6 * \text{Age} + b_7 * \text{LogAssets} + b_8 * \text{FundRet}_{t-2} + b_9 * \text{FundRetMkt}_{t-2} + b_{10} * \text{FundRetSq}_{t-2} \\ & + b_{11} * \text{FundRetMktSq}_{t-2} + b_{12} * \text{Yeardum}_{1998-2008} + b_{13} * \text{IOCdum}_{2-3} + e_{i,t} \end{aligned} \quad (3)$$

Table VI shows that window dressing funds are more likely to concentrate their high return holdings in stocks that have received past media coverage. The *WindowDress* variable is associated with higher returns to media-covered holdings, with a coefficient 0.408 (t-statistic of 4.79). By contrast, for non-media-covered holdings, the coefficient is lower, at 0.342 (t-statistic of 4.32). For the difference between media-covered and non-media-covered holdings, the coefficient is 0.065, with a t-statistic of 4.04. In terms of magnitudes, a one standard deviation increase in window dressing (8.09%) is associated with higher past returns for media-covered holdings of 3.42%, versus 2.87% for non-media-covered holdings. The results using *WindowDressResid* are substantially similar.

Overall, these results show that funds that appear to engage in window dressing are taking advantage of the greater attention paid to media-covered holdings in constructing their portfolios. In other words, the actions of window dressing funds are consistent with them believing that investors are reacting naively to holdings that receive media coverage.

#### 4.3 The Reaction of Flows to Window Dressing

If investors react to the past returns of fund holdings, this creates incentives for funds to window dress their portfolios. However investors may undo these perverse incentives by only reacting to the returns of

holdings that actually appear to represent past fund performance. If the past returns of holdings are close to the past returns of the fund, this makes it more likely that the fund actually held the stocks for the whole quarter, and the stocks represent an accurate picture of the fund's choices. If the past returns of holdings greatly exceed the returns of the fund, this makes it more likely that the fund is engaging in window dressing. Investors may punish funds engaging in window dressing by reducing the overall flows allocated, or by lowering their sensitivity to holdings performance. This presents an additional test of investor sophistication.

We investigate this in Table VII, by examining whether the relationship between future flows and past returns of media-covered holdings is weaker when a fund appears to be engaging in window dressing. If the relationship is weaker for window dressing funds, this would suggest that investors are sophisticated in responding to the returns of holdings. By contrast, if the relationship is not weaker for window dressing funds, then investors are rewarding funds equally regardless of whether the holdings represent realized returns or not. In this sense, the tests are also a measure of whether window dressing actually works to generate additional flows. The regressions are similar to those in section 3.1 - the dependent variable is quarterly fund flows, and the independent variables are *WindowDress*, and *WindowDressResid*, as well the interactions of these variables with both *HoldRetMkt<sub>t-1</sub>* and *NewsHoldRetMkt<sub>t-1</sub>*.

The results in Table VII show that investors do not appear to reduce their flow allocations when funds engage in window dressing, and if anything they increase them. The coefficients on *WindowDress<sub>t-1</sub>* and *WindowDressResid<sub>t-1</sub>* are insignificant, and directionally positive. This shows that window dressing is penalized through lower fund flows overall.

Window dressing also does not decrease the attention investors pay to holdings returns, as seen in the interactions of *WindowDress<sub>t-1</sub>* and *WindowDressResid<sub>t-1</sub>* with *HoldRetMkt* and *NewsHoldRetMkt*. The coefficients are statistically insignificant and uniformly positive— directionally at least, investors

respond more to the returns of holdings when those holdings appear to overstate the actual returns of the fund. Overall, Table VII shows that window dressing ‘works’ – investors respond equally to the performance of past holdings, regardless of whether they resemble the actual performance of the fund.

#### *4.4 Characteristics of Window Dressing Funds*

If window dressing is successful in generating fund flows, this raises the question of why more funds do not do it. Window dressing will vary in both its costs and benefits to funds. While it is beyond the scope of this paper to provide a complete explanation of window dressing, in Table VIII we explore which fund characteristics are associated with window dressing.

In terms of incentives for window dressing, we examine a number of variables. Funds with high past market-adjusted returns will have less incentive to window dress their portfolios, as they are likely already holding securities that have risen in value. Funds with managers who have recently joined the fund (measured as less than three years at the fund) may be more likely to window-dress, as they have less of a track-record of performance with which to attract flows. Funds that are closed to new investment have less incentive to try to attract additional flows, and so may window dress less. Funds with higher expenses may be more likely to window-dress to compensate for outflows related to their high fees. Funds may have more incentive to window dress their holdings in December, when annual reports are released and funds face more scrutiny (Brown, Harlow and Starks (1996)). Finally, funds holding higher volatility stocks may have more need to window dress, as these holdings are more likely to become extreme losers that a window dressing fund will want to eliminate.

In terms of costs of window dressing, we examine the log of fund total net assets, as larger funds are likely to have more price impact which may deter them from window dressing. Funds with high turnover are likely to engage in more window dressing, as they face lower marginal costs – if a fund is already planning on trading their portfolio, it is relatively cheaper to sell the losing stocks and buy

winners. Finally, we consider various measures of the liquidity of holdings – the average market capitalization of holdings, the relative bid-ask spread (  $[(\text{Ask Price} - \text{Bid Price}) / ((\text{Ask Price} + \text{Bid Price}) / 2)]$ ), the average book-to-market ratio, and the average measure of illiquidity from Amihud

(2002) ( 
$$\text{Illiq} = \frac{1}{D} \sum_{t=1}^D \frac{|R_t|}{\text{VOLD}_t}$$
 , where R is the stock return that day, D is the number of days that year the stock traded and VOLD is the dollar volume traded that day). Standard errors are clustered by fund and month. The regression is:

$$\begin{aligned} \text{WindowDress}_{i,t} = & a + b_1 * \text{FundRetMkt}_{t-1} + b_2 * \text{LogAssets}_{i,t} + b_3 * \text{ClosedFund}_{i,t} + b_4 * \text{Turnover}_{i,t} + \\ & b_5 * \text{December} + b_6 * \text{Expense\_Ratio} + b_7 * \text{YoungManager}_{i,t} + b_8 * \text{HoldAvgMktCap}_{i,t} + b_9 * \text{HoldAvgIlliq}_{i,t} + \\ & b_{10} * \text{HoldAvgVolatil}_{i,t} + b_{11} * \text{HoldAvgRelSpread}_{i,t} + b_{12} * \text{HoldAvgBM}_{i,t} + b_{13} * \text{Yeardum}_{1998-2008} + \\ & b_{14} * \text{IOCdum}_{2-3} + e_{i,t} \end{aligned}$$

We find that window dressing is significantly related to various measures of costs and benefits. At a univariate level, window dressing is more likely for funds with low past returns, high turnover funds, high-expense funds, managers with less than three years experience at their current fund, and funds with high volatility stocks and value stocks. Window dressing is less likely for funds with large assets under management, and weakly less likely for funds holding large market-capitalization stocks. On a multivariate level, the effects are dominated by the past fund market-adjusted returns (coefficient of -0.106, t-statistic of -2.04), turnover (coefficient of 0.010, t-statistic of 4.51), stock volatility (coefficient of 2.886, t-statistic of 2.91), and to a lesser extent December holdings (coefficient of 0.014, t-statistic of 1.71).

On the whole, the results in this section suggest that window dressing varies across funds and is likely to be more prevalent among funds facing stronger performance pressures. This implies that window dressing is a somewhat risky practice and is mostly pursued by funds that are unable to woo investors via other means.

## **5. Alternative Explanations**

### *5.1 Variables Correlated with Media Coverage*

One possible concern is that media coverage may be proxying for some other underlying company characteristic. Solomon (2010) and Solomon and Soltes (2011) show how media coverage is determined by company characteristics such as market capitalization, analyst coverage, book-to-market ratio, and promotion that the company engages in. If the media coverage/holdings returns interaction is driven by some other company characteristic, then the effect should disappear after controlling for interactions of holdings returns with other variables that are correlated with media coverage.

The identification question here is less problematic than many papers that examine the effects of media coverage on stocks, however. The reason is that the variable of interest is not the returns of the stocks being covered, but the flows accruing to the funds holding the stocks. It is unlikely that media attention towards the stocks is directly affecting the funds themselves, as very few media articles about a company will mention the funds that hold the company's stock.

In Table IX we examine whether the reaction to media-covered stocks is driven by stock characteristics related to media coverage, rather than media coverage itself – market capitalization, analyst coverage, book-to-market ratio, and momentum. We construct four variables for the previous quarter's returns of holdings for those that were above the NYSE midpoint of market capitalization, and above the midpoints of analyst coverage, book-to-market ratio, and momentum. We then include these four variables in the regression in section 3.1

Table IX shows that these variables do not influence the results. Despite all four variables being correlated with media coverage (Solomon (2010)), holdings returns sorted on these variables show no significant effects on fund flows, nor do they reduce the effect of media-covered holdings. This suggests that the extra response to holdings returns lies in the media coverage itself, not merely in other variables associated with media coverage.

## 5.2 Future Fund Returns, Holdings Weights and the Direction of Holdings Returns

In Table X we consider three additional robustness checks. The first is whether media-covered returns survive controlling for the future returns of the fund. Even if media-covered holdings do not directly predict future returns in the regressions in section 3.4, it is possible that they are being used in some other way to predict returns. If investors are able to forecast future fund returns via any method at all in fund holdings, then controlling for the fund returns should drive out the effects of holdings and the media coverage interaction.

Secondly, we consider the effect of portfolio weights. Since media-covered stocks are on average larger, it may be that position size (rather than media coverage) is driving the effects. To control for this, we include the fund's value-weighted holdings returns (as well as the equal-weighted holdings returns from the previous regression) in the regressions from section 3.1.

Finally, we examine whether the effect of media-covered holdings returns is different based on the sign of the news. Solomon and Soltes (2011) argue that bad news is more likely to receive media coverage, and may be more interesting to investors. To evaluate whether positive and negative holdings returns (and their media coverage) are viewed differently, we include two additional variables. *NewsHoldRetMktNeg* is equal to *NewsHoldRetMkt* when that variable is negative, and zero otherwise. Similarly, *HoldRetMktNeg* is equal to *HoldRetMkt* when that variable is negative, and zero otherwise. The regression also includes analogous variables for *FundRetMktNeg* and *FundRetNeg* which equal (respectively) *FundRetMkt* when it is negative and zero otherwise, and *FundRet* when it is negative and zero otherwise.

Table X shows that the effects of media-covered holdings returns survive controlling for different portfolio weights and future fund returns. After controlling for fund returns over the next two quarters (column 1), the coefficient on *NewsHoldRetMkt* is 0.099, with a t-statistic of 2.61. Adding in controls for the value-weighted holdings returns does not have a large effect on the *NewsHoldRetMkt*

coefficient (equal to 0.139, with a t-statistic of 3.43). This indicates that the impact of media-covered holdings is not driven by them being a larger component of the fund's portfolio.

Additionally, column 3 shows that the effects of media-covered holdings returns are roughly symmetric between positive and negative holdings returns. The coefficient on *NewsHoldRetMktNeg* is positive (meaning that directionally investors pay more attention to negative average returns of media covered holdings), but the difference is not significant.

## **Conclusion**

In this paper, we show how media coverage affects the way investors allocate money to mutual funds. Investors reward funds that hold stocks with high past returns, but only for stocks that recently received media coverage. We argue that media coverage of individual companies increases the salience of those companies' stock returns, and attracts investor attention. When faced with a long list of fund holdings, investors appear to respond only to those companies they are already familiar with. As a consequence, funds holding high-visibility winners and loser experience larger effects in fund flows based on the returns of their holdings, compared with funds holding less visible stocks.

In contrast to the view of the media as a source of increased investor information, we find little evidence that press articles are associated with better investor decision-making. Investors reward high return media-covered holdings, even though doing so does not help them identify high future fund returns. In addition, investor behavior creates incentives for funds to window dress their portfolios by holding media-covered winners. We find evidence of this portfolio strategy among funds with weak performance records, but find no evidence that this strategy is penalized by investors. Overall, our results suggest that investors are allocating capital to mutual funds in a fairly naïve fashion.

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## **Appendix – Variable Definitions**

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<b>Variable Name</b>	<b>Description</b>
WindowDressResid	Residual from regression of WindowDress on turnover and holdings characteristics (see eq (2) in section 4.2)
NewsDiffHoldRet	Difference between the returns of media covered holdings and non media covered holdings
NewsMth1HoldRetMkt	Market-adjusted average returns of fund holdings which received media coverage in the month of filing
NewsMth2HoldRetMkt	Market-adjusted average returns of fund holdings which received media coverage one month before the month of filing
NewsMth3HoldRetMkt	Market-adjusted average returns of fund holdings which received media coverage two months before the month of filing
HeadHoldRetMkt	Market-adjusted average returns of fund holdings which received media coverage, where the firm's name was mentioned in the article headline
NewsHalf2RetMkt	Market-adjusted average returns of fund holdings with more media coverage than the median firm (taken across firms with at least one article)
NewsHalf1RetMkt	As above, but below the median
NewsQuart1RetMkt to NewsQuart4RetMkt	As above, but for quartiles of media coverage, with 4 being the most covered firms
Age	Fund age in years, relative to earliest CRSP Header Date
LogAssets	Log of the CRSP total net assets of the fund (summed over all share classes)
Turnover	Fund turnover, from CRSP
Expense_Ratio	Fund expense ratio, from CRSP
YoungManager	A dummy variable that equals one if the fund manager has been at the fund for less than three years.
IOCdum/Style FE	Dummy variables for fund IOC codes of 'growth' and 'aggressive growth'
NumStocks	Number of stocks in the fund's portfolio
ReportGap	Difference (in years) between filing date of holdings information with the SEC and the date that the holdings are reported for
MktCapHoldRetMkt	Market-adjusted average returns of fund holdings with market capitalizations above NYSE median
NumAnHoldRetMkt	Market-adjusted average returns of fund holdings with analyst coverage above CRSP median
BMHoldRetMkt	Market-adjusted average returns of fund holdings with book-to-market ratio above CRSP median
MomHoldRetMkt	Market-adjusted average returns of fund holdings with cumulative returns from two to 12 months ago that are above CRSP median

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<b>Variable Name</b>	<b>Description</b>
WindowDressResid	Residual from regression of WindowDress on turnover and holdings characteristics (see eq (2) in section 4.2)
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HeadHoldRetMkt	Market-adjusted average returns of fund holdings which received media coverage, where the firm's name was mentioned in the article headline
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Turnover	Fund turnover, from CRSP
Expense_Ratio	Fund expense ratio, from CRSP
YoungManager	A dummy variable that equals one if the fund manager has been at the fund for less than three years.
IOCdum/Style FE	Dummy variables for fund IOC codes of 'growth' and 'aggressive growth'
NumStocks	Number of stocks in the fund's portfolio
ReportGap	Difference (in years) between filing date of holdings information with the SEC and the date that the holdings are reported for
MktCapHoldRetMkt	Market-adjusted average returns of fund holdings with market capitalizations above NYSE median
NumAnHoldRetMkt	Market-adjusted average returns of fund holdings with analyst coverage above CRSP median
BMHoldRetMkt	Market-adjusted average returns of fund holdings with book-to-market ratio above CRSP median
MomHoldRetMkt	Market-adjusted average returns of fund holdings with cumulative returns from two to 12 months ago that are above CRSP median

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**Table I - Summary Statistics**

<b>Panel A - Fund Attributes</b>						
	<b>Mean</b>	<b>Standard Deviation</b>	<b>25th Pctile</b>	<b>Median</b>	<b>75th Pctile</b>	<b>N</b>
<b>Flows (%)</b>	4.42	23.52	-4.52	-0.88	5.01	48,067
<b>Returns (%)</b>	0.75	10.51	-4.45	1.60	6.85	48,076
<b>Market-Adjusted Returns (%)</b>	0.30	5.80	-2.54	-0.10	2.80	48,076
<b>CRSP Fund Total Net Assets</b>	1847	6391	100	347	1199	48,077
<b>Turnover (%)</b>	89.02	81.10	38	70	115.5	47,624
<b>Expense Ratio (%)</b>	1.41	0.47	1.11	1.40	1.66	47,713
<b>Age (Years)</b>	14.92	13.94	6.58	10.83	17.42	41,315
<b>Number of Funds</b>						1,720
<b>Number of Fund*Quarters</b>						48,077
<b>Panel B - Holdings Attributes</b>						
	<b>Mean</b>	<b>Standard Deviation</b>	<b>25th Pctile</b>	<b>Median</b>	<b>75th Pctile</b>	<b>N</b>
<b>Number of Stocks Held</b>	108.79	171.53	48	72	110	49,516
<b>Returns of Holdings (%)</b>	2.13	7.77	-1.45	1.18	4.70	49,516
<b>Returns of Holdings with Media Coverage (%)</b>	2.11	8.47	-1.67	1.16	4.84	49,505
<b>Percent of Holdings Covered in Media</b>	53.50	19.77	37.76	56.91	70.00	48,073
<b>Window Dressing - Raw</b>	3.54	8.09	0.61	2.26	5.06	46,568
<b>Window Dressing - Residual</b>	0.00	7.54	-2.46	-0.53	1.60	46,109
<b>Report Gap (in days)</b>	47.16	65.23	0	0	91	51,861

This Table presents summary statistics for the main variables used in this paper, for US Equity Mutual Funds from January 1999 to December 2008. Panel A presents attributes of the mutual funds in our sample. Observations are quarterly (i.e. quarterly flows, returns etc.). Returns are after expenses. Panel B presents attributes of the stocks held by the mutual funds in the sample. Panel C presents attributes of the level of media coverage received by stocks. Media coverage here refers to articles about the company in the Wall Street Journal, USA Today, New York Times or Washington Post over the quarter ending in the month that the holdings were filed with the SEC. Individual variable definitions are provided in the Appendix.

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**Panel C - Media Attributes**

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	<b>Mean</b>	<b>Standard Deviation</b>	<b>25th Pctile</b>	<b>Median</b>	<b>75th Pctile</b>	<b>N</b>
<b><u>Percent of Stock/Quarters with Any Article</u></b>						
<b>All Stocks</b>	30.79					339,352
<b>Stocks Held by at Least One</b>	49.38					83,490
<b>Stocks Held by at Least Ten</b>	56.38					68,807
<b><u>Articles per Quarter</u></b>						
<b>All Stocks</b>	4.10	37.53	0	0	1	339,352
<b>Stocks Held by at Least One</b>	10.04	67.71	0	0	4	83,490
<b>Stocks Held by at Least Ten</b>	11.95	74.33	0	1	5	68,807
<b><u>Articles per Quarter, Given at Least One Article</u></b>						
<b>All Stocks</b>	13.33	66.73	1	3	7	104,485
<b>Stocks Held by at Least One</b>	20.33	95.26	2	4	11	41,225
<b>Stocks Held by at Least Ten</b>	21.10	97.78	2	4	12	38,976

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**Table II - Effect of Media Covered Holdings on Mutual Fund Flows**

<b>Panel A - Effect of Any Media Coverage</b>					
	(1)	(2)	(3)	(4)	(5)
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1)</b>	<b>0.195 ***</b> (2.78)	<b>0.197 ***</b> (3.13)	<b>0.162 ***</b> (3.10)	<b>0.137 ***</b> (2.71)	<b>0.141 ***</b> (3.36)
<b>Market-Adjusted Returns of All Holdings (t-1)</b>	<b>0.197 ***</b> (2.72)	<b>-0.039</b> (-0.38)	<b>-0.060</b> (-0.72)	<b>-0.052</b> (-0.76)	<b>-0.086</b> (-1.19)
<b>Fund Returns (t-1)</b>		<b>0.046</b> (0.75)	<b>0.046</b> (0.84)	<b>0.085</b> (1.52)	<b>0.080</b> (1.39)
<b>Fund Market-Adjusted Returns (t-1)</b>		<b>0.381 ***</b> (3.63)	<b>0.426 ***</b> (4.54)	<b>0.366 ***</b> (3.74)	<b>0.388 ***</b> (5.32)
<b>Squared Fund Returns (t-1)</b>			<b>0.821 **</b> (2.19)	<b>1.060 ***</b> (3.64)	<b>0.867 ***</b> (2.72)
<b>Squared Fund Market-Adjusted Returns (t-1)</b>			<b>0.044</b> (0.09)	<b>-0.554</b> (-1.51)	<b>-0.680</b> (-1.55)
<b>Fund Age</b>			<b>-0.708 ***</b> (-3.57)	<b>-0.570 ***</b> (-2.96)	<b>-0.397 **</b> (-2.07)
<b>Expense Ratio</b>			<b>1.662 ***</b> (3.13)	<b>1.562 ***</b> (3.02)	<b>1.935 ***</b> (3.60)
<b>Log Assets</b>			<b>0.010 ***</b> (5.40)	<b>0.010 ***</b> (5.12)	<b>0.011 ***</b> (5.68)
<b>Fund Returns (t-2)</b>				<b>0.070</b> (1.62)	<b>0.068 **</b> (2.20)
<b>Fund Market-Adjusted Returns (t-2)</b>				<b>0.343 ***</b> (3.54)	<b>0.340 ***</b> (4.49)
<b>Squared Fund Returns (t-2)</b>				<b>-0.271</b> (-1.08)	<b>-0.528 *</b> (-1.79)
<b>Squared Fund Market-Adjusted Returns (t-2)</b>				<b>1.030 *</b> (1.89)	<b>0.766 *</b> (1.79)
<b>Year, Style FE</b>	No	No	No	No	Yes
<b>R-Sq</b>	<b>0.018</b>	<b>0.023</b>	<b>0.032</b>	<b>0.044</b>	<b>0.053</b>
<b>N</b>	<b>48056</b>	<b>48021</b>	<b>41096</b>	<b>39969</b>	<b>39969</b>

See Notes on Following Page

<b>Panel B - Effect of Different Quantities of Media Coverage</b>				
	(1)	(2)	(3)	(4)
<b>Market-Adjusted Returns, Holdings Below Median of Media-Coverage, (t-1)</b>	<b>0.040</b> (1.50)	<b>0.039 *</b> (1.68)		
<b>Market-Adjusted Returns, Holdings Above Median of Media-Coverage, (t-1)</b>	<b>0.082 **</b> (2.47)	<b>0.082 ***</b> (2.68)		
<b>Market-Adjusted Returns, Holdings Below 25th Pctile of Media-Coverage, (t-1)</b>			<b>0.011</b> (0.73)	<b>0.013</b> (0.99)
<b>Market-Adjusted Returns, Holdings Between 25th &amp; 50th Pctile of Media-Coverage, (t-1)</b>			<b>0.022</b> (1.50)	<b>0.021 *</b> (1.76)
<b>Market-Adjusted Returns, Holdings Between 50th &amp; 75th Pctile of Media-Coverage, (t-1)</b>			<b>0.034 **</b> (2.28)	<b>0.033 *</b> (1.92)
<b>Market-Adjusted Returns, Holdings Above 75th Pctile of Media-Coverage, (t-1)</b>			<b>0.045 **</b> (2.12)	<b>0.045 **</b> (2.28)
<b>Market-Adjusted Returns, All Holdings (t-1)</b>	<b>-0.035</b> (-0.686)	<b>-0.064</b> (-1.221)	<b>-0.023</b> (-0.38)	<b>-0.053</b> (-0.81)
<b>Fund Characteristics, Returns</b>	Yes	Yes	Yes	Yes
<b>Year, Style FE</b>	No	Yes	No	Yes
<b>R-Sq</b>	<b>0.045</b>	<b>0.053</b>	<b>0.045</b>	<b>0.053</b>
<b>N</b>	<b>39978</b>	<b>39978</b>	<b>39978</b>	<b>39978</b>

This Table presents OLS regressions of quarterly fund flows for US Equity Mutual Funds on the prior returns of holdings of the fund, from January 1999 to December 2008. The dependent variable is quarterly fund flows. In Panel A, the first independent variable is the average returns of fund holdings over the quarter ending in the report date, minus the CRSP value-weight market return over the same period (lagged one period before the fund flows). The second main dependent variable is the average quarterly returns of the fund's holdings which received media coverage (in the Wall Street Journal, Washington Post, USA Today or New York Times), minus the CRSP value-weight market return, with the measure also lagged by one quarter. Other variables are defined in the Appendix. In Panel B, the returns of holdings are split according to the level of media coverage (with cutoffs taken over stocks that had at least one article that quarter): above and below the median in columns 1 and 2, and into quartiles in columns 3 and 4. 'Fund Characteristics, Returns' includes the controls in Panel A. The top number in bold is the coefficient, the bottom number in parentheses is the t-statistic (clustered by fund and quarter) and \*, \*\* and \*\*\* indicate significance at a 10%, 5% and 1% level respectively.

**Table III- Effect of Measures of Attention and Holdings Informativeness**

	Dependent Variable is Quarterly Fund Flows			
	(1)	(2)	(3)	(4)
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1)</b>	<b>0.111 **</b> (2.25)	<b>0.109 **</b> (2.38)	<b>0.271 ***</b> (2.71)	<b>0.191 ***</b> (3.06)
<b>Market-Adjusted Returns of All Holdings (t-1)</b>	<b>-0.032</b> (-0.39)	<b>-0.086</b> (-1.19)	<b>-0.299 ***</b> (-3.07)	<b>-0.112</b> (-1.23)
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1)</b> * Number of Stocks	<b>0.421</b> (1.58)			
<b>Market-Adjusted Returns of All Holdings (t-1)* Number of Stocks</b>	<b>-0.679 **</b> (-2.16)			
<b>Market-Adjusted Returns, Holdings with Media-Coverage and Firm Name in Headline, (t-1)</b>		<b>0.030 **</b> (2.04)		
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1) * Turnover</b>			<b>-0.120 *</b> (-1.76)	
<b>Market-Adjusted Returns of All Holdings (t-1) * Turnover</b>			<b>0.165 *</b> (1.92)	
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1) * Reporting Gap</b>				<b>-0.441</b> (-1.51)
<b>Market-Adjusted Returns of All Holdings (t-1) * Reporting Gap</b>				<b>0.049</b> (0.16)
<b>Number of Stocks</b>	<b>-0.002</b> (-0.19)			
<b>Turnover</b>			<b>0.000</b> (0.11)	
<b>Reporting Gap</b>				<b>-0.015</b> (-1.60)
<b>Fund Characteristics, Year &amp; Style FE</b>	Yes	Yes	Yes	Yes
<b>R-Sq</b>	<b>0.051</b>	<b>0.051</b>	<b>0.051</b>	<b>0.052</b>
<b>N</b>	<b>42112</b>	<b>42020</b>	<b>41779</b>	<b>42112</b>

This Table examines how holdings returns interact with measures of investor attention and holdings informativeness, using OLS regressions of quarterly fund flows for US Equity Mutual Funds on the prior returns of holdings of the fund, from January 1999 to December 2008. The dependent variable is quarterly fund flows. Attention is measured using the number of stocks, and the returns of holdings that received media coverage that mentioned the name of the firm in the headline. Informativeness is measured using fund turnover, and the gap between the holdings SEC file date and report date. (Reporting Gap). Other variables are defined in the Appendix. The top number in bold is the coefficient, the bottom number in parentheses is the t-statistic (clustered by fund and quarter) and \*, \*\* and \*\*\* indicate significance at a 10%, 5% and 1% level respectively.

**Table IV - Impact of Media Attention at Different Horizons**

	(1)	(2)	(3)	(4)
<b>Intercept</b>	<b>-0.025</b> (-1.29)	<b>-0.026</b> (-1.34)	<b>-0.026</b> (-1.33)	<b>-0.025</b> (-1.31)
<b>Market-Adjusted Returns, Holdings with Media Coverage in Month of Filing, (t-1)</b>	<b>0.086 ***</b> (2.73)			<b>0.099 ***</b> (3.07)
<b>Market-Adjusted Returns, Holdings with Media Coverage One Month Before Filing, (t-1)</b>		<b>0.028</b> (1.08)		<b>-0.027</b> (-0.89)
<b>Market-Adjusted Returns, Holdings with Media Coverage Two Months Before Filing, (t-1)</b>			<b>0.041</b> (1.37)	<b>0.019</b> (0.50)
<b>Market-Adjusted Returns, All Holdings (t-1)</b>	<b>-0.032</b> (-0.43)	<b>0.035</b> (0.46)	<b>0.019</b> (0.21)	<b>-0.036</b> (-0.43)
<b>Year, Style FE</b>	Yes	Yes	Yes	Yes
<b>R-Sq</b>	<b>0.053</b>	<b>0.053</b>	<b>0.053</b>	<b>0.053</b>
<b>N</b>	<b>39945</b>	<b>39939</b>	<b>39939</b>	<b>39900</b>

This Table examines how media coverage at different horizons affects how investors respond to the returns of fund holdings when allocating flows to mutual funds. It presents OLS regressions of quarterly fund flows for US Equity Mutual Funds on the prior returns of holdings of the fund, from January 1999 to December 2008. The dependent variable is quarterly fund flows. The main dependent variables are the returns of fund holdings that received media coverage at different points in time during the quarter –coverage in the month of filing coverage, one month before the filing month, and coverage two months before the filing month. Additional controls included in all specifications are those from Table II, and additional definitions are given in the Appendix. The top number in bold is the coefficient, the bottom number in parentheses is the t-statistic (clustered by fund and quarter) and \*, \*\* and \*\*\* indicate significance at a 10%, 5% and 1% level respectively.

**Table V - Effect of Media Covered Holdings on Fund Market-Adjusted Returns****Panel A - Fund Market-Adjusted Returns and Media Covered Holdings**

Dependent Variable is Quarterly Fund Returns Minus Market Returns

	(1)	(2)	(3)	(4)	(5)
<b>Intercept</b>	<b>0.001</b> (0.44)	<b>0.001</b> (0.45)	<b>0.017</b> (1.57)	<b>0.014</b> (1.31)	<b>-0.011</b> (-0.51)
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1)</b>	<b>0.063 *</b> (1.81)	<b>0.050</b> (1.42)	<b>0.048</b> (1.61)	<b>0.021</b> (0.80)	<b>0.009</b> (0.32)
<b>Market-Adjusted Returns of All Holdings (t-1)</b>	<b>0.017</b> (0.23)	<b>0.006</b> (0.08)	<b>-0.048</b> (-0.83)	<b>-0.010</b> (-0.23)	<b>-0.015</b> (-0.31)
<b>Fund Returns (t-1)</b>		<b>0.039</b> (1.38)	<b>0.028</b> (1.27)	<b>0.045 **</b> (2.19)	<b>0.051 *</b> (1.73)
<b>Fund Market-Adjusted Returns (t-1)</b>			<b>0.088</b> (1.05)	<b>0.079</b> (0.86)	<b>0.091</b> (1.03)
<b>Squared Fund Returns (t-1)</b>			<b>0.191</b> (0.53)	<b>0.364</b> (1.10)	<b>0.328</b> (0.99)
<b>Squared Fund Market-Adjusted Returns (t-1)</b>			<b>0.333</b> (0.69)	<b>0.034</b> (0.09)	<b>-0.176</b> (-0.42)
<b>Fund Age</b>			<b>-0.056</b> (-1.32)	<b>-0.028</b> (-0.80)	<b>-0.012</b> (-0.44)
<b>Expense Ratio</b>			<b>-0.380</b> (-1.51)	<b>-0.295</b> (-1.19)	<b>-0.211</b> (-1.24)
<b>Log Assets</b>			<b>-0.002 **</b> (-2.24)	<b>-0.002 **</b> (-1.97)	<b>-0.002 **</b> (-2.16)
<b>(t-2) Fund Returns</b>	No	No	No	Yes	Yes
<b>Year, Style FE</b>	No	No	No	No	Yes
<b>R-Sq</b>	<b>0.013</b>	<b>0.016</b>	<b>0.029</b>	<b>0.067</b>	<b>0.098</b>
<b>N</b>	<b>48065</b>	<b>48030</b>	<b>41100</b>	<b>39973</b>	<b>39973</b>

See Notes on Following page

**Panel B - Calendar Time Portfolios Sorted on Media Covered Holdings Returns**

<b>Percentiles of Media-Covered Holdings Returns</b>	<b>3 Factor Alpha</b>	<b>4 Factor Alpha</b>	<b>MktRf</b>	<b>SMB</b>	<b>HML</b>	<b>UMD</b>	<b>R2</b>	<b>N</b>
<b>Decile 10</b>	<b>0.024</b> (0.10)	<b>-0.001</b> (-0.54)	<b>1.050 ***</b> (22.04)	<b>0.559 ***</b> (9.75)	<b>0.039</b> (0.67)	<b>0.260 ***</b> (7.04)	<b>0.886</b>	<b>117</b>
<b>Decile 1</b>	<b>-0.059</b> (-0.28)	<b>0.038</b> (0.21)	<b>1.042 ***</b> (24.28)	<b>-0.027</b> (-0.52)	<b>-0.025</b> (-0.48)	<b>-0.188 ***</b> (-5.66)	<b>0.892</b>	<b>117</b>
<b>Decile 10 - Decile 1</b>	<b>0.084</b> (0.20)	<b>-0.149</b> (-0.44)	<b>0.008</b> (0.11)	<b>0.586 ***</b> (6.24)	<b>0.064</b> (0.67)	<b>0.448 ***</b> (7.42)	<b>0.558</b>	<b>117</b>
<b>Quintile 5</b>	<b>0.038</b> (0.18)	<b>-0.076</b> (-0.44)	<b>1.038 ***</b> (25.87)	<b>0.463 ***</b> (9.59)	<b>0.052</b> (1.06)	<b>0.219 ***</b> (7.04)	<b>0.907</b>	<b>117</b>
<b>Quintile 1</b>	<b>-0.057</b> (-0.34)	<b>0.028</b> (0.19)	<b>0.994 ***</b> (29.21)	<b>-0.051</b> (-1.25)	<b>0.015</b> (0.35)	<b>-0.163 ***</b> (-6.18)	<b>0.920</b>	<b>117</b>
<b>Quintile 5 - Quintile 1</b>	<b>0.095</b> (0.28)	<b>-0.103</b> (-0.37)	<b>0.043</b> (0.68)	<b>0.514 ***</b> (6.66)	<b>0.038</b> (0.48)	<b>0.382 ***</b> (7.68)	<b>0.584</b>	<b>117</b>

This Table examines whether the returns of media-covered fund holdings predict future mutual fund returns. Panel A presents OLS regressions of quarterly market-adjusted returns for US Equity Mutual Funds on the prior returns of holdings of the fund, from January 1999 to December 2008. The main dependent variable is the average quarterly returns of the fund's holdings which received media coverage (in the Wall Street Journal, Washington Post, USA Today or New York Times), minus the CRSP value-weight market return, with the measure lagged by one quarter. Other variables are defined in the Appendix. Panel B presents the results of regressions of calendar time portfolios of fund returns sorted on values of the returns of fund holdings which received media coverage during the previous quarter, regressed on a four factor models. In rows 1-3, portfolios are sorted into the highest and lowest decile of media-covered holdings returns, and the difference between these two. Rows 4-6 use the top and bottom quintile. These portfolio returns are regressed on the returns of the excess market return, and portfolios measuring size, book to market and momentum (SMB, HML and UMD from Ken French's website). The top number in bold is the coefficient, the bottom number in parentheses is the t-statistic. In Panel A, t-statistics are clustered by fund and quarter, in Panel B regular t-statistics are used. \*, \*\* and \*\*\* indicate significance at a 10%, 5% and 1% level respectively.

**Table VI - Media Covered Holdings and Fund Window Dressing**

**Panel A - Impact of Window Dressing on Fund Tendency to Hold High Return Media-Covered Stocks**

Dependent Variable is the Returns of Fund Holdings According to Level of Media Coverage

	(1)	(2)	(3)	(4)	(5)	(6)
	Media	No Media	Media - No Media	Media	No Media	Media - No Media
<b>Window Dressing (Raw)</b>	<b>0.408 ***</b> (4.79)	<b>0.342 ***</b> (4.32)	<b>0.065 ***</b> (4.04)			
<b>Window Dressing (Residual)</b>				<b>0.362 ***</b> (4.37)	<b>0.299 ***</b> (4.06)	<b>0.063 ***</b> (4.30)
<b>Fund Return</b>	<b>0.138 ***</b> (5.23)	<b>0.036</b> (1.01)	<b>0.101 ***</b> (3.66)	<b>0.153 ***</b> (5.81)	<b>0.050</b> (1.50)	<b>0.103 ***</b> (3.75)
<b>Fund Market-Adjusted Return</b>	<b>0.848 ***</b> (21.27)	<b>0.853 ***</b> (16.46)	<b>-0.004</b> (-0.12)	<b>0.753 ***</b> (16.96)	<b>0.767 ***</b> (15.96)	<b>-0.014</b> (-0.42)
<b>Fund Characteristics</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Year, Style FE</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Holdings Char., Turnover</b>	No	No	No	Yes	Yes	Yes
<b>R-Sq</b>	<b>0.662</b>	<b>0.493</b>	<b>0.076</b>	<b>0.685</b>	<b>0.509</b>	<b>0.079</b>
<b>N</b>	<b>38816</b>	<b>38753</b>	<b>38744</b>	<b>38487</b>	<b>38424</b>	<b>38417</b>

This Table examines the relationship between window dressing, the returns of holdings with media coverage and fund flows. Panel A examines whether funds that appear to engage in more window dressing have higher returns in their media-covered holdings than their non-media-covered holdings, using OLS regressions for quarterly observations of US Equity Mutual Funds from January 1999 to December 2008. The dependent variable is the return on fund holdings, sorted by those that received media coverage during the quarter ('Media'), those that didn't ('No Media') and the difference between them ('Media - No Media'). In Panel A, the first main independent variable is Window Dressing (Raw) = RetGap - RetGapFwd (t-1). RetGap is the difference between the returns of the fund, and the returns of the holdings (reported at the end of the quarter). RetGapFwd(t-1) is the difference between the returns of the fund in the previous quarter, and the returns over the previous quarter of the holdings reported at the start of the previous quarter). See Figure 1 for more details. The second main independent variable is Window Dressing (Residual), which is the residual of Window Dressing on fund turnover, and holdings characteristics (see equation (2) in section 4.2). 'Returns Sq, Fund Char' is the list of variables in Table II. 'Holdings Char., Turnover' are the variables used in the regression for Window Dressing (Residual) in equation (2). Other variables are defined in the Appendix. The top number in bold is the coefficient, the bottom number in parentheses is the t-statistic (clustered by fund and quarter) and \*, \*\* and \*\*\* indicate significance at a 10%, 5% and 1% level respectively.

**Table VII - Impact of Window Dressing on Fund Flows**

Dependent variable is quarterly fund flows

	(1)	(2)
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1)</b>	<b>0.144 ***</b> (3.82)	<b>0.158 ***</b> (4.18)
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1) * Window Dressing (Raw)</b>	<b>0.114</b> (0.954)	
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1) * Window Dressing (Residual)</b>		<b>0.100</b> (1.11)
<b>Market-Adjusted Returns of All Holdings (t-1)</b>	<b>-0.158 ***</b> (-2.595)	<b>-0.156 ***</b> (-2.74)
<b>Market-Adjusted Returns of All Holdings (t-1) * Window Dressing (Raw)</b>	<b>0.020</b> (0.17)	
<b>Market-Adjusted Returns of All Holdings (t-1) * Window Dressing (Residual)</b>		<b>0.022</b> (0.16)
<b>Window Dressing (Raw)</b>	<b>0.036</b> (0.924)	
<b>Window Dressing (Residual)</b>		<b>0.005</b> (0.16)
<b>Fund Returns, Characteristics</b>	Yes	Yes
<b>Year, Style FE</b>	Yes	Yes
<b>R-Sq</b>	<b>0.054</b>	<b>0.052</b>
<b>N</b>	<b>38812</b>	<b>38525</b>

This Table examines whether fund flows are affected by window dressing. The dependent variable is quarterly fund flows. The independent variables are interactions of the window dressing measures (raw and residual) as described in section 4.2 and the Appendix, and interactions of the window dressing measures with the returns of fund holdings, and the returns of fund holdings that received media coverage. Other variables are defined in the Appendix. The top number in bold is the coefficient, the bottom number in parentheses is the t-statistic (clustered by fund and quarter) and \*, \*\* and \*\*\* indicate significance at a 10%, 5% and 1% level respectively.

**Table VIII -Window-Dressing and Fund Characteristics**

Dependent Variable is the measure of fund window dressing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>Past Returns</b>	<b>-0.132 **</b> (-2.34)								<b>-0.106 **</b> (-2.04)
<b>Log Assets</b>		<b>-0.002 ***</b> (-4.00)							<b>0.000</b> (0.02)
<b>Closed Fund</b>			<b>-0.003</b> (-0.88)						<b>0.000</b> (-0.05)
<b>Turnover</b>				<b>0.017 ***</b> (4.28)					<b>0.010 ***</b> (4.51)
<b>December Holdings</b>					<b>0.029 *</b> (1.68)				<b>0.014 *</b> (1.71)
<b>Expense Ratio</b>						<b>0.001 **</b> (2.01)			<b>0.023</b> (0.19)
<b>Manager Less Than 3 Years at Fund</b>							<b>0.005 **</b> (2.53)		<b>-0.002</b> (-1.37)
<b>Average Log Market Cap of Holdings</b>								<b>-0.003 *</b> (-1.88)	<b>0.001</b> (0.35)
<b>Average Amihud Liquidity of Holdings</b>								<b>-0.108</b> (-1.28)	<b>-0.198</b> (-1.47)
<b>Average Volatility of Holdings</b>								<b>2.430 ***</b> (4.28)	<b>2.886 ***</b> (2.91)
<b>Average Bid-Ask Spread of Holdings</b>								<b>0.510</b> (0.40)	<b>1.804 *</b> (1.66)
<b>Average Book-to-Market Ratio of Holdings</b>								<b>-0.001 *</b> (-1.79)	<b>0.000</b> (-1.08)
<b>R-Sq</b>	<b>0.027</b>	<b>0.002</b>	<b>0.000</b>	<b>0.001</b>	<b>0.029</b>	<b>0.024</b>	<b>0.069</b>	<b>0.069</b>	<b>0.155</b>
<b>N</b>	<b>48814</b>	<b>48813</b>	<b>48814</b>	<b>48814</b>	<b>48434</b>	<b>48814</b>	<b>48726</b>	<b>48726</b>	<b>41716</b>

This Table examines window dressing is associated with fund characteristics. The dependent variable is the Window Dressing measure, as defined in the Appendix. The independent variables are the fund's market adjusted returns in the previous quarter, (Past Returns), the log of the fund's assets, a dummy variable for funds closed to new investments, fund turnover, a dummy for holdings reported in December, the fund's expense ratio, a dummy variable for manager's who have less than 3 years experience at their current fund, and the average of characteristics for the fund's holdings, across dimensions of market cap, Amihud (2002) liquidity measure, volatility, relative bid-ask spread and book-to-market ratio. The top number in bold is the coefficient, the bottom number in parentheses is the t-statistic (clustered by fund and quarter) and \*, \*\* and \*\*\* indicate significance at a 10%, 5% and 1% level respectively.

**Table IX- Media Coverage vs. Other Holdings Characteristics**

	Dependent Variable is Quarterly Fund Flows				
	(1)	(2)	(3)	(4)	(5)
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1)</b>	<b>0.145</b> *** (3.32)	<b>0.135</b> *** (3.05)	<b>0.137</b> *** (3.37)	<b>0.140</b> *** (3.34)	<b>0.133</b> *** (3.00)
<b>Market-Adjusted Returns of All Holdings (t-1)</b>	<b>-0.076</b> (-0.91)	<b>-0.130</b> (-1.11)	<b>-0.071</b> (-0.78)	<b>-0.064</b> (-0.80)	<b>-0.109</b> (-0.81)
<b>Market-Adjusted Returns of Holdings Above Market Cap Midpoint (t-1)</b>	<b>-0.019</b> (-0.47)				<b>-0.014</b> (-0.36)
<b>Market-Adjusted Returns of Holdings Above Analyst Coverage Midpoint (t-1)</b>		<b>0.056</b> (0.67)			<b>0.073</b> (0.93)
<b>Market-Adjusted Returns of Holdings Above Book-to-Market Midpoint (t-1)</b>			<b>-0.006</b> (-0.32)		<b>-0.007</b> (-0.35)
<b>Market-Adjusted Returns of Holdings Above Momentum Midpoint (t-1)</b>				<b>-0.028</b> (-0.60)	<b>-0.015</b> (-0.30)
<b>Year, Style FE</b>	Yes	Yes	Yes	Yes	Yes
<b>R-Sq</b>	<b>0.053</b>	<b>0.053</b>	<b>0.053</b>	<b>0.053</b>	<b>0.053</b>
<b>N</b>	<b>39901</b>	<b>39954</b>	<b>38920</b>	<b>39958</b>	<b>38835</b>

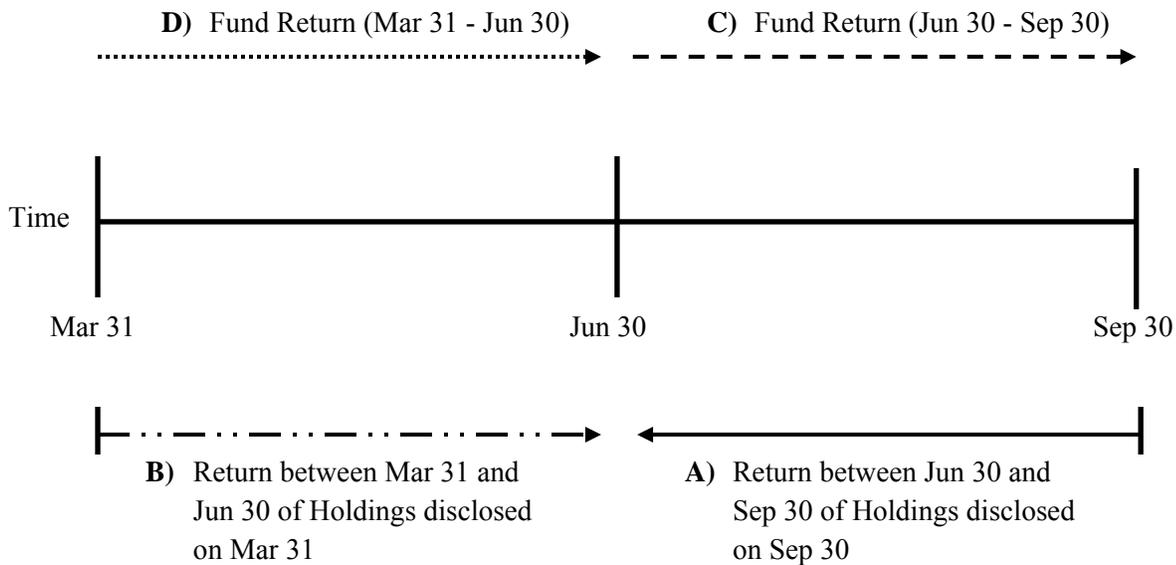
This Table examines whether stock characteristics other than media coverage affect the relationship between fund holdings returns and fund flows. It presents OLS regressions of quarterly fund flows for US Equity Mutual Funds on the prior returns of holdings of the fund, from January 1999 to December 2008. The dependent variable is quarterly fund flows. The main dependent variable is the average quarterly returns of the fund's holdings which received media coverage (in the Wall Street Journal, Washington Post, USA Today or New York Times), minus the CRSP value-weight market return, with the measure lagged by one quarter. The other controls represent the returns of holdings that were above the NYSE median of market capitalization, above the CRSP median of analyst coverage, above the CRSP median of book to market ratio, and above the median of momentum. Additional controls included are the same as Table II, with definition detail in the Appendix. The top number in bold is the coefficient, the bottom number in parentheses is the t-statistic (clustered by fund and quarter) and \*, \*\* and \*\*\* indicate significance at a 10%, 5% and 1% level respectively.

**Table X - Future Fund Returns, Value-Weighted Holdings, and the Direction of Holdings Returns**

	Dependent Variable is Quarterly Fund Flows		
	(1)	(2)	(3)
<b>Market-Adjusted Returns of Media-Covered Holdings (t-1)</b>	<b>0.099</b> *** (2.61)	<b>0.134</b> *** (3.27)	<b>0.108</b> ** (1.97)
<b>Market-Adjusted Returns of All Holdings (When Negative) (t-1)</b>			<b>0.087</b> (1.00)
<b>Market-Adjusted Returns of All Holdings (t-1)</b>	<b>-0.009</b> (-0.143)	<b>-0.157</b> ** (-2.18)	<b>-0.044</b> (-0.48)
<b>Market-Adjusted Returns of All Holdings (When Negative) (t-1)</b>			<b>-0.175</b> (-1.23)
<b>Fund Returns (t)</b>	<b>0.297</b> *** (5.580)		
<b>Fund Returns (t+1)</b>	<b>0.012</b> (0.29)		
<b>Market-Adjusted Returns of All Holdings (Value-Weighted) (t-1)</b>		<b>0.096</b> (1.13)	
<b>Year, Style FE</b>	Yes	Yes	Yes
<b>R-Sq</b>	<b>0.065</b>	<b>0.053</b>	<b>0.054</b>
<b>N</b>	<b>39848</b>	<b>39969</b>	<b>39969</b>

This Table examines whether the relationship between media-covered fund holdings returns and fund flows is affected by portfolio weights, future fund returns, and the sign of holdings returns. It presents OLS regressions of quarterly fund flows for US Equity Mutual Funds on the prior returns of holdings of the fund, from January 1999 to December 2008. The dependent variable is quarterly fund flows. The main dependent variable is the average quarterly returns of the fund's holdings which received media coverage (in the Wall Street Journal, Washington Post, USA Today or New York Times), minus the CRSP value-weight market return, with the measure lagged by one quarter. Additional controls are the returns of the fund in the period of flows (Fund Returns (t)) and one quarter after (Fund Returns(t+1)), as well as the value-weighted returns of fund holdings. Finally, additional variables are included that equal the returns of media-covered holdings when this variable is negative, and zero otherwise (and analogously for the average returns of all holdings). Additional controls included are the same as in Table II, with definition detail in the Appendix. The top number in bold is the coefficient, the bottom number in parentheses is the t-statistic (clustered by fund and quarter) and \*, \*\* and \*\*\* indicate significance at a 10%, 5% and 1% level respectively.

**Figure 1 – Illustration of Timing for Window Dressing Measure**



**Measures**

Kacperczyk, Sialm and Zheng (2008) Return Gap = **(D – B)**

Backwards Looking Return Gap = **(C – A)**

Window Dressing Measure = **( A – C ) – ( B – D )**

**Intuition**

-The Kacperczyk, Sialm and Zheng (2008) Return Gap contains effects of window dressing, as well as transaction costs and the value of trades in the periods between holdings reports

-Transaction costs and the value of interim trades seem likely to affect (C-A) and (D-B) in a similar fashion . E.g. High transaction costs will reduce fund returns relative to both post-disclosure holdings returns and pre-disclosure holdings returns

-Buying shares after their period of high returns will make *past* returns of holdings high, but cause a smaller increase in future returns of holdings (e.g. Increase A more than B)

-Subtracting out (D-B) from (C-A) should on average remove most of the effects of transaction costs and interim trades, leaving the window dressing component. The signs are flipped in the final measure (e.g. (A-C) rather than (C-A)) in order that positive values mean more window dressing.