

**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. 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 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 an extra quarterly capital inflow of 0.72% of the fund's assets, 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 about 28% larger for articles that feature the firm's name in the headline, and more than twice as large for articles that appear in the month of holdings' filing, as compared to 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 incentives for fund managers to distort their portfolios. In particular, investors' preference for funds that hold media-covered winners may create incentives for fund managers to 'game' their portfolios at reporting dates, a strategy known as 'window-dressing' (Lakonishok, Shleifer, Thaler, and Vishny, 1991; Musto 1999).

This portfolio 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 how media coverage affects firms (as firm outcomes are likely to be endogenous to media coverage) but on the flows accruing to *funds* that invest in these firms. While this additional level of separation makes reverse causality less likely, one possibility that we examine is whether media coverage of firms may proxy for media coverage of funds that invest in these stocks. We find that the overlap between the media coverage of companies and the media coverage of the funds is small: only 2% of articles about firms in our sample mention mutual funds. To ensure that coverage of the funds is not driving our findings, we exclude articles that mention mutual funds and obtain similar results.

Second, we consider whether our results may be driven by omitted characteristics of the 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. Additionally, 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. 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 brief summary.

## **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 by 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 *salience* 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

salience 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 (2005) 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.

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 (Cohen, Coval, and Pastor, 2005; Kacperczyk and Seru 2007; Cremers and Petajisto 2009; Kacperczyk, Sialm, and Zheng 2005, 2008; Fang, Peress, and Zheng, 2009; Kacperczyk, Van Nieuwerburgh, and Veldkamp, 2011). 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 the absolute amount of quarterly flows exceeds 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.

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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' and its variants).

## 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 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).

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 measure ReportGap, which captures the time lag between the SEC filing date and the date for which the holdings are reported, shows that

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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.

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 a fund's current portfolio strategy.

### *2.3 Media Coverage*

Our media dataset comprises four 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. We obtain the entire text of these publications from Factiva between January 1999 and December 2008, inclusive. Our media sample includes 1.7 million 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. 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 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.

Panels B and C of Table I summarize media coverage statistics for our sample. 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 4.1. 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 (12.0) per quarter. For stocks held by at least one fund (at least ten funds) 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 similar to the average returns of all holdings (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:

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

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

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

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

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>.

$NewsHoldRetMkt_{t-1}$  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 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 ( $LogAssets$ ). 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) and  $NewsHoldRetMkt_{t-1}$  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 ( $0.197 + 0.195 = 0.392$ ) 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, Table II, we test whether holdings' returns have an 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<sub>t-1</sub>*) 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 (*NewsAboveMedHoldRetMkt<sub>t-1</sub>* and *NewsBelowMedHoldRetMkt<sub>t-1</sub>* respectively). In the second specification, we examine four variables – the returns of holdings with media coverage in quartiles 1 through 4 based on the frequency of coverage (*News25PctHoldRetMkt<sub>t-1</sub>* to *News100PctHoldRetMkt<sub>t-1</sub>*). All percentiles are taken over firms 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

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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:  $0.085 / 0.366 = 0.23$

the low coverage stocks have a coefficient of 0.039, significant at the 10% level. When coverage is split 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, past returns of media-covered fund holdings 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 posit 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. As a result, portfolio holdings with a longer *ReportGap* are likely to be ~~staler~~ 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 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  $HoldRetMkt_{t-1}$  and  $NewsHoldRetMkt_{t-1}$ . These terms 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 informativeness. Funds that hold more

stocks show a decreased sensitivity of flows to 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 with 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 mentioned in headlines 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 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 -

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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%

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 news articles mention the company name more prominently. In contrast, variables proxying for the informativeness of holdings do not affect investors' behavior, suggesting either that 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. 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 instance, by helping investors identify skilled 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. This outcome is 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*

In this section, we study how investors' response to media-covered holdings is associated with subsequent fund performance. If the returns on media-covered holdings predict fund performance,

investors' attention to these stocks may improve investment outcomes, supporting the information view. Previous research identifies plausible mechanisms that may generate this predictive power. First, stocks with high past returns are likely to have higher future returns due to the momentum effect of Jegadeesh and Titman (1993). Second, the momentum effect is stronger among media-covered stocks (Chan 2003).

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. This analysis examines whether market-adjusted fund returns can be predicted based on the past returns of fund holdings. In Panel B, we form portfolios of funds sorted on levels of *NewsHoldRetMkt*, and regress the returns of these portfolios on the risk factors from the three-factor and four-factor asset pricing models, using MKT, SMB, HML and UMD portfolios from Ken French's website. This analysis examines the relation between past returns of media covered holdings and future fund performance, while controlling for the exposure to the standard risk factors.

Table V shows that past returns of media-covered holdings have little predictive power for future fund returns. In Panel A, *NewsHoldRetMkt* has a coefficient of 0.063 and a t-statistic of 1.81 after controlling for *HoldRetMkt* (Column (1)). In Column (4), the addition of raw and market-adjusted fund returns (and their squared returns) at two lags reduces the *NewsHoldRetMkt* coefficient to 0.021 with a t-statistic of 0.80, suggesting that the apparent effect of past holdings' returns is picking up the effect of past fund returns. The addition of style and year fixed effects in Column (5) reduces the *NewsHoldRetMkt* effect further, to 0.009 with a t-statistic of 0.32.

The results for calendar time portfolios, shown in Panel B, indicate an even weaker relation between the returns of media-covered holdings and future fund performance. At the end of every month, funds are sorted into quintiles and deciles based on levels of *NewsHoldRetMkt* (using the most recent reporting within 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 coefficients of opposite signs.

Overall, the results in this section indicate that past returns of media-covered holdings do not predict future fund performance and are unlikely to generate value for investors, to the extent that this value is measured by risk-adjusted returns. These findings are consistent with the salience view and undermine the information hypothesis.

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

If investors' capital flows react to the presence of media-covered winners among fund holdings, fund managers may strategically respond to this investor behavior. In this section, we study the incentives of mutual fund managers to purchase media-covered stocks with high trailing returns in an attempt to attract flows. In particular, we seek to distinguish between funds that purchase well-performing stocks *before* they appreciate in value ("stock pickers") and those that purchase them *after* the stocks appreciate ("window dressers"). The goal of this analysis is to examine whether media-based window dressing is an effective strategy for attracting flows or whether it is exposed and even penalized by investors.

If investors extract useful information contained in media-covered fund holdings, they should respond to holdings' returns only when these returns represent the actual returns of the fund. Under the information view, investors should be able to detect media-based window-dressing by comparing the returns of holdings to the returns of the fund. Under this interpretation, investors' response to media-covered holdings is likely to be weaker when these holdings were acquired after the stocks appreciated in value. Under the salience view, investors react to the appeal of media-covered winners rather than the

fund's investment strategy. Under this view, we should observe a similar reaction of investors to media-covered fund holdings for funds that purchased the stocks before and after their appreciation in value.

#### *4.1 Measures of Window Dressing*

If a fund engages in window dressing by buying past winners or selling past losers before reporting dates, the past returns of the fund's holdings will exceed those of the fund, creating a 'return gap', i.e. a differential between the returns of the fund's holdings and the returns of the fund. Kacperczyk, Sialm and Zheng (2008), hence KSZ, provide comprehensive evidence on the return gap for U.S. equity funds and attribute it to window dressing, transaction costs, and unobserved trades between reporting dates.

To construct a measure of window dressing, we would like to control for other factors that contribute to the return gap. Our approach is based on the following intuition. Window dressing, a strategy of buying past winners or selling past losers, will be associated with high *past* returns of holdings, but will have only a weak effect on *future* returns. In contrast, the other components of the return gap, such as unobserved trades and transaction costs, are likely to be similar both before and after reporting dates. Using this distinction, we measure window dressing as the difference between (i) the return gap based on holdings' returns before disclosure ('backward-looking' return gap), and (ii) the return gap based on holdings' returns after disclosure ('forward-looking' return gap).

We illustrate our approach with an example 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 holdings' returns from March 31 to June 30, for the set of holdings filed on March 31. Consider a backward-looking return gap that compares fund returns from March 31 to June 30 with the holdings' returns from March 31 to June 30, for the set of holdings filed on June 30. Window dressing will have a larger effect on this gap, for example, if the holdings reported on June 30 were bought due to their high returns between March 31 and June 30, but may not earn high returns after June 30. Other components

of the return gap, such as transaction costs and the value of trades between March 31 and June 30, are likely to be similar for both measures. Therefore, our measure of window dressing is the difference between the backward-looking return gap and the forward-looking return gap.<sup>8</sup> We lag the forward-looking KSZ return gap by one quarter, so that the return component does not cancel out. Figure 1 illustrates this approach. Using 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 measure of window dressing, which controls for other reasons why funds may purchase stocks after high returns, such as a decision to follow a momentum or post-earnings announcement drift strategy. We construct percentile measures of each stock's market capitalization, book-to-market ratio<sup>9</sup>, momentum (cumulative returns between month t-12 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 discussed above.

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

<sup>9</sup> As in Fama and French (1992), we calculate this ratio by dividing the market value of equity in the previous December by the book value of equity in the previous fiscal year after allowing a min. 6-month gap from reporting dates to the stock return.

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

The analysis of funds' window dressing behavior can also provide indirect evidence on the information and salience views of media-covered holdings from the perspective of fund managers. If fund managers are aware of investors' reaction to media-covered holdings and believe that this behavior is a naïve response of investors to the salience of these stocks, window dressing funds will likely purchase past winners covered in the media, since these stocks will generate a greater investor response. In contrast, under the information view, the stronger 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, mutual funds have less incentive to window dress their holdings with media-covered stocks, since investors are likely to distinguish between stocks purchased before and after their appreciation in value.

In Table VI, we consider whether window dressing funds are more likely to tilt their portfolios towards media-covered winners, as compared to stocks with similarly high returns but without media coverage. The dependent variables are the returns of holdings with media coverage (*NewsHoldRet*), the returns of holdings without media coverage (*NoNewsHoldRet*), and the difference between the two (*NewsDiffHoldRet*). The main independent variables of interest are the measures of window dressing, *WindowDress* and *WindowDressResid*. When *WindowDressResid* is included, we also include additional controls as in Model (2). 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 report holdings with higher returns among stocks with media coverage. In particular, the *WindowDress* variable is associated with higher returns for media-covered holdings, with a coefficient 0.408 and a t-statistic of 4.79. By contrast, the coefficient for holdings without media coverage is lower, at 0.342 (t-statistic of 4.32). The magnitude of this effect is nontrivial. A one standard deviation increase in window dressing (8.09%) is associated with an increase of 3.30% in the past returns of media-covered holdings, versus a 2.77% increase for holdings without media coverage. The results are similar for the second window dressing measure, *WindowDressResid*.

Overall, window dressing funds appear to exploit investors' positive reaction to media-covered winners in constructing their portfolios.

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

In this section, we study whether investors react differently to fund holdings that were acquired by the fund before rather than after appreciating in value. In particular, if holdings were acquired as part of a fund's window dressing strategy (as proxied by our measures), investors may punish the fund by reducing their capital flows or by lowering their sensitivity to holdings' returns. This prediction presents an additional test of investor sophistication in the analysis of fund holdings.

We investigate this relation in Table VII, where we examine whether the relation between future capital inflows and past returns of media-covered holdings varies with a fund's propensity to window dress. If the relation is weaker for window dressing funds, this outcome would be consistent with the ability of investors to detect window dressing, reflecting a sophisticated approach in the analysis of holdings. By contrast, if the relation between the returns of media-covered holdings and fund flows does not depend on whether holdings' returns reflect the realized returns of the fund, this evidence would support the more naïve reaction to fund holdings, consistent with the salience view. More broadly, the distinction between these interpretations will also indicate whether window dressing is

effective in generating additional flows. To test these predictions, we estimate panel regressions, where the dependent variable is the quarterly fund flow, and the independent variables are *WindowDress*, and *WindowDressResid*, as well their interactions with *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 capital allocations when funds engage in window dressing. If anything, investors react more strongly to the holdings of window dressing funds. The coefficients on *WindowDress<sub>t-1</sub>* and *WindowDressResid<sub>t-1</sub>* are insignificant, and directionally positive, indicating that investors do not appear to penalize window dressing funds with lower flows. In addition, window dressing, to the extent that it is captured by our measures, does not decrease the attention investors pay to holdings' returns, as shown by 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, suggesting that if anything, investors respond more to the returns of holdings when those holdings overstate the realized fund returns.

Overall, the evidence in Table VII suggests that window dressing appears to be effective in generating flows. In particular, investors respond positively to media-covered holdings with strong past returns, even if these holdings do not reflect the actual performance of the fund.

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

If window dressing is successful in generating fund flows, why do some funds rely on this strategy more than others? While it is beyond the scope of our paper to explain the prevalence of window dressing strategies, we seek to provide the reader with the analysis of fund characteristics associated with window dressing. Our objective is to offer suggestive evidence on the incentives for and the costs of window dressing, which contribute to the variation in this strategy across funds.

We begin this analysis by studying the variation in incentives for window dressing. We develop and test several predictions that connect the incentives for window dressing with key fund

characteristics. We conjecture that funds with high trailing returns are likely to have lower incentives for window dressing, as these funds already hold securities with strong past performance. We expect that window dressing will be more prevalent among portfolio managers with shorter tenures (less than three years in our empirical tests), since these managers often lack a sufficient performance record to attract flows. Funds may have more incentive to window dress their holdings in December, when annual reports are released and funds face increased scrutiny (Brown, Harlow, and Starks, 1996). In contrast, funds closed to new investment are likely to have lower incentives for window dressing, although they may still use this strategy to appeal to current investors. We obtain the list of such funds and the periods of closure from Bris, Gulen, Kadiyala, and Rau (2007).<sup>10</sup> Funds with higher expenses may rely on window dressing as one of the mechanisms to attract investors despite the high fees. In fact, the fees of these funds may reflect the greater transaction costs associated with window dressing. Finally, funds with a higher volatility of holdings may rely on window dressing to compensate for a lack of stability in performance records or to eliminate extreme losers, which are more likely among volatile stocks.

We also examine fund characteristics associated with the differential costs of window dressing. Larger funds (as measured by the natural logarithm of TNA) are likely to incur higher costs of window dressing because of the greater price impact of their trades. Funds with a higher turnover are likely to engage in more window dressing; in particular, such funds rebalance their portfolios more often and face a lower marginal cost of selling losers and buying winners. Lastly, we conjecture that funds investing in less liquid stocks have greater costs of window dressing. To measure liquidity, we use several measures, including the average market capitalization of holdings, the relative bid-ask spread, the average book-to-market ratio, and the Amihud (2002) measure of illiquidity.<sup>11</sup>

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<sup>10</sup> We are grateful to Arturo Bris and Huseyin Gulen for sharing their data on fund closures.

<sup>11</sup> The Amihud (2002) illiquidity measure is defined as follows:  
where R is the daily stock return, D is the number of days that year the stock traded, and VOLD is the daily dollar volume.

$$Illiq = \frac{1}{D} \sum_{t=1}^D \frac{|R_t|}{VOLD_t}$$

To test the relation between fund characteristics and the propensity to window dressing, we use regression analysis, where the dependent variable is a measure of window dressing, and the independent variables are fund characteristics. Standard errors are clustered by fund and month. The regression is:

$$\begin{aligned}
 WindowDress_{i,t} = & a + b_1 * FundRetMkt_{t-1} + b_2 * LogAssets_{i,t} + b_3 * ClosedFund_{i,t} + b_4 * Turnover_{i,t} + \\
 & b_5 * December + b_6 * Expense\_Ratio + b_7 * YoungManager_{i,t} + b_8 * HoldAvgMktCap_{i,t} + b_9 * HoldAvgIlliq_{i,t} + \\
 & b_{10} * HoldAvgVolatil_{i,t} + b_{11} * HoldAvgRelSpread_{i,t} + b_{12} * HoldAvgBM_{i,t} + b_{13} * Yeardum_{1998-2008} + \\
 & b_{14} * IOCdum_{2-3} + e_{i,t} \quad (4)
 \end{aligned}$$

The results of estimation are reported in Table VIII. At a univariate level, window dressing is more likely among funds with low past returns, high turnover, high expense ratios, new managers, smaller assets under management, and high volatility. On a multivariate level, the effects are dominated by the market-adjusted returns of the fund (coefficient of -0.106, t-statistic of -2.04), turnover (coefficient of 0.010, t-statistic of 4.51), holdings' 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 with weaker historical performance, greater volatility, and higher turnover, and that the propensity to window dressing increases at the end of the calendar year. Interpreted broadly, this evidence suggests that window dressing is more prevalent among funds that appear less attractive based on the standard investment characteristics. In contrast, window dressing can be unproductive for well performing funds, since their flows are most sensitive to returns (the steepest part of the convex relation between performance and flows), and the performance drag from portfolio rebalancing may outweigh any benefits from holdings' appeal.

## 5. Alternative Explanations

### *5.1 Variables Correlated with Media Coverage*

Media coverage of a stock is correlated with a number of firm characteristics, such as size, industry, analyst coverage, and book-to-market ratio. Moreover, there may be omitted or unobservable variables associated with media attention. In this section, we would like to investigate whether investors' reaction to fund holdings can be explained by other firm attributes

In Table IX, we construct four variables for holdings' returns for the holdings 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 same regression as in section 3.1 and report our results in Table IX. The evidence shows that these variables do not influence investors' capital flows. Despite the fact that all four variables are correlated with media coverage (Solomon 2010), holdings' returns sorted on these variables show no significant effect on fund flows, nor do they reduce the effect of media-covered holdings. This evidence suggests that the extra response to holdings returns is related to media coverage rather than its correlates.

Although the analysis of interaction effects with particular firm characteristics enables a researcher to test the influence of particular variables, there is always a possibility of an omitted or unobservable variable. However, our empirical design mitigates this concern in two ways. First, our tests exploit the temporal variation in media coverage, which isolates the shift in media attention, while controlling for observable and unobservable firm characteristics that remain constant within several months. Second, our analysis focuses not on the returns of the media-covered stocks, but rather on the flows accruing to the funds that invest in these stocks. Therefore, in order for an omitted firm characteristic to confound our inference, such a characteristic should affect the flows of funds investing in media-covered stocks, and, at the same time, be unrelated to the salience of stocks to investors. While this scenario appears less likely, we provide evidence in this direction in the next subsection.

## *5.2 Media Coverage of Mutual Funds*

It is possible that a stock's media coverage overlaps with the media coverage of the fund holding this stock. For example, a media article about a mutual fund could list some of the fund's holdings or discuss the fund manager's top picks. In this case, a change in investors' capital flows could be driven by the media coverage of the investment funds rather than by the salience of their holdings.

To investigate this possibility, we identify all media articles that include the word 'fund' and its variations. We find that such articles are rare and account for only 2.0% of all articles in our sample. Another fact that mitigates this concern is that the average fund holding in our sample is shared by 56 mutual funds, making it unlikely that more than a small fraction of the funds will be mentioned individually. Nonetheless, we exclude all articles that mention the word 'fund' from our sample and repeat our main analyses. In unreported results, we find that excluding these articles has virtually no effect on the magnitude and significance of the results, suggesting that our evidence is unlikely to be driven by media coverage of the funds rather than that of their holdings.

## *5.3 Future Fund Returns, Holdings Weights, and the Direction of Holdings Returns*

In Table X, we consider three additional robustness checks. First, we test the robustness of media-covered returns to controlling for the future returns of the fund. Even if media-covered holdings do not directly predict future fund returns (as shown in section 3.4), it is possible that investors use this information in some other, perhaps less direct way to improve investment performance. If investors use fund holdings in any way to forecast fund returns, then controlling for fund returns should drive out the effects of holdings and the interaction effect of media coverage with holdings' returns.

Our second robustness test focuses on the effect of portfolio weights of media-covered holdings. Since media-covered stocks are on average larger, it is possible that position size (rather than media coverage) is driving the effects. To examine this possibility, 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 varies between good and bad news, as inferred from market returns. Solomon and Soltes (2011) argue that bad news is more likely to receive media coverage, and that investors may be more sensitive to this news. To evaluate whether investors' capital flows respond more strongly to positive or negative news coverage of fund holdings, 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 effect of media-covered holdings' returns is robust to controlling for different portfolio weights and future fund returns. After controlling for fund returns over the next two quarters in Column (1), the coefficient on *NewsHoldRetMkt* remains significant at the 1% level. The effect of holdings' returns also retains significance and economic magnitude after controlling for the value-weighted holdings' returns, as shown by the coefficient on *NewsHoldRetMkt* in Column (2), significant at the 1% level. This indicates that the impact of media-covered holdings is not driven by the larger weights of these stocks in mutual fund portfolios.

The analysis in Column (3) of Table X shows that the effects of media-covered holdings' returns are approximately symmetric between positive and negative holdings' returns. The coefficient on *NewsHoldRetMktNeg* is positive, consistent with greater attention to negative returns of media-covered holdings, but the effect falls short of being statistically significant. This result indicates that investors' response to media covered holdings is driven both by rewarding funds that hold media-covered winners and penalizing funds that hold media-covered losers.

## **Conclusion**

In this paper, we show how media coverage affects investors' capital allocations to mutual funds. Investors reward funds that hold stocks with high past returns, but only if these stocks recently received media coverage. We argue that media coverage of firms increases the salience of their stock returns and attracts investor attention. When faced with a long list of fund holdings, investors appear to respond only to those companies which were recently featured in the news. As a result, funds holding high-visibility winners attract greater capital flows than their counterparts holding less visible stocks. Similarly, funds that hold high-profile losers experience a greater attrition of flows, compared to funds that hold stocks with similarly poor performance but no media coverage.

In contrast to the view that media coverage provides investors with valuable information, we find little evidence that newspaper articles are associated with better investor decision-making. Although investors react to media-covered holdings, this strategy does not predict fund returns. In addition, investor behavior creates incentives for funds to window dress their portfolios by holding media-covered winners. We find evidence of window dressing 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

**Table AI - Variables Used in the Paper**

Variable Name	Description	Definition
Flow	Quarterly fund flows	$\frac{TNA_t - TNA_{t-1} * R_t}{TNA_{t-1}}$ <p>where R is the fund return and TNA is the fund's total net assets</p>
HoldRetMkt	Market-adjusted average returns of fund holdings	$\sum_{i=1}^N R_{i,t} - R_{Mkt,t}$ <p>taken over all fund holdings <i>i</i> reported at the end of quarter t</p>
NewsHoldRetMkt	Market-adjusted average returns of fund holdings which received media coverage	$\sum_{i=1}^N R_{i,t} - R_{Mkt,t}$ <p>taken over all fund holdings <i>i</i> reported at the end of quarter t which were covered in WSJ, NY Times, USA Today or Wash. Post during quarter t</p>
VWHoldRet	Value-weighted average returns of fund holdings (in period before disclosure)	$\sum_{i=1}^N (w_{i,t-1} * R_{i,t})$ <p>where w is the weight in the fund's portfolio, taken over all fund holdings <i>i</i> reported at the end of quarter t</p>
VWHoldRetFwd	Value-weighted average returns of fund holdings (in period after disclosure)	Same as VWHoldRet, but for holdings reported at the start of quarter t
FundRet	Fund return (after expenses)	
FundRetMkt	Market-adjusted fund return (after expenses)	$R_{Fund,t} - R_{Mkt,t}$
FundRetSq	Fund return (after expenses) squared	$R_{Fund,t} * R_{Fund,t}$
FundRetMktSq	Market-adjusted fund return (after expenses) squared	$(R_{Fund,t} - R_{Mkt,t})^2$
RetGap	Returns gap (backward looking) - difference between fund returns and returns of fund holdings disclosed at end of period	$FundRet - VWHoldRet$
RetGapFwd	Returns gap (forward looking) - difference between fund returns and returns of fund holdings disclosed at start of period	$FundRet - VWHoldRetFwd$
WindowDress	Difference between backward-looking returns gap and forward-looking returns gap from one quarter	$RetGap(t) - RetGapFwd(t-1)$

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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
NewsHeadHoldRetMkt	Market-adjusted average returns of fund holdings which received media coverage, where the firm's name was mentioned in the article headline
NewsAboveMedRetMkt	Market-adjusted average returns of fund holdings with less media coverage than the median firm (taken across firms with at least one article)
NewsBelowMedRetMkt	As above, but above the median
NewsPct25RetMkt to NewsPct100RetMkt	As above, but for quartiles of media coverage, with 25Pct being firms from 0 to the 25th percentile of coverage, and 100pct being firms between the 75th and 100th percentiles
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
NewManager	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	48,077

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 Fund</b>	49.38					83,490
<b>Stocks Held by at Least Ten Funds</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 Fund</b>	10.04	67.71	0	0	4	83,490
<b>Stocks Held by at Least Ten Funds</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 Fund</b>	20.33	95.26	2	4	11	41,225
<b>Stocks Held by at Least Ten Funds</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>NewsHoldRetMkt(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>HoldRetMkt(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>FundRet(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>FundRetMkt(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>FundRetSq(t-1)</b>			<b>0.821 **</b> (2.19)	<b>1.060 ***</b> (3.64)	<b>0.867 ***</b> (2.72)
<b>FundRetMktSq(t-1)</b>			<b>0.044</b> (0.09)	<b>-0.554</b> (-1.51)	<b>-0.680</b> (-1.55)
<b>Age</b>			<b>-0.708 ***</b> (-3.57)	<b>-0.570 ***</b> (-2.96)	<b>-0.397 **</b> (-2.07)
<b>ExpenseRatio</b>			<b>1.662 ***</b> (3.13)	<b>1.562 ***</b> (3.02)	<b>1.935 ***</b> (3.60)
<b>LogAssets</b>			<b>0.010 ***</b> (5.40)	<b>0.010 ***</b> (5.12)	<b>0.011 ***</b> (5.68)
<b>FundRet(t-2)</b>				<b>0.070</b> (1.62)	<b>0.068 **</b> (2.20)
<b>FundRetMkt(t-2)</b>				<b>0.343 ***</b> (3.54)	<b>0.340 ***</b> (4.49)
<b>FundRetSq(t-2)</b>				<b>-0.271</b> (-1.08)	<b>-0.528 *</b> (-1.79)
<b>FundRetMktSq(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>NewsBelowMedHoldRetMkt(t-1)</b>	<b>0.040</b> (1.49)	<b>0.039</b> * (1.66)		
<b>NewsAboveMedHoldRetMkt(t-1)</b>	<b>0.082</b> ** (2.47)	<b>0.082</b> *** (2.67)		
<b>News25PctHoldRetMkt(t-1)</b>			<b>0.011</b> (0.72)	<b>0.013</b> (0.98)
<b>News50PctHoldRetMkt(t-1)</b>			<b>0.021</b> (1.44)	<b>0.020</b> * (1.68)
<b>News75PctHoldRetMkt(t-1)</b>			<b>0.034</b> ** (2.27)	<b>0.033</b> * (1.91)
<b>News100PctHoldRetMkt(t-1)</b>			<b>0.045</b> ** (2.11)	<b>0.045</b> ** (2.28)
<b>HoldRetMkt(t-1)</b>	<b>-0.034</b> (-0.687)	<b>-0.064</b> (-1.225)	<b>-0.022</b> (-0.35)	<b>-0.051</b> (-0.77)
<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. The first dependent variable is HoldRetMkt – 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 NewsHoldRetMkt – the same holdings returns as in HoldRetMkt, but only for holdings that were covered during the quarter in the Wall Street Journal, Washington Post, USA Today or New York Times. Other variables are defined in the Appendix. In Panel B, the returns of media-covered 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. (with ‘100Pct’ having the most coverage, and ‘25Pct’ having the least. ‘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>NewsHoldRetMkt(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>HoldRetMkt(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>NewsHoldRetMkt(t-1)*NumStocks</b>	<b>0.421</b> (1.58)			
<b>HoldRetMkt(t-1)*NumStocks</b>	<b>-0.679 **</b> (-2.16)			
<b>NewsHeadHoldRetMkt(t-1)</b>		<b>0.030 **</b> (2.03)		
<b>NewsHoldRetMkt(t-1)*Turnover</b>			<b>-0.120 *</b> (-1.76)	
<b>HoldRetMkt(t-1)*Turnover</b>			<b>0.165 *</b> (1.92)	
<b>NewsHoldRetMkt(t-1)*ReportGap</b>				<b>-0.441</b> (-1.51)
<b>HoldRetMkt(t-1)*ReportGap</b>				<b>0.049</b> (0.16)
<b>NumStocks</b>	<b>-0.002</b> (-0.19)			
<b>Turnover</b>			<b>0.000</b> (0.11)	
<b>ReportGap</b>				<b>-0.015</b> (-1.60)
<b>Fund Characteristics, Year &amp; Style FE</b>	Yes	Yes	Yes	Yes
<b>R-Sq</b>	<b>0.053</b>	<b>0.053</b>	<b>0.053</b>	<b>0.054</b>
<b>N</b>	<b>39969</b>	<b>39969</b>	<b>39690</b>	<b>39969</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 ('NumStocks'), and the market-adjusted returns of holdings that received media coverage, where the article mentioned the name of the firm in the headline ('NewsHeadHoldRetMkt'). Informativeness is measured using fund turnover ('Turnover'), and the gap between the holdings SEC file date and report date. ('ReportGap'). 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>NewsMth1HoldRetMkt(t-1)</b>	<b>0.086</b> *** (2.73)			<b>0.099</b> *** (3.07)
<b>NewsMth2HoldRetMkt(t-1)</b>		<b>0.028</b> (1.08)		<b>-0.027</b> (-0.89)
<b>NewsMth3HoldRetMkt(t-1)</b>			<b>0.041</b> (1.37)	<b>0.019</b> (0.50)
<b>HoldRetMkt(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 –NewsMth1HoldRetMkt for coverage in the month of filing, NewsMth2HoldRetMkt for coverage one month before the month of filing, and NewsMth3HoldRetMkt for coverage two months before the month of filing. 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>NewsHoldRetMkt(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>HoldRetMkt(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>FundRet(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>FundRetMkt(t-1)</b>			<b>0.088</b> (1.05)	<b>0.079</b> (0.86)	<b>0.091</b> (1.03)
<b>FundRetSq(t-1)</b>			<b>0.191</b> (0.53)	<b>0.364</b> (1.10)	<b>0.328</b> (0.99)
<b>FundRetMktSq(t-1)</b>			<b>0.333</b> (0.69)	<b>0.034</b> (0.09)	<b>-0.176</b> (-0.42)
<b>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>LogAssets</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>

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 NewsHoldRetMkt – the average returns of fund holdings over the quarter ending in the report date which were covered some time during the quarter in the Wall Street Journal, Washington Post, USA Today or New York Times, minus the CRSP value-weight market return over the same period (lagged one period before the fund returns). 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.

**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>

**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>WindowDressRaw</b>	<b>0.408</b> *** (4.79)	<b>0.342</b> *** (4.32)	<b>0.065</b> *** (4.04)			
<b>WindowDressResid</b>				<b>0.362</b> *** (4.37)	<b>0.299</b> *** (4.06)	<b>0.063</b> *** (4.30)
<b>FundRet</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>FundRetMkt</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 WindowDress = 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 WindowDressResid, which is the residual of Window Dressing on fund turnover, and holdings characteristics (see equation (2) in section 4.2). 'Fund Characteristics' 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>NewsHoldRetMkt(t-1)</b>	<b>0.144 ***</b> (3.82)	<b>0.158 ***</b> (4.18)
<b>NewsHoldRetMkt(t-1)*</b>	<b>0.114</b>	
<b>WindowDressRaw(t-1)</b>	(0.954)	
<b>NewsHoldRetMkt(t-1)*</b>		<b>0.100</b>
<b>WindowDressResid(t-1)</b>		(1.11)
<b>HoldRetMkt(t-1)</b>	<b>-0.158 ***</b> (-2.595)	<b>-0.156 ***</b> (-2.74)
<b>HoldRetMkt(t-1)*</b>	<b>0.020</b>	
<b>WindowDressRaw(t-1)</b>	(0.17)	
<b>HoldRetMkt(t-1)*</b>		<b>0.022</b>
<b>WindowDressResid(t-1)</b>		(0.16)
<b>WindowDressRaw(t-1)</b>	<b>0.036</b> (0.924)	
<b>WindowDressResid(t-1)</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 (WindowDress, WindowDressResid 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 (HoldRetMkt, NewsHoldRetMkt). 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>New Manager</b>							<b>0.005</b> ** (2.53)		<b>-0.002</b> (-1.37)
<b>Hold Avg. Log Mkt Cap</b>								<b>-0.003</b> * (-1.88)	<b>0.001</b> (0.35)
<b>Hold Avg. Amihud Liquidity</b>								<b>-0.108</b> (-1.28)	<b>-0.198</b> (-1.47)
<b>Hold Avg. Volatility</b>								<b>2.430</b> *** (4.28)	<b>2.886</b> *** (2.91)
<b>Hold Avg. Relative Spread</b>								<b>0.510</b> (0.40)	<b>1.804</b> * (1.66)
<b>Hold Avg. Book-to-Market</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 *WindowDress*, 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 ('New Manager'), 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>NewsHoldRetMkt(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>HoldRetMkt(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>MktCapHoldRetMkt(t-1)</b>	<b>-0.019</b> (-0.47)				<b>-0.014</b> (-0.36)
<b>NumAnHoldRetMkt(t-1)</b>		<b>0.056</b> (0.67)			<b>0.073</b> (0.93)
<b>BMHoldRetMkt(t-1)</b>			<b>-0.006</b> (-0.32)		<b>-0.007</b> (-0.35)
<b>MomHoldRetMkt(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>

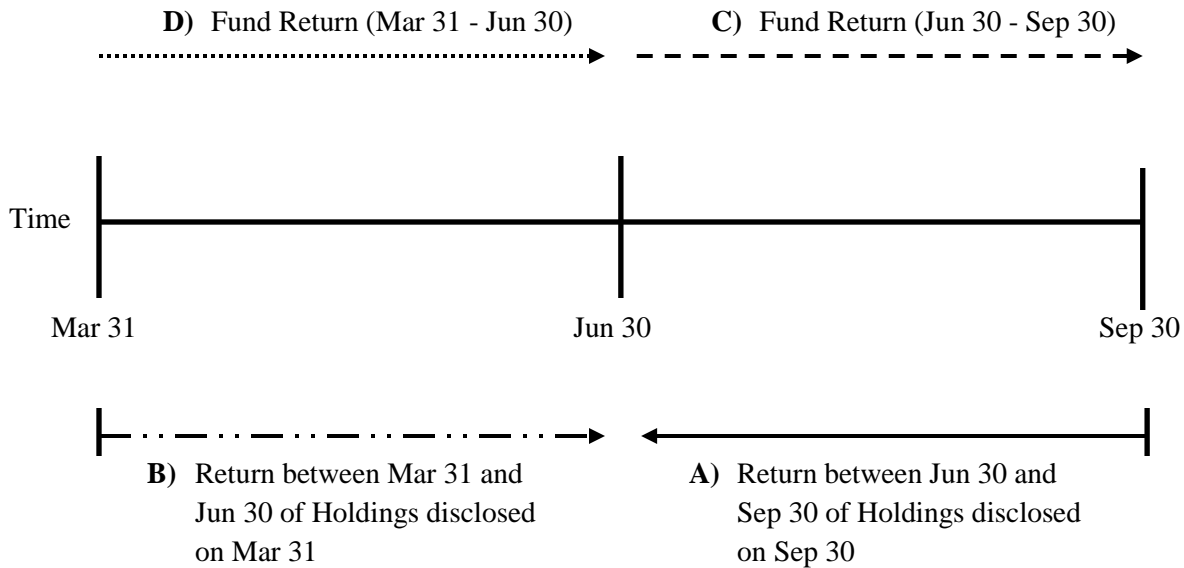
This Table examines whether stock characteristics other than media coverage affect the relationship between fund holdings returns and fund flows. It presents OLS regressions of quarterly fund flows for US Equity Mutual Funds on the prior returns of holdings of the fund, from January 1999 to December 2008. The dependent variable is quarterly fund flows. The main dependent variable is NewsHoldRetMkt – the average returns of fund holdings over the quarter ending in the report date which were covered some time during the quarter in the Wall Street Journal, Washington Post, USA Today or New York Times, minus the CRSP value-weight market return over the same period (lagged one period before the fund returns). The other controls represent the returns of holdings that were above the NYSE median of market capitalization (MktCapHoldRetMkt), above the CRSP media of analyst coverage (NumAnHoldRetMkt), above the CRSP median of book to market ratio (BMHoldRetMkt), and above the median of momentum (MomHoldRetMkt). 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>NewsHoldRetMkt(t-1)</b>	<b>0.099 ***</b> (2.61)	<b>0.134 ***</b> (3.27)	<b>0.108 **</b> (1.97)
<b>NewsHoldRetMktNeg(t-1)</b>			<b>0.087</b> (1.00)
<b>HoldRetMkt(t-1)</b>	<b>-0.009</b> (-0.143)	<b>-0.157 **</b> (-2.18)	<b>-0.044</b> (-0.48)
<b>HoldRetMktNeg(t-1)</b>			<b>-0.175</b> (-1.23)
<b>FundRet(t)</b>	<b>0.297 ***</b> (5.580)		
<b>FundRet(t+1)</b>	<b>0.012</b> (0.29)		
<b>HoldRetVWMkt(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 and future fund 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 NewsHoldRetMkt -- the average returns of fund holdings over the quarter ending in the report date which were covered some time during the quarter in the Wall Street Journal, Washington Post, USA Today or New York Times, minus the CRSP value-weight market return over the same period (lagged one period before the fund returns). Additional controls are the returns of the fund in the period of flows (FundRet(t)) and one quarter after (FundRet(t+1)), as well as the value-weighted returns of fund holdings (HoldRetVWMkt). 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.