

Deception and Managerial Structure: A Joint Study of Portfolio Pumping and Window Dressing Practices*

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Abstract

This paper examines the relation between managerial structure and the likelihood of deception. Using U.S. equity mutual fund data, we find that team-managed funds deceive significantly less than single-managed funds. In particular, we show that two trading activities – portfolio pumping and window dressing, – which are considered illegal or quasi-illegal, are more profound or exists at all only among single-managed funds. We also document a negative relation between the extent of those two activities and team size. Subsequent tests indicate that these results are not driven by various fund characteristics that differ between single- and team-managed funds, such as fund returns, size, and turnover. In addition, we observe that portfolio pumping is present most strongly among the worst performing single-managed funds, while window dressing occurs primarily again among single-managed funds but in the middle performance group for which it has the largest potential benefits. Overall, our findings support the notion that team is a desirable form of organization as it helps weaken incentives to deceive.

JEL classifications: D70; G23; K22

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1. Introduction

In this article, we study whether organizational structure impacts the likelihood of deception.¹ In particular, we study whether team-based organizations deter agents from engaging in deceptive and unethical behavior. We achieve this goal by examining the extent of portfolio pumping and window dressing – the two fund practices that are considered illegal or quasi-illegal – among single-managed and team-managed funds in the U.S. mutual fund industry (see Appendix for the U.S. Securities and Exchange Commission’s (SEC) litigation cases involving both these practices). Portfolio pumping is a practice when fund managers artificially inflate their year-end (and often quarter-end) performance by placing large orders on existing holdings (see Zweig, 1997; Carhart, Kaniel, Musto, and Reed 2002; Bernhardt and Davies, 2005). Market regulators regard this action as illegal. Another type of fund managers’ trading behavior that is largely perceived as being dishonest, although without a formal status of illegal activity, is window dressing. It is a practice when fund managers buy (sell) stocks that recently performed well (bad) just before the fund’s holdings are made public to give the impression that they’ve been holding good stocks in their portfolios for a while (e.g., see Lakonishok, Shleifer, Thaler, Vishny, 1991; Sias and Starks, 1997; He, Ng, and Wang, 2004; Ng and Wang, 2004; Meier and Schaumburg, 2006; Agarwal, Gay, and Ling, 2011).

The relation between organizational structure and agents’ incentives is well known (see Arrow, 1974). The predisposition of team-based organizations to cheat may be lower than that of individuals due to the three main factors: social, economic, and psychological.² First, teams may increase the cost of cheating by greater social pressure and peers monitoring (e.g., see Arnott and Stiglitz, 1991; Mas and Moretti, 2009).³ Teams may also reduce the benefits from cheating since

¹ There are several types of deception (lies). We follow Gneezy’s (2005) classification and assume for the purposes of our work that deception is an increase of the payoff to the liar and decrease of the payoff to the liar’s counterpart.

² We use words deception and cheating interchangeably. In economics literature, cheating is often associated with the free-rider problem (shirking) rather than illegal behavior.

³ In 2010, the SEC started a whistleblower program to encourage people to report fraud within their own organization by providing them with financial incentives and protection (see <http://www.sec.gov/whistleblower>). This program makes fraud reporting easier, thus deterring illegal trading activities.

they divide their total production output among all members, thus transforming high-powered incentives into low-powered ones and reducing each individual member's monetary incentives to cheat (e.g., see Ma, Moore, and Turnbull, 1988; Kandel and Lazear, 1992; Acemoglu, Kremer, and Mian, 2008). Finally, when working in teams, individuals may experience higher moral pressures such as guilt aversion (see Charness and Dufwenberg, 2006). However, almost all the aforementioned studies are theoretical, and few existing empirical results are related only to free-riding. There is no any empirical evidence on the relation between organizational structure and deception.

Our data comes from Morningstar Direct and covers actively managed U.S. domestic equity mutual funds from January 2, 1992 to December 31, 2010. These funds belong to one of the four investment objectives: aggressive growth, growth, growth & income, and equity income. To properly disentangle any potential impact of managerial structure on fund deception tactics, we account for several fund-specific variables, such as investment objective, total assets under management, trading frequency, and performance – all of which may have incremental impact on the propensity to cheat. Using standard methodologies in the literature, we test portfolio pumping on daily returns and window dressing on quarterly returns to match the frequency in reporting of fund portfolio holdings.

First, we examine the impact of managerial structure on portfolio pumping. Consistent with prior findings, we find strong evidence of portfolio pumping over the whole sample period. However, it is present more among single-managed than team-managed funds, at both the year-end and quarter-ends. The average end-of-year (beginning-of-year) daily excess returns among single-managed funds are different from those of the rest of the year by 32bps (-26bps). The same returns for team-managed funds differ from those of single-managed ones by -0.11bps and 0.04bps for the end-of-year and beginning-of-year, respectively. These differences are highly statistically significant. Moreover, we find that the evidence of portfolio pumping is decreasing with the number of fund managers in a team. For example, two-manager funds show -8bps and 2bps differences with single-managed funds for the end-of-year and beginning-of-year daily

returns, respectively, but these differences for funds with five or more managers are -16bps and 11bps, respectively. This constitutes 50% lower returns on the last day of the year and 42% higher return in the first day of the year, respectively, among funds with five or more managers as compared to single-managed funds. The decreasing relation between the extent of portfolio pumping and team size holds across all fund investment objectives, but it is more profound among aggressive growth and growth funds.

We analyze how team size affects portfolio pumping across different fund sizes. We find evidence of portfolio pumping across all fund sizes, but its extent is again smaller among team-managed funds in all instances, at both the year- as well as quarter-ends, with the exception of the year-end for the smallest quartile of funds. However, even in this size quartile, funds experience much weaker pumping when managed by teams of five or more managers. In a similar vein, portfolio pumping activity is present across all turnover quartiles, but, as expected, it is stronger among high turnover funds. Importantly though, even among funds with the lowest turnover, team-management consisting of five or more people helps reduce this activity.

We also relate the extent of portfolio pumping across managerial structures for funds with different prior performances. In contrast to previous studies (e.g., Carhart et al., 2002), we find that portfolio pumping can be at least as profound among the worst performing funds as among the best performers. Notably, we observe that the strongest evidence of portfolio pumping occurs among the worst-performing single-managed funds. It appears that managers of these funds have the highest incentives for making the performance of their funds look better and very low pressures for not undertaking any illegal trading activities.

Next, we examine window dressing. Overall, team-managed funds sell less extreme losing stocks and buy less extreme winning stocks than their single-managed counterparts. When looked at the quarterly trading activity, we find, consistent with prior studies, that the evidence of window dressing, more specific trading activity at the year-end, is concentrated in sells of extreme losing stocks. Importantly, while single-managed funds are involved in more selling of bad performing stocks in the fourth quarter of the year compared to the previous three quarters,

the trading activity of these types of stocks among team-managed ones is similar throughout the year. Moreover, the difference in selling intensity of the most underperforming stocks between team-managed and single-managed funds is decreasing (increasing in magnitude) in team size across all quarters. In addition, we document an absence of window dressing practice among team-managed funds across all four fund investment objectives. Yet, the selling intensity of the worst performing stocks among single-managed funds is always higher in at the end-of-the-year.

Then, given the fact that some of the characteristics of team-managed funds may again affect their ability to window dress, we analyze the impact of fund size, turnover, and performance on the established negative relation between the propensity to window dress and team size. We observe that the selling intensity of the worst performing securities even among the largest single-managed funds is prone to window dressing. The difference in their selling intensity of bad stocks is again economically and statistically larger in the fourth quarter of the year as compared to the first three quarters. The largest team-managed funds have similar selling intensity throughout the year. Similarly, when we look at fund turnover quartiles, we continue observing the same pattern with selling of the worst performance stocks: economically sizable window dressing is observed among single-managed funds but not team-managed. Across fund performance quartiles we find that the selling rate of poorly performing stocks in team-managed funds is significantly lower in the fourth quarter compared to the first three quarters of the year in the middle performance range. Yet, in the same performance brackets, single-managed funds significantly increase their trading towards the end of year.

Finally, we conduct our window dressing tests over the period of 1996-2000. Greenwood and Nagel (2009) mention that window dressing is likely to be observed more during the Dot-com bubble since many funds at that time would be interested in reporting that they were holding high-performing telecom and internet stocks. Indeed, our results show that the extent of window dressing is more prevalent in the late 1990s, yet, again only among single-managed funds.

Thus, our study shows that team management significantly inhibits managers' drive to deceive. In particular, deceptive tactics of investment managers such as portfolio pumping and

window dressing are largely the prerogatives of single-manager funds. The three potential explanations for our results can be linked to peer monitoring, monetary incentives, and psychological factors. Due to data limitations, we are unable to differentiate across these explanations for more ethical behavior of team-managed funds. Nonetheless, our findings provide a clear picture that, whatever the reason may be, team-management in the mutual fund industry is beneficial to both individual investors and the public as a whole, at least, from the perspective of reduction in illegal or quasi-illegal activities.

The rest of the article is organized as follows. Section 2 provides motivation for differences in incentives to deceive between individuals and teams. Section 3 examines the extent of portfolio pumping among team-managed and single-managed funds. Section 4 focuses on the relation between managerial structure and window dressing. The descriptive statistics of data are present within each of these two sections. Section 5 concludes.

2. Motivation and Related Literature

It has been understood for a long time that groups behave differently from individuals. Le Bon (1896) is the first to introduce the idea of a “group mind,” differentiating it from a mind of a single individual. Since then, many studies in various fields, including economics and finance, have attempted to compare group and individual decision making in terms of performance and risk taking. The related literature is divided into two camps. On the one side, many papers argue that decisions made within groups are inferior to those made by individuals.⁴ This may result from extreme decisions by a dominant team member or a reduction in critical thinking in each team member for the sake of more conformity across the entire group. In economics, the negative effects of groups are usually associated with cheating (free-riding) by some group members that lead to the loss of productivity (e.g., see Holmstrom, 1982; Rasmusen, 1987;

⁴ See, for example, Moscovici and Zavalloni (1969) and Janis (1982).

Nalbantian and Schotter, 1997). Likewise, few finance studies find no benefits of teamwork in enhancing the performance of professional money managers (e.g., Chen, Hong, Huang, and Kubik, 2004; Massa, Reuter, and Zitzewitz, 2010).

On the other side, some theoretical and empirical evidence shows that teams outperform individuals and do not take excessive risks. For example, Sah and Stiglitz (1986, 1991) and Sharpe (1981) show that the opinion of a team is the average of opinions of each team member, and, therefore, teams help diversifying individuals' opinions. Barry and Starks (1984) provide a theoretical setting suggesting that teams in investment funds may reduce portfolio risk. However, there are very few empirical studies that find evidence of increased performance in teams based on theories of opinion and risk diversification in groups.⁵ Hamilton, Nickerson, and Owan (2003) find that teams increase productivity, and that this increase is more apparent among earliest team members. Patel and Sarkissian (2012) use equity mutual fund data and observe that team-managed funds outperform single-managed ones without resorting to extra risk taking.⁶

An additional dimension where a team behavior may differ from that of an individual is the likelihood of deceptive and illegal behavior. The probability of involving in an illegal action depends on its costs and benefits. Becker (1968) argues that criminals are rational agents: they weight the cost and benefit of a crime before actually committing it. Different organizational structures imply different costs and benefits of deceptive behavior. First, teams increase social pressures and provide an easy ground for mutual supervision, thus reducing deception opportunities and increasing the cost of deviating from the "right" behavior. Arnott and Stiglitz (1991) argue that peers monitoring is important in labor markets because workers (e.g., portfolio managers) are often in a better position to monitor their co-workers (e.g., co-portfolio managers) than are employers (e.g., a fund company or investors). Mas and Moretti (2009) conclude that workers in a team experience disutility if they are observed behaving selfishly by their peers,

⁵ The majority of existing studies in this area are experimental (e.g., see Bornstein and Yaniv, 1998; Bone et al., 1999; Barber et al., 2003; Cooper and Kagel, 2004; and Blinder and Morgan, 2005; among others).

⁶ Other papers, such as Adams and Ferreira (2010) and Bar, Kempf, and Ruenzi (2011), find that teams take less extreme decisions than individuals, but they provide no evidence of better performance in teams.

irrespective whether their co-workers' sanctions are formal or informal. Second, teams provide a different compensation structure, thus reducing the benefits of cheating. Ma et al. (1988) argue that the principal can overcome the problem of "cheating" by linking one agent's contract to other agent's output. Kandel and Lazear (1992) find that peer pressure and monitoring are more effective when profits are shared in by all members of the organization (e.g., partnership). Acemoglu et al. (2008), using a career concerns model and some evidence from pension funds, show that when agents are provided with high-powered incentives, which induce them to apply sufficient amount of good efforts, these incentives may also encourage agents to use bad efforts to improve their observed performance. Acemoglu et al. (2008) further argue that working in teams may transform high-powered incentives of individual team members into low-powered ones resulting in lesser frequency of bad behavior.⁷ Third, there are psychological factors that explain why individuals may be less inclined to deceive when working in a team. For instance, Charness and Dufwenberg (2006), using a model based on contract theory, find that when agents exhibit guilt aversion then communication among them may enhance their trustworthy behavior. Thus, teams are less likely to deceive than individuals. Moreover, the positive effects of peers monitoring and social pressures, as well as economic costs of deceptive behavior are likely to increase with team size. Therefore, the larger is the team the less likely that its members will cheat.

Various experimental studies generally support a view that groups (not crowds) behave smarter than individuals.⁸ Studies like Bornstein and Yaniv (1998), Cooper and Kagel (2005), and Sutter (2009) argue that groups are more rational than individuals. In particular, groups behave more strategically and learn more quickly to act strategically than individuals. Charness et al. (2007) find that the more salient are the links among group members, the more often group members select actions producing the largest payments for both themselves and the rest of the group.

⁷ Jacob and Levitt (2003) show that high-powered incentives often lead to such distortions in behavior as cheating.

⁸ Large groups with loosely defined ties may show off the negative characteristics of a crowd.

The next problem is to find a data source which would allow us to confidently test whether there is a relation between organizational structure and deception. In this respect, mutual funds provide one of the best datasets for analyzing the impact of group decision making on the likelihood and extent of deceptive actions. There are several reasons for that. First, at present, mutual funds provide one of the largest single sources of occupational data. They represent the largest cross-sectional sample of firms within a single industry and provide the longest time-series of data covering about two decades of observations with sufficiently large details. Second, the proportion of team-managed and single-managed funds is such that it allows one to make inferences about their relative performance, risk-taking, and deception propensity while dealing with comparable samples. Third, fund industry in general, and mutual funds in particular, have been identified with certain types of practices that are perceived illegal or quasi-illegal on the part of investors and government bodies. These are two trading actions: portfolio pumping and window dressing.⁹ Portfolio pumping is a practice when fund managers place large orders on existing holdings to artificially inflate their year-end and often quarter-end performance. This is a very distractive practice for investors since after a temporary gain in performance, stock prices usually fall back to previous levels once the impact from the positive price pressure is over. Zweig (1997), Carhart et al. (2002), and Bernhardt and Davies (2005) document that portfolio pumping is quite common across various fund types. Market regulators regard this action as illegal and the SEC has changed few portfolio managers with this behavior. (See the Appendix, sub-section A.1, for some recent SEC cases related to portfolio pumping.)

Another type of fund managers' trading behavior that perceived as being dishonest is window dressing. It is a practice when fund managers buy (sell) stocks that recently performed

⁹ Another type of investment activity that may have ill-motivated trades is risk-shifting (e.g., see Brown, Harlow, and Starks, 1996; Chevalier and Ellison, 1997; Goetzmann, Ingersoll, Spiegel, and Welch, 2007; Huang, Sialm, and Zhang, 2011). It is a practice of changing the fund's risk exposure to maximize its performance by the reporting date and to attract additional fund flows. However, this activity is not regarded as unethical, since even good performing funds with skilled managers may resort to risk-shifting for simply maximizing the returns on their investments. Also, to the best of our knowledge, there has not been any official litigation case related to risk-shifting (unlike portfolio pumping and window dressing). Therefore, we do not consider this trading tactic as universally unethical and do not examine it in our study.

well (bad) just before the fund's holdings are made public giving the impression that they've been holding good stocks in their portfolios for a while. Lakonishok et al. (1991) observed these trading patterns among pension funds. He et al. (2004) as well as Ng and Wang (2004) document similar behavior across a variety of financial institutions. Sias and Starks (1997) find the evidence of the turn-of-the-year effects not only among institutional investors but also individuals. Yet, they attribute their findings not so much to window dressing as to tax-loss-selling. It is indeed more difficult to identify whether funds have been involved in window dressing activities than whether they practice portfolio pumping. However, in spite of this difficulty, there are cases when the SEC has explicitly cited window dressing tactics while charging portfolio managers with illegal trading schemes. (See the Appendix, sub-section A.2, for the SEC's case related to window dressing.) Moreover, with recent increase in fund performance reporting at the quarterly frequency, the incidences of window dressing are likely to occur not only at the end of the year.

3. Portfolio Pumping and Managerial Structure

3.1. The Detail of Portfolio Pumping Phenomenon and its Estimation Methodology

It has been widely documented in both academic literature and professional reports that returns of stocks and equity funds exhibit various seasonality effects. Of particular interest was the observation of unusually large fund returns at the New Year's Eve. While some evidence of artificial stock price inflation by fund managers has been making the headlines in popular press in the 1990s (see Zweig, 1997), Carhart et al. (2002) offered the first comprehensive study on both yearly and quarterly fund performance manipulation. This frequency of abnormal patterns in fund returns coincides with the reporting frequencies among mutual funds.¹⁰ Ippolito (1992),

¹⁰ Reflecting the position that more transparency is better than less, in May 2004 the SEC increased the required portfolio disclosure frequency from semi-annual to quarterly frequency. Prior to 2004 funds could voluntarily report on a quarterly basis.

Sirri and Tufano (1998) and others observe that money flows into the best performing funds. Since it is in fund managers' compensation interests to have increasing inflows to their funds, they have strong incentive to inflate their performance by the reporting dates. Expectedly, Meier and Schaumburg (2006) and Agarwal et al. (2011) show that funds with poor recent performance are more likely to engage in window dressing.

There also exist some theoretical studies that justify the existence of portfolio pumping and/or provide some predictions on the extent of this phenomenon across funds. Bhattacharyya and Nanda (2009) develop an equilibrium model where managers have incentives to alter the closing prices of their security holdings. Bernhardt and Davies (2009) show that portfolio pumping is persistent, that is, those mutual funds who are involved in portfolio pumping in one quarter are likely to do it again in the following quarter.

Since the results of Carhart et al. (2002) became public around the year 2000, the SEC began scrutinizing suspicious fund trading activities and enforcing the existing trading laws much better. As a result of these actions, in the June of 2001, SEC filed the first fraud charges against a fund manager for market manipulation and portfolio pumping. Duong and Meschke (2011) find a substantial decrease in portfolio pumping activity afterwards. However, our focus is not so much on the changes in magnitude of speculative price manipulation over time but on the cross-sectional differences in the extent of portfolio pumping related trading between team-managed and single-managed funds.

The primary source of mutual fund data is the Morningstar Direct database.¹¹ Our sample covers actively managed U.S. domestic open-end equity mutual funds from January 2, 1992 to December 31, 2010. We focus on funds that belong to aggressive growth (includes small company), growth, growth & income, and equity income investment objectives. We exclude all sector, balanced, international, and index funds from our analysis. The dataset includes daily fund returns (net of expenses), funds size, measured by the total net assets (TNA) under

¹¹ Several recent studies show that Morningstar data on managerial structure is superior to that of CRSP (see Massa et al., 2010; Patel and Sarkissian, 2012).

management of the fund at the end of calendar year, and fund turnover, computed as the minimum of aggregated sales or purchases of securities in a year divided by the average 12-month TNAs of the fund. All fund characteristics except fund returns are at individual fund level, so we aggregate mutual fund share class level return observations to individual fund level using a unique fund identifier in Morningstar Direct. To obtain fund returns in excess of a benchmark, we subtract the daily fund returns from the returns of S&P 500 index. To minimize the effect of outliers on our analysis, we winsorize daily excess fund returns at 1% and 99% levels.

The Morningstar database also contains names of fund managers responsible for day-to-day management of fund each year and the exact joining and leaving dates of fund managers. We determine the managerial structure of funds based on the total number of fund managers at the end of the calendar year. If a fund names only one fund manager at the end of calendar year, we classify that fund as single-managed for that year. If a fund names two or more fund managers, we classify that fund as team-managed. Further, we divide team-managed funds into funds with two, three, four, and five (or more) distinct fund managers at the end of calendar year, denoted 2FM, 3FM, 4FM, and 5+FM, respectively. We remove all fund-years where fund manager names or tenure dates are missing. Our final sample covers 3,252 unique funds with 7,053,857 daily observations.

To estimate the managerial structure impact on portfolio pumping, we amend the Carhart et al. (2002) methodology. Specifically, our regression model is:

$$\begin{aligned}
 r_{i,t} = & b_0 + b_1 YEND_t \times Team_i + b_2 YBEG_t \times Team_i + b_3 QEND_t \times Team_i + b_4 QBEG_t \times Team_i + \\
 & + b_5 MEND_t \times Team_i + b_6 MBEG_t \times Team_i + \\
 & + b_7 YEND_t + b_8 YBEG_t + b_9 QEND_t + b_{10} QBEG_t + b_{11} MEND_t + b_{12} MBEG_t + b_{13} Team_i + e_{i,t},
 \end{aligned} \tag{1}$$

where $r_{i,t}$ is the fund i daily return (net of expenses) in excess of the daily S&P500 index return. Independent variables include $Team_i$, which is a dummy variable equals to one if fund i has two (or more) fund managers and zero otherwise. $YEND$ and $YBEG$ are the last and first trading day of year dummies, respectively. $QEND$ is the last trading day of the quarter, that is, March, June

or September dummy; *QBEG* is the first trading day of the quarter, that is, April, July or October dummy. *MEND* is the last trading day of February, April, May, July, August, October or November dummy; and *MBEG* is the first trading day of February, March, May, June, August, September, November or December dummy. The coefficients of primary interest are those on the interaction terms of *Team* and *YEND*, b_1 , *YBEG*, b_2 , *QEND*, b_3 , and *QBEG*, b_4 . They indicate how much fund returns around the end of the year and end of quarters are different from average returns during the rest of the year.

Table 1 shows the summary statistics of data that we use to measure the level of portfolio pumping. It reports the mean and standard deviation of daily excess returns of funds across various team sizes, as well as their respective number of observations (multiplied by 1000). It also gives these return statistics across funds with different investment objectives. The average returns of team-managed funds are higher than single-managed ones, consistent with evidence in Patel and Sarkissian (2012). Across investment objectives, the highest returns are observed, as expected, in the aggressive growth category while the lowest – in growth & income and equity income categories. The average excess returns of team-managed funds are higher than single-managed ones for all four fund investment objectives. The table also provides summary statistics on two important fund characteristics that are known to be related to fund returns. These are fund size, measured by the total net assets under management of the fund at the end of calendar year. We can see that the average fund size is somewhat larger for team-managed funds. However, the average fund size for funds managed by less than five people is, in fact, smaller than that of single-managed fund. Only funds with five or more managers have substantially larger total net assets than their single-manager counterparts. The turnover of team-managed funds is lower than that of single-managed ones for any team size.

3.2. Test Results

Table 2 shows the aggregate results on the portfolio pumping activity across funds with different managerial structures. It reports the end-of-year and beginning-of-year, end-of-quarter,

and beginning-of-quarter coefficients and their corresponding p-values (in parentheses) for single-managed funds, across all team-managed funds, and separately for funds with various team sizes. The standard errors are clustered by fund. Consistent with Carhart et al. (2002) and others, we find strong evidence of portfolio pumping both around the year-end and quarter-ends. Importantly, the most profound evidence of this seasonal trading activity is concentrated in single-managed funds. The average daily excess returns of single-managed funds at the year-end and quarter-ends differ from their returns during the rest of the year by 32bps and 20bps, respectively. The same return differences among team-managed funds are lower by 11bps and 5bps. This implies, that team-managed funds earn about 33% (25%) lower additional returns on the last day of the year (quarter) compared to single-managed funds. Similar pattern is detected for the beginning-of-year and beginning-of-quarter returns. These returns for single-managed funds differ from those of the rest of the year by -26bps and -21bps, respectively, but are less negative by about 4bps for team-managed funds. Furthermore, we notice that the evidence of portfolio pumping is decreasing with the number of fund managers in a team. For example, two-manager funds exhibit -8bps and 2bps differences with single-managed funds for the end-of-year and beginning-of-year daily returns, respectively. Yet, the same differences for funds with five managers are substantially larger standing at -16bps and 11bps, respectively. This implies that funds with five or more managers experience 50% lower returns on the last day of the year and 42% higher returns in the first day of the year than funds with only one manager.

The next issue is to identify whether portfolio pumping activity patterns documented in Table 3 are present across all fund investment categories, various fund sizes and occur irrespective of average fund turnover. Table 3 presents results on portfolio pumping evidence across four investment objectives and various fund manager team sizes. We notice that the largest extent of pumping occurs, not surprisingly, among aggressive growth funds, followed by growth funds. For example, the daily excess returns at the year-end and year-beginning among single-managed aggressive growth funds are 50bps and -49bps, respectively. The quarter-end and quarter-beginning results are similar, standing at 40bps and -41bps. The magnitude of end-

of-year (beginning-of-year) returns among team-managed aggressive growth funds is less positive (negative) than that of single-managed ones by 15bps (7bps). Similar to the overall picture in Table 2, we again observe that the dampening effect of team management on pumping activity increases with team size. Among aggressive growth funds, the strength of portfolio pumping for funds with five or more managers is lower by about 35% than that for single-managed funds: the daily returns for funds with five or more managers around December 31 – January 1 are -22bps and 17bps (compare with 50bps and -49bps for single-managed funds, respectively).

Table 4 reports the estimation results of daily fund returns around the year- and quarter-ends for four fund size quartiles. Quartile 1 includes the smallest 25% of all funds, while Quartile 4 – the largest 25%. The evidence of portfolio pumping is present across all fund sizes, but, consistent with previous literature, the spread in the magnitudes between positive returns in the last day of the year and negative returns in the first day of the year are larger for the smallest size quartile. Yet, this pattern is observed only among single-managed funds. Team-managed funds, even the smallest ones, exhibit much less positive year-end returns and much less negative beginning-of-year ones. Similar patterns are observed for returns around the quarter-ends. As before, the effect of team-management on the reduction of portfolio pumping is increasing with team size across all fund size quartiles. The takeaway from this table is that not only the smallest but also the largest funds are not immune from portfolio pumping, but that team management alleviates this problem significantly, especially when teams are comprised of more than three people.

Table 5 shows the estimation results of daily fund returns around the year- and quarter-ends for four fund turnover quartiles. Quartile 1 includes funds with the lowest 25% turnover, while Quartile 4 – funds with the highest 25% turnover. Again, not unexpectedly, we find more evidence of portfolio pumping among funds with the highest turnover rates based on returns around both year- and quarter-ends. That is, that are accustomed to trade a lot, are also more prone to portfolio pumping activity. The table shows that the management team impact on

returns around the year-ends and quarter-ends are similar to all previous tables: portfolio pumping significantly decreases with team size.

Thus, Tables 2-5 show that the propensity of funds managers to artificially alter returns at the end of reporting periods, including the year-end is substantially reduced when managers act within a team, especially teams of four, five or more managers. Importantly, this reduction is not a characteristic of any one fund investment objective, size or turnover. What remains to be seen is how group decision making impacts the extent of portfolio pumping across funds with various performance. We accomplish this in Figures 1 and 2.¹²

Figure 1 shows fund returns around the year-end depending on fund performance for all funds and separately for single-managed and team-managed funds. The upper part of the plot shows daily excess fund returns on the last trading day of the year; the lower part – on the first trading day of the year. Fund performance is measured from the first trading day of the year to the second-to-last day of the same year and is split into 20 performance bins by 5% each. Similar to Carhart et al. (2002), we find a U-shaped pattern between the end-of-year returns and fund performance for the whole sample of funds, as well as for the sub-samples of single- managed and team-managed funds. We also observe an inverse U-shaped pattern between the beginning-of-year returns and fund performance. What is different from Carhart et al. (2002) is that, unlike them, we find that the evidence of portfolio pumping is more profound not among high-performing funds, but those in the lowest yearly performance. For example, for the full sample of funds, while excess positive returns at the year-end are about the same for funds with both the worst and the best performance (around 33bps), the year-beginning returns are markedly lower among the worst performing funds (close to an average of 30bps for the bottom 15bps of performance) than their best performing counterparts (about -25bps). Nevertheless, substantial year-end return manipulation evidence among high performing funds indicates, as other studies

¹² We also conduct cross-sectional tests similar to those in Carhart et al. (2002) to analyze whether the relation between fund's subsequent returns over any two trading days is more negative on the first day of the year and quarter. Our results, consistent with the earlier evidence, show more reverse relation for these days. They are available on request.

also concluded, that funds that have very high likelihood of being classified as top performers have sufficient incentives to increase that possibility.

More interesting for our analysis are the differences in portfolio pumping between single-managed and team-managed funds. As we can see, for any fund performance, the year-end returns are higher for single-managed funds than team-managed ones. The same picture (with minus sign) holds almost throughout all performance bins for the year-beginning returns: these returns are less negative for team-managed funds than single-managed ones in all but the second-to-the-best performance bin. In addition, unlike previous studies, using the fund performance dimension, we can state that the largest extent of portfolio pumping occurs among the worst-performing single-managed funds. One can easily explain this. Managers of single-managed funds anticipating that their funds will fall in the lowest performance percentiles have, on the one side, very high incentives to make their returns look better and, on the other, relatively low pressures for not getting involved in any form of unethical or illegal trading behavior. For these types of funds, the cost of cheating (probability of being caught) versus the benefit from it (improved fund performance, increased inflows) is much lower than among analogous team-managed funds. When single-managed funds are successful in deceiving the public, they can enjoy all the benefits from their unethical actions themselves, while the benefits of cheating in team-managed funds are shared by all team members. In addition, while the chances of being caught with illegal trading activity, *ceteris paribus*, must be equal across all funds, the cost of cheating in team-managed funds may still be higher than in single-managed ones due, for instance, to various psychological factors (see Charness and Dufwenberg, 2006).

Figure 2 provides more refined information on managerial structure relative to Figure 1. It depicts fund returns around the year-end depending on fund performance across manager teams of different sizes: single manager, two or three managers, and four, five, or more managers. For the ease of clarity, the daily excess return data for funds with two or three managers as well as four, five or more managers are averaged. The curve for single-managed funds is the same as in Figure 1 and is shown for convenience. Consistent with all our previous

tests, we see that the magnitude of portfolio pumping again diminishes with team size. For instance, the scale of positive returns at the end-of-year and the beginning-of-year among best performing funds with four, five and more managers is the lowest among all manager team sizes and is not much different from similar returns of funds with average performance. Thus, Figures 1 and 2 show that such illegal trading as activity portfolio pumping is practiced primarily among single-managed funds, especially those with the worst performance.

4. Window Dressing and Managerial Structure

4.1. The Details of Window Dressing Phenomenon and its Estimation Methodology

For a long time there is strong consensus among academics, financial industry, and regulatory bodies that the disclosure of trading activity by professional money managers is very useful, since, in this way, people are able to exercise more control over those who handle their investments. As a result, fund managers are required to make their holdings public on a regular basis. While the idea of providing more disclosure on holdings to current and potential investors seems noble, it may lead to unintended consequences on the part of fund managers such as short-term portfolio reshuffling with the goal of better performing assets to be shown to the public. Although not without some reservations, many academic studies demonstrate that excessive trading activity of equity mutual funds around the reporting times such as the end of calendar year as well as end of quarters can often be classified as window dressing (see Lakonishok et al., 1991; He et al., 2004; Ng and Wang, 2004). Window dressing is primarily associated with funds selling their badly performed stocks and buying those with recent strong price appreciation just before presenting their holdings to their clients and shareholders.

We analyze window dressing activity across funds with different managerial structure using three databases: Morningstar Direct, Thomson-Reuters Mutual Fund Holdings database and CRSP Stock Price database. The Morningstar Direct database contains information related to

managerial characteristics of mutual funds such as names of fund managers, their joining and termination dates as well as other important fund characteristics such as performance, assets under management and portfolio turnover rate. We focus on U.S. domestic equity mutual funds that belong to aggressive growth, growth, growth & income, and equity income investment objectives from 1992 to 2010. We exclude all funds that belong to sector, balanced, international and index fund categories from our analysis.

The Thomson-Reuters Mutual Fund Holdings database contains, for each fund, complete stock holdings at the end of a given quarter. The dataset includes name of stock holdings, number of shares held in the current portfolio for each stock holding and net changes in shares held since previously reported portfolio. Following Lakonishok et al. (1991), we focus our analysis on all common stocks traded on the NYSE, AMEX and NASDAQ. Finally, we obtain stock prices, returns, and other stock related information for all stocks in our analysis from CRSP.

We link the Morningstar mutual fund sample to the Thomson-Reuters holding database using MFLINKS. To do this, we first match each fund in the Morningstar sample to CRSP mutual fund database using individual fund tickers and date of inception. In cases where the fund ticker information is missing, we use fund names along with their date of inception for matching purposes. Then using each fund's unique identifier in CRSP (CRSP_FUNDNO), we obtain each fund's unique portfolio identifier (FUNDNO) using MFLINKS file. This matching technique results in 2,238 funds (almost a 70% match with the sample used in Section 3 on portfolio pumping) with a total of 332,983 observations.

To determine whether managers engage in window dressing, we follow Lakonishok et al. (1991). Each quarter we classify stocks held by mutual funds into performance quintiles based on stock returns over the past year up to the end of that quarter. The lowest (highest) quintile represents the stocks that have performed the worst (best) over the past year. Then we estimate the total dollar value of holdings, purchases and sales for each fund in each performance quintile

by multiplying the number of shares each fund holds, buys, and sells each quarter by the average of beginning and end-of-quarter stock prices.¹³ Formally, we define the selling intensity as

$$Selling\ Intensity = \frac{(SELL(i, q, k)/HOLD(i, q - 1, k))}{(\sum_i SELL(i, q, k)/\sum_i HOLD(i, q - 1, k))}, \quad (2)$$

where $SELL(i, q, k)$ is the dollar value of sales by fund k in quarter q and performance group i , and $HOLD(i, q-1, k)$ is the dollar value of holdings at the end of the quarter $q-1$ of the exact same stocks as those in performance group i in quarter q . $SELL$ and $HOLD$ are defined using the average of beginning and end of quarter q prices. Similarly, the buying intensity is defined as

$$Buying\ Intensity = \frac{(BUY(i, q, k)/\sum_i BUY(i, q, k))}{(UNIV.HOLD(i, q)/\sum_i UNIV.HOLD(i, q))}, \quad (3)$$

where $BUY(i, q, k)$ is the dollar purchases by fund k in performance group i in quarter q and $UNIV.HOLD(i, q)$ is the value of CRSP universe holding in quarter q in performance group i . Again, BUY and $UNIV.HOLD$ are computed using the average of beginning and end of quarter q prices.

Table 6 shows the summary statistics of trading intensity across mutual funds with different managerial structures. It reports the mean and standard deviation of selling and buying intensities of funds across various team sizes, as well as their respective number of observations (multiplied by 1000). The table also provides summary statistics on fund excess returns, size, and turnover – three important fund characteristics that may affect the extent of window dressing practice. Fund excess return is the quarterly excess fund return (in percent) computed as the difference between the quarterly net fund return and the quarterly S&P 500 index return. Fund size and turnover are defined as in Table 1 and show similar trends with manager team size as those in that table.

¹³ It is important to point that we only observe net changes in shares held by a fund over a given quarter and not all trades that it makes during the same quarter.

The selling and buying intensities are shown for fund portfolio holdings classified as Extreme Losers and Extreme Winners. Extreme Losers is defined as the lowest stock performance quintile each quarter, where stocks have the lowest returns over the past year up to the end of that quarter. Extreme Winners is defined as the highest stock performance quintile each quarter, where stocks have the highest returns over the past year up to the end of that quarter. We can see that single-managed funds have higher selling intensity for losing stocks, 1.30 versus 1.27. Moreover, the selling intensity of the worst performing stocks decreases uniformly with team size. A funds with two managers on average sells 29% more of extreme losers (relative to its holdings of those stocks) than it sells of all stocks, while a fund with five or more managers sells only 21% more of those stocks. This constitutes a 30% reduction in the selling intensity of the worst performing stocks among funds with five or more managers relative to single-managed funds.

Note that the selling intensity of the best performing stocks is relatively stable across all team sizes, and its magnitude is higher than that of the worst performing stocks. This implies that funds in general, irrespective of their managerial structure, are keener on getting rid of recent winning stocks than recent losers. Next, we look at the buying intensity. Here, we can again observe that fund purchases of extremely bad performing stocks are similar between single- and team-managed funds, are do not differ much with team size. Finally, almost the same picture emerges for the practice of fund buying of extreme losers. Yes, the only difference here is that funds with five or more portfolio managers report much smaller intensity rate than not only single-managed funds but also funds with fewer than five managers.

4.2. Test Results

Table 7 shows the effect of managerial structure on window dressing. It reports the equal-weighted average selling and buying intensities of the worst performing and best performing stocks over funds and years comparing across the first three quarters and the last quarter of the year. The estimates are for the whole sample, as well as for single-managed and team-managed

funds. The standard errors are shown below the mean estimates. We also report two difference tests. Diff(Q4-13) is the difference between quarter 4 and quarters 1-3 across selling and buying intensities, respectively. Diff(Team-Single) is the difference of means between single and team-managed funds within quarters 1-3 and quarter 4. The p-values for these tests are in parentheses.

The test results of particular interest are those corresponding to the selling intensity of extreme losers followed by the buying intensity of extreme winners. We observe that across all funds the average selling intensity of the worst performing stocks is similar around the year: the difference between selling of these stocks in the fourth quarter is economically and statistically indistinguishable from that in the first three quarters of the year. More importantly, the same result holds for team-managed funds – they show even somewhat lower selling activity in bad stocks at the year-end. However, single-managed funds behave differently. Their quarter 4 selling rate of the worst performing securities is higher by 3.1% than that in the first three quarters. That is, in quarter 4, a single-managed fund on average sells 3.1% more of its extremely bad performing stocks than in quarters 1-3, relative to fund's sells of all stocks. This difference, Diff(Q4-13), is statistically significant almost at the 5% level, similar to results in Lakonishok et al. (1991) for the overall sample of pension funds.¹⁴

It is important to recognize that, as a reflection of average turnover differences (see Table 6), the overall selling activity of extreme losing stocks (and some buying activity as well) may be naturally lower among team-managed funds than their single-managed counterparts. Yet, another notable result of Table 7 is that not only the difference in selling intensity of the worst performers is significantly lower among team-managed funds, but the difference in this rate between the two managerial structures is larger in the fourth quarter of the year. Therefore, we believe these trading differences across managerial structures are not driven by such considerations as tax-loss selling at the end of the year: rather they indicate different propensities to window dress between single-managed and team-managed funds. On the buying side, among

¹⁴ It is important to note is that while calculating the difference between quarter 4 and quarters 1-3, we correct for the repeated observations within the same fund-quarter-return quintile category. Without this correction, our t-statistics become comparable to those in He et al. (2004).

the best performing stocks, we observe that both single-managed and team-managed funds show significantly less purchasing activity in the fourth quarter of the year as compared with the first three quarters. Finally, with respect to the results in the top-right and bottom-left quadrants of the table, we only note that they are not providing any information on the existence of window dressing in mutual funds. Besides, all the corresponding difference tests are insignificant.

In Table 8, we compare the selling and buying intensities of the worst and best performing stocks across funds with different team sizes. Similar to Table 7, Panel A, reports the average trading intensities for the two stock performance groups across the three quarters and the fourth quarter of the year. Panel B shows the difference in means between funds with two, three, four, and five (or more) fund managers and single-manager funds within quarters 1-3 and quarter 4. We find that not only team-managed funds do not sell bad stocks more intensely at the year-end on average, but also that this evidence is uniform across team-managed funds irrespective of the team size. Only funds with four managers exhibit somewhat higher selling rate of bad performing stocks in the fourth quarter compared to the first three ones, but this difference is insignificant and, in addition, its magnitude is still lower than that of single-managed funds. On top of that notice from Table 6 that the sub-sample of four-manager funds is the smallest in our analysis. More interestingly, we observe from Panel B that team-managed funds of any team size show substantially lower selling intensity than single-managed funds throughout the year. Also, the reduction in selling rate vis-à-vis single-managed funds is increasing in team size and is statistically significant among funds with five or more managers. Finally, as in Table 7, on the buying side, we do not observe any evidence of specific trading patterns across quarters of the year or the size of fund management.

As with portfolio pumping, the next issue is to see whether window dressing patterns shown in Tables 6-7 are different across fund investment categories, sizes or turnover. Table 9 repeats the estimation of selling (Panel A) and buying (Panel B) intensities for the best and worst performing stocks across four investment objectives and different managerial structure. Note that due to the sizable sample reduction in comparison to the overall results in Table 6, we expect

fewer occurrences of statistical significance in difference tests even for the same level of coefficients. Across all investment objectives in Panel A, we find a consistently positive difference in selling intensity between the fourth quarter and the first three quarters of the year among single-managed funds. Moreover, while this difference is small among aggressive growth funds (0.5%), it is larger than 3.5% across the other three fund investment objectives, and, for growth funds, due to their larger sample size, is also marginally significant. Yet, the same difference is consistently negative among team-managed funds. Another interesting observation is that even though we already know that team-managed funds on average trade less than single-managed ones, and that their selling intensity of bad performing stocks is lower at the year-end than in the first three quarter-ends, this pattern persist across all funds investment objectives. The buying intensity results for the best performing stocks in Panel B again confirm, consistent with our earlier findings and those of other studies, that there are no evidence of more trading activity of this type at the end of the year.

Table 10 shows the average selling and buying intensities of single- and team-managed funds across quarters 1-3 and quarter 4 controlling for fund size (Panel A) and fund turnover (Panel B). At the end of each quarter, funds are sorted into size quartiles based on the total net assets under their management. Also at the end of each quarter funds are sorted into turnover quartiles based on their annual turnover rates. The top (bottom) quartile is classified as large (small) funds, while the top (bottom) quartile is classified as high (low) turnover funds. In this table, we report the results for only these two quartiles of fund sizes and turnover rates. All other measures are defined similarly to previous tables. In Panel A, we notice an increase in selling intensity of bad performing stocks among single-managed funds but not team-managed ones at the year-end relative to the first three quarters in the subsets of both large and small funds. Moreover, this increase is statistically significant and larger in magnitude for the sub-sample of large funds versus small ones (5% versus 3%). As before, there is no evidence of purchases of winning stocks at the end of the year across all fund types. In Panel B we see that, on average, selling intensity is higher among low turnover funds than high turnover ones. This subset of

funds also demonstrates increased selling rates in the fourth quarter of the year. The difference in the selling intensity of extreme losers for single-managed funds in the fourth quarter versus the first three quarters is around 3%, although it is insignificant due to the approximately four-fold reduction in the sample size. Contrary to this outcome, low turnover team-managed funds at the year-end demonstrate a decrease even of higher magnitude in the selling intensity of badly performed holdings.

Finally, we want to understand the impact of managerial structure on window dressing depending on fund performance. Clearly, if a fund shows good performance prior to reporting dates, its managers do not need to prove to their clients that their portfolio holdings included good stocks. Also, if fund returns are much below the industry's median, then, most likely, investors will be very puzzled by seeing many "hot" stocks in a fund's portfolio given its underperformance. Thus, *a priori*, we expect to see more window dressing evidence in the middle fund performance groups, where the benefits of this trading activity are the greatest.

Table 11 shows the results of our tests. It again reports the average selling and buying intensities of single- and team-managed funds across quarters 1-3 and quarter 4. The Winner (Loser) funds are those within the top 25% (bottom 25%) of median performance across all funds in a given year. Fund performance is based on the year to date net excess fund returns up to and including the last day of the given quarter. That is, fund performance in quarter 1 is measured based on the net excess fund returns from January to March; quarter 2 – from January to June; quarter 3 – from January to September; and quarter 4 for the full calendar year. The rest of the format of Table 11 is similar to previous tables.

First, we find that the selling intensity of loser stocks is higher for single-managed funds than team-managed ones across all four quartiles of fund performance and all quarters of the year except in quarter 4 for the best performing funds. Second, we find significantly higher selling rate of loser stocks in quarter 4 relative to quarters 1-3 only among single-managed funds and only in the middle two quartiles of fund performance. These differences for quartiles 2 and 3 are 5.4% and 7.6%, respectively. Importantly, for the same performance quartiles, team-managed

funds decrease their selling intensity in quarter 4, and this decrease is even statistically significant for quartile 2 (-4.7% drop with a p-value of 7.4%). Third, on the two extremes of fund performance, we find no significant changes in the selling intensity of loser stocks at the year-end relative to quarters 1-3, although the overall change is positive for Winner funds and negative for Loser funds. These patterns are consistent with the notion that window dressing is more likely to occur among those funds that can gain the most from this action, but even in those instances, team-managed funds behave diametrically different from their single-managed counterparts. As in previous tables, we observe no evidence of window dressing on the purchasing side.

Overall, Tables 7-11 provide substantial support regarding the impact of managerial structure on such misleading trading activity of professional money managers as window dressing. There is one caveat though. Like other authors, we do not assume that any increase in fund trading activities at the quarter- or year-end is necessarily a manifestation of window dressing. For example, in Table 11, we observe that winner funds, both single- and especially team-managed, increase their selling rate of loser stocks in quarter 4 relative to quarters 1-3. Some of this activity may also be related to momentum trading or other legitimate strategies. However, cross-sectional differences in trading activity between single- and team-managed funds that we observe under various scenarios are likely to reveal the fundamental link between managerial structure and trading practice. This relation is further reinforced by the consistency of our window dressing results with the earlier ones on portfolio pumping.

4.3. The Dot-com Bubble: A Special Case of Window Dressing

Greenwood and Nagel (2009) mention that the window dressing practice is more likely to occur at the times when there are more pressures on portfolio managers to report that their holdings include highly publicized stocks or group of stocks. For example, during the Dot-com bubble at the end of 1990s many funds would be interested in reporting that they were holding high-performing telecom and internet stocks. We test this in Table 12, which repeats our

estimations from Tables 7 and 8 on the impact of various managerial structures on window dressing but only over the years of 1996-2000. Panel A depicts the results across all funds, as well as single-managed and team-managed funds, while Panel B shows the difference tests between funds with different team sizes and those with single manager. We observe that the evidence of window dressing is indeed stronger in the late 1990s, but, importantly, again only among single-managed funds. First, the selling intensity of extreme losers in the fourth quarter of the year for single-managed funds is by 6.2% higher than that in the first three quarter of the year. Note that in spite of the decrease in the sample size, the increase in selling of the worst performing stocks at the year-end is again statistically significant almost at the 5% level. As before, the difference in quarterly selling intensity between team-managed and single-managed funds increases both economically and statistically with team size, especially in the fourth quarter, reaching the rate of 23% for the difference between funds with five or more managers and their single-managed counterparts.

Table 12 also shows some evidence of window dressing on the purchasing side, but again only among single-managed funds: their intensity of buying the best performing stocks at the year-end in comparison to previous quarter trading rate is higher by almost 3% (see Panel A), which is comparable in magnitude to the selling rate of worst performers among single-managed funds across the full sample period in Table 7. The difference tests in Panel B indicate that, similar to selling intensity differences, the difference in buying intensity between team-managed and single-managed funds also increases substantially with team size, reached for funds with five managers statistically significant levels even in this reduced sample.

5. Conclusions

In this paper, we use U.S. domestic equity mutual fund and examine the extent of two trading practices, portfolio pumping and window dressing across funds with different managerial

structure. These two practices, which are generally viewed as unethical at best and even illegal, create an ideal ground for analyzing the potential relation between the likelihood to deceive and organizational structure. Our results show that team-managed funds are less likely to involve in these *dishonest* fund performance enhancing activities. Moreover, in some instances, such as window dressing, based on selling poorly-performed stocks at the end of quarters and the year, we are unable to find any significant evidence of such behavior among team-managed funds. Across all our tests, we document a negative relation between the extent of the evidence of the two trading tactics and team size. These cross-managerial structure results hold irrespective of additional controls related to such fund characteristics as fund returns, size, and turnover that could also affect the actual propensity of fund manager to deceive. We also show that portfolio pumping activity, which is again greatly reduced among team-managed funds, including the best performers, is present most profoundly among single-managed funds showing the worst prior performance. Thus, our findings provide novel empirical support for the benefits of team-management in the fund industry.

Appendix:

A.1: SEC cases related to portfolio pumping

Case 1: Excerpted from Litigation Release No. 20046 / March 16, 2007¹⁵

SEC v. Burton G. Friedlander et al., Civil Action No. 01 Civ. 4683 (KMW) (S.D.N.Y.)

On February 21, 2007, United States District Judge Kimba Wood entered final judgments by consent against Burton Friedlander and four entities he formerly controlled. These final judgments conclude the U.S. Securities and Exchange Commission's action, except for a final distribution by the court-appointed receiver.

¹⁵ See details at <http://sec.gov/litigation/litreleases/2007/lr20046.htm>.

The Commission filed its original complaint in May 2001, alleging fraud in connection with Friedlander's management of the assets of Friedlander International Limited, an overseas hedge fund. The Commission alleged that Friedlander inflated the hedge fund's net asset value by improperly and arbitrarily valuing certain unlisted securities of a company in which Friedlander and entities he controlled had heavily invested. The Commission's complaint also alleged that Friedlander engaged in "portfolio pumping" by purchasing a thinly-traded common stock as part of a manipulative scheme to inflate the value of that stock and to inflate the hedge fund's net asset value...

Case 2: Excerpted from Litigation Release No. 21865 / February 25, 2011¹⁶

SEC v. Todd M. Ficeto, Florian Homm, Colin Heatherington, Hunter World Markets, Inc., and Hunter Advisors, LLC et al., Case No. CV-11-1637 GHK (RZx) (C.D. Cal. February 24, 2011)

The Securities and Exchange Commission charged two securities professionals, a hedge fund trader, and two firms involved in a scheme that manipulated several U.S. microcap stocks and generated more than \$63 million in illicit proceeds through stock sales, commissions and sales credits.

According to the SEC's complaint filed in the U.S. District Court for the Central District of California, Homm along with Ficeto and Heatherington conducted the scheme from September 2005 to September 2007... The SEC alleges that Florian Homm of Spain and Todd M. Ficeto of Malibu, Calif., conducted the scheme through their Beverly Hills, Calif.-based broker-dealer Hunter World Markets Inc. (HWM) with the assistance of Homm's close associate Colin Heatherington, a trader who lives in Canada. They brought microcap companies public through reverse mergers and manipulated upwards the stock prices of these thinly-traded stocks before selling their shares at inflated prices to eight offshore hedge funds controlled by Homm. Their manipulation of the stock prices allowed Homm to materially overstate by at least \$440

¹⁶ See details at <http://sec.gov/litigation/litreleases/2011/lr21865.htm>.

million the hedge funds' performance and net asset values (NAVs) in a fraudulent practice known as "portfolio pumping..."

A.2: SEC cases related to window dressing

Case 1: Excerpted from Litigation Release No. 19170 / April 6, 2005¹⁷

SEC v. Jeff Thomas Allen et al., Civil Action No. 05-453 (W.D. Pa.)

The Securities and Exchange Commission ("Commission") announced that on April 6, 2005, it filed a civil action in the United States District Court for the Western District of Pennsylvania against Jeff Thomas Allen, of Pittsburgh, Pennsylvania, and James Barlow Smith, of Saxonburg, Pennsylvania. Allen was the President, CEO, Chief Investment Officer and majority shareholder of Advanced Investment Management, Inc. ("AIM"), a now-defunct investment adviser previously registered with the Commission. Smith was AIM's Vice President of Equity Trading...

The Commission's Complaint alleges that AIM's investment strategy involved matching or exceeding the performance of the S&P 500 Index through the use of derivatives rather than direct investment in the equities that comprised the Index... The Complaint further alleges that, from at least January 2002 through July 2002, Allen and Smith conducted unauthorized trading in numerous client accounts, and in violation of advisory agreements. In particular, from April through July 2002, during a time when the S&P 500 Index dropped almost 29 percent, the defendants improperly increased market exposure in an effort to recover from past losses. This trading caused market exposure in some accounts to reach levels as high as 500 percent, which, in turn, caused more than \$415 million in client losses. In order to conceal the effect of their trading, which otherwise would have been disclosed in monthly account statements, Allen and Smith sold the unauthorized positions before month-end, and repurchased them shortly thereafter. This strategy of "window dressing" prevented clients from discovering the scheme...

¹⁷ See details at <http://sec.gov/litigation/litreleases/lr19170.htm>.

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Table 1
Summary Statistics of Daily Fund Returns and Fund Characteristics

		Overall	Single	Team	Team Size			
					2FM	3FM	4FM	5+FM
Daily Excess Return	Mean	0.010	0.009	0.011	0.011	0.012	0.011	0.011
	SD	0.567	0.585	0.553	0.561	0.574	0.532	0.511
Investment Objectives:								
Aggressive Growth	Mean	0.017	0.016	0.018	0.018	0.018	0.020	0.017
	SD	0.721	0.741	0.706	0.720	0.729	0.681	0.636
Growth	Mean	0.010	0.009	0.010	0.010	0.011	0.008	0.011
	SD	0.547	0.569	0.531	0.537	0.551	0.504	0.502
Growth & Income	Mean	0.005	0.003	0.007	0.006	0.007	0.012	0.007
	SD	0.419	0.422	0.417	0.417	0.424	0.444	0.389
Equity Income	Mean	0.005	0.004	0.006	0.004	0.010	0.007	0.008
	SD	0.473	0.483	0.462	0.484	0.451	0.404	0.438
	Obs.	7,053	3,013	4,040	1,988	939	459	652
Fund Size	Mean	1,080	1,040	1,110	745	931	917	2,620
	SD	4,600	4,070	4,960	2,090	2,590	2,350	11,100
Fund Turnover	Mean	0.900	0.961	0.856	0.859	0.903	0.830	0.796
	SD	1.076	1.383	0.774	0.767	0.915	0.660	0.632

This table reports the mean and standard deviation (SD) of daily returns of domestic equity mutual funds in the U.S. across various managerial structures and investment objectives from January 2, 1992 to December 31, 2010. Based on the number of fund managers listed in Morningstar Direct database, funds are categorized into two broad managerial structures: Single and Team. Funds with only one fund manager are classified as Single whereas funds with more than one manager are classified as Team. Team Size represents funds with two, three, four and five (or more) fund managers. Daily Excess Return is the daily excess fund return (%) computed as the difference between the daily net fund return and the daily S&P 500 index return. Fund Size (millions, \$) is the total net assets under the management of the fund at the end of the year. Fund Turnover is the minimum of aggregated sales or aggregated purchases of securities in a year divided by the average 12-month total net assets of the fund. The four fund investment objectives are Aggressive Growth, Growth, Growth & Income, and Equity Income. The number of observations is reported in 1000s.

Table 2
Effect of Managerial Structure on Portfolio Pumping Activity

	Team Size					
	Single	Team	2FM	3FM	4FM	5+FM
YEND	0.323 (0.000)	-0.106 (0.000)	-0.081 (0.000)	-0.107 (0.000)	-0.139 (0.000)	-0.162 (0.000)
YBEG	-0.259 (0.000)	0.043 (0.000)	0.021 (0.077)	0.025 (0.094)	0.073 (0.000)	0.114 (0.000)
QEND	0.202 (0.000)	-0.054 (0.000)	-0.037 (0.000)	-0.047 (0.000)	-0.082 (0.000)	-0.098 (0.000)
QBEG	-0.213 (0.000)	0.036 (0.000)	0.022 (0.007)	0.021 (0.067)	0.052 (0.000)	0.087 (0.000)

This table reports panel regression coefficients of daily excess fund returns on managerial structure using U.S. domestic equity mutual fund data from January 2, 1992 to December 31, 2010. The regression model is:

$$r_{i,t} = b_0 + b_1 YEND_t \times Team_i + b_2 YBEG_t \times Team_i + b_3 QEND_t \times Team_i + b_4 QBEG_t \times Team_i + b_5 MEND_t \times Team_i + b_6 MBEG_t \times Team_i + b_7 YEND_t + b_8 YBEG_t + b_9 QEND_t + b_{10} QBEG_t + b_{11} MEND_t + b_{12} MBEG_t + b_{13} Team_i + e_{i,t}.$$

The dependent variable is the daily fund return (net of expenses) in excess of daily S&P500 index return. Independent variables include Team, defined as a dummy variable which equals one if the fund has two (or more) fund managers and zero otherwise; YEND – the last trading day of year dummy; YBEG – the first trading day of the year dummy; QEND – the last trading day of the quarter, that is, March, June or September dummy; QBEG – the first trading day of the quarter, that is, April, July or October dummy; MEND – the last trading day of February, April, May, July, August, October or November dummy; and MBEG – the first trading day of February, March, May, June, August, September, November or December dummy. The coefficients reported in the table are: the interaction terms of Team and YEND, b_1 , YBEG, b_2 , QEND, b_3 , and QBEG, b_4 . The standard errors are clustered by fund. The p-values for the test if the estimates are different from zero are in parentheses.

Table 3
Effect of Managerial Structure on Portfolio Pumping across Investment Objectives

	Team Size					
	Single	Team	2FM	3FM	4FM	5+FM
Aggressive Growth						
YEND	0.496 (0.000)	-0.155 (0.000)	-0.117 (0.002)	-0.171 (0.000)	-0.212 (0.000)	-0.223 (0.000)
YBEG	-0.489 (0.000)	0.068 (0.004)	0.035 (0.223)	0.048 (0.167)	0.131 (0.002)	0.169 (0.000)
QEND	0.400 (0.000)	-0.130 (0.000)	-0.078 (0.002)	-0.127 (0.000)	-0.231 (0.000)	-0.234 (0.000)
QBEG	-0.413 (0.000)	0.092 (0.000)	0.068 (0.001)	0.062 (0.039)	0.126 (0.000)	0.198 (0.000)
Growth						
YEND	0.289 (0.000)	-0.113 (0.000)	-0.088 (0.000)	-0.115 (0.000)	-0.144 (0.000)	-0.162 (0.000)
YBEG	-0.231 (0.000)	0.044 (0.001)	0.020 (0.191)	0.042 (0.028)	0.069 (0.001)	0.104 (0.000)
QEND	0.168 (0.000)	-0.045 (0.000)	-0.032 (0.001)	-0.042 (0.000)	-0.062 (0.000)	-0.079 (0.000)
QBEG	-0.206 (0.000)	0.031 (0.000)	0.017 (0.069)	0.025 (0.058)	0.051 (0.002)	0.069 (0.000)
Growth & Income						
YEND	0.235 (0.000)	-0.022 (0.260)	-0.012 (0.569)	-0.003 (0.909)	-0.015 (0.727)	-0.074 (0.024)
YBEG	-0.116 (0.000)	0.030 (0.053)	0.041 (0.031)	-0.028 (0.237)	0.033 (0.342)	0.067 (0.021)
QEND	0.095 (0.000)	0.005 (0.603)	-0.005 (0.676)	0.025 (0.105)	0.023 (0.338)	-0.001 (0.943)
QBEG	-0.043 (0.000)	0.003 (0.744)	0.003 (0.784)	-0.015 (0.317)	-0.009 (0.774)	0.031 (0.061)
Equity Income						
YEND	0.292 (0.000)	-0.082 (0.005)	-0.060 (0.084)	-0.087 (0.031)	-0.132 (0.012)	-0.130 (0.027)
YBEG	-0.100 (0.000)	-0.042 (0.147)	-0.070 (0.058)	-0.037 (0.420)	-0.019 (0.737)	0.083 (0.190)
QEND	0.145 (0.000)	-0.038 (0.019)	-0.031 (0.094)	-0.038 (0.099)	-0.057 (0.100)	-0.052 (0.136)
QBEG	-0.006 (0.698)	-0.014 (0.510)	-0.023 (0.366)	0.000 (0.993)	-0.021 (0.552)	0.015 (0.749)

This table reports panel regression coefficients of daily excess fund returns on managerial structure across different investment objectives using the US domestic equity mutual fund data from January 2, 1992 to December 31, 2010. The regression specification is as in Table 2, but it is rerun separately for each of the four investment objectives: Aggressive Growth, Growth, Growth & Income, and Equity Income. All variables are defined and reported as in Table 2. The p-values for the test if the estimates are different from zero are in parentheses.

Table 4
Effect of Fund Size on Portfolio Pumping and Managerial Structure Relation

	Team Size					
	Single	Team	2FM	3FM	4FM	5+FM
Quartile 1 (Smallest)						
YEND	0.369 (0.000)	-0.160 (0.000)	-0.145 (0.000)	-0.105 (0.003)	-0.233 (0.000)	-0.255 (0.000)
YBEG	-0.218 (0.000)	0.004 (0.866)	0.007 (0.782)	-0.037 (0.263)	-0.023 (0.530)	0.081 (0.016)
QEND	0.195 (0.000)	-0.063 (0.000)	-0.052 (0.001)	-0.040 (0.050)	-0.111 (0.000)	-0.104 (0.000)
QBEG	-0.216 (0.000)	0.030 (0.021)	0.025 (0.108)	-0.006 (0.767)	0.063 (0.015)	0.084 (0.000)
Quartile 2						
YEND	0.332 (0.000)	-0.098 (0.000)	-0.053 (0.038)	-0.136 (0.000)	-0.140 (0.000)	-0.168 (0.000)
YBEG	-0.280 (0.000)	0.055 (0.003)	0.022 (0.297)	0.056 (0.037)	0.124 (0.000)	0.114 (0.000)
QEND	0.221 (0.000)	-0.080 (0.000)	-0.052 (0.001)	-0.062 (0.001)	-0.149 (0.000)	-0.154 (0.000)
QBEG	-0.206 (0.000)	0.032 (0.015)	0.015 (0.351)	0.024 (0.235)	0.041 (0.103)	0.104 (0.000)
Quartile 3						
YEND	0.325 (0.000)	-0.108 (0.000)	-0.095 (0.000)	-0.124 (0.000)	-0.102 (0.006)	-0.131 (0.000)
YBEG	-0.316 (0.000)	0.090 (0.000)	0.071 (0.002)	0.066 (0.018)	0.136 (0.000)	0.154 (0.000)
QEND	0.226 (0.000)	-0.065 (0.000)	-0.043 (0.007)	-0.073 (0.000)	-0.076 (0.003)	-0.115 (0.000)
QBEG	-0.234 (0.000)	0.051 (0.000)	0.032 (0.047)	0.043 (0.050)	0.057 (0.024)	0.120 (0.000)
Quartile 4 (Largest)						
YEND	0.267 (0.000)	-0.060 (0.002)	-0.032 (0.145)	-0.064 (0.021)	-0.087 (0.015)	-0.103 (0.002)
YBEG	-0.221 (0.000)	0.018 (0.327)	-0.015 (0.498)	0.006 (0.828)	0.040 (0.199)	0.096 (0.002)
QEND	0.167 (0.000)	-0.012 (0.295)	-0.003 (0.828)	-0.014 (0.441)	-0.002 (0.930)	-0.037 (0.037)
QBEG	-0.197 (0.000)	0.028 (0.035)	0.019 (0.231)	0.020 (0.341)	0.048 (0.062)	0.049 (0.025)

This table reports panel regression coefficients of daily excess fund returns on managerial structure across different fund size quartiles using U.S. domestic equity mutual fund data from January 2, 1992 to December 31, 2010. The regression specification is as in Table 2, but it is rerun separately for each fund size quartile. All variables are defined and reported as in Table 2. The p-values for the test if the estimates are different from zero are in parentheses.

Table 5
Effect of Fund Turnover on Portfolio Pumping and Managerial Structure Relation

	Team Size					
	Single	Team	2FM	3FM	4FM	5+FM
Quartile 1 (Lowest)						
YEND	0.270 (0.000)	-0.070 (0.000)	-0.064 (0.005)	-0.058 (0.041)	-0.128 (0.000)	-0.063 (0.097)
YBEG	-0.181 (0.000)	0.018 (0.291)	-0.016 (0.444)	-0.006 (0.815)	0.046 (0.139)	0.138 (0.000)
QEND	0.149 (0.000)	-0.038 (0.001)	-0.019 (0.158)	-0.032 (0.076)	-0.074 (0.002)	-0.076 (0.000)
QBEG	-0.145 (0.000)	0.016 (0.176)	0.009 (0.507)	0.021 (0.316)	0.005 (0.842)	0.039 (0.037)
Quartile 2						
YEND	0.298 (0.000)	-0.076 (0.000)	-0.058 (0.010)	-0.065 (0.010)	-0.123 (0.000)	-0.116 (0.000)
YBEG	-0.220 (0.000)	0.027 (0.137)	0.016 (0.481)	0.007 (0.784)	0.066 (0.032)	0.067 (0.029)
QEND	0.182 (0.000)	-0.047 (0.000)	-0.033 (0.019)	-0.046 (0.007)	-0.067 (0.002)	-0.075 (0.000)
QBEG	-0.189 (0.000)	0.046 (0.000)	0.033 (0.020)	0.026 (0.120)	0.072 (0.001)	0.094 (0.000)
Quartile 3						
YEND	0.327 (0.000)	-0.132 (0.000)	-0.092 (0.000)	-0.154 (0.000)	-0.149 (0.000)	-0.206 (0.000)
YBEG	-0.283 (0.000)	0.042 (0.026)	0.025 (0.270)	0.014 (0.642)	0.048 (0.181)	0.119 (0.000)
QEND	0.209 (0.000)	-0.051 (0.000)	-0.039 (0.007)	-0.054 (0.004)	-0.039 (0.140)	-0.085 (0.000)
QBEG	-0.224 (0.000)	0.037 (0.005)	0.019 (0.214)	0.022 (0.268)	0.079 (0.004)	0.079 (0.000)
Quartile 4 (Highest)						
YEND	0.328 (0.000)	-0.131 (0.000)	-0.103 (0.000)	-0.152 (0.000)	-0.139 (0.002)	-0.184 (0.000)
YBEG	-0.338 (0.000)	0.077 (0.000)	0.046 (0.061)	0.088 (0.009)	0.134 (0.001)	0.132 (0.001)
QEND	0.244 (0.000)	-0.079 (0.000)	-0.054 (0.001)	-0.053 (0.010)	-0.160 (0.000)	-0.148 (0.000)
QBEG	-0.281 (0.000)	0.046 (0.002)	0.039 (0.023)	0.000 (0.990)	0.060 (0.023)	0.137 (0.000)

This table reports panel regression coefficients of daily excess fund returns on managerial structure across different fund turnover quartiles using U.S. domestic equity mutual fund data from January 2, 1992 to December 31, 2010. The regression specification is as in Table 2, but it is rerun separately for each fund turnover quartile. All variables are defined and reported as in Table 2. The p-values for the test if the estimates are different from zero are in parentheses.

Table 6
Summary Statistics of Trading Intensity across Funds with Different Managerial Structures

		Overall	Single	Team	Team Size			
					2FM	3FM	4FM	5+FM
Selling Intensity:								
Extreme Losers	Mean	1.286	1.304	1.273	1.288	1.289	1.280	1.207
	SD	0.939	0.953	0.928	0.943	0.939	0.934	0.867
Extreme Winners	Mean	1.449	1.440	1.455	1.466	1.451	1.455	1.429
	SD	0.889	0.892	0.887	0.886	0.899	0.902	0.862
	Obs.	240	97	142	69	31	16	25
Buying Intensity:								
Extreme Losers	Mean	1.423	1.428	1.419	1.453	1.386	1.373	1.399
	SD	1.161	1.168	1.156	1.187	1.122	1.142	1.117
Extreme Winners	Mean	1.420	1.437	1.408	1.427	1.419	1.420	1.325
	SD	1.077	1.107	1.056	1.086	1.056	1.032	0.973
	Obs.	293	121	171	84	38	19	28
Fund Excess Return	Mean	0.744	0.694	0.779	0.798	0.780	0.726	0.760
	SD	5.193	5.417	5.030	5.122	5.448	4.692	4.338
Fund Size	Mean	702	737	677	468	642	528	1469
	SD	2,747	2,615	2,836	1,413	1,781	1,376	6,080
Fund Turnover	Mean	0.884	0.948	0.836	0.836	0.894	0.812	0.773
	SD	1.077	1.398	0.751	0.732	0.911	0.630	0.619

This table reports the mean and standard deviation (SD) of trading intensity among U.S. domestic equity mutual funds across various managerial structures from January 1992 to December 2010. Based on the number of fund managers listed in Morningstar Direct database, funds are categorized into two broad managerial structures: Single and Team. Funds with only one fund manager are classified as Single whereas funds with more than one manager are classified as Team. Team Size represents funds with two, three, four and five (or more) fund managers. Selling Intensity is defined as

$$(SELL(i, q, k) / HOLD(i, q - 1, k)) / (\sum_i SELL(i, q, k) / \sum_i HOLD(i, q - 1, k)),$$

where $SELL(i, q, k)$ is the dollar value of sales by fund k in quarter q and performance group i , and $HOLD(i, q - 1, k)$ is the dollar value of holdings at the end of the quarter $q - 1$ of the exact same stocks as those in performance group i in quarter q . Buying Intensity is defined as

$$(BUY(i, q, k) / \sum_i BUY(i, q, k)) / (UNIV.HOLD(i, q) / \sum_i UNIV.HOLD(i, q)),$$

where $BUY(i, q, k)$ is the dollar purchases by fund k in performance group i in quarter q and $UNIV.HOLD(i, q)$ is the value of CRSP universe holding in quarter q in performance group i . Extreme Losers is defined as the lowest stock performance quintile each quarter, where stocks have the lowest returns over the past year up to the end of that quarter. Extreme Winners is defined as the highest performance quintile each quarter, where stocks have the highest stock returns over the past year up to the end of that quarter. These definitions follow Lakonishok et al. (1991). Fund Excess Return is the quarterly excess fund return (%) computed as the difference between the quarterly net fund return and the daily S&P 500 index return. Fund Size (millions, \$) is the total net assets under the management of the fund at the end of the year. Fund Turnover is the minimum of aggregated sales or aggregated purchases of securities of the year divided by the average 12-month total net assets of the fund. The number of observations is reported in 1000s.

Table 7
Effect of Managerial Structure on Window Dressing Activity

		Selling Intensity			Buying Intensity		
		Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)
Extreme Losers:							
	Overall	1.282 0.005	1.290 0.009	0.007 (0.465)	1.417 0.005	1.422 0.009	0.005 (0.625)
	Single	1.296 0.008	1.327 0.014	0.031 (0.059)	1.426 0.009	1.434 0.015	0.008 (0.646)
	Team	1.276 0.007)	1.263 0.011	-0.013 (0.324)	1.418 0.007	1.424 0.013	0.006 (0.693)
	Diff(Team-Single)	-0.020 (0.075)	-0.064 (0.001)		-0.008 (0.483)	-0.010 (0.596)	
Extreme Winners:							
	Overall	1.450 0.004	1.440 0.007	-0.009 (0.276)	1.437 0.005	1.398 0.009	-0.039 (0.001)
	Single	1.445 0.007	1.427 0.012	-0.018 (0.193)	1.451 0.009	1.399 0.014	-0.052 (0.002)
	Team	1.456 0.006	1.452 0.010	-0.004 (0.735)	1.416 0.007	1.383 0.011	-0.034 (0.012)
	Diff(Team-Single)	0.011 (0.254)	0.025 (0.103)		-0.035 (0.002)	-0.016 (0.378)	

This table shows the effect of managerial structure on window dressing of U.S. domestic equity mutual funds from January 1992 to December 2010. It reports the average selling and buying intensity of stocks over funds and year comparing across the first three quarters and the last quarter of the year. Funds are categorized into two broad managerial structures: Single, which are funds with only one fund manager and Team, which are funds with two or more managers. Selling Intensity is defined as the ratio of stocks sold in a performance group by a fund to holdings of the same stocks at the end of the previous quarter divided by the ratio of total stocks sold in this quarter to holdings at the end of the previous quarter. Buying Intensity is defined as the fraction of stock purchases in a performance group by a fund relative to the fraction of the universe holdings in that performance group. Extreme Winners and Extreme Losers are defined as in Table 6. The standard errors are shown below the mean estimates. Diff(Q4-13) is the difference between quarter 4 and quarters 1-3 across selling and buying intensities, respectively. Diff(Team-Single) is the difference of means between single and team-managed funds within quarters 1-3 and quarter 4. The standard errors are below intensity estimates. The p-values for the difference tests are in parentheses.

Table 8
Window Dressing across Teams of Different Sizes

Panel A: Window dressing across team sizes

	Selling Intensity (Extreme Losers)			Buying Intensity (Extreme Winners)		
	Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)
Single	1.296 0.008	1.327 0.014	0.031 (0.059)	1.426 0.009	1.434 0.015	0.008 (0.646)
2FM	1.295 0.010	1.269 0.017	-0.026 (0.178)	1.446 0.011	1.469 0.019	0.023 (0.277)
3FM	1.289 0.015	1.290 0.025	0.001 (0.982)	1.392 0.015	1.371 0.025	-0.021 (0.477)
4FM	1.274 0.020	1.298 0.034	0.024 (0.547)	1.375 0.021	1.366 0.037	-0.010 (0.815)
5+FM	1.212 0.015	1.193 0.025	-0.019 (0.522)	1.399 0.017	1.399 0.029	0.001 (0.987)

Panel B: Difference in selling and buying intensities across management structures

Difference	Selling Intensity (Extreme Losers)		Buying Intensity (Extreme Winners)	
	Q1-Q3	Q4	Q1-Q3	Q4
2FM - Single	-0.001 (0.966)	-0.058 (0.009)	0.020 (0.142)	0.036 (0.131)
3FM - Single	-0.007 (0.696)	-0.037 (0.205)	-0.034 (0.055)	-0.063 (0.034)
4FM - Single	-0.021 (0.334)	-0.028 (0.461)	-0.051 (0.033)	-0.068 (0.090)
5+FM - Single	-0.084 (0.000)	-0.134 (0.000)	-0.027 (0.172)	-0.035 (0.304)

This table shows window dressing activity of mutual funds managed by a single manager as well as by teams of two, three, four, and five (or more) managers using U.S. domestic equity mutual funds from January 1992 to December 2010. Panel A reports equal-weighted average selling and buying intensity of extreme winner stocks and extreme loser stocks across the first three quarters and the fourth quarter of the year. The standard errors are shown below the mean estimates. Panel B reports the difference in means between funds with two, three, four, and five (or more) fund managers and single-manager funds within quarters 1-3 and quarter 4. Single is defined as funds with only one fund manager; 2FM, 3FM, 4FM and 5+FM are funds with two, three, four, and five (or more) fund managers. Other measures are defined as in Tables 6 and 7. Diff(Q4-13) is the difference between quarter 4 and quarters 1-3 across selling and buying intensities, respectively. The standard errors are below intensity estimates. The p-values for the difference tests are in parentheses.

Table 9
Managerial Structure and Window Dressing across Investment Objectives

Panel A: Selling intensity in extreme loser stocks

	Aggressive Growth			Growth			Growth & Income			Equity Income		
	Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)
Overall	1.176 0.010	1.168 0.017	-0.009 (0.658)	1.314 0.007	1.328 0.012	0.014 (0.287)	1.299 0.014	1.310 0.023	0.011 (0.675)	1.443 0.031	1.438 0.051	-0.005 (0.933)
Single	1.195 0.017	1.200 0.029	0.005 (0.880)	1.306 0.011	1.343 0.018	0.037 (0.082)	1.339 0.024	1.379 0.041	0.040 (0.388)	1.528 0.047	1.583 0.075	0.055 (0.536)
Team	1.155 0.013	1.138 0.022	-0.022 (0.507)	1.315 0.009	1.309 0.015	-0.005 (0.772)	1.295 0.019	1.274 0.030	-0.021 (0.547)	1.384 0.043	1.262 0.071	-0.122 (0.151)
Diff(Team-Single)	-0.040 (0.063)	-0.062 (0.082)		0.008 (0.552)	-0.034 (0.159)		-0.044 (0.144)	-0.105 (0.035)		-0.144 (0.025)	-0.321 (0.002)	

Panel B: Buying intensity in extreme winner stocks

	Aggressive Growth			Growth			Growth & Income			Equity Income		
	Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)
Overall	1.811 0.012	1.762 0.020	-0.049 (0.042)	1.431 0.006	1.402 0.011	-0.030 (0.018)	0.964 0.010	0.941 0.017	-0.023 (0.240)	0.879 0.021	0.847 0.033	-0.032 (0.422)
Single	1.855 0.021	1.809 0.034	-0.045 (0.263)	1.437 0.011	1.371 0.017	-0.066 (0.001)	0.963 0.017	0.944 0.029	-0.020 (0.555)	0.874 0.029	0.860 0.050	-0.014 (0.804)
Team	1.766 0.016	1.698 0.026	-0.068 (0.029)	1.421 0.009	1.402 0.014	-0.018 (0.274)	0.928 0.013	0.901 0.021	-0.028 (0.275)	0.833 0.029	0.772 0.042	-0.062 (0.263)
Diff(Team-Single)	-0.089 (0.001)	-0.111 (0.008)		-0.017 (0.221)	0.031 (0.156)		-0.035 (0.100)	-0.043 (0.216)		-0.040 (0.322)	-0.088 (0.181)	

This table reports the average selling and buying intensities of funds within different investment objectives comparing across quarters 1-3 and quarter 4. The sample includes U.S. domestic equity mutual funds from January 1992 to December 2010. Investment objectives are: Aggressive Growth, Growth, Growth & Income, and Equity Income. Panel A reports the average selling intensity within extreme loser stocks across quarters 1-3 and quarter 4. Panel B reports the average buying intensity within extreme winner stocks across quarters 1-3 and quarter 4. Other measures are defined as in Tables 6 and 7. The standard errors are shown below the mean estimates. Diff(Q4-13) is the difference between quarter 4 and quarters 1-3 across selling and buying intensities, respectively. Diff(Team-Single) is the difference of means between single and team-managed funds within quarters 1-3 and quarter 4. The standard errors are below intensity estimates. The p-values for the difference tests are in parentheses.

Table 10
Effect of Fund Size and Turnover on Window Dressing and Managerial Structure Relation

Panel A: Results by fund size

		Selling Intensity (Extreme Losers)			Buying Intensity (Extreme Winners)		
		Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)
Large Funds:							
Single		1.227	1.277	0.051	1.315	1.311	-0.004
		0.014	0.025	(0.072)	0.015	0.025	(0.884)
Team		1.235	1.262	0.027	1.254	1.226	-0.028
		0.013	0.022	(0.274)	0.012	0.020	(0.235)
Diff(Team-Single)		0.008	-0.016		-0.060	-0.084	
		(0.678)	(0.638)		(0.002)	(0.007)	
Small Funds:							
Single		1.353	1.384	0.031	1.515	1.482	-0.033
		0.020	0.034	(0.432)	0.019	0.031	(0.366)
Team		1.342	1.287	-0.055	1.445	1.427	-0.018
		0.016	0.026	(0.077)	0.014	0.025	(0.535)
Diff(Team-Single)		-0.011	-0.097		-0.071	-0.055	
		(0.663)	(0.020)		(0.003)	(0.163)	

Panel B: Results by fund turnover

		Selling Intensity (Extreme Losers)			Buying Intensity (Extreme Winners)		
		Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)
High Turnover Funds:							
Single		1.187	1.203	0.016	1.795	1.732	-0.063
		0.014	0.024	(0.545)	0.017	0.028	(0.056)
Team		1.223	1.232	0.009	1.799	1.762	-0.037
		0.013	0.022	(0.709)	0.014	0.024	(0.172)
Diff(Team-Single)		0.037	0.030		0.004	0.030	
		(0.051)	(0.361)		(0.854)	(0.415)	
Low Turnover Funds:							
Single		1.430	1.463	0.032	1.190	1.129	-0.061
		0.022	0.036	(0.445)	0.018	0.029	(0.082)
Team		1.413	1.376	-0.037	1.079	1.043	-0.037
		0.019	0.031	(0.312)	0.015	0.023	(0.195)
Diff(Team-Single)		-0.017	-0.086		-0.111	-0.087	
		(0.547)	(0.066)		(0.001)	(0.018)	

This table compares average selling and buying intensities of single- and team-managed funds across quarters 1-3 and quarter 4 controlling for fund size (Panel A) and fund turnover (Panel B). The sample includes U.S. domestic equity mutual funds from January 1992 to December 2010. At the end of each quarter, funds are sorted into size quartiles based on the total net assets under their management. The top (bottom) quartiles are classified as Large (Small) Funds. Also, at the end of each quarter, funds are sorted into turnover quartiles based on the annual fund turnover. The top (bottom) quartiles are classified as High (Low) Turnover Funds. Other measures are defined as in Tables 6 and 7. The standard errors are shown below the mean estimates. Diff(Q4-13) is the difference between quarter 4 and quarters 1-3 across selling and buying intensities, respectively. Diff(Team-Single) is the difference of means between single and team-managed funds within quarters 1-3 and quarter 4. The standard errors are below intensity estimates. The p-values for the difference tests are in parentheses.

Table 11
Effect of Fund Performance on Window Dressing and Managerial Structure Relation

		Selling Intensity (Extreme Losers)			Buying Intensity (Extreme Winners)		
		Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)
Winner Funds:							
Single		1.302	1.323	0.021	1.677	1.626	-0.051
		0.019	0.031	(0.567)	0.018	0.029	(0.134)
Team		1.298	1.342	0.043	1.627	1.600	-0.026
		0.015	0.028	(0.161)	0.014	0.024	(0.346)
Diff(Team-Single)		-0.004	0.019		-0.051	-0.026	
		(0.880)	(0.653)		(0.026)	(0.491)	
Quartile 3:							
Single		1.285	1.360	0.076	1.370	1.309	-0.062
		0.018	0.030	(0.025)	0.017	0.027	(0.052)
Team		1.273	1.263	-0.010	1.352	1.311	-0.041
		0.014	0.023	(0.711)	0.013	0.021	(0.102)
Diff(Team-Single)		-0.012	-0.098		-0.018	0.002	
		(0.589)	(0.009)		(0.384)	(0.948)	
Quartile 2:							
Single		1.324	1.377	0.054	1.278	1.266	-0.012
		0.017	0.028	(0.093)	0.016	0.025	(0.694)
Team		1.292	1.246	-0.047	1.301	1.221	-0.080
		0.014	0.022	(0.074)	0.020	0.020	(0.001)
Diff(Team-Single)		-0.031	-0.132		0.023	-0.045	
		(0.144)	(0.001)		(0.25)	(0.155)	
Loser Funds:							
Single		1.264	1.245	-0.019	1.428	1.365	-0.062
		0.015	0.026	(0.529)	0.018	0.029	(0.080)
Team		1.245	1.207	-0.037	1.361	1.364	0.002
		0.013	0.020	(0.129)	0.014	0.025	(0.932)
Diff(Team-Single)		-0.019	-0.038		-0.066	-0.002	
		(0.337)	(0.244)		(0.004)	(0.963)	

This table compares average selling and buying intensities of single- and team-managed funds across quarters 1-3 and quarter 4 controlling for different fund performance quartiles. The sample includes U.S. domestic equity mutual funds from January 1992 to December 2010. The Winner (Loser) funds are those within the top 25% (bottom 25%) of median performance across all funds in a given year. Fund performance is based on the net excess fund returns. Other measures are defined as in Tables 6 and 7. The standard errors are shown below the mean estimates. Diff(Q4-13) is the difference between quarter 4 and quarters 1-3 across selling and buying intensities, respectively. Diff(Team-Single) is the difference of means between single and team-managed funds within quarters 1-3 and quarter 4. The standard errors are below intensity estimates. The p-values for the difference tests are in parentheses.

Table 12
The Dot-Com Bubble: A Special Case of Window Dressing and Managerial Structure

Panel A: Window dressing during the Dot-Com bubble

	Selling Intensity (Extreme Losers)			Buying Intensity (Extreme Winners)		
	Q1-Q3	Q4	Diff(Q4-13)	Q1-Q3	Q4	Diff(Q4-13)
Overall	1.255 0.012	1.278 0.019	0.022 (0.310)	1.154 0.009	1.169 0.013	0.014 (0.38)
Single	1.261 0.017	1.323 0.028	0.062 (0.055)	1.147 0.013	1.174 0.020	0.027 (0.255)
Team	1.259 0.017	1.227 0.027	-0.032 (0.334)	1.144 0.013	1.137 0.020	-0.007 (0.756)
Diff(Team-Single)	-0.002 (0.917)	-0.096 (0.013)		0.003 (0.883)	-0.037 (0.182)	

Panel B: Difference in selling and buying intensities across management structures during the Dot-Com bubble

Difference	Selling Intensity (Extreme Losers)		Buying Intensity (Extreme Winners)	
	Q1-Q3	Q4	Q1-Q3	Q4
2FM - Single	0.021 (0.479)	-0.049 (0.298)	0.006 (0.777)	-0.025 (0.442)
3FM - Single	-0.013 (0.747)	-0.102 (0.116)	0.067 (0.023)	0.041 (0.363)
4FM - Single	0.024 (0.698)	-0.202 (0.052)	-0.049 (0.287)	-0.044 (0.531)
5+FM - Single	-0.118 (0.032)	-0.231 (0.008)	-0.188 (0.000)	-0.290 (0.000)

This table shows the impact of managerial structure on window dressing activity of equity mutual funds during the Dot-com bubble. The sample includes U.S. domestic equity mutual funds from January 1996 to December 2000. Panel A reports equal-weighted average selling and buying intensities of single- and team-managed funds across quarters 1-3 and quarter 4. Panel B reports the difference in means between funds with two, three, four, and five (or more) fund managers and single-manager funds within quarters 1-3 and quarter 4. Other measures are defined as in Tables 6 and 7. Diff(Q4-13) is the difference between quarter 4 and quarters 1-3 across selling and buying intensities, respectively. Diff(Team-Single) is the difference of means between single and team-managed funds within quarters 1-3 and quarter 4. The standard errors are below intensity estimates. The p-values for the difference tests are in parentheses.

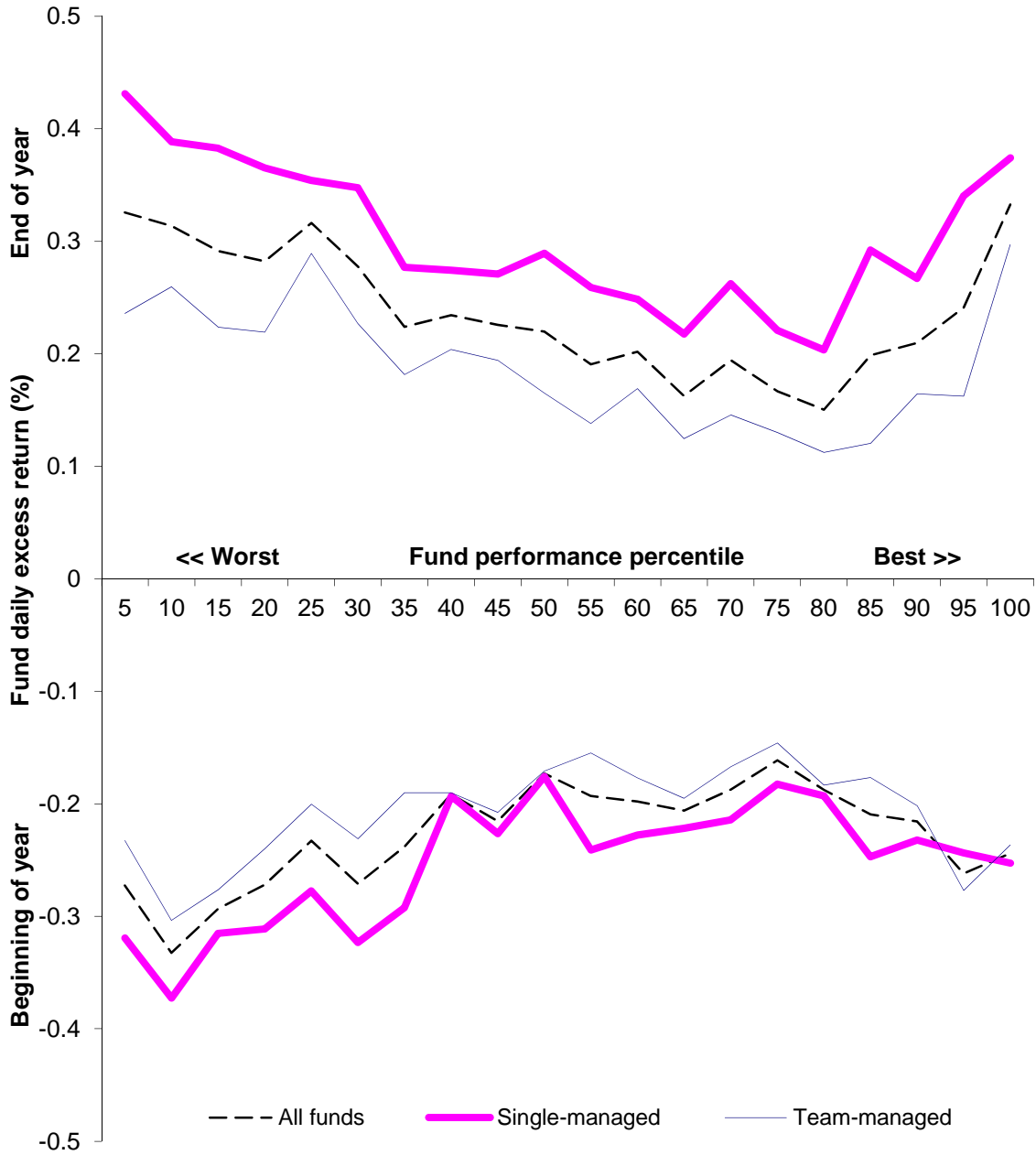


Figure 1. Fund Returns around the Year-end for Different Managerial Structures and Performance. The figure shows the relation between daily excess fund returns (in percent) on the last trading day of the year (upper half of the plot) as well as the first trading day of the year (lower half of the plot) and fund performance across all funds (dashed curve), single-managed funds (thick curve), and team-managed funds (thin curve). Fund performance is measured from the first trading day of the year to the second-to-last day of the same year and is split into 20 performance bins by 5% each. The sample covers the period between January 1, 1992 and December 31, 2010.

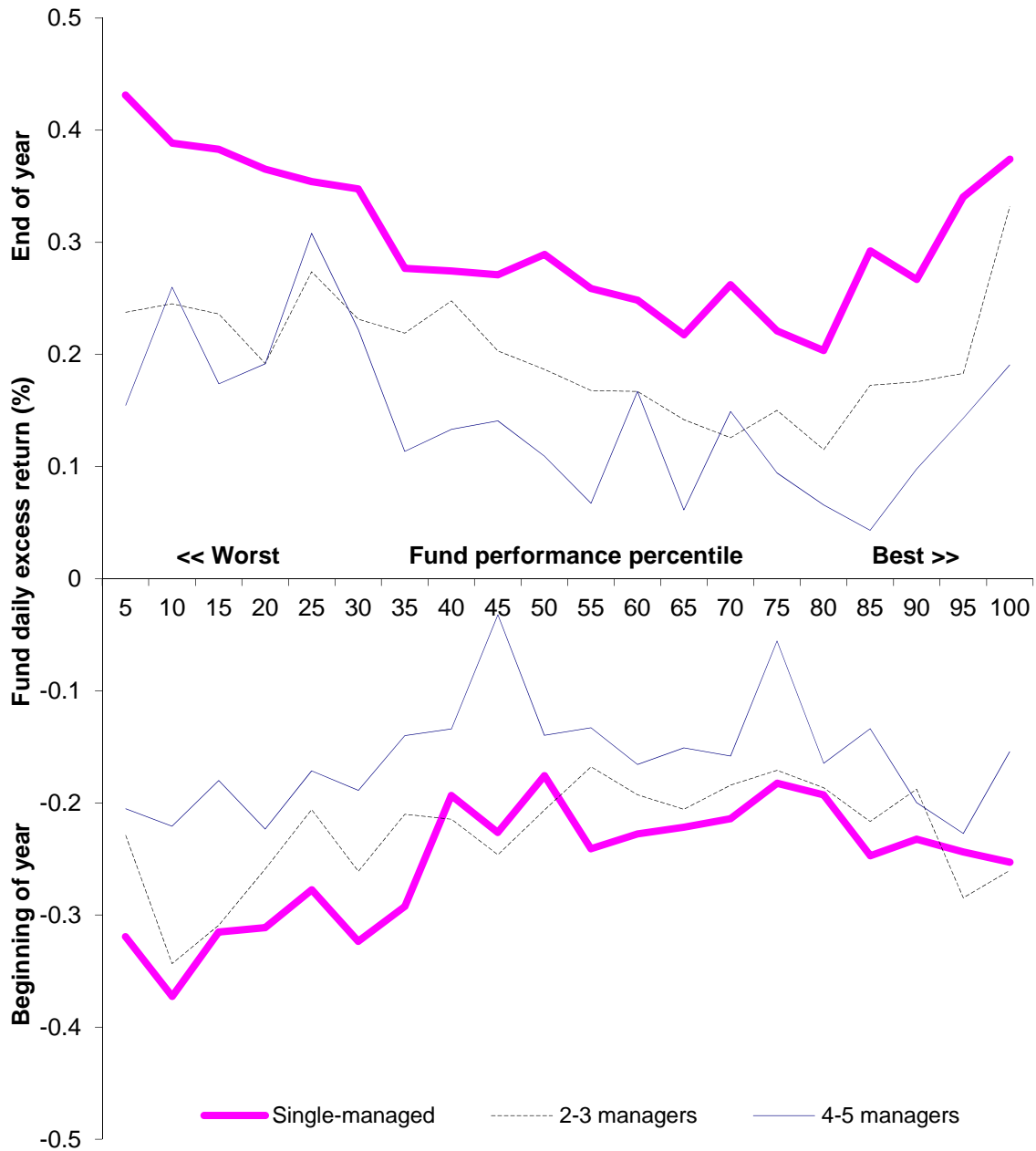


Figure 2. Fund Returns around the Year-end for Different Manager Team Sizes and Performance. The figure shows the relation between daily excess fund returns (in percent) on the last trading day of the year (upper half of the plot) as well as the first trading day of the year (lower half of the plot) and fund performance across single-managed funds (thick curve), funds with two or three managers (dashed curve), and funds with four, five and more managers (thin curve). The daily excess return data for funds with two or three managers as well as four, five or more managers are averaged. Fund performance is measured from the first trading day of the year to the second-to-last day of the same year and is split into 20 performance bins by 5% each. The sample covers the period between January 1, 1992 and December 31, 2010.