# Strategic Timing in Closed-End Fund Portfolio Holdings Disclosure

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#### Abstract

Using a sample of fifty four closed-end funds for the period 1995-2010 that includes detailed portfolio holdings data, we document strategic behavior by portfolio managers in the timing of portfolio holdings disclosure. We find that protection from both copycatters and frontrunners are strong motives for delaying to disclose portfolio holdings, while managerial protection from activist investor attacks provide a strong motive for early disclosure for funds trading at large discounts. We argue that early disclosure facilitates arbitrageurs to implement arbitrage strategies in competition with activist investors. Consistent with this argument we document that early disclosure is associated with significantly positive abnormal fund price returns as well as significant returns to a portfolio strategy that goes long the fund and short the underlying assets.

Keywords: Closed-End funds, Portfolio Holdings Disclosure, Front running, Copycatting, Arbitrageurs

#### 1. Introduction

In this paper we examine the disclosure practices of closed-end fund managers. The Securities and Exchange Commission requires closed-end funds to transmit a report to their shareholders within 60 days of the end of the period for which the shareholder report is made. While initially funds were required to disclose holdings information within these shareholder reports semiannually, in May 2004 the SEC adopted the Shareholder Reports and Quarterly Portfolio Disclosure of Registered Management Investment Companies final rule.<sup>1</sup> The rule requires, among other amendments, a closed-end fund to file its complete portfolio schedule as of the end of the first and third fiscal quarters with the commission in a new form (N-Q) within 60 days from the quarter end.<sup>2</sup>

The arguments for increased holdings transparency focus on the fact that it would allow investors to make more informed asset allocation decisions and in addition would result in better monitoring of the fund's management. In fact proponents of increased disclosure argue that holdings filings should be more timely than the allowed 60-day delay period.<sup>3</sup> On the other hand arguments against more frequent portfolio and timely holdings disclosure suggested that it could lead to several threats that would harm the institutions. More specifically such threats could arise from professional traders that seek to exploit portfolio information by engaging in predatory trading practices such as copycatting and front running. An extensive literature examines issues related to mutual fund holdings disclosures ranging from the ability of information in holdings

<sup>&</sup>lt;sup>1</sup> SEC final rule: Shareholder reports and Quarterly portfolio disclosure of registered management investment companies https://www.sec.gov/rules/final/33-8393.htm

<sup>&</sup>lt;sup>2</sup> The same rules apply for registered open end funds.

<sup>&</sup>lt;sup>3</sup> SEC proposed rule: Shareholder Reports and Quarterly Portfolio Disclosure of registered management investment companies https://www.sec.gov/rules/proposed/ic-25870.htm

disclosures to predict future fund returns (Collin-Dufresne and Fos (2015) and Kacperczyk, Sialm and Zheng (2008)), the profitability of copycat strategies (Phillips, Pukthuanthong and Rau (2014), Verbeek and Wang (2013), Brown and Schwarz (2013) , Frank *et al.*, (2004)), and the threat of front runners (Shive and Yun (2013), Chen *et al.* (2008)). Christoffersen, Danesh and Musto (2015) examine copycat and front running threats as well as concealing voting power as motives for institutions to delay their portfolio holdings disclosure through 13F filings.

We extend the literature on fund industry disclosure by examining the timing of closedend fund (CEF) managers portfolio holdings disclosure decisions. We investigate the motives of closed-end fund managers to delay or speed-up portfolio holding disclosures. These motives include the shared concerns with open-end fund managers for the potential negative effects from free-riding by copycatters and front runners in light of the tendency of closed-end funds to hold illiquid assets, but also new motives that arise from the unique institutional features of CEFs that give rise to premiums/discounts in CEF prices. CEFs differ significantly from open-end mutual funds in that after an initial public offering, the fund shares trade on a stock exchange just like any other stock. Consequently, unlike open-end funds that stand ready to create new shares or redeem existing shares at the Net Asset Value (NAV) of their underlying assets, the price of CEFs is determined by supply and demand forces and can vary significantly from their NAV.<sup>4</sup> In addition to the rise of new motives for timely disclosure by CEF managers, the existence of a CEF price determined by fund investors

<sup>&</sup>lt;sup>4</sup> In fact these premiums/discounts in CEF prices constitute a long standing puzzle in the finance literature. See Dimson and Minio-Kozerski (1999)and Cherkes (2012) for extensive surveys of the closed-end fund puzzle literature.

allows for pricing tests to evaluate investor reaction to timely disclosures, something that is not feasible in the open-end fund disclosure literature.<sup>5</sup>

What disclosure motives arise from the presence of premiums/discounts in CEF prices? To answer this question we need to analyze how premiums or discounts affect the CEF managers utility. Evidence from the CEF literature suggest that the manager's fee compensation, typically specified as a percentage of the fund's total net assets, is not directly affected by the premiums/discounts. However, the manager's job security is likely affected by large discounts. Managers of high discount funds risk to be terminated through investor pressure or activist investors liquidating the fund. Cherkes, Sagi and Wang (2014) argues that fund managers of high discount funds are more likely to adopt shareholder value enhancing managed distribution policies (MDP) as a defense mechanism from activists investors<sup>6</sup> attempts to takeover and liquidate the fund. Johnson, Lin and Roy Song (2006) argue that CEF adopt explicit policies committing them to pay minimum dividend yields as deliberate attempts to reduce CEF discounts. We argue that timely disclosure offers an alternative or complimentary managerial action that could potentially have positive fund valuation effects reducing discounts. These positive valuation effects could arise from facilitating arbitrageurs to compete with activist investors through the reduction in the cost and risk of implementing arbitrage strategies, and also through the positive valuation effects of disclosure quality argued in the corporate finance and accounting literatures.

<sup>&</sup>lt;sup>5</sup> Open end fund literature uses money flows to investigate investor reaction on disclosure. For example Ge and Zheng (2006) examine the relation between disclosure frequency and new money flows to study whether investors are attaching a greater value to more frequent portfolio disclosure. <sup>6</sup> Cherkes, Sagi and Wang (2014) state that "… holdings of CEF shares are generally dispersed and not held by institutions so that control contests tend to arise through block-holder activism (U.S. law prohibits the hostile acquisition of one investment firm by another)".

The copycat and front running threats as motives for delayed disclosure argued by fund managers and examined in the mutual fund literature along with the motive of fund managers for self-preservation in the presence of fund discounts leads to a set of intuitive empirical hypothesis. First, managers that possess valuable proprietary information that is reflected in their trading activity are more motivated to delay the disclosure of their portfolio holdings to protect their information and avoid copycatting behavior by competitors. Second, managers who plan to actively trade immediately after the filing report period are more likely to delay disclosure of their portfolio holdings to avoid the threat of front running. Third, the illiquidity of the underlying assets affects the threat of copycatting and front running in opposite directions as the high price impact of trading illiquid assets works against copycatters and in favor of front runners. The illiquidity of underlying assets also increases the cost of an activist attack reducing its threat and the managerial benefit from early disclosure. Therefore, the higher the illiquidity of the underlying assets the more likely it is for the manager to delay disclosure to avoid front running. Fourth, the higher the discount the more likely it is for the fund manager to disclose earlier to protect his/her job and finally, more timely disclosure has positive fund valuation effects.

In order to examine the disclosure habits of closed-end fund managers and test our hypotheses we utilize the hand collected sample of detailed portfolio holdings of 54 CEF from 1995-2010 used in Lesmond and Nishiotis (2015), and the filing dates of their disclosure reports.<sup>7</sup> We begin our empirical analysis by first documenting that the timing of CEF filings varies wildly both across and within funds. Our descriptive statistics indicate that there is variation both within funds and across funds in the

<sup>&</sup>lt;sup>7</sup> We collect portfolio disclosure information from the following SEC filing forms: N-30D, N-30B-2, N-Q, N-CSR, and N-CSR(S).

decision to delay. The within fund standard deviation ranges from a low of 3.42 days for the Templeton Dragon Fund to a high of 25.38 days for the Thai Capital fund. The average delay across funds is 57.99 days with a cross-fund standard deviation of 9.49 days.

We document strategic behavior by portfolio managers in the timing of portfolio holdings disclosure. We find that both protection from copycatters and protection from front runners are strong motives for delaying to disclose portfolio holdings. In addition in the case of holdings illiquidity front running costs are found to outweigh copycat benefits since managers of funds with more illiquid holdings are found to delay more. Furthermore, we show that managers of funds trading at high discounts are more likely to disclose earlier in order to reduce discounts and protect themselves from activist investor attacks. Indeed an event study reveals that more timely disclosures are associated with positive fund price abnormal returns as well as statistically and economically significant returns to a portfolio strategy that goes long the fund and short its underlying assets.

Our study contributes to the literature in various ways. First, while other studies focus on mutual fund portfolio disclosure<sup>8</sup>, our paper is the first to study the disclosure practices of closed-end funds whose particular organization form brings new dimensions in the motives of fund managers to delay disclosure. The distinction between closed-end funds and other types of mutual funds allows us to split the factors that affect the fund managers decision to delay in two categories. First, factors that affect mutual fund managers decisions in general, such as defense against predatory

<sup>&</sup>lt;sup>8</sup> Agarwal *et al.* (2015) examines the impact of mandatory portfolio disclosure by mutual funds on stock liquidity and fund performance. Christoffersen, Danesh and Musto (2015) examines the factors affecting the managerial choice to delay portfolio disclosure using a sample of mutual funds.

practices of rival funds or other investors, and second, factors that apply uniquely to closed-end fund managers such as defense against the threat of activist investors. Another important dimension arises from the fact that in the case of CEFs a fund price is available separate from the NAV. This allows the investigation of investor reaction to fund disclosures through an event study on CEF price returns, something that could not be done for other fund types. In this respect our paper is related to the corporate finance and accounting disclosure literature, where increased disclosure improves firm performance (see for example Karamanou and Nishiotis (2009) and references therein).

The structure of the study is as follows: In the next section we present the institutional background of CEF disclosures. In section 3 we review the existing literature and develop the hypotheses regarding closed-end funds and strategic delay. The data description and descriptive statistics are presented in section 4 and the methodology used is described in section 5. We present and analyze our results in section 6, while the conclusion and a summary of key findings are presented in section 7.

## 2. Institutional Background of Closed-End Fund Disclosures

In this section we review the regulatory background of investment companies portfolio holdings disclosure.<sup>9</sup>

Different kinds of filing forms are used by fund managers for portfolio holdings disclosure throughout the period covered in this study. These forms are listed in the appendix along with what information is contained in each report type, the filing frequency and the maximum filing delay allowed by the regulatory authorities.

<sup>&</sup>lt;sup>9</sup> The majority of the information cited in this section can be found in both the proposed and final rule of the SECs "Shareholder Reports and Quarterly Portfolio Disclosure of Registered Management Investment Companies".

Prior to May 2004 all registered investment companies were required to report their complete portfolio holdings in the reports delivered to their shareholders twice a year within 60-days from the period-end date. These semiannual filings had to be filed with the SEC within 10 days from the transmission to the shareholders. The filing forms used were the N-30D form<sup>10</sup> until the January of 2003, and N-CSR and N-CSR(S) forms<sup>11</sup> from January 2003 onwards. Some funds, occationally voluntarily filed quarterly disclosures through form N-30B-2, which being voluntary, have no file timing requirements.

On May 10<sup>th</sup> 2004, following a debate between members of the fund industry that asked for an improved disclosure regime for better monitoring<sup>12</sup> and fund groups arguing that increased disclosure would expose funds to the predatory practices of professional traders, the Security and Exchange Commission adopted a new rule<sup>13</sup> regarding portfolio holdings disclosure. One of the main requirements of the rule was the mandatory quarterly disclosure of portfolio holdings of every registered management investment company within a 60-day period from the period-end date.

More specifically, as stated in the rule, a fund is required to file its complete portfolio schedules for the second and fourth fiscal quarters on Form N-CSR, and is required to file its complete portfolio schedules for the first and third fiscal quarters on new Form

<sup>&</sup>lt;sup>10</sup> Covered under Rule 30e-1 of the Securities Exchange Act of 1934

<sup>&</sup>lt;sup>11</sup> Covered under Section 30 of the Investment Company Act of 1940 and Sections 13 and 15(d) of the Securities Exchange Act of 1934. Investment Companies with fiscal annual and semiannual period ending on or before March 31, 2003 could choose either to file their holdings using form N-CSR or to continue to comply with the certification requirements of Form N-30D for that period.

<sup>&</sup>lt;sup>12</sup> Specifically proponents of improved disclosure argued that an increase in the frequency of portfolio disclosure would give investors the possibility to be more informed about the funds' portfolio holding changes, and as a result make more informed asset allocation decisions. In addition the petitioners argued that more frequent disclosure would expose style drift and potential forms of portfolio manipulation

<sup>&</sup>lt;sup>13</sup> Final rule: Shareholder Reports and Quarterly Portfolio Disclosure of Registered Management Investment Companies https://www.sec.gov/rules/final/33-8393.htm#IIB

N-Q, within 60 days of the end of the quarter. As in the case of Form N-CSR, Form N-Q must be filed with the Commission on EDGAR. On the other hand it is not required for Form N-Q to be delivered to the shareholders, but it will be available on the Commission's website for disclosure purposes.

The aforementioned rules and changes in regulation concern fund level disclosure. It is important to mention that another disclosure regime exists with regards to investment company level disclosure (13F filings). As Agarwal *et al.* (2015) argues, investment company level disclosure is less informative relative to fund level disclosure, which offers much more detailed information about the investments of mutual funds than that provided by the 13F form since mutual fund companies often operate multiple funds. In addition Form 13F is only filed by large investors, while fund level filings are filed by all funds. As a result, examining disclosure at the fund level allows for a much more detailed and in depth analysis.

## 3. Literature Review and Hypothesis Development

The potential costs and benefits of timely disclosure in the fund industry are extensively examined in the literature typically in the context of open-end funds. In this section we discuss some of the arguments in the open-end fund literature along with new arguments stemming from the unique institutional features of CEF to derive testable empirical hypotheses on the motives of closed-end fund managers to delay or expedite disclosure within the flexibility provided by disclosure regulation. Our objective is twofold. First, we aim to shed new light to the fund disclosure literature and second, analyzing the disclosure practice of CEF managers and the corresponding investor reaction has unique interest for the broader CEF literature, which is dominated by the closed-end fund puzzle, one of the longest standing anomalies in finance.

Existing literature on portfolio holdings fund disclosure as well as industry responses to regulation changes involving more timely disclosures identify copycatting and front running as two major threats fund managers face when they disclose early. Front running is the case where professional investors and speculators trade before an expected trade of an institution resulting to obtaining a better price. As Wermers (2001) argues more frequent portfolio disclosure arms front runners with more timely and comprehensive information and gives the ability to take the right position in anticipating the fund's trades. As a result the fund faces higher prices in the case that the manager plans to invest in new securities, and lower prices in the case that the manager plans to sell securities. These higher trading costs result to lower returns for the fund and its shareholders.

Christoffersen, Danesh and Musto (2015) use inflows and outflows to examine the impact of front running on the fund manager's decision to delay its 13F filings. Their findings suggest that institutions delay more after a large outflow than inflows. Shive and Yun (2013) find that institutions trade on, and profit from, the predictability of mutual fund flow-induced trading. Coval and Stafford (2007) show that front-running anticipated trades by distressed mutual funds is a profitable strategy, while Chen et al. (2008) provide evidence that Hedge Funds take advantage of this strategy. Similarly Ge and Zheng (2006) findings, indicate a cost to disclosure from front runners.

Copycatting is another freeriding action usually taken by outside investors. Similar to front running, copycatting is also driven by the information released in the market by the investment company. More specifically copycatting a fund is free riding on the choice of its portfolio by mimicking the investment strategy of the fund. As a result

outside investors benefit from the fund's research and investment strategies without incurring the costs.

Brown and Schwarz (2013) find that securities disclosed by target funds experience abnormal trading volume and positive returns immediately after hedge funds' 13-F filings disclosure, suggesting that market participants attempt to take advantage of hedge fund disclosures. Their findings show limited evidence that copycatters benefit from this strategy and that target funds might benefit from copycatting. Phillips, Pukthuanthong, and Rau (2014), on the other hand, find that the performance of the target fund reverses following copying initiation. Frank *et al.* (2004) findings suggest that copycat funds earn statistically indistinguishable and possibly higher returns than actively managed funds. Similarly Verbeek and Wang (2013) find that on average copycat strategies perform similar to their targets. They also show that the success increased significantly after 2004 and the mandatory quarterly disclosure rule by SEC.

Copycatting and front running threats are expected to be faced by closed-end fund managers as well. With regards to copycatting we argue that the more proprietary information a CEF manager has the more likely he/she is to delay portfolio holdings disclosure to protect his/her proprietary information reflected in the holdings of his portfolio from copycatters.

H1: The more proprietary information a CEF manager has the more likely he/she is to delay portfolio holdings disclosure.

To empirically test this hypothesis we use two different reporting period trading activity measures to proxy for the level of proprietary information a manager possesses. First, we use the return gap measure of Kacperczyk, Sialm and Zheng (2008), which is defined as the difference of the actual closed-end fund (NAV) performance from the

performance of a hypothetical portfolio that invests in the previously disclosed fund holdings. This is a measure of the impact of unobserved actions by the fund manager on the fund NAV return during the reporting period. The more positive this impact is, the more likely it is that the manager processes proprietary valuable information that she would want to protect and copycatters would want to imitate. We also use the total turnover measure, also used in Christoffersen, Danesh and Musto (2015), as an alternative measure. Total turnover is estimated using the end of period holdings relative to the previous period reported holdings. The average return gap measure is more informative than total turnover since, while total turnover captures a manager's activity during a certain period, the average return gap captures whether this activity adds value to the portfolio.

Front running involves trading in front of an expected trade of an investment company seeking to trade at a lower price. CEF managers would likely be more concerned about front running if they are in the middle of implementing a new investment strategy and thus plan to have significant trading activity after the end of the reporting period. In this case they would likely hold off from reporting their end of period position fearing that they might reveal their next moves.

H2: CEF managers are more likely to delay portfolio holdings disclosure if they are in the middle of implementing a new trading strategy.

In order to empirically identify situations where CEF managers are more likely to be in the middle of implementing a new trading strategy we use the return gap measure estimated between the report date and the filing date as a direct proxy of the actual trading activity of the fund in the post report period. The higher the return gap measure immediately after the report period-end the more likely it is that the manager is in the middle of implementing a new investment strategy and thus his concern about front running will be heightened while he will be less concerned about copycatting.

Another important dimension in the analysis of portfolio holdings disclosure in the fund industry is the effect of holdings illiquidity. Fund managers dealing with illiquid positions tend to employ sequential trading strategies to avoid a large impact on advanced trading, and the longer it takes to complete taking a position the higher the likelihood of free riders trading prior to the completion of the target funds position.<sup>14</sup> As a result investing in illiquid securities may result to an amplification of the negative effects of front running<sup>15</sup> and this increase in the probability of higher disclosure costs may lead fund managers to seek to delay the disclosure of illiquid positions.

While front running could be potentially more severe for a CEF with illiquid holdings, one could argue that the threat of copycatting is not only lessened, but could be potentially beneficial to the fund in the case of illiquid securities, as the copycatters actions would have a price impact that would enhance the returns of the fund.<sup>16</sup>

Examining the effect of holdings illiquidity on the timing of CEFs disclosures, is crucial, given the fact that as it is argued by the literature, CEFs tend to hold illiquid assets.<sup>17</sup> We argue that the illiquidity of CEFs underlying assets has a direct impact on the threats of copycatting and front running in opposite directions. If the fund investment strategy is concentrated on illiquid assets then the negative effects of potential front running are heightened as the price impact of the front runners activity could prove devastating to the manager's strategy (see Amihud (2002) and Amihud and

<sup>&</sup>lt;sup>14</sup> See Keim and Madhavan (1997) and Shi (2017) for more on the matter

<sup>&</sup>lt;sup>15</sup> See Parida (2016) and Aragon, Hertzel and Shi (2013)

<sup>&</sup>lt;sup>16</sup> As mentioned earlier Brown and Schwarz (2013) finds that securities disclosed by hedge funds experience significant excess volume on and around the filing dates.

<sup>&</sup>lt;sup>17</sup> Several studies examining this argument are Cherkes, Sagi and Stanton (2009), Lee, Shleifer and Thaler(1991) and Lesmond and Nishiotis (2015).

Mendelson (1986)). On the other hand, as explained above, the fund could benefit from copycatters.

H3. The more illiquid the assets the more likely a CEF manager is to delay portfolio holdings disclosure if the costs of front running outweigh the benefits of copycatting.

To empirically identify the effect of holdings illiquidity on the CEF managers' decision to delay we use *Holdings Spread* which is the average bid-ask spread of the fund's holdings on the month of the report.

To uncover possible disclosure motives arising from CEF pricing, we turn to CEF literature to analyze how premiums or discounts affect the CEF managers utility. The literature suggests that the manager's fee compensation, which is typically specified as a percentage of the fund's total net assets, is not directly affected by the premiums/discounts. However, the manager's job security is likely affected by large discounts. Managers of high discount funds risk to be terminated through investor pressure or activist investors liquidating the fund. Cherkes, Sagi and Wang (2014) argues that fund manager of high discount funds are more likely to adopt shareholder value enhancing managed distribution policies (MDP) as a defense mechanism from activists investors<sup>18</sup> attempts to takeover and liquidate the fund. Johnson, Lin and Roy Song (2006) argue that CEF adopt explicit policies committing them to pay minimum dividend yields as deliberate attempts to reduce CEF discounts. We argue that timely disclosure offers an alternative or complimentary managerial action that could potentially have positive fund valuation effects reducing discounts.

<sup>&</sup>lt;sup>18</sup> Cherkes, Sagi and Wang (2014) state that "... holdings of CEF shares are generally dispersed and not held by institutions so that control contests tend to arise through block-holder activism (U.S. law prohibits the hostile acquisition of one investment firm by another)".

We offer two potential sources of valuation benefits arising from more timely disclosure of portfolio holdings. The first, is the reduction in the cost and risk of implementing arbitrage strategies to take advantage of the high discounts. Pontiff (1996) shows how costly arbitrage affects the discount/premium in CEF prices. Arbitrage strategies rely on simultaneously purchasing the discounted fund and shorting it's underlying assets. A big distance between the report date and filing date would make the disclosure of portfolio holdings obsolete and hamper the implementation of such a strategy. On the other hand, the closer the disclosure date is to the report date the more implementable such an arbitrage strategy is, other things equal. While arbitrageurs and activist investors both try to take advantage of the large discounts in CEF, there are critical differences in the type of information needed to implement each strategy and the impact on managers utility. Unlike the arbitrageur's strategy, the initiation of the activist investor's strategy does not critically depend on the prior knowledge of the exact portfolio holdings as it involves first taking control of the fund and then liquidating its underlying assets. At the initiation stage of such a strategy it is enough to know the discount and perhaps aggregate info on the underlying assets like whether the fund tends to hold liquid or illiquid assets. The impact of the two investment strategies on the manager's utility is also drastically different. The arbitrageurs strategy does not impact the managers compensation and could significantly reduce the discount thus making a detrimental investor activist attack less attractive.

The second source of potential valuation benefits from timely disclosure comes from the positive effects of disclosure and transparency in the corporate finance and accounting literatures. Easley and O'Hara (2004) show that in equilibrium the quantity and quality of information affect asset prices. Verrecchia (2001) argues that commitment to greater disclosure over a long window is linked to reduced information asymmetry and a decrease in a firm's cost of capital. While the more timely disclosure of CEF portfolio holdings constitutes an improvement of information quality, the discretion that the manager maintains for future disclosures does not represent a solid commitment that this practice will continue in the future. Botosan (1997) shows a negative relation between voluntary disclosure and firms cost of capital.

The aforementioned discussion leads to our last two empirical hypotheses.

H4: The higher the CEF discount the more likely CEF managers are to disclose early, and

H5: Early disclosure is associated with positive CEF valuation benefits.

## 4. Data

Our analysis focuses on all-equity closed-end funds included in the 'Equity' and 'International Equity' categorizations by MorningStar, with an initiation date prior to 2000. Our sample consists of 54 closed-end funds trading on the U.S. stock exchange. The source of the holdings reports of each closed-end fund, is the U.S. Securities and Exchange Commission (S.E.C.) and Electronic Data Gathering Analysis and Retrieval System (E.D.G.A.R.) websites. We focus on the period between the beginning of 1995 and the end of 2010. We use information from various fund-level report filings including the following: Form N-30D which is described as "Annual and Semi-Annual Reports Mailed to Shareholders under Rule 30d-1", Forms N-CSR and N-CSRS which are Certified Annual and Semi-Annual Shareholder Reports of Management Investment Companies. Our analysis also includes forms N-Q and forms N-30B-2. The former is described as Quarterly Schedules of Portfolio Holdings of Management Investment

Companies which first came in existence after May 2004 and was mandatory following the "Shareholder reports and quarterly portfolio disclosure of registered management investment companies" final rule. The latter is described as Periodic and Interim Reports Mailed to Shareholders.<sup>19</sup> The information used from these reports includes the reporting and the filing period dates, company names, industry, country, number of shares held and the value at the reporting date.

We used the same procedure used in Lesmond and Nishiotis (2015) to match the holdings data. The matching process was particularly challenging since there was no code identifier for the vast majority of the holdings, other than the company name. Datastream was the primary source used for the necessary data on the holdings. Funds that have been subject to a merger were excluded due to the very long periods of holdings disclosure delay and several inconsistencies in their EDGAR filings during the merger period. Our final sample consists of 16 funds focused on investing in US equities (U.S funds) and 38 funds focused on international equities (International Funds).

We use the reporting period for each fund to determine the total turnover, which is the percentage change in the shares traded across quarters, scaled by the total number of shares held in the prior reporting period. Bid and ask quotes for the funds and the U.S. equity holdings are taken from the Trade and Quote (TAQ) database. In the case of foreign equity holdings we used ISIN firm identifiers with Datastream. Proportional bid-ask spreads are then calculated and averaged over the month.

<sup>&</sup>lt;sup>19</sup> For several funds these forms are not available or do not exist since N-30B-2 forms are filed by the funds voluntarily.

Center for Research in Security Prices (CRSP) database provides the closing price and number of shares outstanding used to determine the market capitalization of each closed-end fund. Datastream was used to gather the market index data. We used Bloomberg's 12 month dividend yield to smooth out dividend. We calculate the premium using daily NAV data from Lipper. Thompson Reuters 13-F filings were used for the quarterly institutional holdings data.

*Delay*<sub>*it*</sub> is the difference, in days, between the filing date of the report and the report period-end date. The Delay dummy takes the value of 1, if the filing date is greater than 60 days after the report date, which is the period required by the SEC for public disclosure<sup>20</sup>, and 0 otherwise. *Delay*<sub>*it*-1</sub> is the value of the dependent variable in the previous report for each closed-end fund. *AveragePremium*<sub>*it*</sub> is the average daily premium in the period between the report date and one day before the filing date.<sup>21</sup> *DiscountDummy*<sub>*it*</sub> takes the value of 1 if the *AveragePremium*<sub>*it*</sub> is lower than the median premium over all events and 0 otherwise.<sup>22</sup> *Frequency*(*D*)<sub>*it*</sub> is a dummy variable taking the value of 1 if the distance between holdings filings is a quarter and zero otherwise. Given that quarterly disclosure became mandatory from 2004 onwards, the frequency dummy variable captures also the effect of the change in the regulation and the effect of the voluntary quarterly filings prior to the change. *BookInformation*(*D*) is a dummy variable that takes the value of 1 if the report contains additional information such as a statement of assets and liabilities, cash flow information and an

<sup>&</sup>lt;sup>20</sup> 60 Days for N-30D and N-CSR type forms to be transmitted to the shareholders and 60 days for N-Q forms to be filed with the SEC. Observations where the 60 day period end falls in a non-trading day and the fund disclosed its portfolio holdings on the next available trading day, take the value of 0.
<sup>21</sup> It is important to mention that for several periods in our data NAV was reported weekly rather than daily. As a result for those cases we take the average over weekly premiums.

<sup>&</sup>lt;sup>22</sup> Median Premium is calculated to be -10.40.

income statement.<sup>23</sup> Foreign is a dummy variable that takes the value of 1 if the fund is an international equity fund and 0 otherwise.

We also construct the average return gap measure, to measure the effect that unobserved portfolio changes have on the decision to delay, following Kacperczyk, Sialm and Zheng (2008). Return Gap is measured as the difference between the reported fund return and the return on a portfolio that invests in the previously disclosed fund holdings. We create two variables estimated over two distinct periods. Our first measure is the average return gap between two reports (*Average Return Gap(RR)*) and the second is the average monthly return gap between the report and the filing date (*Average Return Gap(RF)*).<sup>24</sup>

For the purpose of calculating abnormal returns in our event study we assign an index to each fund in our sample depending on the geographic region that the holdings of the fund are focused on. U.S. funds are assigned the S&P 500 index, on the other hand each foreign holdings fund is assigned the corresponding index, based on their holdings country of origin.<sup>25</sup>

## 4.1 Descriptive Statistics

Table 1 panel A displays the pairwise correlation coefficients of several variables used in the regression analysis. Consistent with our first hypothesis (H1), *Total Turnover*,

<sup>&</sup>lt;sup>23</sup> These are N-CSR, N-CSR(S) and N-30D while in some cases N-30B-2 also include balance sheet and income statement information.

<sup>&</sup>lt;sup>24</sup> We include the filing month return gap in the calculation if the filing takes place in the second half of the month.

<sup>&</sup>lt;sup>25</sup> We use the corresponding MSCI indices for 36 out of 38 foreign holdings funds while for Greater China Fund and Taiwan Fund we use the corresponding FTSE index. All index data is taken from Datastream.

and *Average Return Gap(RR)* which are both proxies for proprietary information of a CEF manager, are positively correlated with Delay.

*Delay* is also positively correlated with *Average Return Gap*(RF) which is consistent with our second hypothesis (H2) that managers are more likely to delay disclosure if they are in the process of implementing a new strategy.

Higher holdings illiquidity as measured by the *Holdings Spread* is also positively correlated with *Delay*. As mentioned earlier front running could be significantly costlier for the fund in the case of illiquid holdings, while copycatting could be beneficial (H3). The positive correlation between illiquidity of holdings and filing delay indicates that managers are more concerned about the potential losses from front running rather than any gains associated with copycatting.

*Delay* is positively correlated with *Average Premium*. This suggests that the lower the premium (higher discount) the greater the probability a fund manager discloses earlier. This is consistent with our fourth hypothesis (H4).

Panel B of Table 1 presents the descriptive statistics of the main variables used to test the hypotheses.<sup>26</sup> Average *Delay* across all events is around 58 days with a standard deviation of around 13 days. The mean *Average Premium* is negative at -8.34% while the median is -10.4% which is consistent with the literature that the majority of CEFs trade at a discount. The mean total turnover is 0.4 while the means of *Average Return* Gap(RF) and *Average Return* Gap(RR) are 0 and 0.01 respectively. Finally *Holdings Spread* average across funds is 1.95 with a minimum of 0.07 and a maximum of 11.68.

<sup>&</sup>lt;sup>26</sup> Delay has been winsorised at the top 1% while all remaining variables have been winsorised at the top and bottom 1%.

#### 4.2 Descriptive statistics of delay

Table 2 Panel A presents the delay descriptive statistics for each of the filing forms used in this study. As one can observe prior to 2003 and the adoption of N-CSR forms (N-CSR and N-CSR(S)) for semiannual filings, funds were filing their required forms in a more timely manner (2<sup>nd</sup> and 4<sup>th</sup> quarters). The average delay of N-30D (older forms) filings is 59.55 while N-CSR filings (new forms) have an average delay greater than 62 for 2<sup>nd</sup> quarter filings and greater than 64 for 4<sup>th</sup> quarter filings. The standard deviation on the other hand is higher in the case of N-30D filings. First and third quarter filings (N-Q) which have been adopted in May 2004 have a lower average delay since the maximum delay allowed from the SEC is 60 days while for the semiannual filings, funds are expected to file the forms within 10 days from the transmission to the shareholders, allowing for a maximum of 70 day period.<sup>27</sup> Around 6% of N-CSR filings, 2.2% of N-CSR(S) 7% of N-30D are filed after the 70 day period. On the other hand 3.3% of N-Q filings exceed the 60 day period allowed by the regulation. N-30B-2 are voluntary filings and as a result are not subject to a delay regulation. As one can observe more than 60% of N-30B-2 filings are filed with a delay higher than 60 days and 12.5% with a delay higher than 70 days.

Panel B of Table 2 reports delay descriptive statistics for different groups. As one can observe from the average across funds, U.S. funds tend to report earlier than international funds. For example the average delay of the U.S. funds is around 53 days while in the case of international funds 61 days. The standard deviation of mean delays across the 16 U.S. funds is around 16 days and is greater than the standard deviation of international funds, which is 10.71 days.

<sup>&</sup>lt;sup>27</sup> Given that transmission to the shareholders takes place on the last day allowed.

Reports containing additional information such as financial statements (mainly N-CSR, N-CSR(S) and N-30D reports) appear to delay almost 8 days more than reports that include just holdings information (such as N-Q filings).

Also it appears that, after the change in reporting regulations, funds tend to delay their filings less relative to the period before the change. This is probably driven from the fact that the new quarterly filing forms (N-Q) are reported with less delay, as shown in Panel A than the filings used prior to the regulation.

Table 3 Panel A reports delay descriptive statistics for each of the U.S. holdings CEF in our sample while Panel B presents the same statistics for foreign holdings CEFs. The large standard deviations across events especially in the case of U.S. funds is an indication that institutions tend to follow different strategies regarding the timing of their filings.

Another important conclusion that is drawn from Table 3 that fund managers strategically alter their reporting delay. These conclusion can be drawn from the fact that the timing of CEF filings varies wildly both within and across funds. In terms of across funds variation the standard deviation of delay varies from fund to fund. For example, the standard deviation of delay of Eagle Capital Growth fund is 22.31 days while Greater China Fund 4.76. In terms of within fund variation, 46 out of 54 funds have a negative autocorrelation of delay which indicates that the choice of delay varies between consecutive periods.

## 5. Methodology

In this section we discuss the models used in our analysis

#### 5.1 Explaining Delay

In our first analysis we examine the factors affecting the choice of a fund to delay its holdings information. We use delay at time t for a linear regression analysis and Delay dummy as a dependent variable for our logistic regression. The following multivariate and a logistic regression models are used to test our first three hypotheses regarding strategic delay.

$$\begin{array}{ll} (1) \qquad Delay_{it} = \beta_0 + \beta_1 Proprietary Information_{it} + \beta_2 NewStrategy_{it} \\ & + \beta_3 \ Discount(Premium)_{it} + \beta_4 HoldingsLiquidity_{it} + \beta_5 FundLiquidity_{it} \\ & + \beta_6 Delay_{it-1} + \beta_7 Frequency(D)_{it} + \beta_8 Book \ Information_{it} \\ & + \beta_9 NumberOf Holdings_{it} + \beta_{10} DividendYield_{it} + \beta_7 ForeignFund_{it} + \varepsilon_{it} \end{array}$$

$$(2) Prob(Delay_{it} > 60)$$

$$= F(\beta_0 + \beta_1 ProprietaryInformation_{it} + \beta_2 NewStrategy_{it}$$

$$+ \beta_3 Discount(Premium)_{it} + \beta_4 HoldingsLiquidity_{it} + \beta_5 FundLiquidity_{it}$$

$$+ \beta_6 Delay_{it-1} + \beta_7 Frequency(D)_{it} + \beta_8 Book Information_{it}$$

$$+ \beta_9 NumberOfHoldings_{it} + \beta_{10} DividendYield_{it} + \beta_7 ForeignFund_{it} + \varepsilon_{it})$$

The linear regression equation sheds light on cross-sectional characteristics, which are important in explaining delay. On the other hand, as Christoffersen, Danesh and Musto (2015) explain, looking only at average delays hides whether the increase is coming from a small increment by all funds or a large increment by a few. As a result, we use a multivariate logit model as the second equation to better estimate the severity of delay using factors that affect the probability of an institution reporting after 60 days.

We use two different proxies to estimate the effect of  $ProprietaryInformation_{it}$  on both  $Delay_{it}$  and the probability to delay more than 60 days. Those are TotalTurnover<sub>it</sub>, and AverageReturnGap(RR)<sub>it</sub>. Since we expect the manager's proprietary information to be associated with greater delay, the coefficients are expected to be positive.

In the case that a manager is in the middle of implementing a new strategy we expect a positive impact on the decision to delay holdings disclosure as the manager wants to avoid front running. We use  $AverageReturnGap(RF)_{it}$  as a proxy for  $NewStrategy_{it}$ .

As for holdings illiquidity, proxied by the *Holdings Spread*, it is expected to increase *Delay* if managers are more concerned about the potential losses from front running. On the other hand it is expected to decrease delay if managers expect the potential benefits from copycatting (copycatters have a positive price impact on illiquid assets held by the fund) to be greater than potential losses from front running.

We use *AveragePremium*<sub>it</sub> in the linear regressions and *DiscountDummy*<sub>it</sub> in the logit regressions to test our fourth hypothesis 4 (H4). *DiscountDummy*<sub>it</sub> takes the value of 1 if the *AveragePremium*<sub>it</sub><sup>28</sup> is lower than the median premium over all events<sup>29</sup> and 0 otherwise.<sup>30</sup> Given our fourth hypothesis that greater discounts are associated with less delay, we expect the coefficient for *AveragePremium*<sub>it</sub> to be positive and the coefficient for *DiscountDummy*<sub>it</sub> to be negative. Since some of the other explanatory variables are used in the literature to explain the discount, we estimate equation (1) with and without *AveragePremium*<sub>it</sub> and (2) with and without

<sup>&</sup>lt;sup>28</sup> Measured between the report date and one day before the filing date

<sup>&</sup>lt;sup>29</sup> Median Premium is -10.4%.

<sup>&</sup>lt;sup>30</sup> For the third hypothesis (H3) we also used a discount dummy which is based on the period between reports, the average discount between report and filing date and the average discount between reports, as alternatives to *DiscountDummy*<sub>it</sub>. In all cases the results were very similar.

 $DiscountDummy_{it}$  to make sure that the results for the other variables remain significant and in the same direction.

 $Delay_{it-1}$  is the value of the dependent variable in the exact previous reporting period for each closed-end fund. A positive significant effect is an indication of persistence in the choice of delay. Within a fund company several technical reasons affecting the completion of the reports are likely to be persistent over several periods of time. As a result we control for the previous period delay.

*Frequency*(*D*)<sub>*it*</sub> is a dummy variable taking the value of 1 if the distance between holdings filings is a quarter and zero otherwise. *Book Information*<sub>*it*</sub> is a dummy variable that takes the value of 1 if the report contains additional information such as a statement of assets and liabilities which could affect disclosure delay. Other control variables include the *FundLiquidity*<sub>*it*</sub>, which is the monthly bid ask spread of the fund in the month of the report date, the *NumberOfHoldings*<sub>*it*</sub> which is the logarithm of the fund's number of unique firms for which the fund holds stocks in a given report, the dividend yield and *Foreign Fund*(*D*)<sub>*it*</sub>, a dummy variable taking the value of 1 for international equity funds and 0 otherwise.

#### 5.2 Pricing Effects Event Study

In our second analysis we aim to capture the effects of disclosure on closed-end funds' returns to test our fifth hypothesis (H5) that holdings disclosure will be associated with positive CEF valuation benefits. We apply a short horizon event study analysis using the market model and daily return data, daily stock market index returns and the filing dates from EDGAR reports.

We regress each funds' returns on the relative stock market index over an estimation window of [-260, -11] relative to event day 0. We use the coefficient estimates from those regressions to calculate the expected returns around the event (period [-10, +10]). Abnormal returns for the period [-10, +10] are then calculated as the difference between actual returns and expected returns. We then use abnormal returns to calculate average abnormal returns for different windows. We then split our sample into two categories, one with events with delay above 60 days and one with events with delay equal or less than 60 days, and follow the same procedure.<sup>31</sup>

We test for significance using the Kolari and Pynnonen (2010) test that allows for both event-induced variance and cross-correlation across events changes simultaneously.<sup>32</sup>

## 5.2.1 Returns to arbitrage strategy around portfolio holdings disclosure

We proceed to investigate how the returns of a portfolio going long the discounted fund and short its' NAV performs around the early holdings disclosure. This analysis tests for significant CEF price returns over and above the corresponding NAV returns, which can also be interpreted as a reduction in the discount. Furthermore, the returns to this long-short portfolio represent the potential returns to an arbitrage strategy that takes advantage of fund discounts. We argue in the derivation of hypotheses 4 and 5 that managers strategically disclose early to facilitate such arbitrage strategies that could reduce discounts as a defense to potential activist investor actions that could prove detrimental to their survival. We therefore expect that the returns to the long-short portfolio will increase significantly after the portfolio holdings disclosure. We apply

<sup>&</sup>lt;sup>31</sup> The number of events for the whole sample is 2500, for the more delay sample 1176 and 1324 for the less delay sample.

<sup>&</sup>lt;sup>32</sup> For a more descriptive analysis of the procedure used for the event study see the appendix of Michaelides et al. (2015)

an event study analysis around each filing and calculate the returns of the long-short portfolio in the [-10, +10] event window.

For the purpose of this analysis we create a new sample that consists of the events where holdings were disclosed within 60 days from the period end and NAV is reported at a daily frequency around the event. In addition we include only events for which *AveragePremium<sub>it</sub>* is less than 0, that is funds that trade at a discount.<sup>33</sup>

Daily long-short returns (LSR) for event i and event day t are calculated using the following formula:

$$LSR_{it} = R_{it} - R_{it}^{NAV} \tag{3}$$

Where,  $R_{it}$  is the CEF price return of event *i* on day *t* of the event window and  $R_{it}^{NAV}$  is the corresponding NAV return.

Cumulative Long Short Returns (CLSRs) for different sub periods  $[t_1,t_2]$  are obtained by adding up the corresponding Long Short Returns over the event window

$$CLSR_{it} = LSR_{it_1} + \dots + LSR_{it_2}$$
(4)

For the statistical significance of average CLSRs we use the cross-sectional variation of LSRs in the event window under the assumption that  $LSR_{it}$  is independently and identically distributed following a normal distribution with mean zero (under the null) and variance  $\sigma^2$ . We use  $s_t$  as an estimator for  $\sigma$  (N=number of events) to define our test statistic based on  $CALSR_i$ :

$$Z = \sqrt{N} \frac{CALSR_i[t_1, t_2]}{s} \sim N(0, 1),$$
(5)

<sup>&</sup>lt;sup>33</sup> This results to a sample of 748 events. Out of the 898 events with daily NAV data and timely disclosure only 150 events have an average premium greater than 0. For robustness reasons we also estimate our model with a sample that includes these 150 events and compare the results.

where the cumulative average long short return is

$$CALSR[t_1, t_2] = \frac{1}{N} \sum_{i=1}^{N} CLSR_i[t_1, t_2],$$
(6)

and the standard deviation is

$$s = \sqrt{\frac{1}{N-1} \sum_{i=1}^{N} (CLSR_i[t_1, t_2] - CALSR[t_1, t_2])^2}$$
(7)

## 6. Results

In this section we present the findings of our empirical analysis. We first present the results from the estimation of our linear and logistic regressions that provide empirical tests for our first four hypotheses. We then present the empirical findings of our event study analysis.

## 6.1 Explaining Delay

Table 4A presents two versions of equation explaining the delay of portfolio holdings disclosure.

The first version (1) of equation 1 uses *Total Turnover* as a proxy for manager's proprietary information and *Average Return Gap(RF)* as a proxy for implementing a new strategy. The second version (2) uses *Average Return Gap(RR)* as a proxy for manager's proprietary information and excludes *Average Return Gap(RF)* due to the high correlation between the two measures. We present three estimations for each version. We use robust standard errors in the first column, include year fixed effects in the second column, and year and fund fixed effects in the third column of each version of the equation. We begin our discussion focusing in the first two columns of each version.

We document strong evidence in support of hypothesis (H1) since both variables used to proxy a manager's proprietary information, *Total Turnover* and *Average Return Gap* (RR), have a positive and significant effect on delay. This indicates that the greater the proprietary information a manager has, the more likely she will choose to delay the holdings filings, as a protection from copycat threats.

Regarding our second hypothesis which states that the manager is more likely to delay holdings disclosure if they are in the middle of implementing a new strategy to avoid front running, *Average Return Gap(RF)*, which measures the trading activity between the report date and the filing date, is positive and statistically significant. This indicates that the manager delays portfolio holdings disclosure to avoid front running in cases of higher planned trading activity between the report date and the filing date.

Illiquidity of holdings is positive and significant in our time fixed effects regressions. This is consistent with a strong aversion on the part of CEF managers, to the high costs of front running.

Turning now to our control variables, illiquid funds, as measured by the fund's bid ask spread, tend to report earlier than more liquid funds and this is statistically significant in the first column of each version. The lagged delay variable has a positive and significant coefficient in all equation versions as does the Frequency. Reports containing Book Information are associated with more delay as do international funds relative to US funds. Finally, both Dividend Yield and Number of Holdings have a positive effect on delay.

In Table 4B we run the same regressions but also include  $AveragePremium_{it}$  to test for our fourth hypothesis. A comparison of the two tables indicates that the effect and the significance of our main variables remains the same. Consistent with our fourth hypothesis (H4) average premium has a positive and statistically significant effect on delay in all versions of the equation. This indicates that the higher the discount the more likely the managers are to disclose early.

The third column of each version of the equation in both Table 4A and 4B includes both time and fund fixed effects in the regression analysis. As expected the fund fixed effects have a negative effect on the magnitude of most coefficients while in terms of statistical significance many coefficients turn insignificant. On the other hand *Average Premium* and both average return gap measures remain statistically significant.

Table 5A uses the same explanatory variables as Table 4A in logit regressions with Delay Dummy as the independent variable, except that in this case we use *Discount Dummy* to test our fourth hypothesis. Delay Dummy takes the value of 1 if delay is greater than 60 days, and 0 otherwise. There is significant difference in the interpretation of the results of the two econometric equations. Equation 1 (Tables 4A and 4B) presents which factors affect the magnitude of delay while equation 2 (Tables 5A and 5B) presents which factors affect the choice to delay beyond the 60 day requirement for public disclosure.

The positive and significant coefficient of *Average Return Gap*(RF) in Table 5A indicates that a manager being in the middle of implementing a new strategy, and as a result more concerned about front running threats, is more likely to choose to delay for more than 60 days (H2).

Similarly both *Total Turnover* and *Average Return Gap(RR)* are positive and significant in both estimations. Illiquidity of holdings has a positive and significant effect on the probability to delay more than 60 days. Finally, all the control variables are significant and in the same direction as in Table 4A. Table 5B includes the variable *DiscountDummy*<sub>it</sub> to test our fourth hypothesis. A comparison between Tables 5A and 5B indicates that the effect and the significance of our main variables remains the same. *DiscountDummy*<sub>it</sub> has a negative and significant effect on the probability to delay for more than 60 days in all versions of the equation, which is consistent with our fourth hypothesis. This indicates that the higher the discount the more likely the managers are to disclose early.<sup>34</sup> Our marginal effects at means calculations indicate that discount is both statistically and economically significant since we find that an CEFs with high discount (*DiscountDummy*<sub>it</sub>=1) have a 8.2% lower probability of delaying more than 60 days.

Overall our results indicate that protection from copycatters and frontrunners are both strong motives for delaying holdings disclosure. Front running costs are found to outweigh copycat benefits in the case of illiquid holdings. Furthermore, the results indicate that managers of funds trading at high discounts are more likely to disclose earlier in order to reduce discounts and protect themselves from activist investor attacks. In order to corroborate this last finding we proceed with an event study analysis that examines the valuation benefits of timely disclosure providing a test of our fifth hypothesis.

## 6.2 Valuation Benefits of timely disclosure

We use an event study analysis to test our fifth hypothesis (H5) on whether timely disclosure is associated with valuation benefits for closed-end funds. Table 6 presents the cumulative standardized average abnormal returns (CSAARs) over different event windows for: the whole sample, the sample of events with delay less than or equal to

<sup>&</sup>lt;sup>34</sup> It's important to mention that using *Average Premium* in equation 2 instead of *Discount Dummy* yields the same conclusion.

60 days (less delay sample) and the sample of events with delay more than 60 days (more delay sample). As mentioned earlier we test for significance using the Kolari and Pynnonen (2010) test that allows for both event-induced variance and cross-correlation across events simultaneously.

The results for the whole sample show insignificant CSAARs in almost all windows. In fact, only CSAAR(0,10) is statistically significant at the 90% level.

The results, when we condition on timely disclosure, are much more telling and can explain the insignificance of our findings for the whole sample as they are in opposite direction. More specifically, we re-estimate the event study after we split the sample into two categories, first for events where the disclosure delay is less than or equal to 60 days and second for events where the disclosure delay is more than 60 days. CSAARs for the "less delay sample" are positive and statistically significant for windows (0,1) (0,4) and (0,7) and negative and significant for the (-10,-1) window. The latter result is consistent with the fact that the decision for holdings disclosure is strategic since it appears that managers choose to file their holdings information early in the case of negative returns as an attempt to generate a positive market reaction. On the other hand CSAARS for the "more delay sample" are negative and significant for windows (0,4) (0,7) and (0,10).

This specific pattern is also observed graphically in figure 1, which presents the whole sample CAARs throughout the event window and in figure 2, which presents the CAARs for the sample split. While no consistent pattern is observed in the first case, in the second figure one can observe that after the announcement, timely disclosure is associated with positive CAARs, while delayed disclosure is associated with negative CAARs.

To summarize our results, first we find that using the whole sample there appear to be no significant valuation effects associated with portfolio holdings disclosure. However, conditioning our event study analysis on timely disclosure by splitting the sample into events with delay less than or equal to 60 days and events with longer delay reveals opposing statistically significant valuation effects for the two sub samples. We document significant positive abnormal returns following the event for the timely disclosure sample and significant negative abnormal returns for the longer delay sample. Our results confirm our hypothesis that portfolio holdings disclosure by closedend funds does affect closed-end fund prices (H5) with the direction of the valuation effect significantly depending on disclosure timing.

## 6.2.1 Returns to arbitrage strategy around timely holdings disclosure

After establishing significant positive CEF abnormal returns associated with early disclosure of fund portfolio holdings, we proceed to investigate how the returns of a portfolio going long the discounted fund and short its' NAV performs around the early holdings disclosure as described in the methodology section 5.2.1.

Table 7 presents the cumulative average long short returns (CALSRs) over different event windows for our new sample<sup>35</sup> while a graphic representation of CALSRs is presented in figure 3. The CALSRs for windows (0,1) (0,4) and (0,7) and (0,10) are positive and statistically significant, while all pre-event windows exhibit statistically insignificant CALSRs. The findings are consistent with our expectations since the returns of a long short portfolio become statistically significant following timely disclosure. This is in line with our argument that managers strategically disclose early

<sup>&</sup>lt;sup>35</sup> The sample here includes only funds trading at a discount with NAV reporting at a daily basis. The positive and significant abnormal returns associated with early disclosure documented in the previous section are maintained when we re-run the analysis using this sample.

to facilitate such arbitrage strategies that could reduce discounts and thus act as a defense mechanism to potential activist investor actions.

## 7. Conclusion

In this paper we extend the literature on fund industry disclosure by examining the timing of closed-end fund (CEF) manager's portfolio holdings disclosure decisions. We investigate the motives of closed-end fund managers to delay or speed-up portfolio holding disclosures. These motives include the shared concerns with open-end fund managers for the potential negative effects from free-riding copycatters and front runners in light of the tendency of closed-end funds to hold illiquid assets, but also new motives that arise from the unique institutional features of CEFs that give rise to premiums/discounts in CEF prices.

Our findings indicate that protection from both copycatters and frontrunners are strong motives for delaying holdings disclosure. Front running costs are found to outweigh copycat benefits in the case of illiquid holdings. Furthermore, we show that managers of funds trading at high discounts are more likely to disclose earlier in order to reduce discounts and protect themselves from activist investor attacks. The results of an event study analysis corroborate this finding. We document that early disclosure is associated with significantly positive abnormal fund price returns as well as significant returns to a portfolio strategy that goes long the fund and short the underlying assets.

## Appendix

#### Forms used for portfolio holdings disclosure between 1995 and 2010

This table presents a list of the filing forms used for portfolio holdings disclosure throughout the period covered in this study along with the information contained in the reports, the rules each filing is covered from, the filing frequency, the period each for was used and the maximum filing delay allowed by the regulatory authorities. The source for the information is the Security and Exchange Commission(SEC) Website.

Form	Description	Information in Reports	Regulation	Frequency	Period Used	Maximum Delay
N-30D	An annual and semi- annual report mailed to shareholders. Filed by registered investment companies	Includes: Schedule of Investments, letter to stockholders, statement of assets and liabilities, statement of operations, statement of changes in Net Assets, Financial Highlights, changes in portfolio securities, historical financial statistics, dividend payments schedule and the automatic dividend reinvestment plan	covered under Rule 30e- 1 of the Securities Exchange Act of 1934	twice a year (semi-annual)	Until January 22, 2003	Must be transmitted to the shareholders within 60 days after the close of the period. Must be filed within 10 days of the transmission
N-30B-2	Periodic and interim reports mailed to shareholders. Filed by registered investment companies.	In some cases it contains the information included in N-30D filings and in other cases it includes only the schedule of investments	covered under rule 30b2-1(b) of the Securities Exchange Act of 1934	Voluntary	-	-
N-CSR and N-CSR(S)	Certified shareholder report	1)a copy of the report to stockholders (Schedule of Investments, letter to stockholders, statement of assets and liabilities, statement of operations, statement of changes in Net Assets, Financial Highlights, changes in portfolio securities, historical financial statistics, dividend payments schedule and the automatic dividend reinvestment plan). 2)a copy of the firm's code of ethics. 3)name of the firm's audit committee financial expert. 4)disclosure of principal accountant fees and services for the previous two fiscal years. 5)disclosure of audit committee of listed registrants or reason for exemption. 6)disclosure of proxy voting policies	covered under Section 30 of the Investment Company Act of 1940 and Sections 13 and 15(d) of the Securities Exchange Act of 1934	end of the second and fourth fiscal quarters	Since January 22, 2003	Must be transmitted to the shareholders within 60 days after the close of the period. Must be filed within 10 days of the transmission
N-Q	quarterly schedule of portfolio holdings	Schedule of Investments	covered under Section 30(b) of the Investment Company Act of 1940 and Sections 13(a) and 15(d) of the Securities Exchange Act of 1934	end of the first and third fiscal quarters	May 10, 2004 onwards	Must be filed not later than 60 days after the close of the first and third quarters of each fiscal year

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Figure 1 Cumulative average abnormal returns (All events). Depicted are the Cumulative average abnormal returns for the [-10, +10] event window for the whole sample: 2500 events



Figure 2 Cumulative Average Abnormal Returns (Delay Split). Depicted are the Cumulative average abnormal returns for the [-10, +10] event window for the more delay sample (Delay>60): 1176 events and the less delay sample: 1324 events



Figure 3 Cumulative average long short returns. The graph shows Cumulative average long short returns for the Sample with delay being less or equal to 60 days, daily NAV around the event and Average Premium≤0 :748 events

#### **Table 1: Pairwise Correlations and Descriptive Statistics**

Table 1 panel A presents the pairwise correlation coefficients between the variables used for the main hypotheses of this study. Panel B presents the descriptive statistics for the same variables. The number of observations, the mean, the standard deviation, the minimum, the median and the maximum for each variable. Delay is the difference, in days, between filing and report date, collected from the EDGAR reports. Average premium is the average premium over the period between the reportdate and one day before the filing date, where premium is calculated by 100x((Price-NAV)/NAV) and is taken from Lipper. Total Turnover is the proportion of the fund's holdings that altered that quarter (reporting period) with both buys and sells. Holdings Spread is the average bid-ask spread of the fund's holdings for the month of the report. Average return gap (RR) is the average monthly return gap between the report dates and Average return gap (RF) between the report date and filing date. Delay has been winsorised at the top 1% while all remaining variables have been winsorised at the top and bottom 1%.

Variable	Delay	Average Premium	Total Turnover	Average Return Gap(RF)	Average Return Gap(RR)	Holdings Spread
Delay	1					
Average Premium	0.0885	1				
Total Turnover	0.1233	-0.0947	1			
Average Return Gap(RF)	0.0077	0.007	-0.05	1		
Average Return Gap(RR)	0.0429	0.0433	-0.0338	0.2776	1	
Holdings Spread	0.1678	0.017	0.0742	0.023	-0.0192	1
Panel B: Descriptive statistics	of main vari	ables	•			
Variable	n	Mean	S.D.	Min	Median	Max
Delay	2500	58.38	12.65	4	60	78
Average Premium	2500	-8.34	11.42	-28.1	-10.4	27.79
Total Turnover	2453	0.4	0.33	0.01	0.31	1.74
Average Return Gap(RF)	2427	0	0.05	-0.19	0	0.17
Average Return Gap(RR)	2435	0.01	0.03	-0.13	0	0.11
Holdings Spread	2494	1.95	2.07	0.07	1.4	11.68

Panel A: Correlation coefficients of main variables

## Table 2: Delay descriptive statistics for each filing form

Table 2 panel A presents the descriptive statistics for each of the forms used in this study. The number of observations, the mean delay, the standard deviation of delay, the minimum delay, the 25% and 75% quantiles delay, the median and the maximum delay for each form. The last 3 columns present the percentage of events with delay greater than 60 days, between 60 and 70 days, and greater than 70. Panel B of Table 2 reports delay descriptive statistics for different groups Statistics are presented over events for U.S. holdings and foreign Holdings CEFs, all events before and after the new rule for quarterly reporting. We also present the statistics for reports with and without extra information (such as balance sheet information) Source: SEC EDGAR

Panel A: For Each Filing Form											
Form	Observations	Mean	S.D.	Min	0.25	Mdn	0.75	Max	% Delay>60	%Delay 61 to 70	% Delay>70
N-CSR	456	64.14	8.45	12	62	67	69	89	80.04	74.12	5.92
N-CSRS	358	62.44	9.74	16	61	65	68	87	79.05	76.82	2.23
N-Q	670	51.37	13.59	4	51	57	60	70	3.28	3.28	0
N-30D	773	59.55	13.25	9	57	61	66	147	54.72	47.61	7.12
N-30B-2	248	58.71	14	14	56	63	67	79	61.29	48.79	12.5
Panel B: By type											
U.S. Funds	765	53.16	16.09	5	44	59	65	89	39.48	35.42	4.05
Foreign Funds	1740	60.89	10.71	4	58	61	67	147	54.20	49.02	5.17
Holdings Information	748	52.92	12.67	4	52	57	60	81	8.69	7.09	1.60
Book Information	1751	60.91	12.53	9	59	64	68	147	67.22	61.05	6.17
Before the New Rule	1131	59.77	13.13	9	57	62	67	147	58.09	50.31	7.78
After the New Rule	1374	57.51	12.97	4	56	60	67	87	42.79	40.39	2.40

#### Table 3: Descriptive Statistics for Distance between filing and report date

The table presents the descriptive statistics of Delay winsorised (at the top 1%), measured as the distance between filing and report date. N stands for the number of observations, s.d. is the standard deviation, min is the minimum and max is the maximum value. % over 60 is the percentage of events with delay greater than 60 days. AC is the autocorrelation of delay. Panel A presents the data for U.S. Based Holdings CEFs while Panel B presents the data for Foreign Holdings CEFs. Source: EDGAR filings

	-							
Closed-End Fund	Ν	Average Delay	Standard Deviation	min	median	max	% over 60	AC
Adams Express	60	25.35	12.23	13	21	59	51.67	-0.308
Blue Chip Value	45	55.82	13.75	25	60	71	48.89	0.141
Boulder Total Return	35	60.09	8.4	42	59	70	40	-0.399
Central Securities	38	31.39	5.66	20	33	41	0	-0.352
Cornerstone Strategic Value	53	59.45	6.8	43	60	71	41.51	-0.409
Eagle Capital Growth	39	45.1	22.31	2	56	86	25.64	-0.693
Gabelli	61	63.1	8.77	35	65	81	67.21	-0.081
General American Investors	61	29.61	5.84	19	28	44	0	-0.531
Liberty All Star Equity	49	65.47	8	51	65	89	73.47	0.061
Liberty All Star Growth	47	65.06	9.2	34	65	89	72.34	0.103
Royce Focus Trust	45	59.67	6.27	45	61	70	55.56	-0.408
Royce Micro Cap	45	60.11	6.01	45	61	70	57.78	-0.43
Royce Value Trust	45	59.62	6.81	38	61	70	57.78	-0.347
Source Capital	44	56.07	5.77	45	55	70	18.18	-0.035
Tri Continental	64	60.33	8.86	32	60	76	48.44	-0.325
Zweig	63	56.35	10.98	34	59	72	34.92	0.491
Across Funds Average	16	52.42	14.05	25.35	59.54	65.47		-0.22

Panel A: U.S. Based Holdings Closed-End Funds

#### Table 3. Continued:

Panel B: Foreign Holdings Closed-End Funds

Closed-End Fund	Ν	Average Delay	Standard Deviation	min	median	max	% over 60	AC
Asia Pacific	40	63.18	7.27	36	62.5	72	62.5	-0.122
Asia Tigers	45	57.04	15.27	35	58	136	24.44	-0.035
Central Europe Russia	42	61.76	10.72	28	60	89	42.86	-0.046
European Equity	40	64.43	14.17	55	61.5	147	52.5	-0.05
Morgan Stanley Asia Pacific	61	65.25	4.9	55	67	77	73.77	-0.161
Morgan Stanley Eastern Europe	54	64.94	5.08	55	66	79	70.37	-0.18
Morgan Stanley Emerging Markets	61	65.13	4.93	55	67	79	73.77	-0.169
Templeton Dragon	49	61.47	3.42	56	61	71	53.06	0.052
Templeton Emerging Markets	47	61.28	3.91	55	61	76	53.19	0.032
Templeton Russia Eastern European	43	61.7	3.62	56	61	71	60.47	0.092
Aberdeen Australia	46	63.52	10.05	9	64.5	78	60.87	-0.066
Japan Equity	42	45.6	21.12	4	54.5	71	23.81	-0.419
Japan Smaller Cap	35	57.09	12.29	12	60	74	48.57	-0.298
New Germany	40	64.35	14.19	55	60.5	147	50	-0.052
New Ireland	57	62.46	9.73	50	60	119	40.35	-0.092
Spain	46	64.3	5.32	54	65	74	69.57	-0.342
Swiss Helvetica	53	58.66	7.41	43	59	70	35.85	-0.087
Argentina	13	54.92	7.89	46	51	71	23.08	0.00
Brazil	26	60.42	5.81	51	59.5	71	34.62	-0.18
Aberdeen Chile	45	61.16	6.09	45	63	68	66.67	-0.573
China	44	61.27	5.81	44	60	74	40.91	-0.426
Greater China	43	64.3	4.76	55	65	73	69.77	-0.252
India	45	57.2	9.6	36	59	75	42.22	-0.452
Aberdeen Indonesia	41	61.07	6.24	45	62	68	65.85	-0.603
JF China Region	42	61.88	6.08	42	61.5	72	57.14	-0.569
Korea Equity	37	56.35	12.54	28	60	73	48.65	-0.511
Korea	46	61.63	5.48	47	61	71	54.35	-0.404
Latin America Discovery	60	64.95	4.56	55	66	77	73.33	-0.259
Malaysia	60	65.2	4.86	55	66.5	77	73.33	-0.183
Mexico Equity Income	43	60.44	9.58	29	60	85	48.84	-0.486
Mexico	59	59.78	5.98	42	60	76	44.07	-0.056
Morgan Stanley India	60	65.12	5.02	55	66	79	73.33	-0.183
Singapore	40	45.15	21.12	4	55	70	22.5	-0.407
Taiwan Greater China	41	58.98	7.86	44	58	71	43.9	-0.542
Taiwan	43	62.02	6.78	30	61	72	53.49	-0.239
Thai Capital	34	42.53	25.38	6	58	72	35.29	-0.702
Thailand	60	65.22	5	55	66.5	79	73.33	-0.152
Turkey	57	60.7	8.16	29	59	77	45.61	-0.29
Across Funds Average	38	60.33	5.47	42.53	61	65.25		-0.248

#### **Table 4A: Factors Affecting Delay of Holdings filings**

The table presents cross sectional regressions using Delay (winsorised at the top 1%) as a dependent variable. Delay is the difference, in days, between filing and report date. Lagged delay is delay of the previous reporting period. Frequency (D) takes the value of 1 if the period between reports of the same fund (t and t-1) is a quarter (or less) and 0 otherwise. All delay and distance data were hand collected from the EDGAR reports. Total turnover is the proportion of the fund's holdings that altered that quarter (reporting period) with both buys and sells. Holdings Spread is the average bid-ask spread of the fund's holdings for the month of the report Fund Liquidity is the average bid-ask spread of the fund itself for the month of the report. DY is the 12-month average dividend yield from the prior 12 months from Bloomberg. Book Information takes the value of 1 if report contains extra information such as a balance sheet. Foreign Fund is an indicator variable taking the value of 1 if the fund is foreign and 0 otherwise. Log number of firms is the logarithm of the fund's number of unique firms for which the fund holds stocks in a given report. Return Gap is measured as the difference between the report and the return on a portfolio that invests in the previously disclosed fund holdings. Average Return Gap(RR) is the average monthly return gap between the report and the film due i. We use robust standard errors in all 3 columns of (1) and (2), time fixed effects in the second column and both time and fund fixed effects in the third columns of (1) and (2) \*\*\* indicates significance at 99% level, \*\* indicates significance at 90% level and \* indicates significance at 90% level.

		(1)		(2)			
	Delay	Delay	Delay	Delay	Delay	Delay	
Total Turnover	1.317*	1.314*	-0.500				
	(0.056)	(0.056)	(0.455)				
Average Return Gap (RF)	7.816**	7.032**	6.313**				
	(0.031)	(0.047)	(0.023)				
Average Return Gap (RR)				22.33***	21.04***	10.45**	
				(0.000)	(0.000)	(0.015)	
Holdings Spread	0.146	0.247***	0.100	0.132	0.251***	0.127	
	(0.107)	(0.002)	(0.390)	(0.106)	(0.002)	(0.267)	
Fund Liquidity	-0.753***	-0.0112	0.229	-0.766***	0.0625	0.217	
	(0.000)	(0.970)	(0.330)	(0.000)	(0.836)	(0.358)	
lagged Delay	0.528***	0.526***	-0.0481*	0.518***	0.517***	-0.0526*	
	(0.000)	(0.000)	(0.093)	(0.000)	(0.000)	(0.064)	
Frequency(D)	3.421***	2.473***	0.754	2.968***	1.898***	0.834	
	(0.000)	(0.000)	(0.228)	(0.000)	(0.001)	(0.150)	
Dividend Yield	0.0737***	0.0762***	0.00800	0.0700**	0.0780***	0.00731	
	(0.010)	(0.009)	(0.759)	(0.011)	(0.006)	(0.777)	
Foreign Fund(D)	5.023***	4.669***		5.404***	5.055***		
	(0.000)	(0.000)		(0.000)	(0.000)		
Book Information (D)	13.28***	13.62***	10.55***	13.39***	13.83***	10.64***	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
Number of Holdings	1.656***	1.851***	-0.599	1.721***	1.935***	-0.502	
	(0.000)	(0.000)	(0.224)	(0.000)	(0.000)	(0.309)	
Constant	5.163***	4.065**	53.50***	6.045***	4.720**	52.92***	
	(0.008)	(0.035)	(0.000)	(0.002)	(0.014)	(0.000)	
Year Fixed Effects	NO	YES	YES	NO	YES	YES	
N	2389	2389	7389	2421	2421	7421	
Adjusted R <sup>2</sup>	0.402	0.407	0.661	0.404	0.411	0.666	

#### Table 4B: Factors Affecting Delay of Holdings filings-with Average Premium

The table presents cross sectional regressions using Delay (winsorised at the top 1%) as a dependent variable. Delay is the difference, in days, between filing and report date. Lagged delay is delay of the previous reporting period. Frequency (D) takes the value of 1 if the period between reports of the same fund (t and t-1) is a quarter (or less) and 0 otherwise. All delay and distance data were hand collected from the EDGAR reports. Average premium is the average premium over the period between the reportdate and one day before the filing date, where premium is calculated by 100x((Price-NAV)/NAV) taken from Lipper, Total turnover is the proportion of the fund's holdings that altered that quarter (reporting period) with both buys and sells. Holdings Spread is the average bid-ask spread of the fund's holdings for the month of the report Fund Liquidity is the average bid-ask spread of the fund itself for the month of the report. DY is the 12-month average dividend yield from the prior 12 months from Bloomberg. Book Information takes the value of 1 if report contains extra information such as a balance sheet. Foreign Fund is an indicator variable taking the value of 1 if the fund is foreign and 0 otherwise. Log number of firms is the logarithm of the fund's number of unique firms for which the fund holds stocks in a given report. Return Gap is measured as the difference between the reported fund return and the return on a portfolio that invests in the previously disclosed fund holdings. Average Return Gap(RR) is the average monthly return gap between two reports. Average Return Gap(RF) is the average monthly return gap between two reports and 1 and (2) \*\*\* indicates significance at 99% level, \*\* indicates significance at 95% level and \* indicates significance at 90% level. P-Values are in parentheses.

	(1)			(2)			
	Delay	Delay	Delay	Delay	Delay	Delay	
Average Premium	0.0715***	0.0508***	0.0350*	0.0708***	0.0511***	0.0359**	
	(0.000)	(0.002)	(0.054)	(0.000)	(0.002)	(0.047)	
Total Turnover	1.453** (0.035)	1.406** (0.042)	-0.474 (0.479)				
Average Return Gap (RF)	8.466* (0.067)	7.922* (0.082)	7.397** (0.030)				
Average Return Gap (RR)				21.60*** (0.000)	20.50*** (0.000)	9.965** (0.021)	
Holdings Spread	0.112	0.209**	0.0725	0.0961	0.213***	0.0986	
	(0.180)	(0.011)	(0.528)	(0.242)	(0.009)	(0.382)	
Fund Liquidity	-0.679***	-0.0932	0.215	-0.689***	-0.0170	0.204	
	(0.000)	(0.757)	(0.359)	(0.000)	(0.955)	(0.386)	
lagged Delay	0.521***	0.522***	-0.0492*	0.511***	0.513***	-0.0538*	
	(0.000)	(0.000)	(0.086)	(0.000)	(0.000)	(0.059)	
Frequency(D)	3.313***	2.465***	0.700	2.827***	1.865***	0.773	
	(0.000)	(0.000)	(0.263)	(0.000)	(0.001)	(0.182)	
Dividend Yield	0.0597**	0.0620**	0.00157	0.0565**	0.0641**	0.000860	
	(0.035)	(0.036)	(0.953)	(0.040)	(0.026)	(0.974)	
Foreign Fund(D)	5.063*** (0.000)	4.715*** (0.000)		5.463*** (0.000)	5.114*** (0.000)		
Book Information (D)	13.25***	13.59***	10.54***	13.36***	13.79***	10.63***	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
Number of Holdings	1.638***	1.811***	-0.745	1.706***	1.896***	-0.654	
	(0.000)	(0.000)	(0.134)	(0.000)	(0.000)	(0.190)	
Constant	6.284***	5.081***	54.61***	7.202***	5.783***	54.14***	
	(0.001)	(0.008)	(0.000)	(0.000)	(0.003)	(0.000)	
Year Fixed Effects	NO	YES	YES	NO	YES	YES	
Fund Fixed Effects	NO	NO	YES	NO	NO	YES	
N	2389	2389	2389	2421	2421	2421	
Adjusted R <sup>2</sup>	0.405	0.408	0.661	0.407	0.411	0.666	

#### Table 5A: Factors Affecting the choice to delay for more than 60 days

The table presents logistic regressions using Delay Dummy (=1 if delay >60)as a dependent variable. Delay is the difference, in days, between filing and report date. Lagged delay is delay dummy of the previous reporting period. Frequency (D) takes the value of 1 if the period between reports of the same fund (t and t-1) is a quarter (or less) and 0 otherwise. All delay and distance data were hand collected from the EDGAR reports. Total turnover is the proportion of the fund's holdings that altered that quarter (reporting period) with both buys and sells. Holdings Spread is the average bid-ask spread of the fund's holdings for the month of the report Fund Liquidity is the average bid-ask spread of the fund itself for the month of the report. DY is the 12-month average dividend yield from the prior 12 months from Bloomberg. Book Information takes the value of 1 if report contains extra information such as a balance sheet. Foreign Fund is an indicator variable taking the value of 1 if the fund is stocks in a given report. Return Gap is measured as the difference between the reported fund return and the return on a portfolio that invests in the previously disclosed fund holdings. Average Return Gap(RR) is the average monthly return gap between the report and the filing date. We use robust standard errors in all columns and time fixed effects in the right columns of both (1) and(2) \*\*\* indicates significance at 95% level and \* indicates significance at 90% level. P-Values are in parentheses.

	(:	1)	(2)		
	Pr(Delay>60)	Pr(Delay>60)	Pr(Delay>60)	Pr(Delay>60)	
Total Turnover	0 220*	0.250*			
	(0.069)	(0.061)			
Average Return Gap (RF)	(0.000)	(0.001)			
	1.878*	1.845*			
Average Poturn Can (PP)	(0.098)	(0.098)			
Average Return Gap (RR)			4.719***	4.420***	
			(0.003)	(0.004)	
Holdings Spread	0.0781***	0.101***	0.0733***	0.100***	
	(0.002)	(0.000)	(0.003)	(0.000)	
Fund Liquidity	0 125***	0.0124	0 120***	0.00963	
	-0.133	(0.832)	-0.139	(0.892)	
	(0.003)	(0.032)	(0.002)	(0.852)	
lagged Delay	0.894***	0.891***	0.889***	0.902***	
	(0.000)	(0.000)	(0.000)	(0.000)	
Frequency(D)	1.092***	1.029***	0.997***	0.877***	
	(0.000)	(0.000)	(0.000)	(0.000)	
Dividend Yield	0.0226**	0.0270**	0.0197*	0.0262**	
	(0.027)	(0.012)	(0.051)	(0.015)	
Foreign Fund(D)	1 170***	1 170***	1 210***	1 221***	
	(0,000)	(0,000)	(0.000)	(0.000)	
Book Information (D)	(0.000)	(0.000)	(0.000)	(0.000)	
(_)	4.336***	4.467***	4.374***	4.554***	
Number of Holdings	(0.000)	(0.000)	(0.000)	(0.000)	
Number of Holdings	0.665***	0.707***	0.667***	0.715***	
	(0.000)	(0.000)	(0.000)	(0.000)	
Constant	-8.342***	-8.069***	-8.278***	-7.589***	
	(0.000)	(0.000)	(0.000)	(0.000)	
Year Fixed Effects	NO	YES	NO	YES	
N	2389	2389	2421	2421	
Pseudo R <sup>2</sup>	0.3194	0.3377	0.3235	0.341	

Table 5B: Factors Affecting the choice to delay for more than 60 days-with Discount Dummy

The table presents logistic regressions using Delay Dummy (=1 if delay >60) as a dependent variable. Delay is the difference, in days, between filing and report date. Lagged delay is delay of the previous reporting period. Frequency (D) takes the value of 1 if the period between reports of the same fund (t and t-1) is a quarter (or less) and 0 otherwise. All delay and distance data were hand collected from the EDGAR reports. Discount dummy takes the value of 1 if average premium is lower that the median premium and 0 otherwise. Average premium is the average premium over the period between the reportdate and one day before the filing date, where premium is calculated by 100x((Price-NAV)/NAV) taken from Lipper, Total turnover is the proportion of the fund's holdings that altered that quarter (reporting period) with both buys and sells. Holdings Spread is the average bid-ask spread of the fund's holdings for the month of the report Fund Liquidity is the average bid-ask spread of the fund itself for the month of the report. DY is the 12-month average dividend yield from the prior 12 months from Bloomberg. Book Information takes the value of 1 if report contains extra information such as a balance sheet. Foreign Fund is an indicator variable taking the value of 1 if the fund is foreign and 0 otherwise. Log number of firms is the logarithm of the fund's number of unique firms for which the fund holds stocks in a given report. Return Gap is measured as the difference between the reported fund return and the return on a portfolio that invests in the previously disclosed fund holdings. Average Return Gap(RR) is the average monthly return gap between two reports. Average Return Gap(RF) is the average monthly return gap between the report and the filing date . We use robust standard errors in all columns and time fixed effects in the middle columns of both (1) and(2). In the third column of each of the two versions marginal effects at means are presented for the time fixed effects models \*\*\* indicates significance at 99% level, \*\* indicates significance at 95% level and \* indicates significance at 90% level. P-Values are in parentheses.

		(1)		(2)			
	Pr(Delay>60)	Pr(Delay>60)	Marginal Effects	Pr(Delay>60)	Pr(Delay>60)	Marginal Effects	
Discount Dummy	-0.468*** (0.000)	-0.345*** (0.002)	-0.0821 (0.002)	-0.444*** (0.000)	-0.343*** (0.002)	-0.0824 (0.002)	
Total Turnover	0.362** (0.048)	0.372** (0.048)	0.0886 (0.048)				
Average Return Gap (RF)	2.138* (0.062)	2.047* (0.070)	0.4876 (0.071)				
Average Return Gap (RR)				4.684*** (0.003)	4.365*** (0.005)	1.0482 (0.005)	
Holdings Spread	0.0686*** (0.008)	0.0900*** (0.001)	0.02111 (0.001)	0.0649** (0.010)	0.0900*** (0.000)	0.0216 (0.000)	
Fund Liquidity	-0.114** (0.015)	-0.0258 (0.686)		-0.116** (0.013)	-0.00192 (0.976)		
lagged Delay	0.896*** (0.000)	0.886*** (0.000)		0.889*** (0.000)	0.898*** (0.000)		
Frequency(D)	1.061*** (0.000)	1.029*** (0.000)		0.960*** (0.000)	0.870*** (0.000)		
Dividend Yield	0.0179* (0.078)	0.0224** (0.037)		0.0152 (0.128)	0.0216** (0.044)		
Foreign Fund(D)	1.143*** (0.000)	1.162*** (0.000)		1.192*** (0.000)	1.214*** (0.000)		
Book Information (D)	4.394*** (0.000)	4.487*** (0.000)		4.427*** (0.000)	4.575*** (0.000)		
Number of Holdings	0.648*** (0.000)	0.688*** (0.000)		0.653*** (0.000)	0.698*** (0.000)		
Constant	-8.161*** (0.000)	-8.001*** (0.000)		-8.000*** (0.000)	-7424*** (0.000)		
Year Fixed Effects	NO	YES	YES	NO	YES	YES	
Ν	2389	2389		2421	2421		
Pseudo R <sup>2</sup>	0.3253	0.3405		0.3289	0.344		

#### **Table 6: Cumulative Standardized Average Abnormal Returns**

The table presents the Cumulative standardized average abnormal returns, from day -10 of the event window to day 10, their standard errors and the test statistic. Results for the whole sample are in the "Whole Sample" category, "Less Delay Sample" contains results for events with delay less or equal to 60 days, while the "More Delay Sample" contains results for events with delay of more than 60 days \*\*\* indicates significance at 99% level, \*\* indicates significance at 95% level and \* indicates significance at 90% level. We test for significance using the Kolari and Pynnonen (2010) test that allows for both event-induced variance and cross-correlation across events changes simultaneously.

Event Window	Whole Sample			Less I	Delay Sample		More Delay Sample		
	CSAAR	Std Error	TestKP	CSAAR	Std Error	TestKP	CSAAR	Std Error	TestKP
(-10,-1)	-0.0500	0.0526	-0.6916	-0.2088**	0.0750	-2.2079	0.1280	0.0729	1.1688
(-7,-1)	0.0078	0.0446	0.1267	-0.0870	0.0622	-1.1095	0.1140	0.0639	1.1880
(-4,-1)	0.0198	0.0377	0.3831	-0.0054	0.0530	-0.0804	0.0481	0.0535	0.5987
(-1,0)	0.0336	0.0287	0.8531	0.066	0.0397	1.3187	-0.0026	0.0415	-0.0415
(-1,1)	0.0205	0.0316	0.4731	0.0054	0.0318	0.1363	-0.0069	0.0316	-0.1451
(0,1)	0.034	0.0208	1.1878	0.098342**	0.0343	2.2875	-0.0674	0.0399	-1.1243
(0,4)	0.0327	0.0381	0.6244	0.2111***	0.052	3.2416	-0.1705**	0.0555	-2.0431
(0,7)	-0.0688	0.0498	-1.006	0.1927**	0.0648	2.378	-0.3667***	0.0758	-3.2136
(0,10)	-0.1340*	0.0571	-1.7066	0.0611	0.0792	0.6165	-0.3563***	0.0821	-2.8855
Events	2500		1324			1176			

## **Table 7: Cumulative Average Long Short Returns**

The table presents the Cumulative average long short returns ,from day -10 of the event window to day 10, their standard errors and the test statistic. The sample used consists of events where holdings were disclosed within 60 days from the period end, NAV reporting around the event is daily and Average Premium is less than zero. The number of events is 748. \*\*\* indicates significance at 99% level, \*\* indicates significance at 95% level and \* indicates significance at 90% level.

Event Window	CALSR	Standard Error	Test Statistic
(-10,-1)	0.1569	0.1282	1.2234
(-7,-1)	0.1509	0.1265	1.1925
(-4,-1)	0.1574	0.1126	1.3971
(-1,0)	0.0767	0.0715	1.0736
(-1,1)	-0.0548	0.0620	-0.8828
(0,1)	0.1510**	0.0660	2.2885
(0,4)	0.3778***	0.1057	3.5730
(0,7)	0.4198***	0.1188	3.5327
(0,10)	0.6810***	0.1528	4.4560