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The Potential Effects of More Frequent Portfolio Disclosure on Mutual Fund Performance

by Russ Wermers¹

1. OVERVIEW

The U.S. Securities and Exchange Commission (SEC) is considering changes to the disclosure requirements for the semiannual and annual reports provided by mutual funds to their shareholders.² These periodic shareholder reports discuss fund investment strategies and recent performance. In addition, they contain a variety of other information, including the fund's financial statements and a list of the fund's current investments. These shareholder reports must be sent to fund owners within 60 days after the end of the reporting period.³

After the SEC announced its intention to revise shareholder report requirements, several groups submitted petitions calling for more frequent disclosure of a fund's portfolio holdings to

its shareholders. In particular, the petitioners requested that the SEC require funds to disclose holdings on a monthly or quarterly basis, within either 30 or 60 days after the end of the month or quarter.⁴

This issue of *Perspective* examines the potential effects of more frequent portfolio disclosure on the performance of mutual funds. This study concludes that, with more frequent portfolio disclosure, the total return shareholders receive from mutual fund investments would likely be lower than that under the current disclosure standard. The principal reasons for this conclusion are summarized as follows.

- ▶ **Front running of mutual fund trades could significantly increase, which could increase fund trading costs.**

More frequent portfolio disclosure would enable increased "front running" by professional investors and speculators. Armed with more timely and comprehensive portfolio information, these investors would be better positioned to anticipate fund trades and thus capture the price impact by trading securities ahead of a fund. Such front running could result in higher prices for fund purchases of securities and lower prices for fund sales. Higher trading costs translate into lower realized returns for fund shareholders.

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² See Paul F. Royce, Director, Division of Investment Management, U.S. Securities and Exchange Commission, "Remarks Before the Securities Law Procedures Conference [of the] Investment Company Institute," December 7, 1998, p. 3 (www.sec.gov/news/speech/speecharchive/1998/spch238.htm).

³ Investment Company Act Rule 30e-1(c).

⁴ For example, see the letter and supporting memorandum from Mercer E. Bullard, Fund Democracy, LLC to Jonathan G. Katz, Secretary, U.S. Securities and Exchange Commission, June 28, 2000.

► **Free riding on mutual fund investment strategies could increase, limiting a fund's ability to fully benefit from its research.**

More frequent disclosure of portfolio holdings would enable outside investors to obtain the benefits of fund research and investment strategies without incurring the costs. Outsiders would be able to either duplicate a fund's portfolio holdings or identify and adopt the proprietary investment techniques and strategies of the fund. An increase in free-riding activity could reduce the returns that funds provide to their shareholders by causing security prices to move before a fund could fully implement its investment strategies.

► **The cost of providing liquidity to fund shareholders could increase.**

Mutual funds offer investors liquidity through the daily issuance and redemption of fund shares. Timely estimates of the net flow of new cash to funds from these activities are currently available to the public. With more frequent portfolio disclosure, professional investors and speculators would be able to identify the securities that a fund would likely buy or sell to accommodate these cash flows. As a result, front running of trades would be facilitated, thereby increasing liquidity-motivated trading costs and lowering returns.

► **Tax-management strategies of funds could become more costly.**

More frequent disclosure would facilitate front running of tax-motivated trades of mutual funds, as professional investors and speculators would be better able to identify securities that funds might sell toward year-end to offset realized capital gains. Front running of tax-motivated trades could reduce pre-tax returns through higher trading costs and impair a fund's ability to provide shareholders with better after-tax returns.

"With more frequent portfolio disclosure, the total return shareholders receive from mutual fund investments would likely be lower than that under the current disclosure standard."

The magnitude of the costs arising from more frequent portfolio disclosure would depend upon the investment and trading strategies of a fund, as well as upon its size and particular investments. As a consequence, some funds and their shareholders would be less affected by more frequent disclosure than others. Indeed, some funds currently provide their shareholders with portfolio holdings information more often than semiannually. Other funds, however, do not provide more frequent information, which likely reflects a concern that such disclosure could adversely affect fund performance.⁵

The remaining sections of this paper detail the likely effects of more frequent portfolio disclosure on mutual fund returns. Section 2 discusses how more frequent portfolio disclosure facilitates front running and increases fund trading costs. Section 3 evaluates how free riding could be facilitated by more frequent disclosure and, thus, reduce fund returns derived from investment research. This section also considers how free riding could increase the direct research costs borne by fund shareholders. Section 4 discusses how more frequent portfolio disclosure could increase the costs of providing liquidity to shareholders through the daily offering and redemption of fund shares. In addition, Section 4 describes how the cost of providing tax management services through tax-sensitive trading strategies might increase with more frequent disclosure.⁶

2. TRADING COSTS, FRONT RUNNING, AND PORTFOLIO DISCLOSURE

Recent research on mutual fund performance finds that mutual funds can identify securities that are either over- or underpriced.⁷ Furthermore, the research finds that funds capture "abnormal

⁵ Institutional investment managers (including investment advisers to mutual funds) with investment discretion over \$100 million or more of certain U.S. equity securities are required to file a schedule with the SEC listing these securities at the end of each quarter. The filing, called Form 13F, is due within 45 days after the end of the quarter and is made public shortly thereafter. Institutional investment managers may request confidential treatment with respect to certain disclosures on Form 13F. In addition, investment advisers are not required to disclose which funds or accounts hold the securities disclosed on Form 13F.

⁶ Much of the information in this report is drawn from academic research, as well as from interviews with various market participants. Mutual fund managers and traders were interviewed to better understand the risks they deem important regarding more frequent disclosure of holdings data. Wherever possible, to validate and gauge the relative importance of these risks, academic research and high-quality databases were consulted. Also, interviews were conducted with several experts both within and outside the mutual fund industry who are knowledgeable in institutional investor tax issues as well as market microstructure issues relevant to the involvement of institutional investors in markets.

⁷ See, for example, Russ Wermers, "Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transactions Costs, and Expenses," *Journal of Finance*, 55 (2000), p. 1658.

returns”—returns in excess of that on a benchmark—with strategies exploiting these mispricings.

These abnormal returns, however, are relatively small and can be erased by inefficient trade execution. For example, financial research shows that stocks purchased by equity mutual funds, on average, have an abnormal return of one percent during the year following the purchase.⁸ This figure is computed before factoring in the trading costs associated with the purchase of the stocks, which are estimated to be 0.55 percent of the value of a stock on the New York Stock Exchange (NYSE) and 1.0 percent for a Nasdaq stock.⁹ Moreover, the trading cost can vary widely, ranging from an estimated 0.3 percent for a small-sized trade of a large-capitalization stock to 4.1 percent for a large-sized trade of a small-capitalization stock.¹⁰ Trading costs clearly have the potential to eliminate extra returns offered by superior stock-picking strategies if the trades cannot be executed efficiently.

More frequent disclosure of portfolio holdings has the potential to raise the trading costs of mutual funds. Armed with knowledge of recent portfolio holdings, speculators and other professional investors would be better able to anticipate the trades of actively managed mutual funds. These outside investors may then attempt to trade ahead of mutual funds in order to capture the temporary impact—especially of large mutual fund trades—on prices of the traded securities. This activity, known as “front running,” can cause security prices to “move against” the impending fund trade, thereby driving up the overall costs of securities trades and reducing the expected investment return.¹¹

A current example of how front-running activity drives up mutual fund trading costs is provided by the recent controversy surrounding the move to decimalization by the NYSE. In this case, the shift to trading in one-cent

“More frequent disclosure of portfolio holdings could raise the trading costs of mutual funds.”

increments allows specialists and floor traders to step more easily in front of large institutional buy orders by purchasing shares at a slightly higher price than that offered by the institution. This front running is done in anticipation of the institution increasing its bid price above the

price that the specialist paid in order to complete the trade. This process, which is commonly referred to as being “pennyyed,” benefits the front runner while driving up mutual fund trading costs.¹²

The remainder of this section discusses, in more detail, the likely effect of more frequent portfolio disclosure on mutual fund trading costs. The discussion starts with a description of the components of mutual fund trading costs, presents empirical evidence of their relative importance, and then analyzes the potential effects of more frequent disclosure on these components of trading costs.

Components of Trading Costs

The cost of executing a security transaction has two components. The first component is the direct commission paid to the broker for executing the trade. A recent study estimates that direct commissions account for about one-third of total trading costs for large-capitalization equity trades.¹³

The second and larger component, representing two-thirds of the cost of executing a large-capitalization equity transaction, is the trade-impact cost. This cost is the price concession that a buyer or seller must offer to induce a counterparty to make a trade. For instance, when a mutual fund or other institutional investor wishes to buy a security, it may need to offer to buy shares at a price in excess of the currently quoted market price to attract sellers.

⁸ Hsiu-Lang Chen, Narasimhan Jegadeesh, and Russ Wermers, “The Value of Active Mutual Fund Management: An Examination of the Stockholdings and Trades of Fund Managers,” *Journal of Financial and Quantitative Analysis*, 35 (2000), pp. 353-55.

⁹ Plexus Group, “Quality of Trade Executions in Comparative Perspective: AMEX vs. Nasdaq vs. NYSE,” (American Stock Exchange Publication) August 1996, p. 9. The Plexus study included trades during 1995 by different types of institutions, including pension funds and mutual funds.

¹⁰ Donald B. Keim and Ananth Madhavan, “Transactions Costs and Investment Style: An Inter-Exchange Analysis of Institutional Equity Trades,” *Journal of Financial Economics*, 46 (1997) pp. 275-77.

¹¹ “Front running” is sometimes used to describe specific activities that are illegal under federal securities law, such as trading ahead of an order on improperly obtained information (for example, in violation of an investment adviser’s fiduciary duty to its clients). In this article, however, the term encompasses trading activities not prohibited by securities laws because they are based upon lawfully obtained information.

¹² See, for example, Jeff D. Opydyke and Gregory Zuckerman, “Decimal Move Brings Point of Contention From Traders,” *The Wall Street Journal*, February 12, 2001 p. C1.

¹³ Stephen A. Berkowitz and Dennis E. Logue, “Transaction Costs,” *Journal of Portfolio Management*, 28 (2001), p. 67.

This price concession is a large part of the cost of acquiring a security, and clearly affects the return on the purchase. Although the trade-impact cost for large-capitalization stocks is significant, smaller-capitalization stocks and other securities traded in thinner markets can have even higher impact costs, which, in turn, represent a much greater proportion of the overall cost (market impact plus broker commissions) of executing these trades. More specifically, impact costs are directly related both to the size of the transaction and to its size relative to the volume of outstanding shares. In addition, trading costs can rise substantially if transactions are conducted over a short time span.

The trade-impact cost of executing a security trade can be further separated into two components relating to events that occur between the time that the order is conceived by the mutual fund manager and the time that the order is executed. The first component is the price drift that occurs between the time the portfolio manager places an order with the fund's trader and the time that the trader places the order with brokers. Price drift results, in part, from the leakage of information that occurs as the mutual fund trader communicates with brokers and other market participants in a search for liquidity for the trade. The price drift during this pre-trade period has been estimated to average 0.17 percent of the dollar value of an institutional stock trade made on the NYSE during 1995 (Figure 1).¹⁴ A significantly higher cost of 0.44 percent was estimated for trades on the Nasdaq market.

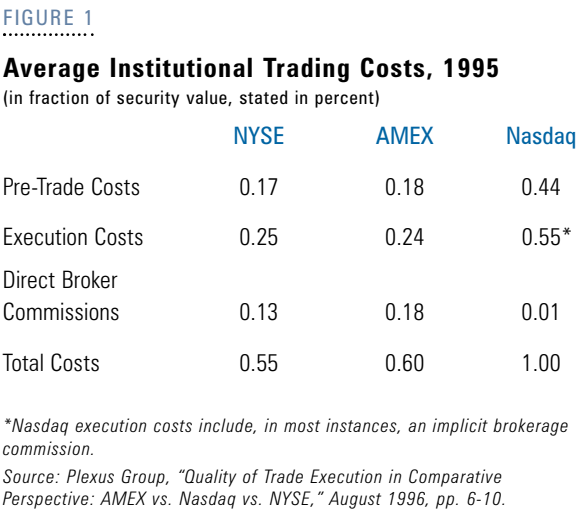
Although the pre-trade price drift can be costly, a substantially larger cost is represented by the second component of trade-impact costs. This cost is due to the price movement that occurs between the time that brokers receive an order from the fund trader and the time that the actual trade is executed.¹⁵ This cost is estimated at 0.25 percent of the value of an institutional trade on the NYSE and 0.55 percent for Nasdaq trades.¹⁶ Leakage of information is an important part of this cost, as well as the price concession necessary to bring liquidity into the market.

¹⁴ Plexus, "Quality of Trade Execution," pp. 6-10.

¹⁵ The completed trade package may represent the execution of the package through either a single transaction or a series of transactions. Figure 1 shows the average cost of executing a trade package across both types of strategies.

¹⁶ It is important to note that Nasdaq execution costs normally include an implicit brokerage commission.

¹⁷ Wermers, "Mutual Fund Performance," pp. 1681-85, uses periodic mutual fund portfolio holdings data to infer trades and to estimate this cost. This approach understates the actual number of trades, as well as the actual costs of these trades.



Information Leakage and Trading Strategies

Trading costs for mutual funds can be substantial, amounting to at least an estimated 0.48 percent of equity fund assets during 1994.¹⁷ As a consequence, mutual funds are sensitive to trading costs, especially trade-impact costs, as they frequently trade in blocks of 10,000 shares or more and sometimes in blocks of up to several million shares.

In stock trades of these magnitudes, information leakage is a risk that can significantly contribute to the overall cost of transactions. As a result, a fund often splits a large block into a series of small orders carried out over several days or weeks to avoid detection by potential front runners. In some instances, the series of transactions might even take several months to complete, especially if the securities involved are thinly traded or if the transaction represents a large fraction of the total shares outstanding. Long-term portfolio revisions are becoming more common, especially with the increasing number of

very large funds, many of which have investments concentrated in relatively few stocks.¹⁸

To illustrate this point, consider a \$10 billion fund wanting to liquidate a position in a stock accounting for 3 percent or \$300 million of its assets. Assuming a price of \$50 per share, the fund would have to sell six million shares. Large block transactions of 10,000 shares would require the fund to execute 600 separate transactions. Such a large-scale portfolio revision might be conducted over several weeks or months to minimize trading costs. Trying to squeeze the entire transaction into a shorter period would likely raise the per-share costs of selling the six million shares. In practice, the fund must weigh the higher cost of selling the shares quickly against the risk of information leakage in a sale spread over weeks or months. At a minimum, information leakage would compound the difficulty of obtaining a cost-effective execution of the stock sales over a protracted period.

"In large stock trades, information leakage is a risk that can significantly contribute to the overall cost of transactions."

Although fund traders and managers are aware of the costs of information leakage and attempt to minimize it, maintaining secrecy about impending trades is difficult. Many outsiders are involved in the execution of a trade, especially one broken into a package of smaller transactions. Besides the brokers handling the trade, other agents involved in the transaction include custodians, transfer agents, and market makers. At every step in the process, there is high potential for information leakage, as the incentive to trade on privileged information is very large.¹⁹

Index funds provide an example of a front-running problem caused by the availability of complete information on the funds' portfolios.²⁰ Speculators often make trades after the announcement of a change in the index's composition but in advance of the revision. Stocks scheduled to be added to an index are purchased, while stocks scheduled to leave an index are sold short. In contrast, index funds delay trades until the compositional changes become effective in order to minimize tracking error. As a result, index funds are exposed to increased trading costs arising from the price-pressure effects of the earlier trades. Many index funds have recently reacted to front running by concealing their index-revision strategies, and by devising more sophisticated strategies.²¹

Effect of More Frequent Portfolio Disclosure

Fund trading costs. More frequent disclosure of portfolio holdings, such as disclosure on a monthly basis, would raise the risk that speculators would be able to detect when a mutual fund trader is attempting to acquire or dispose of a large block of shares. Specifically, outside investors would be able to use recent information on fund holdings to determine with greater precision when a fund is likely to be in the market to buy or sell large blocks of a certain security. With this information, they could more easily attempt to front run the fund's transaction, thereby raising trading costs and lowering expected returns.²²

¹⁸ In a recent conversation, the head trader of a fund complex with some large concentrated funds stated that, with many very large-block orders, only a few parties are willing or able to handle the opposite side of the trade. Thus, liquidity is very limited for these trades. The trader also stated that very large blocks are increasingly being broken up into smaller blocks to minimize the temporary price impact. In an analysis of institutional stock trades during 1986-1988, Louis K. C. Chan and Josef Lakonishok, "Institutional Trades and Intra-day Stock Price Behavior," *Journal of Financial Economics*, 33 (1993) pp. 177-79, found that the majority of trades were broken into packages of smaller trades. Also see Louis K. C. Chan and Josef Lakonishok, "The Behavior of Stock Prices Around Institutional Trades," *Journal of Finance*, 50 (1995), pp. 1150-54.

¹⁹ An illustration based on the large-scale trade discussed above helps to show the potential profits from front running. As mentioned earlier, the average one-way trading cost of a stock on the NYSE is 0.55 percent of the value of the trade. If front running increases this cost by 0.20 percent (20 cents per \$100 traded), then front runners could conceivably capture a profit of \$600,000 across the block trades. With many large-block mutual fund trades occurring every business day, the potential profits from engaging in front running as an ongoing strategy are enormous.

²⁰ See E.S. Browning, "Making Index Revisions Sends Markets Into a Frenzy," *The Wall Street Journal*, July 26, 2000, p. C1. The article describes how hedge fund managers and traders on brokerage-firm desks make trades after the announcement of a change in the composition of a stock index in order to front run index mutual funds.

²¹ Another example of front running is given by Susan Pulliam and Gregory Zuckerman, "At Hedge Fund, Debate Emerges," *The Wall Street Journal*, February 1, 2001, p. C1. This article describes how trading desks of Wall Street firms began circulating lists of large-scale technology stock holdings of hedge funds during the spring 2000 sell-off in Internet stocks. These lists helped speculators to short-sell shares in technology stocks before some large hedge funds could effectively liquidate their holdings.

²² Many mutual fund investment advisers are currently required to disclose publicly, on a quarterly basis, aggregate holdings of certain equity securities across all accounts that they manage. (See note 5.) Such disclosures likely facilitate a certain degree of front running, and it is possible that front-running activity has increased in recent years with the development of the SEC's EDGAR database and the public's electronic access to it. More frequent disclosure of *fund-specific* information would give speculators additional information about the activities of individual fund managers, further enhancing the ability to front run.

In addition, an outsider observing a sequence of large block trades in a particular security would be better able to surmise (using recent portfolio holdings data) the identity of the fund making these trades and the likelihood of further block trades by this fund. A fund needing to execute a sequence of several trades in a security may unknowingly “tip its hand” through its early trades, especially when the total number of shares owned by the fund are more accurately known as a result of more frequent disclosure.

“More frequent disclosure would raise the risk that speculators could more easily attempt to front run the fund’s transactions.”

In short, by heightening the potential for front running, more frequent disclosure would raise trading costs for mutual funds. In turn, this would translate into lower fund returns. For any one trade, the increased trading costs may be small. Aggregated across many trades and time, however, the cost would be substantial and could significantly impair the return a fund provides to its shareholders.^{23,24}

Proponents of more frequent disclosure have suggested that a lag of 30 or 60 days between the portfolio holdings date and the date of disclosure would prevent front running.²⁵ For some trades, this statement may be true. For example, it is likely that the lag would protect small trades in liquid securities characterized by quick execution. Potential profits from front running are small in this case, and speculators would generally be deterred. However, larger trades, which have much more significant price impacts and take longer to complete, are much more enticing targets for front running, even if there is some uncertainty in using portfolio holdings data from the past.

Possible responses to more frequent portfolio disclosure. Because more frequent portfolio disclosure could lead to increased trading costs to mutual funds from front running, funds could be expected to attempt to minimize the adverse consequences. For example, some mutual funds might be reluctant to trade securities, especially in illiquid markets, even when their investment strategies dictate otherwise. Such a reaction would serve to reduce the profitability of security research efforts by funds. In addition, funds might react by attempting to trade large blocks of

securities over a shorter period to avoid detection. However, faster execution implies larger market impact costs, even in the context of current portfolio disclosure standards. For example, a mutual fund currently executing a large trade of several million shares over a period of a week, rather than a period of several weeks, would likely incur trading costs of as much as (or perhaps even more than) double or triple the costs of the slower execution strategy.²⁶

3. INVESTMENT RESEARCH AND PORTFOLIO DISCLOSURE

Actively managed funds incur substantial expense in hiring managers and analysts with stock-picking talents. For example, funds may hire experts in the technology, healthcare, utilities, and financial services industries to identify attractive investment opportunities in these sectors. Correspondingly, managers of these funds must effectively implement the portfolio strategies that result from this research if they are to deliver profits to fund shareholders.

This section describes how outside investors, armed with more frequent portfolio holdings information, could share in these research-derived profits by duplicating the holdings or portfolio strategies of a fund. These “free-riding” activities, although benefiting outsiders, can prevent a fund from fully realizing the potential returns from its manager’s research efforts by moving security prices before a fund manager can fully implement a strategy. In addition, free-riding activities can result in fund shareholders bearing higher direct research expenses since they would effectively cover the research costs of outside investors.

²³ The potential gains from front-running trades are even greater in those securities widely held by mutual funds. For example, in the second half of 1994, equity funds purchased 6.6 million shares in Sun Microsystems or about 7 percent of outstanding shares. These purchases would have represented more than 600 block trades of 10,000 shares or more than five large block trades per business day. Had monthly portfolio information been available at the time, funds would certainly have found it difficult to fully implement these trades without incurring high market impact costs because of front running.

²⁴ For example, if increased portfolio disclosure causes fund trading costs to increase from their current level of about 0.50 percent per year to 0.60 percent per year, then, over 30 years, the value of an initial investment of \$10,000 in a mutual fund that yields 12 percent per year (before trading costs) is reduced by almost \$7,000.

²⁵ See letter from Fund Democracy, pp. 4-5.

²⁶ Estimated based on the regression model for transactions costs in Keim and Madhavan, “Transactions Costs and Investment Style,” pp. 277-85.

Free Riding

Nature of the Free-Riding Problem. Although mutual funds are generally able to identify mispriced securities,²⁷ profits from the research tend to accrue over periods ranging from 12 to 18 months after the date a newly acquired stock is first added to a fund's portfolio.²⁸ During this period, funds are vulnerable to free riding by institutional and individual investors outside the fund.

Free riding is an externality—an economic benefit to one party arising from the activities of another for which the benefiting party makes no payment. Where externalities arise, there may be a need to protect proprietary research. To illustrate, consider a pharmaceutical company that invests time, money, and intellectual capital to develop a new prescription drug. The company and the public stand to gain if the new medication is effective. Once developed, however, the medication could be easily produced and sold generically by other drug companies for their own economic gain at far less cost, unless prevented by patent laws. Without the temporary protection afforded by these patent laws, the pharmaceutical company might conclude that the investment in developing effective new medications is not economically worthwhile.

The disclosure of a mutual fund portfolio enables a similar free-riding externality. The management of a mutual fund devotes time, money, and intellectual capital to identifying promising investments. To the extent that the fund is successful, its shareholders benefit. However, outside investors, armed with knowledge of a successful fund's portfolio holdings, can mimic these holdings, thus capitalizing on the fund's research at no cost to themselves.²⁹

Reverse Engineering. In addition to allowing the direct mimicking of a fund's security holdings, frequent portfolio disclosure would facilitate reverse engineering, another type of free-riding activity. Reverse engineering occurs when an outside investor applies statistical techniques

"Armed with knowledge of a successful fund's portfolio holdings, investors outside a fund can mimic its holdings, thus capitalizing on the fund's research at no cost to themselves."

to data on publicly reported holdings to infer the stock-picking strategies, strategic choices, or even the holdings of specific securities. For example, several academic studies have used portfolio holdings from mutual fund SEC filings to infer the types of stocks and strategies chosen by the fund industry.³⁰ Increasing the frequency of portfolio disclosure makes this type of inference more feasible as well as more precise.^{31, 32}

²⁷ Wermers "Mutual Fund Performance," p. 1658.

²⁸ Chen, Jegadeesh, and Wermers, "Value of Active Mutual Fund Management," p. 355. The authors show that positive, abnormal returns accrue to the stocks most widely purchased by the mutual fund industry over the 12 months following the first date that these stocks appeared in a publicly disclosed portfolio list. Since trades can occur anytime during the six months between the dates of the current and prior publicly disclosed portfolio list, new stocks appearing in the current portfolio list represent trades that occurred up to six months prior to the date of this list. Thus, abnormal returns accrue for up to 18 months following trades.

²⁹ Internet-based investment-pooling services in which investors can buy a large portfolio of small positions in individual stocks for an annual fee—and can trade these stocks—would appear to offer one means by which individuals might be able to mimic fund investment strategies.

³⁰ For example, Mark Grinblatt, Sheridan Titman, and Russ Wermers, "Momentum Investment Strategies, Portfolio Performance, and Herding: A Study of Mutual Fund Behavior," *American Economic Review*, 85, (1995), 1088-1105, show that quarterly or semiannual portfolio holdings data can be used to determine whether a mutual fund uses a strategy of buying stocks that are past "winners" and selling stocks that are past "losers." In addition, the paper provides a measurement of the degree to which a fund employs a "momentum strategy." More frequent holdings information would make such a measure even more precise.

³¹ The availability of monthly—or, to a lesser extent, quarterly—data would allow a much more precise measurement of the motivation for mutual fund trades. For example, fund trading strategies based on analyst earnings forecast updates or on earnings announcements could be much more reliably measured with monthly or quarterly holdings.

³² Potential profits from this type of free riding are similar in nature to profits gained from mimicking reported portfolio holdings. Although reverse-engineering a strategy is certainly a more difficult task than simply mimicking reported portfolios, the former strategy, once determined, can be implemented without the delay inherent in portfolio reports. For example, if a fund's strategy results in the purchase of a stock at the end of September, an outsider, using the fund's strategy, might purchase the stock at roughly the same time rather than waiting for the next fund portfolio holdings report.

Effect of Free Riding on Fund Performance

Free-riding activities, either through direct mimicking of fund portfolio holdings or through mimicking the (reverse-engineered) strategy of a fund, can substantially impair a fund's performance. As noted above, some investment strategies may take an extended time to implement due to the realities of implementing large-scale trades. For example, if monthly disclosure of portfolio holdings were required, even with a 30- or 60-day reporting delay, a fund may not have sufficient time to fully establish a position before outsiders discover the fund's purchase activity. Outsiders, interpreting a fund's purchase as a signal that its research indicates the security is underpriced, might begin purchasing the security. As a result, its price might be driven up, causing the fund either to forego completion of the purchase program or to incur a higher average price than otherwise would have been the case. In either event, the fund's realized return would suffer, and shareholders would not benefit fully from the fund's research efforts.

Similarly, a fund's return might be reduced if outsiders detect that the fund is liquidating an overpriced security over an extended period. These outsiders may liquidate the holding from their portfolios, driving the price down before the fund completes its sale of the holding. And, as noted above, outsiders may even be able to use frequent releases of portfolio holdings to reverse engineer the strategy of a fund and use the information to trade and move the prices of securities without waiting for the release of the next portfolio report.

Mutual fund returns might also be reduced by another consequence of free riding either through the direct mimicking of portfolio holdings or the reverse engineering of strategies. The externality provided by frequent portfolio disclosure permits investors to benefit from fund research without incurring the cost of actually owning fund shares. As a result, some investors may choose to utilize the research of the best funds by mimicking their portfolios or their strategies while paying nothing for that research. In the process, fund assets would fall or grow more slowly over time, leaving a larger portion of research-related expenses to remaining shareholders.

"Free-riding activities can substantially impair a fund's performance."

Frequency of Portfolio Disclosure and the Potential for Free Riding

Current portfolio reporting standards, which require semiannual disclosure with a 60-day lag, limit potential free riding. Occasionally, a portfolio report might contain information on a security purchased during the weeks immediately preceding the date of the publicly disclosed portfolio list. However, the combination of a six-month reporting period and a 60-day reporting lag, along with uncertainty over the exact date the security was purchased, reduce the potential returns outsiders can garner from mimicking the reported portfolio. Stated simply, a potential free rider might receive a portfolio list too late to capture the majority of the profits from the fund's purchase of a stock.³³

Requiring funds to report portfolio holdings more frequently than semiannually, even with a 60-day lag, would substantially increase the potential for free riding. If holdings were disclosed monthly, for example, a security purchase would be reported, at most, three months after its purchase date. Thus, the majority of the stock's abnormal return could be captured by outside investors. These investors would be able to buy a stock, at most, only three months after a fund had purchased it and then reap the benefit of the abnormal return over the following three to five quarters.

The expected return from such a strategy can be substantial. Evidence from a recent academic study demonstrates that less than half of the total abnormal return earned from the purchase of a stock by a mutual fund occurs during the first quarter after the date the stock first appears in a publicly disclosed (semiannual) portfolio list; the remainder is earned during the following three quarters.³⁴ The study actually understates the level of return made possible by monthly disclosure. That is, it cannot measure

³³ While filings on Form 13F (see note 5) may currently facilitate some degree of free riding, more frequent disclosure of portfolio holdings on a fund-by-fund basis would exacerbate the potential harm. Disclosure of portfolio holdings on an aggregate basis on Form 13F can obscure changes in the holdings of individual funds and thus make it difficult to mimic the strategies of particular funds or fund managers. For example, Fund A within a fund family might purchase 1,000,000 shares of IBM one week after Fund B of the same family sold 1,000,000 shares of IBM. The strategy of each fund would be safeguarded by the aggregate nature of the Form 13F filing, which would show no change in holdings of IBM shares across the fund family.

³⁴ Chen, Jegadeesh, and Wermers, "Value of Active Mutual Fund Management," p. 355.

the abnormal return accruing between the time the stock is actually purchased and the date the stock first appears in a publicly disclosed portfolio list, which can be up to six months later in the current reporting regime.

For example, a mutual fund may report its portfolio holdings as of the end of June and December. If the fund purchases a stock at the end of September, the purchase will be reported to the public five months later, or about at the end of February.³⁵ The study discussed above shows that, of the abnormal return earned during the period after December, less than half is earned during the first quarter of the following year. With monthly disclosure and a 60-day reporting delay, this September stock purchase would be reported two months later, or about the end of November (60 days after the end of September disclosure date). Thus, monthly disclosure would allow a free rider to capture the entire abnormal return available during the period after December and capture the abnormal return earned in December.

Possible Responses to Free Riding and Reverse Engineering

Frequent disclosure of fund portfolios would likely lead to free riding and reverse engineering of actively managed funds that have established a record of successful investing. In such circumstances, a fund likely to be subject to these

“Free riding and reverse engineering of actively managed funds could cause funds to deviate from their optimal investment strategies and reduce returns to shareholders.”

activities might respond in several ways. For example, it might choose to reduce expenditures on securities research. Or, it might skew its portfolio choices and strategies toward those with a short-term horizon. Finally, a fund’s manager might alter the timing of purchases and sales of portfolio securities, for example, by delaying the purchase of a new investment until after the portfolio report date.

Such responses would be intended to control costs, protect shareholders, and limit the adverse consequences of free riding and reverse engineering on fund returns. Nonetheless, by causing the fund to deviate from what its manager deems the optimal investment strategy, the fund’s return could be reduced.

4. OTHER CONSEQUENCES OF MORE FREQUENT DISCLOSURE

More frequent disclosure of securities holdings could have other effects on the management of fund portfolios. In particular, managing the portfolio in response to shareholder cash flows could become more complicated, as could managing the portfolio to limit capital gain distributions to investors. In these instances, more timely information on fund holdings would enhance the ability of outside investors to front run mutual fund trades.³⁶

Increased Liquidity Costs Associated with More Frequent Disclosure

Mutual funds provide an important service to the investing public by issuing and redeeming shares on a daily basis. This liquidity service, however, subjects mutual funds to variable and often unpredictable inflows and outflows of cash that can be substantial. For example, during the first quarter of 2000, 10 percent of U.S. equity mutual funds had inflows amounting to 31 percent or more of their average level of assets during that period. Another 10 percent experienced asset outflows of 12 percent or more during the quarter.

Investing cash inflows in securities or liquidating securities to meet outflows has the potential to impose a cost on shareholders in the form of lower returns than would have occurred in the absence of such flows.³⁷ This cost could occur for two reasons. First, funds must hold cash in their portfolios to buffer unexpected flows. Second, trading costs are incurred in response to these flows as the funds attempt to move back to

³⁵ As noted above, funds must report their portfolio holdings with a 60-day lag at semiannual intervals.

³⁶ Both of these strategies require information about holdings of individual funds. Hence, information about holdings on a complex-wide basis, as is provided on the quarterly reports on Form 13F, would be of limited use to those seeking to trade on the basis of cash flow or tax strategies.

³⁷ Unexpected cash outflows from shareholders are likely a bigger potential problem than inflows due to the avoidance of short-selling by most funds. Specifically, outflows can require the sale of an existing position, while inflows may be invested to increase holdings in existing positions or to initiate new holdings. However, inflows can also be a problem, as many funds focus their investments in a given sector, such as small-capitalization technology stocks, which constrains their investment choices.

their desired level of cash holdings. Two recent studies have estimated flow-related costs at between 0.7 and 1.4 percent of assets per year for equity funds.³⁸

More frequent disclosure of mutual fund portfolios would tend to increase the cost of providing liquidity to mutual fund investors. Speculators can already estimate flows for most funds on a timely basis by using publicly available information or information compiled by data services specializing in the estimation of fund flows.³⁹

Increasing the frequency of portfolio disclosure would only increase the precision with which outsiders could identify securities that might be traded in response to cash flows. Mutual funds might respond to the enhanced ability of speculators to front run liquidity-motivated trades in several ways. Those funds with highly variable flows might maintain higher cash balances. Other funds might move their portfolios toward more liquid securities to hedge against the possibility of unexpected, long-term redemptions. Finally, some funds might choose to close to new investors to limit the attractiveness of the fund to front runners. For shareholders in these funds, the smaller size would translate into higher direct expenses per dollar of assets, as funds would forgo cost efficiencies that normally occur as they grow.

"Managing a fund's portfolio in response to shareholder cash flows could become more complicated with more frequent disclosure."

Effect of Frequent Portfolio Disclosure on Tax Efficiency

A mutual fund must distribute its net realized capital gains to shareholders to avoid fund-level taxation. These capital gain distributions are taxable at the shareholder level if the shareholder holds the fund in a taxable account rather than in a tax-deferred account such as an Individual Retirement Account or an employer-sponsored retirement plan.

Many fund managers are sensitive to the tax consequences of their investment strategies. One investment strategy that a fund can employ to reduce taxes is to offset realized capital gains with realized losses. Offsetting transactions can occur throughout the year; however, effective tax management often results in bunching of the offsetting transactions in October.⁴⁰

Tax-motivated trading has the potential to expose funds to front-running activities because of the seasonality of these trades.⁴¹ Current portfolio disclosure regulations, however, likely deter attempts to front run tax-motivated trades, as it is not possible to track mutual fund holdings more frequently than semiannually. In contrast, more frequent disclosure would enable speculators and professional investors to develop estimates of losses and gains in fund holdings by tracking portfolio changes over time. With this information, traders could more closely identify securities that a fund or a group of funds would likely liquidate in tax-related transactions toward the end of the tax year.

³⁸ Wermers, "Mutual Fund Performance," p. 1685, placed the estimate at 0.7 percent, and Roger Edelen, "Investor Flows and the Assessed Performance of Open-End Mutual Funds," *Journal of Financial Economics*, 53 (1999), pp. 454-61, estimated 1.4 percent.

³⁹ Some information-service companies provide estimates of weekly or semiweekly mutual fund flows.

⁴⁰ The Internal Revenue Code effectively requires mutual funds to distribute by December 31 their realized capital gains for the 12-month period ending October 31 of that year.

⁴¹ Scott Gibson, Assem Safieddine, and Sheridan Titman, "Tax-Motivated Trading and Price Pressure: An Analysis of Mutual Fund Holdings," *Journal of Financial and Quantitative Analysis*, 35 (2000), pp. 369-86, provide evidence that the market impact of tax-motivated trades can be high due to the commonality in trading across funds and the seasonality of these trades.

In response, funds might execute tax-motivated trades earlier in the year, which would reduce the ability of these funds to accurately forecast the number of such trades needed by the end of the tax year. The result would be a less than optimal implementation of a tax-management trading program, with corresponding losses owing to unnecessary trades as well as an inability to engage in last-minute tax-minimizing trades due to the widespread knowledge of funds' recent portfolios. For example,

"Front running of tax-motivated trades could reduce pre-tax and after-tax returns to fund shareholders."

a mutual fund manager may decide, early in the tax year, to sell some securities that have decreased in price from their tax-basis price. This trade would represent an attempt to decrease the impact of capital gain distributions to shareholders at the end of the tax year that arise from sales of securities which have increased in price over the year. However, a market decline in the months following the trade may make such a trade unnecessary, with the effect of increasing the trading costs of the fund.

5. CONCLUSION

Increasing the frequency of portfolio disclosure beyond the current semianual requirement, even subject to a delay in reporting, would facilitate front running, free riding, and other speculative activities that could, in turn, lower the returns many fund owners would receive from their investments.

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