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Fund Closings as a Signal to Investors: Investment Performance of Open-End Mutual Funds That Close to New Shareholders

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This article examines the growing phenomenon of mutual fund closings by analyzing the investment performance of open-end funds that close to new investors. We find that: (1) the average excess return (estimated by Jensen's alpha) was positive in the 24 months prior to closing, (2) the average excess return was not significantly different from zero in the 24 months after closing, and (3) the funds in the sample on average exhibited a significant decline in investment performance after closing. These findings suggest that the fund managers' strategic decision to close the fund in order to slow down the growth in net assets does not prevent investment performance from declining. For the individual investor, an impending fund closing is a signal not to invest in the fund. It is also a signal that current shareholders consider alternative investments.

I. Introduction

In June, 1991, Janus Funds decided to close its Janus Venture Fund to new investors as of September 30, 1991. After that date, it would only accept additional investment from existing shareholders. The fund's high returns had gained for it a reputation as a "hot" small company fund, inducing investors to pour $500 million into the fund during the previous three quarters and limiting the fund manager's ability to specialize in small company stocks. The impending closing prompted an additional $500 million in new funds (see Laderman, 1993). Should investors have viewed this impending closing as a signal to jump into the fund, as it appears they did, or does a hot mutual fund that closes to new investors cool off once the euphoria is past?

The ability of fund managers to maintain investment performance after a closing is of interest to both investors and researchers. As the example above suggests, investors may respond to imminent closings by pouring large dollar volumes into the fund to beat the

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closing deadline. The volume of new investments made near closing should not, however, be seen as extraordinary. Rather, it represents a continuation of rapid fund growth that precipitated the closing in the first place. For example, median net asset growth in our sample of closed funds was approximately 65% in the nine months prior to the closings and an additional 15% in the quarter in which the closing occurred.

Nevertheless, the flow of new funds around the closing suggests that investors believe that hot funds will continue to be hot. This assumption is consistent with the empirical evidence provided by Hendricks, Patel, and Zeckhauser (1993) and Grinblatt and Titman (1992). Using large samples of no-load growth-oriented funds, they find that funds which have higher-than-average risk-adjusted returns in one period are more likely to have higher-than-average risk-adjusted returns in subsequent periods.

However, *The Wall Street Journal* warns investors that "hot stock funds can cool after closing" (McGough, 1993, p. C1). There are two reasons why fund performance might decline after a closing. First, if the fund is closed too late, the large growth in assets may hinder the fund manager's ability to invest in a manner consistent with the fund's stated investment objective. For example, the fund manager of an income fund like the Lindner Dividend Fund cannot provide the income his shareholders want if he has too much cash chasing too few good investment opportunities. According to the manager: "I can't invest money [in Treasury Bills] at 3% and continue to pay out the 7% yield that I'm trying to give my shareholders" (see Laderman, 1993). The manager of the Oppenheimer Global Biotech Fund, a sector fund, had to close to "keep the fund purely biotech oriented, and to control the stampede of investors into this hot and risky field" (Montgomery, 1991, p. 75).

The rush of new money coming in under the deadline exacerbates the fund manager's predicament. Funds often mitigate the announcement effect by giving short notice of the impending closing and making announcements only to current fund family shareholders.[1] Current shareholders usually have the information to make new or additional investments, but individuals considering investing for the first time must do timely, indepth research to spot upcoming closings and then act quickly.[2]

Fund performance may also decline after closing because the compensation of most fund managers is based on the asset size of the fund.[3] Closing a fund restricts asset growth and size-based compensation. The fund manager can be expected to respond by redirecting some attention from the closed fund to other funds he or she manages, perhaps a clone fund opened at the time the original fund was closed. Although compensation may also deteriorate if a decline in performance prompts investors to sell out, closing a fund dampens the incentives for managers to maximize returns of that fund. Indeed, there is evidence to suggest that a decline in performance does *not* prompt investors to sell out. According to Sirri and Tufano (1993, p. i), "consumers base investment decisions on historical performance asymmetrically: exceptionally high performing funds reap rewards (in terms of new money inflow), but poorer performance is generally not penalized."

The conflicting hypotheses and empirical evidence leave unanswered two important questions facing the individual investor. Have funds that closed generated "excess" returns prior to the closing? And if so, did they close in time to maintain that performance level after the closing? If the answer to both questions is yes, the appropriate response of an individual investor to such a closing would be to jump into the fund. If the answer to the second question

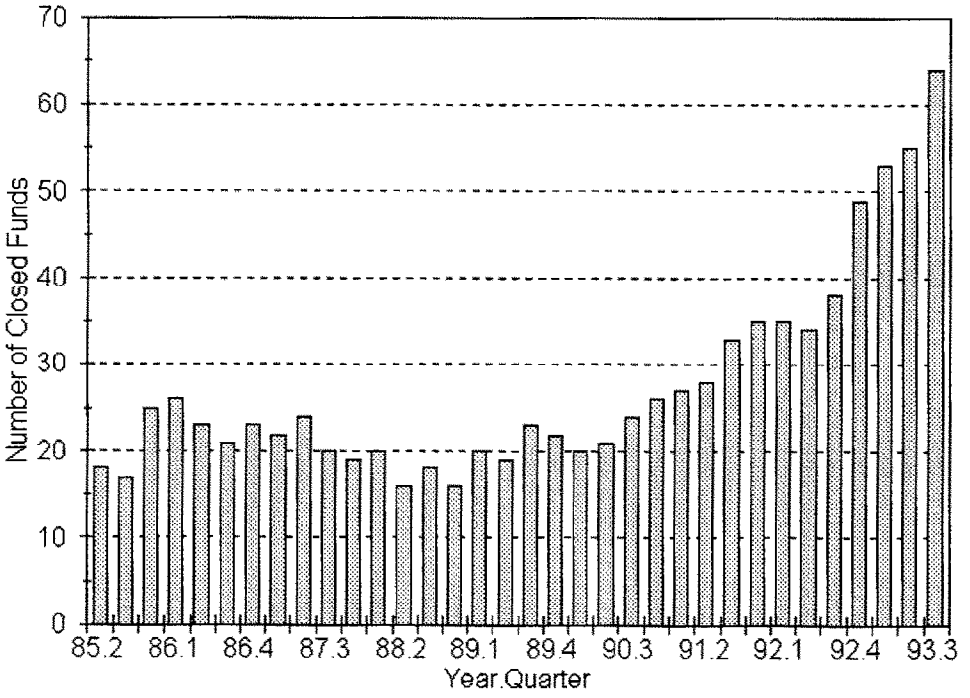

Figure 1. Number of mutual funds reported by Barron's/Lipper Mutual Fund Quarterly to be closed to new investors as of the end of each quarter.

is no, the closing is a signal to the investor that the fund manager believes that it is not possible to maintain the previous level of investment performance.

These questions have become increasingly important as the rate of fund closings accelerates. As interest rates have dropped to 20-year lows in recent years, investors have searched for alternatives to the relatively low yields available through bank certificates of deposit and money-market mutual funds. The result has been a flood of money into open-end mutual funds that invest in equity and fixed-income securities. Although mutual funds have been closing intermittently for many years (State Street Investment Trust was closed in 1944 because it was too big and was not reopened until 1989), the recent growth in the mutual fund industry has led to a spate of new closings. Figure 1 documents the growth in the number of closed funds, as reported by Lipper Analytical Services in the quarterly mutual funds issue of *Barron's* (called *Barron's*/Lipper Mutual Fund Quarterly), from the second quarter of 1985 (when Lipper first reported funds as "closed to new investors") to the third quarter of 1993. As of September 30, 1993, 64 funds were closed to new investors.

In this paper, we examine the growing phenomenon of fund closings by comparing the excess returns of closed funds before and after the closings. Our results suggest that closed

funds do earn positive excess returns prior to closing but that fund performance drops significantly after closing. For the individual investor, an impending fund closing is a signal not to invest in the fund.

II. METHODOLOGY

The analysis of the investment performance of mutual funds closed to new investors is done in three steps. First, we split the sample of fund returns into pre- and post-closing subsamples. Second, we estimate the excess returns of each fund before and after closing. Finally, we test whether the average excess returns of the funds before and after closing are significantly different from zero and whether there is any significant difference between the average pre- and post-closing excess returns.

Excess returns for each fund are estimated using the following regression equation, derived from the Capital Asset Pricing Model:

$$(R_{i,t} - R_{F,t}) = \alpha_i + \beta_i(R_{B,t} - R_{F,t}) + e_{i,t} \tag{1}$$

$$i = 1, \ldots, n$$

$$t = -m, \ldots 1, \textit{ pre-closing, and}$$

$$t = 1, \ldots m, \textit{ post-closing.}$$

where $R_{i,t}$ is the total rate of return for fund i in month t, $R_{F,t}$ is the risk-free rate of return in month t, $R_{B,t}$ is the benchmark portfolio return for month t, and β_i measures the risk of mutual fund i relative to the risk of the chosen benchmark portfolio. The additional return (or the excess return) on mutual fund i after adjusting for risk is represented by α_i, commonly known as Jensen's alpha. An α_i that is statistically significantly different than zero is evidence that mutual fund i has demonstrated a superior risk-adjusted investment performance.

An analysis of the differences between α_{pre} and α_{post} is the key to determining if impending closings are signals to invest in the fund. If post-closing performance is expected to be at least as good as pre-closing performance ($\alpha_{post} \geq \alpha_{pre}$), closing should prompt investors to rush to invest in the soon-to-be closed fund. Alternatively, if post-closing performance is expected to be worse than pre-closing performance ($\alpha_{post} < \alpha_{pre}$), then closing should induce investors to withdraw their investment.

III. DATA

We identified all mutual funds "closed to new investors," as reported in *Barron's*/Lipper Mutual Fund Quarterly from the second quarter of 1985 to the third quarter of 1993. A total of 128 different fund names were reported as closed at some time during that period.

After accounting for terminations, mergers, and renaming of funds, we identified 91 funds for which return data was available on the Morningstar data base "Ondisc" as of September 30, 1993. Because the Ondisc data base only contains data for funds in existence as of that date, any fund that was terminated or merged into another fund subsequent to its closing is not included in our sample. In addition, because the Lipper listing is more inclusive

than the Morningstar data base, some current funds noted in Lipper as closed were not on the Morningstar data base. Whenever possible, the actual closing date was determined by contacting the investor services department of each fund.[4]

Funds close to new investors for a number of reasons. The following list, although not exhaustive, encompasses most of our sample.

1. The fund manager closes the fund for strategic reasons, usually to slow down net asset growth, as discussed above.
2. The fund is closed pending a merger or liquidation. In one case, the fund was closed briefly pending a proxy vote of shareholders to change the investment objective.
3. In at least one case, the fund originally only issued a limited number of shares, which sold out immediately. The fund then only accepted new investment when existing shareholders sold back to the fund. In this case, the fund was never really "open."
4. Funds are sometimes closed for legal or regulatory reasons. Four Steadman funds were closed to new investors in 1989 on the order of the Securities and Exchange Commission in a dispute over failure to register funds in some states where the funds were sold. Two First Investor funds were closed to new investors in 1990 after state officials in two states filed legal complaints against the company.

As we are interested in the effect on performance of closing a fund that is growing too quickly, we only included closings that we determined to be the result of a strategic decision related to net asset growth.

Clearly, our sample of funds has a "survivorship effect" because we only include funds still in existence as of September 30, 1993. However, the bias this might introduce into the analysis does not affect the interpretation of our results. First, we are interested in funds that close because of above-average performance, and it is unlikely that such a fund would subsequently be liquidated because of poor performance. Second, we find that investment performance of our sample of funds drops significantly after the closing. Such an effect would be exacerbated by any poorly performing funds that were subsequently liquidated. We were able to identify 17 funds that were closed pending liquidation or merger. These observations were dropped from our final sample because they do not appear on the Morningstar data base.

Selecting the appropriate length of time for the pre- and post-closing periods involves a tradeoff. Because the number of mutual fund closings has increased significantly in recent years, many of the 91 funds for which data were available were closed between September 1991 and September 1993. Reliable estimation of α_{post} is difficult because return data for post-closing periods is sparse for these recently closed funds. In addition, some funds closed quickly after shares were issued and had only a brief track record of pre-closing return performance. Therefore, the tradeoff in selecting an appropriate sample period involves the size of the closed fund sample versus the number of observations available for each fund in the pre- and post-closing periods. Ultimately, we identified 25 funds (20 equity funds and 5 hybrid funds)[5] for which 24 months of return data were available on either side of the closing month. The closing dates range from December 1982 to August 1991. Table 1 is a breakdown of the funds in the sample by investment objective as reported by Morningstar.

Results for two benchmark portfolios ($R_{B,t}$ in Equation (1)) are reported: first, the S&P 500 index for equity funds or an index consisting of 50% of the return on the Lehman Brothers Aggregate Bond Index and 50% of the S&P 500 for hybrid funds; and second, the

TABLE 1
A Breakdown of the 25 Funds in the Sample by the Investment Objective of Each Fund as Categorized by Morningstar

Type	*Investment Objective*	*Number*	*Total*
Equity	Aggressive Growth	1	
	Growth	6	
	Growth-Income	4	
	Small Company	6	
	Specialty	3	
Total Equity			20
Hybrid	Balanced	1	
	Corporate High Yield	3	
	Income	1	
Total Hybrid			5

TABLE 2
Summary Statistics for the Monthly Average Excess Returns Before and After Closing

Statistics are estimated using Jensen's alpha using two types of benchmark portfolios, a market portfolio (panel A) and an objective portfolio (panel B). The t-statistic and two-tailed significance level for testing whether the average alpha is different than zero in the pre-closing and post-closing are also reported.

	α_{pre}	α_{post}
Panel A		
The S&P 500 index is used as the benchmark portfolio for equity funds. A 50/50 mix of the Lehman Brother Aggregate Bond Index and S&P 500 Index is used for hybrid funds.		
Mean	0.47%	-0.13%
Standard Deviation	0.84	0.52
t-Statistic	2.83***	-1.25
Median	0.56%	-0.08%
Maximum	2.34%	0.77%
Minimum	-2.22%	-1.68%
Panel B		
The average of all funds with similar investment objective is used as the benchmark portfolio for each fund.		
Mean	0.50%	0.03%
Standard Deviation	0.52	0.47
t-Statistic	4.79***	0.34
Median	0.52%	0.00%
Maximum	1.34%	1.35%
Minimum	-1.07%	-0.84%

Note: ***Significant at the 1% level.

average return of the funds with the same investment objective. Hereafter, the first benchmark is referred to as the "market" portfolio, and the second as the "peer group" portfolio. There is evidence (e.g., Lehmann & Modest, 1987) that mutual fund performance measures are sensitive to the benchmark against which excess returns are estimated. We use two distinct benchmarks portfolios for each fund to demonstrate the robustness of our results to the choice of benchmark.

IV. Empirical Results

A. Pre-Closing Excess Returns

The monthly mean excess returns as estimated by Jensen's alpha are reported in panels A and B of Table 2 for the market benchmark and peer group benchmark portfolios, respectively. The mean monthly excess return in the pre-closing period is 0.47% (about 6% on an annual basis) using the market portfolio. The *t*-statistic of 2.83 is significantly different from zero at the 1% significance level. Individual fund excess returns range from 2.34% to −2.22%. The mean monthly excess return in the pre-closing period using the peer group

TABLE 3
Summary Statistics for the Betas of the 25 Funds in the Sample
Before and After Closing

Statistics are estimated using two types of benchmark portfolios, a market portfolio (Panel A) and an objective portfolio (Panel B). The t-statistic and two-tailed significance level for testing whether the average beta is different than 1 in the pre-closing and post-closing are also reported.

	β_{pre}	β_{post}
Panel A		
The S&P 500 index is used as the benchmark portfolio for equity funds. A 50/50 mix of the Lehman Brother Aggregate Bond Index and S&P 500 Index is used for hybrid funds.		
Mean	0.83	0.79
Standard Deviation	0.28	0.30
T-statistic	−3.11***	−3.38***
Median	0.78	0.73
Maximum	1.46	1.32
Minimum	0.40	0.33
Panel B		
The average of all funds with similar investment objective is used as the benchmark portfolio for each fund.		
Mean	0.87	0.89
Standard Deviation	0.31	0.35
T-statistic	−2.12**	−1.60
Median	0.82	0.88
Maximum	1.60	1.44
Minimum	0.45	0.18

Notes: ***Significant at the 1% level.
**Significant at the 5% level.

benchmark portfolio is 0.50% (*t*-statistic of 4.79), which is also significantly different from zero at the 1% level. Individual excess returns range from 1.34% to –1.07%. It appears that funds that close to new investors earn significant excess returns on average in the 24 months prior to the closing. This result is robust to the choice of benchmark portfolio.

B. Post-Closing Excess Returns

The mean monthly excess return in the post-closing period is –0.13% using the market benchmark and 0.03% using the peer group benchmark, neither of which is significantly different from zero. Funds that close to new investors do not earn excess returns on average in the 24 months following the fund closing.

C. Beta Estimates

Summary statistics of the estimated fund betas are reported in Table 3, panels A and B. The funds in our sample appear to be less risky than both the S&P 500 and their own investment peer group averages, although market portfolio betas range from less than 0.5 to

TABLE 4
Summary Statistics for the Difference in Monthly Average Pre- and Post-Closing Excess Returns

Returns are estimated using Jensen's alpha using two types of benchmark portfolios, a market portfolio (Panel A) and an objective portfolio (Panel B). The t-statistic and two-tailed significance level for testing whether the average difference is different than zero are also reported.

	$\alpha_{post} - \alpha_{pre}$
Panel A	
The S&P 500 index is used as the benchmark portfolio for equity funds. A 50/50 mix of the Lehman Brother Aggregate Bond Index and S&P 500 Index is used for hybrid funds.	
Mean	–0.60%
Standard Deviation	1.11
T-statistic	–2.72***
Median	–0.46%
Maximum	2.99%
Minimum	–4.02%
Panel B	
The average of all funds with similar investment objective is used as the benchmark portfolio for each fund.	
Mean Difference	–0.47%
Standard Deviation	0.72
T-statistic	–3.27***
Median Difference	–0.57%
Maximum Difference	2.42%
Minimum Difference	–1.43%

Note: ***Significant at the 1% level.

nearly 1.50. The mean pre-closing betas were 0.83 and 0.87 relative to the market benchmark and the peer group benchmark, respectively. The mean post-closing betas were 0.79 and 0.89, respectively. The reported *t*-statistics in Table 3 test whether the mean beta is significantly different than 1. Only the post-closing peer group benchmark mean beta is not significantly different than 1 at the 5% level. It is somewhat surprising that the funds in our sample are somewhat less risky than average, given that 10 of the funds are aggressive-growth, small-company, or specialty funds. It may be that the buildup in cash of these funds prior to closing reduces the systematic risk of the portfolios.

D. Change in Investment Performance After Closing

In Table 4, we test whether the mean post-closing alphas are different than the pre-closing alphas. Using the market benchmark portfolio, post-closing monthly excess returns are 0.60% less than pre-closing excess returns, which is significantly different from zero at the 1% level. Using the peer group benchmark portfolio, post-closing monthly excess returns are 0.47% less than pre-closing excess returns, also significant at the 1% level. Investment performance of the funds in our sample declines significantly on average after the closing of the funds to new investors.

V. Conclusion

The purpose of this paper was to analyze the investment performance of open-end mutual funds that closed to new investors. We report three important results based on an analysis of 25 funds that closed to new investors between 1982 and 1991:

1. The average excess return was positive in the 24 months prior to the closings.
2. The average excess return was not significantly different from zero in the 24 months after the closings.
3. The funds in the sample on average exhibited a significant decline in investment performance after the closing.

This suggests that the fund manager's strategic decision to close the fund in order to slow down the growth in net assets did not prevent investment performance from declining. This decline in performance may have occurred because the dollar flow into the fund outstripped the fund's investment opportunities and the funds closed too late to shut off the flow of funds. A number of the funds that close invest in high-yield, specialized industry, or small-company securities. Because there are a limited number of undervalued securities in these categories, a fund manager may have too many dollars chasing too few good opportunities.

This decline in performance may also be the result of the form of the fund manager's compensation. Because compensation is typically tied only to the asset size of the fund and since closing the fund limits net asset growth, incentives for fund managers to maximize returns are reduced. This represents an area of future research.

Whatever the reason for the decline in investment performance, the individual investor should interpret an impending closing as a signal *not* to invest in the fund. It is also a signal that current shareholders consider alternative investments.

NOTES

1. Fund families representing many of the closed funds included in our sample provided this information. They emphasized that public announcements of closings were rare; because the goal of closing the fund was to preserve performance and not increase the asset size, funds did not want public announcements to generate additional investments.

2. Atlas and Zweig (1993) discuss several methods for investing in funds that have closed to new investors. For instance, buying a share of a closed fund from an existing shareholder entitles the new shareholder to make additional investments.

3. Golec (1992, pp. 88–89) reports that only 29 of 476 mutual funds included in *Moody's Bank and Finance Manual* (1985) used performance- or return-based compensation for fund managers. Asset size of the fund was the only compensation criterion used for the remaining funds.

4. Determining the actual closing date was difficult in some cases. The fund itself sometimes did not have records going back far enough. Therefore, for some funds, the closing month was determined as the middle month of the quarter in which the fund was first reported closed by Lipper.

5. Morningstar classifies funds according to investment objective as equity, hybrid, fixed-income (taxable-bond), or municipal bond (tax-free) funds. The hybrid category includes funds that typically invest in both equities and bonds, as well as corporate high-yield (junk bond) funds.

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