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Performance of Mutual Funds Before and After Closing to New Investors

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This study examines the decision to close mutual funds to new investors due to the growth of the funds' assets. The evidence indicates that funds perform better three years prior to closing to new investors than they do afterwards. Furthermore, the evidence indicates that the closed funds outperform the control portfolios of funds with similar investment objectives and asset size during the one- and three-year periods prior to closing. However, there is no significant difference in the performance of closed funds and their matched control portfolios during the one- and three-year periods after closing. Although the primary reason given for closing the funds is the desire to maintain performance in the face of growing assets, the strategy does not appear successful in accomplishing this objective.

I. INTRODUCTION

Since Treynor (1965), Sharpe (1966), and Jensen (1968), numerous studies have been conducted to examine the persistence of mutual fund performance. The results remain ambiguous. Lehmann and Modest (1987), Grinblatt and Titman (1992), Hendricks, Patel, and Zeckhauser (1993), Goetzmann and Ibbotson (1994), Brown and Goetzmann (1995), Elton, Gruber, and Blake (1996), and Gruber (1996) conclude that past performance is a good indicator of future performance. To the contrary, Jensen (1968), Malkiel (1995), Kahn and Rudd (1995), Carhart (1997), and Phelps and Detzel (1997) find no evidence of persistence in mutual fund performance.

An important issue regarding the performance of mutual funds remains unexamined. The issue concerns the customary practice in the mutual fund industry to close funds to new investors for various reasons, some financial, and some organizational. The decision to close to new investors may be permanent or temporary, depending on the reason for the original decision. Frequently, the decision to close a fund to new investors is related to the

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fund's asset size. The most common explanation given for closing funds to new investors is the difficulty in effectively managing a large portfolio to earn superior returns for the investors. Presumably, once a portfolio reaches a critical threshold of size, it becomes "too bulky" to manage effectively, and it is difficult to find attractive investments to which new funds can be diverted without sacrificing performance. If this explanation is valid, mutual funds that close to new investors should be able to at the very least maintain performance after the decision to close.

However, the views on closing mutual funds to new investors are far from unanimous in the mutual fund industry. While some investment companies follow this practice regularly, there seems to be no consistency in how large a fund is allowed to grow prior to closing. Other investment companies eschew this practice completely, allowing the funds to grow without limit, while continuing to post enviable investment results for their clients. An interesting example is Fidelity Magellan Fund, the largest of all mutual funds, which was allowed to grow in excess of $60 billion in assets and for many years posted impressive rates of return far exceeding the returns generated by smaller, more nimble funds. Magellan was finally closed to new investors effective September 30, 1997.

The existing literature on mutual funds provides no empirical evidence on the impact of this widespread practice on mutual fund performance. The purpose of this study is to empirically examine whether the decision to close mutual funds to new investors in order to limit the growth of assets is justified by the subsequent performance of the funds relative to both their own historical performance and the performance of their peers.

II. METHODOLOGY AND DATA

In order to examine the impact of closing mutual funds to new investors, it was first necessary to identify a sample of mutual funds that are closed to new investors, along with the date of and the stated reason for closure. The January 1996 version of the *MORNINGSTAR On Disc* data base was screened to identify all funds with purchase constraint codes of L (closed to all investors) and C (closed to new investors). The resulting 128 funds were then contacted to inquire about the date on which they stopped accepting new investors and the reason given for closing. In order to be able to examine the performance of the funds for a period of at least one year on either side of the closing date, it was necessary to limit the study to funds that closed between 1978 and 1994. Of the 63 funds that closed to new investors during this time period, 38 indicated that the decision to close was related to the fund's asset size, while 25 funds expressed other motives for closing, the most frequent of which was a change in the fund's fee structure. The sample was reduced further due to some of the funds having closed and re-opened to new investors within the analysis window, resulting in overlapping periods, and due to lack of data. The final sample consisted of 27 funds that allowed an analysis of a one-year window around the closing date, and 12 of those funds had sufficient data for the analysis of a three-year window around the closing date. The funds included in the analysis are identified in Table 1, along with their investment objectives and month of closing to new investors.

The same source was used to form matching control portfolios for each fund in the sample. The control portfolios consisted of the five funds within the same investment objective with net assets closest to the sample fund, which were open to new investors and

had returns data available for the relevant analysis window. The monthly returns of the sample funds and the matching control portfolios for the one (three) year(s) surrounding the date of closing were then extracted from *MORNINGSTAR*. The three-month T-Bill returns were extracted from the *Federal Reserve Bulletin*, and the monthly returns of the S&P 500 Index were extracted from the *Security Price Index Record*.

The impact of the decision to close the funds to new investors was examined by comparing mean raw returns, as well as widely used risk adjusted portfolio performance measures for the 1-year and 3-year periods prior to and following the closing of the fund to new investors. Sharpe's index was used to measure performance adjusted by total risk, and Treynor's index was used to measure performance adjusted by systematic risk. Jensen's alpha was included as an additional indexed performance measure. Fabozzi, Francis, and Lee (1980) demonstrate that the Jensen performance measure is robust when returns are measured monthly. In addition, Fabozzi and Francis (1979) conclude that Jensen's alpha is not influenced by bull and bear markets. However, Barber (1994) finds that stock mutual funds' future returns are not related to the historical beta of the fund. Since the sample includes fixed income and foreign funds, the α, β, and Treynor's index for these funds should be interpreted with caution, as the S&P 500 index was used as the market return proxy for all sample funds for consistency.

TABLE 1
Sample of Mutual Funds Closed to New Investments

Symbol	*Fund Name*	*Objective*	*Closing Month*
ACFTX	Van Kampen Am Cap Ltd Mat B	Adj. Rate Mtg.	5/93
ACINX	Acorn International	Foreign	2/94
ACRNX	Acorn	Small Company	7/90
ARGFX	Ariel Growth	Small Company	4/90
BABEX	Babson Enterprise	Small Company	1/92
BARIX	Baird Adjustable Rate Income	Adj. Rate Mtg.	12/94
CPGRX	Chesapeake Growth	Growth	12/94
CPSFX	Comstock Partners Strategy O	Mult-Asst Glbl	7/92
IDFDX	Idex 3	Growth	6/90
JAVLX	Janus Twenty	Growth	1/93
JAVTX	Janus Venture	Small Company	9/91
KRFBX	Kemper Retirement II	Balanced	3/92
LOMCX	CGM Capital Development	Growth	11/86
MMHYX	MFS Municipal High-Income A	Muni Nat'l	6/85
MNSCX	Montgomery Small Cap	Small Company	3/92
MONTX	Monetta	Small Company	3/93
MPSCX	MAS Small Cap Value	Small Company	9/94
MSIQX	Morgan Stanley Instl Intl Equity	Foreign	6/93
NEFGX	New England Growth A	Growth	1/92
PJIGX	Piper Jaffray Instl Govt	Gvt Mortgage	6/94
POPAX	Pimco Adv Opportunity A	Aggr Growth	12/92
POPCX	Pimco Adv Opportunity C	Aggr Growth	12/92
SEQUX	Sequoia	Growth	12/82
SKSEX	Skyline Special Equities	Small Company	12/92
SSRSC	State St Research Sm Cap GrC	Small Company	11/94
STCSX	Strong Common Stock	Small Company	3/93
VWNDX	Vanguard Windsor	Growth-Income	5/85

In addition to the raw return (unadjusted for risk), each of the three risk-adjusted performance measures were employed to conduct three types of comparison for a total of twelve comparisons:

(1) One- and three-year performance of each closed fund relative to itself (pre- vs. post-closing).
(2) One- and three-year pre-closing performance of each closed fund relative to the control portfolio.
(3) One- and three-year post-closing performance of each closed fund relative to the control portfolio.

Due to the small sample size, the non-parametric Wilcoxon rank sum test, which is more powerful for small samples of unknown distribution (Gibbons, 1985, p. 193), is used for these pairwise comparisons.

III. RESULTS

Table 2 presents the performance measures (the raw return, Sharpe's index, Jensen's alpha, and Treynor's index), as well as beta, and R^2 values for the 27 funds during the 12 months before and after the closing of a fund to new investors. As expected, the equity funds in the sample have beta values near one, and fixed income and foreign funds have lower betas.

The mean returns during the 12 months before closing are higher than the mean returns during the 12 months after closing for 16 of the 27 funds. The average monthly raw return 12 months prior to closing is 1.63% and is significantly different from zero at the 1% level. In comparison, the average monthly raw return 12 months after closing is 1.17% and is significantly different from zero at the 1% level. On the average, mutual funds generate an additional annual return of 5.64% before closing to new investors than after closing the funds $([1 + (0.016268\text{-}0.011684)]^{12} - 1)$.

The non-parametric Wilcoxon rank sum test reveals that the raw return during the year before closing is not significantly different from the raw return during the year after closing of the funds. Furthermore, the average Jensen's alpha before closing is positive and significantly different from zero at the 1% level, implying that before closing to new investors, the funds beat the market portfolio, as measured by the S&P 500 index. However, the Jensen's alpha after closing the funds is not significantly different from zero, suggesting that the funds fail to beat the market portfolio after closing to new investors.

Based on raw returns, the Sharpe's index, Jensen's alpha, and Treynor's index, 16, 11, 19, and 16 of the 27 funds, respectively, performed better during the 12 months preceding the closing of the fund than the 12 subsequent months. However, the non-parametric Wilcoxon rank sum test indicates that the performance of the sample funds in the 12 months preceding their closing is not statistically superior at the usual significance levels relative to their performance after closing to new investors.

The results are similar when comparing performance in the 36 months preceding and following the closing of the funds for the 12 funds for which the three-year comparison was possible. The mean returns are higher during the three years before closing than the three years after closing for 10 of the 12 funds. The average monthly raw returns during the three

TABLE 2

The 1-Year Performance Summary Before and After Closing

	Before						*After*					
	Raw	*Sharpe*	*Jensen*	*Treynor*	*Beta*	R^2	*Raw*	*Sharpe*	*Jensen*	*Treynor*	*Beta*	R^2
ACFTX	0.2075	-0.2494	-0.0486	1.5244	-0.0380	0.1136	-0.0283	-0.8041	-0.2872***	-2.5106	0.1207***	0.5472
ACINX	3.7142	1.2106	3.0144***	4.2063	0.8225	0.2912	-1.0433	-0.5253	-1.4415	-2.4938	0.5784**	0.3952
ACRNX	1.0650	0.0969	0.0536	0.4873	0.8239***	0.8170	0.6050	0.0093	-0.3099	0.0486	1.3020***	0.9074
ARGFX	0.9458	0.0725	-0.2573	0.2978	0.8997***	0.9031	0.9683	0.0510	-0.3759	0.2978	1.2758***	0.7844
BABEX	3.1075	0.6234	1.3457	3.2518	0.8147***	0.7652	1.4767	.03866	0.8985	1.3239	0.8994**	0.3481
BARIX	-0.4325	-0.5551	-0.8597	4.1312	-0.1878	0.1636	1.3708	0.5215	0.3161	3.1049	0.2907	0.0618
CPGRX	1.2633	0.1639	1.4894	0.7217	1.2748**	0.4812	2.3950	0.3100	-1.3565	1.1841	1.6273	0.1491
CPSFX	0.6850	0.2379	0.2612	3.0186	0.1036	0.1076	0.7267	0.3132	0.5497	-1.3026	-0.3619	0.1635
IDFDX	1.6717	0.1688	0.5003	0.8514	1.1806***	0.8099	0.8342	0.0464	0.4497	0.2352	1.1808***	0.9243
JAVLX	0.2050	-0.0281	-0.1826	-0.0858	1.0103**	0.4956	0.5467	0.0920	-0.3418	0.2496	1.1710**	0.4785
JAVTX	3.1192	0.6616	1.4771**	2.9075	0.8917***	0.7525	0.5900	0.0802	0.0042	0.3787	0.7048***	0.7447
KRFBX	1.9067	0.4076	1.0191	2.0524	0.7215***	0.7453	1.1475	0.5106	0.5716	1.9696	0.4447	0.2262
LOMCX	3.5475	0.4416	1.1112	2.6995	1.1148***	0.7269	0.5217	0.0023	1.1071	0.0222	1.3797***	0.8142
MMHYX	1.4433	0.4033	0.6857	-93.5659	-0.0072	0.0003	1.3167	0.6800	0.6663	19.7887	0.0369	0.10157
MNSCX	4.2925	0.6165	3.0778**	3.1368	1.2327***	0.7290	0.9475	0.1382	-0.1860	0.5365	1.2597	0.2243
MONTX	-0.5000	-0.2447	-0.9911	-1.2481	0.6245	0.1570	0.4417	0.0550	0.5114	0.1858	0.9747***	0.5719
MPSCX	1.0700	0.2374	0.8119	0.9684	0.7930**	0.4384	1.4667	0.2992	-0.2767	1.1899	0.8388	0.2988
MSIQX	0.8658	0.1573	0.7624	-1.6623	-0.3641	0.0377	2.3817	0.4818	2.5435**	1.7439	1.2038**	0.4862

(continued)

TABLE 2
(Continued)

	Before						*After*					
	Raw	*Sharpe*	*Jensen*	*Treynor*	*Beta*	R^2	*Raw*	*Sharpe*	*Jensen*	*Treynor*	*Beta*	R^2
NEFGX	3.9708	0.5949	1.5347**	2.8415	1.2362***	0.9062	0.0442	-0.0885	-0.5957	-0.2220	1.0892***	0.6474
PJIGX	-1.7900	-0.4645	-2.0004	-4.2145	0.4899	0.0687	0.9725	0.1938	-0.4866	0.6703	0.7803***	0.5232
POPAX	3.0675	0.4369	1.7022	2.4252	1.1421**	0.4649	2.7808	0.5024	2.0372	1.6984	1.4875	0.2558
POPCX	3.0050	0.4264	1.6353	2.3608	1.1468**	0.4672	2.7200	0.4918	1.9750	1.6527	1.4918	0.2589
SEQUX	2.0650	0.3698	1.1424***	2.2046	0.5126***	0.8718	2.0500	0.6480	1.0275	3.0077	0.4361**	0.3942
SKSEX	3.2383	0.6687	2.4339	5.4248	0.5421	0.2174	1.7492	0.7033	1.1847**	1.5855	0.9427***	0.5758
SSRSC	-1.1308	-0.3183	-1.2746	-1.6605	0.8784	0.2956	1.3192	0.1617	-1.7768	0.6369	1.3310	0.1461
STCSX	1.2775	0.2944	0.6392	0.9426	1.0588**	0.3969	0.9125	0.2156	0.9826	0.6681	0.9757***	0.6782
VWNDX	2.0417	0.3260	1.0305**	1.5094	0.8335***	0.8694	2.3341	0.5579	0.3080	2.0760	0.8393***	0.9126
Average	1.6268***	0.2502***	0.7450***	-2.0175	0.7241***	0.4849***	1.1684***	0.2235***	0.2851	1.3973	0.9000***	0.4642***
Variance	2.5771	0.1525	1.4680	339.0608	0.2123	0.0945	0.8000	0.1198	1.0665	15.2977	0.2411	0.0743

Notes: Wilcoxon Z-statistic for Raw Returns: 1.2975 (0.1945) Wilcoxon Z-statistic for Jensen's Alpha: 1.7819 (0.0748)
Wilcoxon Z-statistic for Sharpe's Index 0.2595 (0.7952) Wilcoxon Z-statistic for Treynor's Index: 1.4619 (0.1438)
p-values are in parentheses
***Significantly different from zero at the 1% level
**Significantly different from zero at the 5% level

years before and the three years after closing are 1.63% and 1.09%, respectively, and are significantly different from zero at the 1% level.[1]

On the average, mutual funds earn an additional annual return of 6.57% per year for a three-year period before closing to new investors than after closing the funds. The nonparametric Wilcoxon rank sum test reveals that the raw return during the three years before closing is significantly different from the raw return during the three years after closing at the 5% level. The Jensen's alpha before and after closing is positive and significantly different from zero at the 1% and 5% level, respectively, indicating that the funds beat the market portfolio before and after closing to new investors. Based on the raw returns, Jensen's alpha and Treynor's index, 10, eight, and nine of the 12 funds, respectively, performed better prior to closing. The Wilcoxon test indicates that the difference in the performance of the funds before and after closing is statistically significant at the 5% level. The comparison of Sharpe's index is inconclusive, as seven of the 12 funds perform better prior to closing, but the test statistic is not significant.

Based on the comparison of performance measures before and after the closing of a fund to new investors, there is no evidence to indicate that closing of the fund resulted in improved performance. To the contrary, fund performance seems to have deteriorated after closing to new investors. These findings are consistent with the observations of Damato and Jereski (1997) who compare the one-year return of 13 equity funds with more than $500 million in assets that are closed to new investors since 1989 with the S&P 500 index, and conclude that closing a fund does not guarantee performance.

To further examine the impact of the practice of closing funds to new investors as the assets of the fund grow, the performance of each fund in the sample was compared to a matched control portfolio of funds. The control portfolios consisted of the five funds within the same investment objective with asset size closest to the sample fund and having sufficient monthly returns data to allow a one- or three-year comparison.

In Table 3, the performance measures of the 27 funds in the sample during the 12-month period prior to closing of the funds are compared to the performance measures of the matching control portfolios during the same time frame. Using the raw return, Sharpe's index, Jensen's alpha, and Treynor's index, the results indicate that 19 of the 27 funds outperformed their matched portfolios during the year preceding the closing of the funds. However, the Wilcoxon test suggests that the performance of the sample funds in the 12 months preceding their closing is not statistically different at the usual significance levels from the performance of control portfolios.

When the analysis is extended to the 36 months before the closing of the funds, the results are stronger. Of the 12 funds in this sample, 11 outperformed their control portfolios based on the raw return, Sharpe's index, and Treynor's index and 10 outperformed their control portfolios based on the Jensen's alpha. The Wilcoxon rank sum test is significant at the 1% level for the Treynor's index and at the 5% level for the other performance measures, providing strong evidence that the funds in the sample were superior in performance to funds with similar investment objectives and size.

In contrast, when the sample funds are compared to their control portfolios after closing to new investors, their performance does not compare as favorably to the control portfolios. Table 4 indicates that during the 12 months following their closing to new investments, only 11 of the 27 sample funds outperformed their matched control portfolios, measured by the Sharpe's index. The Jensen's alpha measure indicates 12 of the 27 sample funds outperformed their matched portfolios. In addition, the raw return and the Treynor's

TABLE 3

The 1-Year Performance Comparison With Matched Portfolios Before Closing

		Sample Funds						*Matched Portfolios*			
Raw	*Sharpe*	*Jensen*	*Treynor*	*Beta*	R^2	*Raw*	*Sharpe*	*Jensen*	*Treynor*	*Beta*	R^2
ACFTX	0.2075	-0.2494	-0.0486	1.5244	-0.0380	0.1136	0.4467	0.5671	0.1992**	-2.4811	-0.0730	0.2238
ACINX	3.7142	1.2106	3.0144***	4.2063	0.8225	0.2912	3.3233	0.7838	2.4644**	2.7487	1.1165	0.2861
ACRNX	1.0650	0.0969	0.0536	0.4873	0.8239***	0.8170	1.7225	0.2002	0.6076	0.9909	1.0687***	0.8430
ARGFX	0.9458	0.0725	-0.2573	0.2978	0.8997***	0.9031	1.3417	0.1306	0.0019	0.5855	1.1337***	0.7574
BABEX	3.1075	0.6234	1.3457	3.2518	0.8147***	0.7652	3.0667	0.5454	1.1059	2.6208	0.9953***	0.8975
BARIX	-0.4325	-0.5551	-0.8597	4.1312	-0.1878	0.1636	0.0242	-1.5251	-0.3028***	-8.6970	0.0367	0.2312
CPGRX	1.2633	0.1639	1.4894	0.7217	1.2748**	0.4812	0.1517	-0.0707	0.1839	-0.2279	0.8409***	0.8972
CPSFX	0.6850	0.2379	0.2612	3.0186	0.1036	0.1076	0.5525	0.1218	0.0224	0.5684	0.3171***	0.7724
IDFDX	1.6717	0.1688	0.5003	0.8514	1.1806***	0.8099	1.3325	0.1316	0.2152	0.6318	1.0540***	0.8935
JAVLX	0.2050	-0.0281	-0.1826	-0.0858	1.0103**	0.4956	1.2208	0.4925	0.8735	1.5859	0.5859**	0.4441
JAVTX	3.1192	0.6616	1.4771**	2.9075	0.8917***	0.7525	2.6125	0.3587	0.2851	1.4491	1.4395***	0.8927
KRFBX	1.9067	0.4076	1.0191	2.0524	0.7215***	0.7453	1.1308	0.2580	0.3103	1.1432	0.6166***	0.9541
LOMCX	3.5475	0.4416	1.1112	2.6995	1.1148***	0.7269	2.4617	0.3838	0.3243	2.0480	0.9392***	0.9577
MMHYX	1.4433	0.4033	0.6857	-93.5659	-0.0072	0.0003	1.2867	0.4180	0.4297	7.1083	0.0732	0.0481
MNSCX	4.2925	0.6165	3.0778**	3.1368	1.2327***	0.7290	2.8558	0.5069	1.8090**	2.5042	0.9703***	0.7689
MONTX	-0.5000	-0.2447	-0.9911	-1.2481	0.6245	0.1570	0.4092	0.0267	-0.2705	0.1098	1.1811	0.2416
MPSCX	1.0700	0.2374	0.8119	0.9684	0.7930**	0.4384	0.2600	-0.0112	0.0159	-0.0401	1.0463***	0.5684
MSIQX	0.8658	0.1573	0.7624	-1.6623	-0.3641	0.0377	0.2117	-0.0186	0.0156	0.3278	-0.1495	0.0134
NEFGX	3.9708	0.5949	1.5347**	2.8415	1.2362***	0.9062	2.5175	0.4365	0.4249	2.0160	1.0214***	0.9703
PJIGX	-1.7900	-0.4645	-2.004	-4.2145	0.4899	0.0687	0.0708	-0.2534	-0.1738	-0.8891	0.2294**	0.4495

POPAX	3.0675	0.4369	1.7022	2.4252	1.1421**	0.4649	1.0458	0.1819	-0.0376	0.8900	0.8406***	0.5974
POPCX	3.0050	0.4264	1.6353	2.3608	1.1468**	0.4672	1.5175	0.2242	0.1144	1.0315	1.1825***	0.6761
SEQUX	2.0650	0.3698	1.1424***	2.2046	0.5126***	0.8718	1.6508	0.1321	0.7387**	0.7567	0.9460***	0.9669
SKSEX	3.2383	0.6687	2.4339	5.4248	0.5421	0.2174	1.6392	0.2418	0.3663	1.2859	1.0432***	0.5056
SSRSC	-1.1308	-0.3183	-1.2746	-1.6605	0.8784	0.2956	0.2950	-0.0087	0.1789	-0.0323	1.0104***	0.5771
STCSX	1.2775	0.2944	0.6392	0.9426	1.0588**	0.3969	0.9258	0.1655	0.2521	0.5556	1.1634**	0.3625
VWNDX	2.0417	0.3260	1.0305**	1.5094	0.8335***	0.8694	1.4433	0.1876	0.4380***	0.8126	0.8119***	0.9889
Average	1.6268***	0.2502***	0.7450***	-2.0175	0.7241***	0.4849***	1.3154***	0.1706**	0.3890***	0.7186	0.7941***	0.6217***
Variance	2.5771	0.1525	1.4680	339.0608	0.2123	0.0945	0.9509	0.1678	0.3604	6.2045	0.1891	0.0934

Notes: Wilcoxon Z-statistic for Raw Returns: 0.9256 (0.3547) Wilcoxon Z-statistic for Jensen's Alpha: 1.1865 (0.0693)
Wilcoxon Z-statistic for Sharpe's Index 0.7266 (0.4675) Wilcoxon Z-statistic for Treynor's Index: 1.4186 (0.1560)
p-values are in parentheses
***Significantly different from zero at the 1% level
**Significantly different from zero at the 5% level

TABLE 4

The 1-Year Performance Comparison With Matched Portfolios After Closing

	Sample Funds					*Matched Portfolios*						
Raw	*Sharpe*	*Jensen*	*Treynor*	*Beta*	R^2	*Raw*	*Sharpe*	*Jensen*	*Treynor*	*Beta*	R^2	
ACFTX	-0.0283	-0.8041	-0.2872***	-2.5106	0.1207***	0.5472	0.0275	-0.5418	-0.2384	-3.6556	0.0676	0.1109
ACINX	-1.0433	-0.5253	-1.4415	-2.4938	0.5784**	0.3952	-0.8525	-0.3801	-1.2503	-1.6009	0.7817***	0.5040
ACRNX	0.6050	0.0093	-0.3099	0.0486	1.3020***	0.9074	1.6733	0.1257	0.6388	0.6581	1.7194***	0.9165
ARGFX	0.9683	0.0510	-0.3759	0.2978	1.2758***	0.7844	1.5492	0.1196	0.0978	0.6596	1.4566***	0.8804
BABEX	1.4767	0.3866	0.8985	1.3239	0.8994**	0.3481	0.5983	0.0868	-0.0201	0.3052	1.0234	0.3286
BARIX	1.3708	0.5215	0.3161	3.1049	0.2907	0.0618	0.5433	0.3258	0.0425	4.6389	0.0162	0.0117
CPGRX	2.3950	0.3100	-1.3565	1.1841	1.6273	0.1491	2.2533	0.8286	-0.1059	1.9047	0.9372**	0.4112
CPSFX	0.7267	0.3132	0.5497	-1.3026	-0.3619	0.1635	0.9158	0.5819	0.6310	4.8265	0.1369	0.0411
IDFDX	0.8341	0.0464	0.4497	0.2352	1.1808***	0.9243	0.6467	0.0139	0.2788	0.0697	1.2951***	0.9491
JAVLX	0.5467	0.0920	-0.3418	0.2496	1.1710**	0.4785	1.1108	0.4170	0.3762	0.9656	0.8870***	0.6574
JAVTX	0.5900	0.0802	0.0042	0.3787	0.7048***	0.7447	0.6383	0.0682	-0.0132	0.3578	0.8811***	0.6034
KRFBX	1.1475	0.5106	0.5716	1.9696	0.4447	0.2262	1.1858	0.6825	0.4789**	1.4370	0.6361***	0.7601
LOMCX	0.5217	0.0023	1.1071	0.0222	1.3797***	0.8142	-0.1958	-0.0792	0.0917	-0.6883	0.9979***	0.9786
MMHYX	1.1367	0.6800	0.6663	19.7887	0.0369	0.0157	1.2625	0.3865	0.2494	2.7428	0.2465	0.2564
MNSCX	0.9475	0.1382	-0.1860	0.5365	1.2597	0.2243	0.7733	0.1392	-0.1126	0.5587	0.8979	0.2092
MONTX	0.4417	0.0550	0.5114	0.1858	0.9747***	0.5719	0.9842	0.1905	1.1220	0.6155	1.1756***	0.6249
MPSCX	1.4667	0.2992	-0.2767	1.1899	0.8388	0.2988	2.6467	0.6295	0.9142	2.6190	0.8317	0.2723
MSIQX	2.3817	0.4818	2.5435**	1.7439	1.2038**	0.4862	1.7850	0.3092	2.0980**	0.9314	1.6134***	0.7023

NEFGX	0.0442	-0.0885	-0.5957	-0.2220	1.0892***	0.6474	1.1017	0.3278	0.4755	0.7791	1.0471***	0.7189
PJIGX	0.9725	0.1938	-0.4866	0.6703	0.7803***	0.5232	0.8183	0.3797	0.0289	1.4038	0.2628**	0.4714
POPAX	2.7808	0.5024	2.0372	1.6984	1.4875	0.2558	1.3825	0.3268	0.7424	0.9618	1.1727**	0.3376
POPCX	2.7200	0.4918	1.9750	1.6527	1.4918	0.2589	1.1325	0.2607	0.4211	0.6319	1.3895**	0.4977
SEQUX	2.0500	0.6480	1.0275	3.0077	0.4361**	0.3942	1.7100	0.2863	0.2757	0.9099	1.0680***	0.8315
SKSEX	1.7492	0.7033	1.1847**	1.5855	0.9427***	0.5758	1.1983	0.2674	0.5401	0.7687	1.2277**	0.3539
SSRSC	1.3192	0.1617	-1.7768	0.6369	1.3310	0.1461	3.2833	0.8230	0.8448	2.8188	0.9976	0.1932
STCSX	0.9125	0.2156	0.9826	0.6681	0.9757***	0.6782	0.9750	0.2304	1.0785**	0.6650	1.0743***	0.7817
VWNDX	2.3341	0.5579	0.3080	2.0760	0.8393***	0.9126	2.5225	0.6084	0.4204**	2.1847	0.8837***	0.9798
Average	1.1684***	0.2235***	0.2851	1.3973*	0.9000***	0.4642***	1.1730***	0.2746***	0.3743***	1.0544***	0.9157***	0.5327***
Variance	0.8000	0.1198	1.0665	15.2977	0.2411	0.0743	0.7591	0.1000	0.3489	2.8207	0.2012	0.0894

Notes: Wilcoxon Z-statistic for Raw Returns: -0.1557 (0.8763) Wilcoxon Z-statistic for Jensen's Alpha: -0.5017 (0.6159)
Wilcoxon Z-statistic for Sharpe's Index -0.5536 (0.5799) Wilcoxon Z-statistic for Treynor's Index: -0.6401 (0.5221)
p-values are in parentheses
***Significantly different from zero at the 1% level
**Significantly different from zero at the 5% level

index are higher for 13 of the 27 sample funds over the matched portfolios. However, the Wilcoxon test indicates no statistical difference in performance between the sample funds and the control portfolios.

When the analysis is extended to three years around the closing date, the results are similar. Based on the Treynor's index only six of 12 funds outperformed their control portfolios after closing to new investors. Using the raw return, Sharpe's index, and Jensen's alpha, seven of 12 funds outperformed their peers in the 36 months following the decision to close to new investors. The test statistic indicates no significant differences in performance between the sample funds and the control portfolios. Thus, while the sample funds significantly outperformed their peers prior to closing, the performance does not seem to persist after closing to new investors. Consequently, the empirical evidence does not support the wisdom of closing funds to new investors for reasons related to asset size.

IV. IMPLICATIONS OF THE STUDY

Mutual funds are the most popular investment outlets for individual investors. As such, it is important to develop a thorough understanding of factors that influence the performance of mutual funds. While many facets of mutual fund performance have been examined in the finance literature, the common practice of closing funds to new investors as funds grow has not received any attention in the literature.

Fund managers often justify the decision to close funds to new investors based on the desire to maintain superior performance. The premise underlying this line of reasoning is that due to limited suitable investment opportunities, substantial amounts of assets or continued substantial cash inflows make it difficult to maintain strong performance. However, the empirical evidence presented here contradicts the premise that superior performance can be maintained by restricting access to the funds, or by capping the asset size. The evidence indicates that based on the raw return, Sharpe's index, Jensen's alpha, and Treynor's index, funds performance declines after closing to new investors. The conclusion is the same when the sample funds are compared to control portfolios matched in size and investment objective. Thus, maintaining performance does not seem to be an appropriate reason for closing funds to new investors.

The practice of closing funds to new investors continues to be popular. While the initial sample of this study was the 128 funds closed to investors as of January 1996, *MORNINGSTAR* data indicates there were 141 funds closed to new investors as of January 1998. However, the actual number of funds closed during the interim is significantly higher, as many funds close to new investors for short periods, and subsequently re-open. Thus, there are a number of funds that were closed in January 1996, that are now open to the public, as well as a large number of funds that have closed to new investors since that time. Of the 27 funds that were used in the one-year comparisons, 17 continue to be closed to new investments as of January 1998, and three are no longer available in *MORNINGSTAR*. Similarly, of the 12 funds with data available to facilitate the three-year analysis, eight remain closed to new investments and one is no longer available in *MORNINGSTAR*. Given the persistence of this practice, it is possible that fund managers have other reasons for closing funds that are unrelated to the performance of the fund.

NOTES

1. Tables detailing the results of the three-year comparisons are available from the authors upon request.

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