Center for International Securities and Derivatives Markets

Performance Persistence for Mutual Funds: Academic Evidence

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Introduction

Measuring the persistence of Mutual funds performance has been the goal of many academic studies for the last three decades. Managers of actively managed portfolios are expected to consistently outperform a benchmark. To demonstrate their ability in generating excess returns (i.e., positive alphas), money managers have to rely on their past performance. Investors who invest with these managers and people who evaluate money managers (e.g., Morningstar) have to rely on past performance data as well. The important question is, therefore, whether past performance has any predictive power about future performance. If the answer to this question is no, then other sources of information must be used to select the best managers. On the other hand, if past performance can predict future performance, then a portfolio consisting of best performing managers should consistently outperform a randomly selected portfolio of money managers.

Financial industry spends considerable amount of resources in measuring and ranking the performance of actively managed portfolios. The usefulness of track record is taken for granted by market participants and anecdotal evidence seems to support their conclusions. The academic evidence on the subject is not conclusive. A number of studies have shown that the relative performance of equity mutual funds persists from period to period. The persistence seems to be particularly strong for the top 25% and the bottom 25%, while the middle 50% do not display any persistent in their performance.

In this paper, first, we review the available academic evidence on the persistence of performance for actively managed portfolios. Second, we use more recent data to determine if the persistence detected during 1970s and 1980s also prevailed during late 1990s and overflowed until 2002.

Previous Academic Studies:

The early studies on performance persistence of mutual funds gave many contradictory opinions. Sharpe (1966) used the ratio developed by him called "Sharpe ratio" to measure the fund performance. He ranked mutual funds according to their Sharpe ratio over two periods 1944-53 and 1954-63 and found a significantly positive though not very perfect, relationship between the two ranking periods. Thus, he concluded that differences in performance can be predicted although imperfectly. However, the results did not indicate the sources of these differences. M. Jensen 1968, used "Jensen's Alpha" and concluded that prediction of the individual fund performance were not very different from that predicted by a mere random chance. In his studies, he used Jensen's alpha to compute the risk adjusted abnormal returns for funds and examined their performance during the period 1945-64. In subsequent early studies by Carlson, Robert S (1970) the author found partial evidence of persistence. Carlson studied equity mutual funds during the period 1948-67 and found no persistence for 10 years risk adjusted returns but partial persistence with 5 years.

Grinblatt and Titman (1989) studied equity funds for the period from 1974-84, with evaluation periods consisting of 5 years, found partial persistence explained by the expenses of the fund. Table 1 which provides their results (Jensen's measure - annually updated weights for hypothetical results) shows that more active portfolios that are updated annually do achieve significant abnormal results, but these are outperformed by portfolios which are updated

quarterly. The authors computed Jensen's measure using four sets of benchmark portfolios: the monthly rebalanced Equally Weighted (EW) portfolio of all CRSP (New York and American Stock Exchange) securities, the CRSP Value-Weighted (VW), 10 Factor (F 10) portfolios created with factor analytic procedures developed in Lehmann and Modest (1988) and the eight portfolio benchmark (P8) formed on the basis of firm size, dividend yield and past returns developed in their paper in 1988.The appropriateness of these benchmarks had been evaluated by the authors in their paper in 1988.The eight portfolio benchmark appeared to be the most appropriate for benchmark evaluation since the intercepts of 109 passive portfolios, constructed on the basis of securities characteristics and industry grouping were closet to zero with this benchmark. The other three benchmarks displayed size, dividend yield and beta-related pricing errors. Thus the later three were used primarily for comparison purposes.

The authors reported that though the method for creating the F10 portfolio had the potential to create survivorship bias, in comparison to the equally weighted index this bias was not large.

Table 1

	All	Aggressive Growth	Balanced	Growth	Growth Income	Income	Special Purpose	Venture Capital Special Situation
No of funds	274	73	19	81	57	31	6	7
EW	-0.0028	-0.0028	-0.0023	-0.0035	-0.0023	-0.0004	-0.0016	-0.003
	(-1.32)	***(-1.11)***	***(-1.08)***	***(-1.46)***	***(-1.12)***	***(-0.26)***	***(-0.46)***	***(-1.16)***
VW	0.0012	0.0019	0.0008	0.0004	0.0013	0.0032	0.0022	0.0028
	(1.80)	***(1.50)***	***(-1.33)***	***(0.51)***	***(2.28)****	***(-2.71)*****	***(0.70)***	***(1.38)***
F10	-0.0021	-0.003	-0.001	-0.0029	-0.0011	0.0003	0.0009	-0.0023
	(-2.50)*	***(-2.40)****	***(-1.29)***	***(-3.17)*****	***(-1.60)***	***(0.31)***	***(0.38)***	***(-1.45)***
P8	0.0005	0.0021	-0.0002	0.0008	0.0001	-0.0007	-0.0012	0.0017
	(0.96)	***(2.61)*****	***(-0.23)***	***(1.19)***	***(0.15)***	***(-0.77)***	***(-0.31)***	***(1.05)***
Betas:								
EW Index	0.7	0.81	0.59	0.71	0.65	0.58	0.64	0.9
VW Index	1.1	1.24	0.96	1.14	1.02	0.87	0.96	1.32

Jensens Measure of an equally weighted portfolio of funds with a given investment objective (with statistic given in paranthesis). The 120 monthly returns were constructed by multiplying the fund's (annual) portfolio weights by CRSP securities returns and adding. The returns based on these weights have no expenses, fees, or transaction costs subracted from them.

* Significant at 0.05 level.

** significant at 0.01 level.

Source: Jensen M. 1968"The Performance of Mutual Funds in the Period 1945-64", *Journal of Finance*

Similarly, in their later studies, Grinblatt and Titman in1992, found persistence in fund performances. They studied 279 funds for the period 1975-84 using 8 portfolio benchmark with evaluation periods consisting of 5 years and found persistence for next five years. They constructed the 8 portfolio benchmark to take into account size (4 portfolios); dividend yields (3 portfolios) and past returns (1 portfolio). Again in, 1993, Grinblatt and Titman examined CRSP listed quarterly holdings of mutual fund portfolios during 1974-84 and found positive results. They found the strongest evidence of abnormal performance persistence in Aggressive growth category of funds. However in contrast to their earlier work, as a measure of performance in this study they observed portfolio holdings and hence results were not attributable to a benchmark portfolio. They did not use any benchmark. They found that funds which performed well in first

half of the sample period continued to do so in second half thereby suggesting that superior performance was predictable to a certain extent. But the authors emphasized that investors investing in mutual funds would not achieve abnormal returns since (as explained in their paper in 1989) on average their net return after transactions costs, loads and fund expenses is close to zero.

During 1992, positive results were also obtained in studies carried out by Brown, Goetzmann, Ibbotson and Ross, wherein they analyzed the relationship between volatility and returns in a sample which showed evidence of survivorship bias. Their study period ranged from 1976-87 with a three year evaluation period. They concluded that such a relationship created an appearance of predictability. They presented some numerical examples to show that the effect could be strong enough to account for the strength of the evidence favoring return predictability. They found persistence in two out of three 3 year periods. Most of the early studies like Sharpe (1966), Jensen (1968), Carlson (1970), did not take into account survivorship bias whereas Grinblatt and Titman (1992) etc. did show evidence of survivor ship bias. Thus attempts were made to adjust for survivorship bias in later studies.

After taking care of the survivorship bias, performance persistence was still found by Hendricks, Patel and Zeckhauser (1993), where 'hot hands' was used to refer to funds that delivered sustained short-run superior performance. The authors studied portfolios of top performing no-load growth oriented mutual funds (165) from 1974-88 and measured performance in terms of Jensen's alpha. They found that mutual funds that perform well in one year evaluation period persist in their superior performance in the following year and that underperformers displayed short run persistence. The authors employed time-series regression approach discussed by Grinblatt and Titman (1989) as well as contingency tables to avoid problems due to large variance of ε which could affect the previous tests based on autocorrelation. The t-statistics (Regression measure) of the intercept from the time-series tested the hypothesis whether the α-performance in one period is correlated with the α- performance in the other period. The authors used γ statistics proposed by Goodman and Kruskal (1954) as a measure of ordinal association in the contingency table where;

$$\gamma = \frac{P - Q}{P + Q}$$

Where:
P was the number of concordant pairs of observations &
Q was the number of discordant pairs.
However, the authors concluded that the success of the persistence was not from selecting superior funds over the sample period but from timing the selection and further maintained that if investors were to capitalize on the 'hot hands' phenomenon, they could have generated a significant, risk- adjusted excess return of 10% per year. Table 2 depicts their results.

In another study Goetzmann and Ibbotson (1994) examined the performance of mutual funds covering 1976-1988. The methodology of this study was similar to their previous paper except that mutual funds' performances were examined on a one-year and two-year basis. The goal was to check if the persistence of performance lasted more than 1 year and thus requiring less rebalancing. The results are summarized in Table 3.

Table 2

Persistence Measures for Alphas and Betas for Varying Intervals,One Year Estimation Periods

Persistence in Alpha

Interval	Regression Measure (T-Statistics)		Gamma Measure (probability)	
Zero Years	0.30	(3.94)**	0.32	(0.00)
One Year	0.18	(3.17)**	0.11	(0.03)
Two Years	0.06	(0.82)	0.11	(0.03)
Three Years	-0.04	(-0.49)	-0.02	(0.64)
Four Years	-0.07	(-1.23)	-0.13	(0.97)

Persistence in Beta

Interval	Regression Measure (T-Statistics)		Gamma Measure (probability)	
Zero Years	0.40	(5.89)**	0.40	(0.00)
One Year	0.28	(4.19)**	0.28	(0.00)
Two Years	0.16	(2.48)*	0.35	(0.00)
Three Years	0.23	(4.80)**	0.32	(0.00)
Four Years	0.26	(5.66)**	0.28	(0.00)

** = p value is below 0.05*
*** = p value is below 0.01*

Notes: Time-series regression t-statistics are in parenthesis
The p values for the gamma measure are in brackets.
Source*:* Hendricks, Patel and Zeckhauser (1993).

Table 3

	1978-79 Winners	1978-79 Losers		1980-81 Winners	1980-81 Losers
1976-77 Winners	49	14	1978-79 Winners	49	18
1976-77 Losers	15	48	1978-79 Losers	17	49
	1982-83 Winners	1982-83 Losers		1984-85 Winners	1984-85 Losers
1980-81 Winners	39	30	1982-83 Winners	49	28
1980-81 Losers	30	39	1982-83 Losers	25	50
	1986-87 Winners	1986-87 Losers		Combined Successive Winners	Returns Period Losers
1984-85 Winners	49	40	Initial Winners	235 64.40%	130 35.60%
1984-85 Losers	41	48	Initial Losers	128 35.40%	234 64.60%

Source: Goetzmann and Ibbotson (1994)

In this table, growth funds were examined over a number of two-year periods. The authors grouped growth funds into winners and losers according to their 2-year returns and then studied

their performance, measured by their alphas, over the next two-year period. According to Table 2, in1976-1977 period there were a total of 63 (i.e., 49+14) growth funds whose two-year returns ranked above the average. Of these funds 49 were also winners during 1978-1979, while 14 were losers during the same time period. The same procedure was repeated for the entire time period. On the bottom right-hand side of the table a summary of these results appear. We can see that 64.4% of winners are winners during the subsequent periods, while 64.6% of losers remained losers during the subsequent periods.

Table 4 summarizes the results for all the years and all types of the funds. We can see that overall about 62% of winners are repeat winners and about 63% of losers are repeat losers.

Table 4

	Combined Returns Period Successive	
	Winners	Losers
Initial	482	296
Winners	62.00%	38.00%
Initial	285	493
Losers	36.60%	63.40%

Source: Goetzmann and Ibbotson (1994)

Table 5 below also provides additional insights into the persistence of performance of mutual funds. In this table the performance was measured over three-year periods. It confirms the results reported in the previous tables. We can see that 41% of the funds that were ranked in the top 25% in one period were ranked in the top 25% in the subsequent period. On the other hand, 66% of the funds that were ranked in the bottom 25% during the first period maintained the same low ranking during the next time period.

Table 5

Initial Period	Top 25%	Second 25%	Third 25%	Fourth 25%
Top 25%	41	31	19	10
Second 25%	18	33	34	15
Third 25%	10	23	39	29
Fourth 25%	5	8	21	66

Source: Goetzmann and Ibbotson (1994)

Bauman and Miller (1994) studied the behavior of actively managed mutual funds for 1972-1992. The authors ranked mutual funds according to their total return in one period and then studied their performance over subsequent years. The rate of return on the funds that were ranked in the top 25% in the previous period was 18.6%, while the rate of return on the funds that were ranked in the bottom 25% was 14.4%. The authors noticed that top performing funds were not completely homogeneous and therefore ranked them further according to the volatility of their annual returns. The results are summarized in Table 6. The funds were first ranked

according to their annual returns and then they were further ranked according to the volatility of their annual returns. Table 6 shows that the most volatile portfolios that were ranked in the top 25% had an average return of 36% during the subsequent year. On the other hand, the most volatile funds that were ranked in the bottom 25% had an annual return of 25.5%. These results show that more volatile returns tend to provide a higher average return. However, good managers are able to provide a much higher rate of return for this increased volatility.

Table 6

Quartile returns Ranking in t	SubGroup Standard Ranking in t	Portfolio Returns in t+1 period	Average over t+1, t+2,t+3 periods
1st	S4	36.00	18.10
	S3	17.00	17.60
	S2	15.60	16.20
	S1	15.00	16.90
2nd	S4	23.60	14.70
	S3	15.40	15.60
	S2	12.40	16.50
	S1	12.1	16.80
3rd	S4	24.8	14.80
	S3	16.6	15.4
	S2	14	15.3
	S1	16.4	15.6
4th	S4	25.5	13.6
	S3	18.4	14.6
	S2	18.3	15.1
	S1	15.2	15
Average number of portfolios in each SubGroup		8	

Source: Bauman and Miller (1994)

Previous papers used lagged performance as the way to identify the best managers. A number of financial firms provide their own rankings of mutual funds. These methods take past performance and other characteristics of a fund to give it a ranking. Morningstar is the most widely used system and it employs a star system to rank mutual funds, with 5 stars being the best and 1 star being the worst.

Brown and Goetzmann (1995) study performance persistence in mutual funds. The data covers 1976-1988 and covers are U.S. mutual funds. The authors examined the investment implications of switching to the best performing funds at the beginning of each year. So they started with the annual returns in 1976 to rank all mutual funds in 8 different equal size groups (1 being the worst and 8 being the best). Then they calculated the annual rate of return on each of these mutual funds for 1977. Then again using the 1977 returns, they created a new set of groups and

calculated the rate of return on each group for 1978. This was repeated for each year in 1977-1988.

Their results showed that the top two groups had a substantially better performance than the remaining groups. As indicated in the previous section, this is consistent with many other academic studies in which the persistence is most pronounced among the best and the worst funds, while the average funds move in and out of the best and worst groups in a rather unpredictable manner. Notice that though top managers seem to have more volatile returns, their performance more than compensates the investors by providing significant positive alphas.

Brown and Goetzmann (1995) also report on the relative number of repeat winners and losers. Of the total 5144 funds examined by them close to 60% of the winners in year *t,* were also winners in year $t+1$. An important aspect of picking winners was they were far less likely to go out of business. Losers in time period *t* were twice as likely to go out of business in time period $t+1$ as compared to winners in time period *t*.

In 1995 a study by Grinblatt, Mark, Sheridan Titman, and Russ Wermers provided further evidence of performance persistence. Their study analyzed the extent to which mutual funds purchased stocks based on their past returns as well as their tendency to exhibit "herding" behavior (i.e. buying and selling the same stock at the same time). They found that 77 % of the mutual funds studied by them were "momentum investors" who bought stocks that were past winners; however most of them did not systematically sell the past losers. On average the funds that invested in momentum realized significantly better performance than other funds. They also found relatively weak evidence of herding in their sample.

Malkiel, Burton G. (1995), studied equity funds for the period from 1971-90 and using evaluation period of one year concluded the presence of partial persistence. The author found evidence of persistent performance in the 1970's but not in 1980's.

Elton, Edwin J., Martin J. Gruber, and Christopher R. Blake(1996), studied 188 equity funds for the period from 1977-93 and found evidence of persistence in one year and three year risk adjusted returns. In 1997 Carhart Mark M., studied equity funds for the period from 1962-93 and found evidence supporting performance persistence, which he explained by momentum of the stock in the portfolio and expenses of the fund. Contradictorily, Phelps, S. and L. Detzel (1997) studied funds for the period from 1975-95 and found no evidence of persistence once the returns were adjusted for size and style.

Blake and Morey (1999) used Morningstar data for 1993-1997 to see if the star system can predict future performance of mutual funds. The authors started with year 1993 database. They formed portfolios of mutual funds using the star system so that at the beginning of 1994 they had five portfolios with star rankings of 1 through 5. Then they examined the performance of each portfolio during the 1994. They repeated the same procedure for years 1994-1997. The results appear in table 8.

Table 8

Year	4 & 5 Stars	2 & 1 Stars
1994	-17.40	-21.48
1995	37.20	29.76
1996	21.72	17.28
1997	34.80	21.12

Source: Blake and Morey (1999)

It can be seen that during each year, the top funds had a superior performance compared to the bottom funds.

No evidence of persistent performance was found by Jain and Wu (2000). In their research the authors tried to gather evidence of performance persistence once the fund advertised their returns by studying performance of 294 fund advertised in Barron's or Money magazine. The pre-advertisement performance of these funds was significantly higher than that of the benchmarks. They tested whether the sponsors select funds to signal continued superior performance or they use the past superior performance to attract more money into the funds. Their analysis showed that the funds did not exhibit superior performance in the post advertisement period and hence do not support the signaling hypothesis. But they did find that the advertised funds attract significantly more money in comparison with a group of control funds. Wermers, Russ, 2000, studied mutual funds during 1974-94 in one year and three year evaluation period and found evidence of persistence in performance of mutual funds for their 1 year evaluation period and presence of manager skill in the three year evaluation period.

Bollen, Nicolas P. B., and Jeffrey A. Busse (2001), suggested that funds posses more timing ability than previously documented by other researches. In this paper the authors examined the ability of the mutual fund managers to time the market by increasing the funds exposure to the market index prior to market advances and to decrease it prior to market decline. For this they used the conditional market timing test developed by Treynor-Mazuy (1966) and Henriksson and Merton (1981).Treynor-Mazuy (1966) had used their market timing tests to conclude that managers lacked market timing ability. They had found significant market timing ability in only one out of fifty seven funds. Similarly Henriksson and Merton (1981) had arrived at similar conclusions when they found only three out of one hundred and sixteen funds to exhibit significant positive market timing ability. However, according to Bollen and Busse 2001, the negative results were due to the fact that those studies did not use daily mutual fund returns. They further carried out Treynor-Mazuy and Henriksson-Merton tests on daily and monthly mutual fund returns to determine if using daily data changed the inferences regarding managerial ability. Their results showed that daily tests results in a larger number of significant estimates of timing ability, both positive and negative as compared to the monthly tests.

More recently, Ibbotson and Patel (2002), in their working paper indicated that winning funds do repeat good performance. Their work was an extension of the study carried out by Goetzmann and Ibbotson (1994), which revealed that past mutual fund performances and relative rankings are useful in predicting their future performance. Ibbotson and Patel extended this work by adjusting the fund performance for the styles of the funds. They evaluated style adjusted alphas

on both absolute and relative basis and found that highest persistence was exhibited by funds whose alphas were greater than 10% and also by funds whose alphas ranked in the top 5% of the sample.
List 1 in appendix provides some of the studies carried out to evaluate fund performance persistence.

Persistence of Performance: Recent Evidence:

After reviewing the past studies, in this section we use more recent data to determine if the persistence detected during 1970s and 1980s also prevailed during late 1990s and overflowed until 2002. The objective of this study is to investigate the selectivity and market timing performance of US mutual fund managers by using the conditional and unconditional models in order to assess whether or not there are differences in the results that are obtained by applying these alternative models.

In this part we concentrate on mutual funds listed on Morningstar over the period of 1997-2002. The mutual funds style studied here are large growth equity funds, large value equity funds, small growth equity funds and small value equity funds. We used conditional and unconditional tests similar to previous studies.

Unconditional test: Jensen's Alpha

To carry out unconditional performance tests we regressed the monthly excess returns of the top 20 and bottom 20 funds, for each year in 1997 to 2002, against the monthly excess returns on respective benchmarks i.e. S& P 500 for large growth and Value, and S&P 600 for small growth and value funds.

Using Morningstar database, we ranked mutual funds belonging to the same style classification according to their rate of return during January 1997. The funds were sorted according to their annual performance during 1997 .This process was used to determine the top performers and bottom 20 funds during the year 1997. The performance of the selected funds in subsequent years was analyzed. This process was repeated for all the years from 1997 till 2002.

The monthly returns were adjusted for the risk free monthly rates to obtain monthly excess returns. The risk free rate used was US Treasury Bill rate for 3 Month (EP) from Datastream. Similarly the benchmark monthly returns were adjusted for the risk free return. The monthly excess returns of the funds were then regressed against the monthly excess returns of the benchmarks to obtain the Jensen's alpha; where Jensen's alpha is defined as:

$$\alpha_p = (R_p - R_f) - \beta(R_m - R_f)$$

The results of this single regression are as charted in table 9. The alphas presented here are the average alpha for the style.

Table 9

Jensen's Alpha for Top 20 Funds January 1997- December 2002

Styles	1998	1999	2000	2001	2002
Large Growth	(0.369)	1.827	(0.143)	(0.368)	(0.130)
Large Value	(0.935)	(0.756)	0.522	0.303	0.385
Small Growth	0.615	4.288*	(1.825)	(0.287)	(0.573)
Small Value	(0.514)	(0.579)	0.081	0.938	0.406

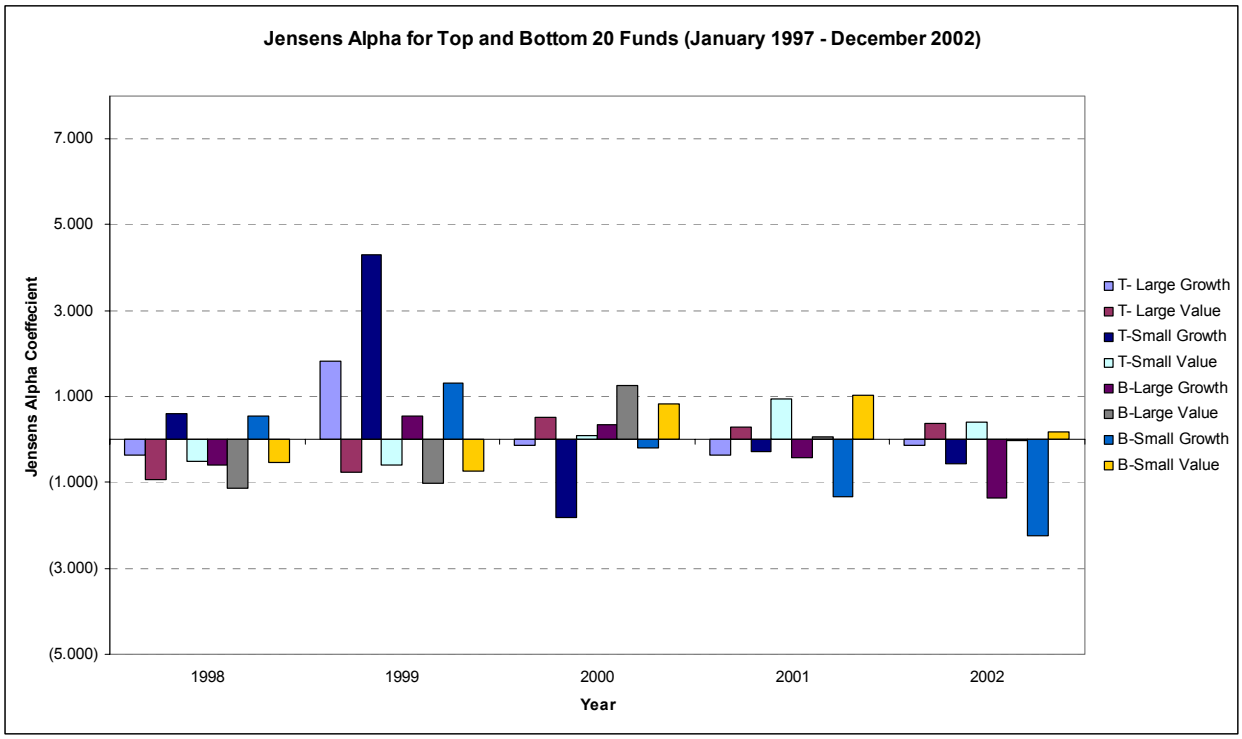
** Significant at 0.05level*

Jensen's Alpha for Bottom 20 Funds January 1997- December 2002

Styles	1998	1999	2000	2001	2002
Large Growth	(0.581)	0.538	0.354	(0.421)	(1.347)
Large Value	(1.139)	(1.021)	1.261	0.076	(0.012)
Small Growth	0.558	1.321	(0.184)	(1.320)	(2.239)*
Small Value	(0.543)	(0.720)	0.828	1.041	0.189

**Significant at 0.05level*

Graph 1:



The results in table 9 and the graph 1 clearly show that portfolio managers of top 20 ranked funds show some positive alpha indicating some value added as against those of managers of the and bottom funds (same order as Top funds) who show negative or insignificant alphas. Thus, based our results we can conclude that there is partial evidence of presence of alpha among the value funds managers, who do provide some value through their portfolio management.

The overall conclusion we can draw from our results is that fund managers, especially the ones from bottom funds, do not beat the market index and the investor would be able to achieve those returns by passively holding the benchmarks themselves.

Conditional test: Treynor-Mazuy (1966) "Quadratic Model"

Treynor-Mazuy ratio is designed to capture nonlinearity of relationship between portfolio and benchmark returns. It is basically aimed at capturing the market timing skills of the fund manager. As the market fluctuates, the risk premium associated with it changes. Hence a good portfolio manager would alter the sensitivity of his portfolio to the market by increasing the beta of the portfolio during the up market and reducing it during the down market. The quadratic model by Treynor-Mazuy (1966) is designed to asses this market timing ability.

The process involves a multi factor regression of the monthly excess returns of the fund against monthly excess returns of the benchmark as the first factor and square of the excess monthly return of the benchmark as the second factor. Thus it is represented as:

$$R_p - R_f = \alpha + \beta (R_m - R_f) + \gamma (R_m - R_f)^2 + \varepsilon$$

Where R_p is the monthly return on the fund; R_f is the monthly return on 30 days T-Bill, β is the market sensitivity coefficient, γ is the market timing coefficient and ε is the error term. Positive γ provided us with evidence of market timing skills in the fund manager.

Table 10

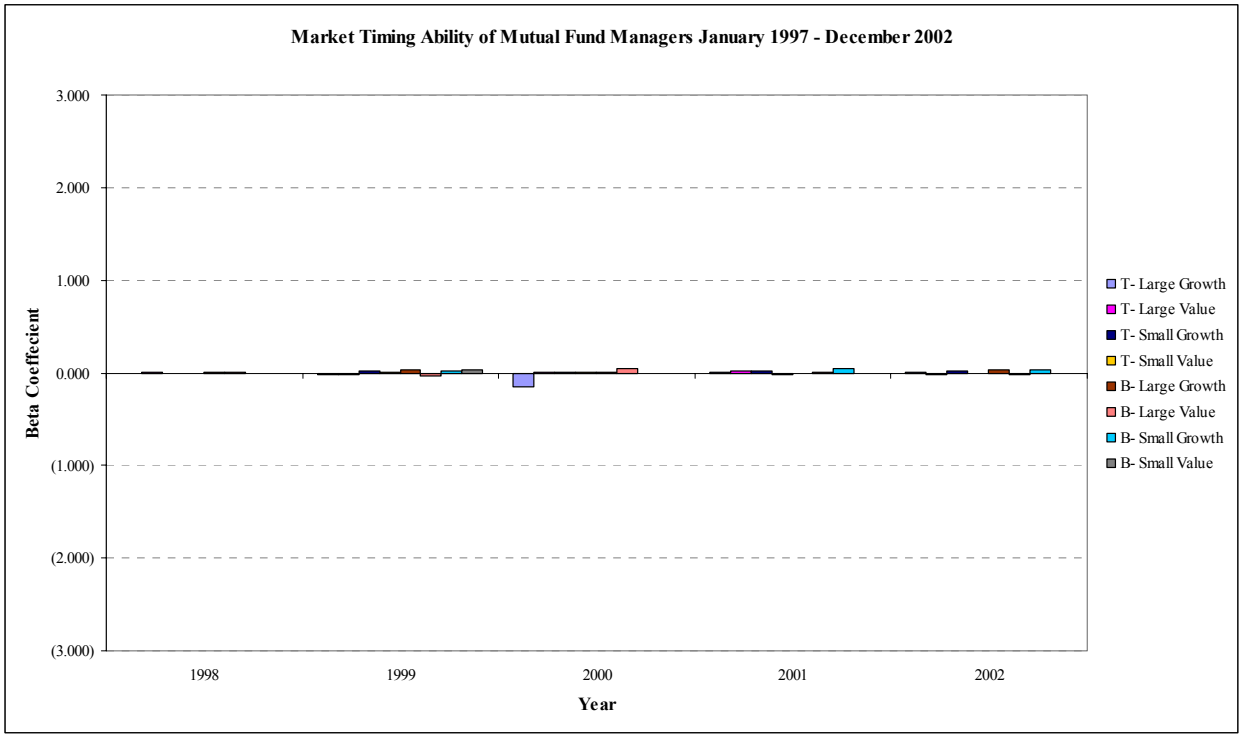
Market Timing of Top 20 funds Managers January 1998- December 2002

Style	1998	1999	2000	2001	2002
Large Growth	(0.008)	(0.023)	(0.151)	0.011	0.002
Large Value	0.006	(0.024)	0.002	0.015	(0.026)
Small Growth	(0.006)	0.019	0.004	0.021	0.021
Small Value	(0.005)	0.026	0.000	(0.021)	0.006

Market Timing of Bottom 20 funds January Managers 1998- December 2002

Style	1998	1999	2000	2001	2002
Large Growth	0.001	0.032	0.011	(0.012)	0.027
Large Value	0.005	(0.035)	0.041	0.004	(0.020)
Small Growth	(0.003)	0.021	(0.012)	0.042	0.034
Small Value	(0.007)	0.031	(0.005)	(0.008)	0.003

Graph 2:



Conclusions:

As we can see from our results in table 10 and graph 2, there is evidence of insignificant market timing ability among the top and bottom funds. The coefficients are not statistically significant enough to provide a strong evidence of market timing skills among the fund managers examined during 1997 – 2002. Persistence in out performing a benchmark exists to a very low extent among the top funds and almost negligible in the bottom funds in the sample.

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Appendix

List 1: Studies to measure performance persistence in US mutual funds.

Authors	Year Published	Dates	Funds Covered	Type of Fund Covered	Survivorship Bais Present	Benchmark used	Persistence Observed	Notes
Sharpe	1966	1954-63	34	All	Yes	Dow-Jones	No	past performance did not give any prediction of the future performance
Jensen	1968	1945-64	115	All	Yes	S&P 500	No	No persistence observed
Carlson	1970	1948-67	82	Equity	Yes	S&P 500 & Dow Jones	Yes	10-years no for risk-adjusted;5-years, yes
McDonald	1974	1960-69	123	All	Yes	EW- NYSE	No	No persistence observed
Shawky	1982	1973-77	255	All	Yes	EW- NYSE	No	No persistence observed
Chang & Lewellen	1984	1971-79	67	All	Yes	VW- CRSP	No	No persistence observed
Henriksson	1984	1968-80	116	All	Yes	VW- NYSE	No	No persistence observed
Lehman & Modest	1987	1968-82	130	All	Yes	VW- CRSP	Yes	evidence of persistence
Grinblatt & Titman	1989	1974-84	157	Equity	No	VW- CRSP & 8P portfolio	No	Explained by expenses.
Ippolito	1989	1965-84	143	All	No	VW- CRSP & S&P500		
Grinblatt & Titman	1992	1974-84	279	All	Yes	8 Factor Benchmark	Yes	Weak persistence for next 5-years.
Brown, Goeztmann, Ibbotson & Ross	1992	1976-87	126-153	Growth Equity	No	S&P 500	Yes	Persistence in 2 of 3 3-year periods.
Hendricks, Patel & Zeckhauser	1993	1974-88	165	All	No	Various	Yes	Persistence for next 2 to 8 quarters.
Grinblatt & Titman	1993	1976-84	155	All		none	Yes	
Goetzmann & Ibbotson	1994	1976-88	728	All	Yes	S&P 500	Yes	Persistence for next 3-year periods
Kahn & Rudd	1994	1983-90	300	Equity & Fixed income	Yes	S&P 500 & Style indices	Partial	No- for Equity, Yes -for Fixed income
Brown & Goetzmann	1995	1976-88	829	All	No	Median Fund and Various Indices	Yes	1-year persistence for best & worse; average funds not predicitive
Grinblatt, Titman & Wermers	1995	1974-85	274	All	No	none	Yes	
Malkiel	1995	1971-90	upto 724	All	Yes	Wilshire 5000 & S&P 500	Partial	70s Yes; '80s No.Funds have underperformed benchmark
Elton, Gruber & Blake	1996	1977-93	188	All	No	Four Factor Model	Yes	Observe persistence for both 1-yr & 3-yr risk adjusted.
Gruber	1996	1985-94	270	All	No	Market model single index 4 factors	Yes	
Carhart	1997	1962-93	1892	All	Yes	CAPM 3 factor model ,4 factor model	Yes	Explained by momentum of stocks in portfolios, and expenses.
Sauer	1997	1976-92		All	No		Partial	Persistence by style not seen.
Phelps & Detzel	1997	1975-95		Equity			No	Persistence not seen once returns are adjusted for size and style.
Wermers	1997	1975-94	400-2700	All	Yes	CRSP Index	Yes	
Jain & Wu	2000	1994-96	294 Advrtsd Fnds	All	No		No	Once performance was advertised, performance deteriorated.
Wermers	2001	1974-94	400-2700	All	No		Partial	1-year shows performance persistence; 3-years shows manager skill
Bollen & Busse	2002	1985-95	230	Equity	No	CRSP VW Index including NYSE,AMEX and Nasdaq stocks.	Yes	Finds persistence beyond expenses and momentum of stocks.
Ibbotson & Patel	2002	1975-00	All	Equity & Fixed income	Yes	Value Indices, BGI-Small cap growth and Value , MSCI EAFE, Lehman Brothers Government / Credit Index.	Yes	Sees persistence after adjusting for style. Limiting "winners" to top 10% = more repeat winners.
Busse & Irvine	2002	1985-95	230	Equity & Fixed income	No	CRSP VW Index including NYSE,AMEX and Nasdaq stocks.	Yes	Uses Bayesian alphas to choose funds.