Short Term Alpha as a Predictor of Future Mutual Fund Performance

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by

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Abstract:

A significant number of financial professionals continue to allocate client assets in broad asset classes, in accordance with various asset allocation models, derived from Modern Portfolio Theory, and with the exception of rebalancing hold the same investments for indefinite periods, and do not consider the potential benefits of periodically exchanging the selected securities.

This paper examines a relatively simple quantitative approach on how to select mutual funds expected to provide above average returns, while constrained to only selecting funds belonging to a specific Morningstar assigned asset class style box, thus remaining within the constraints of a traditional strategic asset allocation framework, allowing an active investment management overlay on a strategic asset allocation model.

The null hypothesis to be overcome is that there is no significant difference between the total returns obtained by selecting the top three funds according to an alpha value calculated for each fund, and periodically exchanging funds, and a benchmark rate of return applicable to the same asset class as the one the mutual funds belong to.

Split and distribution adjusted data was utilized for the fund returns to reflect the total returns earned on the portfolio.

The paper analyzes the results of calculating each mutual funds daily alpha value based on 20, 40, 60, 80 and 100 day look back periods, and holding the selected funds for 45, 70, 95, 120, 135 and 170 calendar days. The regression analysis is performed on the daily percentage changes in the security and in the index. The analysis period used is from 12/31/1999 thru 12/31/2011. This period was chosen as it covers substantial market rallies, as well as the largest market decline since the 1930s, thus testing the robustness of the proposed strategy.

A custom program was developed to allow the mass calculation of all the alpha values, and to simulate the anticipated trading strategy. The program was developed by the author in VB.NET with MS SQL Server 2007 being the data store.

Detailed results for each possible combination variables listed above is provided for the following asset classes: Large Capitalization Growth, Large Capitalization Blend, Mid Capitalization Value, Mid Capitalization Growth, Mid Capitalization Blend, Mid Capitalization Value, Small Capitalization Growth, Small Capitalization Blend and Small Capitalization Value. The average compound rate of return for all possible combinations of look back alpha calculation period and anticipated investment holding period

exceeded the relevant benchmark for each asset class are also calculated in the detailed results, as well as the number of funds included in the asset class for evaluation.

The benchmarks used as a baseline are the Russell Large Capitalization, Mid Capitalization and Small Capitalization indexes and their growth and value subcomponents. The indexes used are also total return indexes and thus constitute an appropriate benchmark against which to assess the validity of the strategy.

The top three funds, as ranked by the relevant short term alpha, are selected and the portfolio balance split equally. The investment is then held for the period of time being tested, at the end of which time the sum of the values of the three funds is calculated. This sum is then again invested equally in the top three funds, according to the alpha, at that date. On 12/31/2011 the total holdings value is calculated and the annualized compound rate of return calculated.

Out of the 225 possible combinations 193 outperformed their relative benchmark, by average annual compound rate of 3.19%, indicating at a 99% confidence level that selecting funds based on the proposed alpha methodology outperform their benchmark. Thus the null hypothesis is soundly rejected and one can assume with great confidence that short term mutual fund alpha is predictor of above average returns for relatively short term holding periods.

The combinations with the highest average compound rate of return are a look back calculation period of either 60 or 80 days, and an investment holding period between 95 and 120 days. All other combinations evaluated also exceeded their average benchmarks, but at lower rates. The fact that all tested look back and holding period average compound rates of return exceed their relevant benchmarks shows the robustness of this approach to selecting mutual funds.

This approach can be replicated by anyone using any universe of funds they are considering investing in, or are available to them. The data can be obtained inexpensively or free, and the required regressions quickly calculated in Excel, as long as the universe remains relatively small.

Additionally studies have been conducted by the author testing a universe of funds that is less constrained than a single investment style box, and substantially higher rates of return were achieved, but it was felt that showing the effectiveness of this approach within a number of very constrained investment universes would show the value of this approach more convincingly, and that this approach may be of interest to investment professionals currently not using any active investment management techniques.

Objective:

A significant number of financial professionals continue to allocate client assets in broad asset classes, in accordance with various asset allocation models, derived from Modern Portfolio Theory, and with the exception of rebalancing hold the same investments for indefinite periods, and do not consider the potential benefits of periodically exchanging the selected securities.

The Modern Portfolio Theory is based on the seminal research completed by Harry Markowitz in his paper titled “Portfolio Selection” published in 1952. Is a standard financial and academic methodology for assessing the performance of a security compared to the benchmark index, and constructing a maximum return portfolio that has the lowest standard deviation of return, the theories' measure of risk. According to the theory, it's possible to construct an "efficient frontier" of optimal portfolios offering the maximum possible expected return for a given level of risk.

Related to this theory is the concept of "efficient markets" which in its strong form postulates that any attempt to outperform markets through active management is a senseless exercise, and therefore a static portfolio, based on an efficient frontier allocation, with the lowest possible costs, is the optimal approach to investing.

Many financial professionals, and their clients, have a strong commitment to "Strategic Asset Allocation" dynamic, as derived from the Modern Portfolio Theory. Active investment management approaches are frequently ignored by this group.

This paper attempts to show that even within the constraints of a single asset class, as commonly defined by the Morningstar style boxes, significant additional portfolio returns can be by periodically exchanging mutual funds from the same style box universe, using a quantitative approach that exclusively uses historical price data and requires no guessing, conjecture or projection of future events.

The null hypothesis to be rejected is that the average annual compound rates of return generated by the system studied do not statistically significantly differ from the benchmark rates of return of the same asset classes.

The study covers the period from 12/31/1999 until 12/31/2011. The reasons for selecting this 11 year testing period are that it is long enough to include both strong market rallies and steep market declines, and that it is commonly referred to as the "lost decade" of investing. The intent is to show that even during this "lost decade" a relatively simple approach could have earned substantial returns through the use of active fund selection.

This approach is then tested across a spectrum of look back calculation periods and investment holding periods, to determine the stability of the approach, as models with either a high degree of freedom (many input variables), or only tested against a limited range of inputs, can often show false positive predicative capabilities, while actual future use of the strategy at best results in benchmark returns or less.

Methodology:

This approach focuses exclusively on the open ended mutual funds which are currently open to investment through the no transaction mutual fund platform at Charles Schwab & Co. This greatly reduces the survivorship bias, or may even punish the test model, as very successful funds tend to close to new investors, and those funds are not included in the universe, while the system itself focuses on funds with recent strong price action, and therefore generally would not select funds that have been eliminated due to weak performance.

This study focuses exclusively on the nine different "style boxes", as defined by Morningstar and identified with the appropriate ticker symbol by Charles Schwab & Co. The nine style boxes specifically are Large Capitalization Growth, Large Capitalization Blend, Mid Capitalization Value, Mid Capitalization Growth, Mid Capitalization Blend, Mid Capitalization Value, Small Capitalization Growth, Small Capitalization Blend and Small Capitalization Value. The number of funds that were included on the no-transaction fee platform, and open for investment to investment professionals as of July 1, 2011 were as follows:

Investment Style	Number of Available Funds on 7/1/11
Large Capitalization Growth	209

Large Capitalization Blend	212
Large Capitalization Value	142
Mid Capitalization Growth	119
Mid Capitalization Blend	82
Mid Capitalization Value	51
Small Capitalization Growth	111
Small Capitalization Blend	94
Small Capitalization Value	50

The daily Net Asset Value, or closing price, for each of the funds was obtained, on a split adjusted and dividend reinvested basis from Yahoo Finance utilizing a third party data downloader. This price information was adjusted for distributions, splits and reverse splits to create price series expressing the compound rate of return with gains and distributions reinvested. No “market inverse” or “leveraged funds” were included in the analysis universe.

The prices obtained cover the period 6/30/1999 through 12/31/2011. The actual analysis period of this study cover 12/31/1999 through 12/31/2011. The preceding six

months worth of data is required for look back calculations needed to establish the predictor value at the beginning of the study trading period.

The predictive value to be calculated and tested is the linear regression alpha value of the security under observation. This alpha value is calculated on a daily basis for all of the above indicated securities against the Standard & Poor's 500 Index daily value. This linear regression calculation is based on the day to day percentage changes in the value of the security and the index.

The alpha value calculated is the value at which the linear regression line intersects the 0 value on the x axis. This represents the average daily excess return earned by the fund over the regression period that is not attributable to market risk incurred by the fund, but rather arising from superior investment selection by the fund manager, or risk-adjusted sector outperformance relative to the benchmark.

The look back periods to calculate each funds daily alpha value were 20, 40, 60, 80 and 100 calendar days. If either the beginning or ending date fell on a day for which no price was available the next available date was used.

This calculation, and the subsequent model testing, was performed by software developed by the author using VB.NET development software with SQL Server 2007 as the data store.

Once all alpha values were calculated, the funds in the universe received a daily ranking. The fund with the highest calculated alpha received the highest rank, the fund with the worst value received the lowest rank, and all other funds ranked in descending order of their daily alpha value.

Subsequently, a simple trading system was employed to evaluate the predictive capability of the short term alpha values calculated with the process described above. The trading system consists of purchasing the highest rated three funds within a particular asset class on the trade date and holding the funds for a prescribed number of days, and then replacing those funds with three new funds after the holding period being tested has passed, allocating 1/3 of the sales proceeds from the funds held during the proceeding holding period, to each of the new funds purchased. Initial simulated trading started on 12/31/1999 and final values calculated through 12/31/11. The prescribed number of holding days studied were 45, 70, 95, 120, 145 and 175 days. If the end of a trading period fell on a date for which the markets were not open, the exchange was calculated effective the next trading day. On 12/31/2011 the total holdings value was calculated and the annualized compound rate of return calculated.

Three funds were selected for each asset class as this approach provides for broader diversification, and hence risk reduction, in the portfolio, rather than only

selecting the top rated fund, while keeping the numbers of funds to be held in the client account to a reasonable amount. Should a client have an allocation to each of the nine asset classes studied, there would be 27 positions in the account at any given time.

A benchmark was calculated for the compound annual rate of return in each asset class for the period 12/31/99 to 12/31/2011 using the appropriate Russell Indexes. This calculator can be found on the internet at http://www.russell.com/indexes/data/calculator/index_calculator.asp. It is important to note that indexes do include the reinvestment of dividends, just as the study assumes reinvestment of dividends and capital gains, so there is a true comparison of "apples to apples." Individual indexes for each of the asset classes were used as there was such a marked difference in the performance of large capitalization versus small capitalization stocks during the study period.

Had a single index, such as the Russell 3000 or Standard &Poor's 500 index, been used as a comparison benchmark the study results would have shown an even greater predictive value of the described methodology, due to capitalization weighted bias towards large capitalization stocks, which had a relatively low rate of return during the test period.

The next page shows the annual average compound rates of return for each look back period and holding period for all asset classes averaged together. It is useful to determine at a macro level what combination of look back periods and investment holding periods show the greatest potential for obtaining additional returns, as each asset class is equally weighted in this summary. The indexes are averaged to each provide an equal weight in the benchmark, as the results of the study are also the simple averages of the annual compound rates of return.

The annual compound rates of return for each look back calculation period to determine the fund rankings, and the holding period for which the funds remained in the portfolio, for each asset class, are shown on the nine subsequent pages, one per investment style box. This shows the results of all 225 discrete analysis performed. Information presented includes the asset class, the benchmark used, the benchmark compound annual rate of return, and the system compound annual rate of return, for each look back period and investment holding period. Cells highlighted in green that the results outperformed, net of all mutual fund level fees, the relevant benchmark. Holding periods are shown in columns, while the alpha calculation look back period is shown in rows. Averages for each column and row and for the entire asset class are also calculated.

Results:

Composite Analysis of Alpha Mutual Fund Selection System

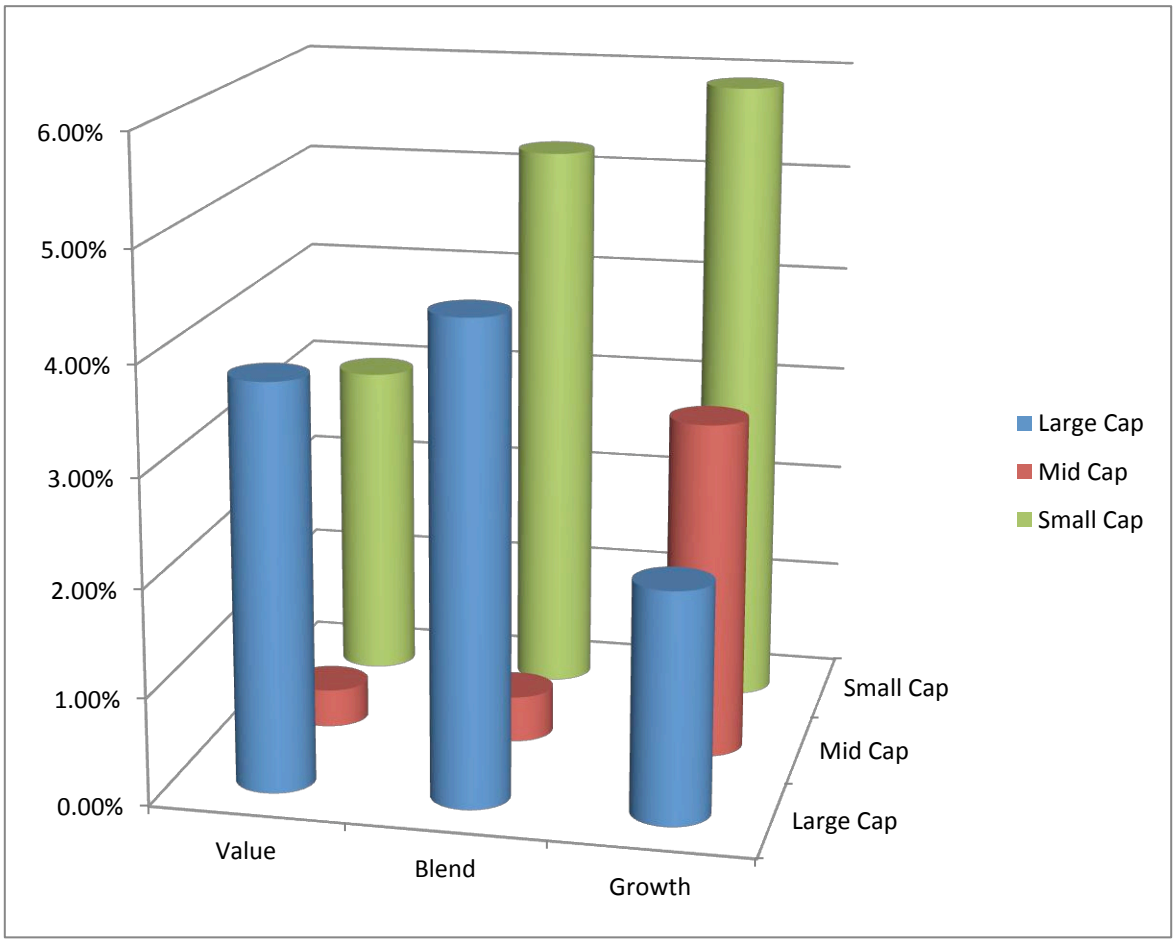
Compound Annual Rate of Return (Net of all Fund Level Fees) using highest 3 Alpha funds with all Asset Class Annual Returns Averaged

	Selected Investment Holding Period (Days)						
Alpha Calculation Look back Period (Days)	45	70	95	120	145	170	Average Return Look back Period
20	5.87%	5.11%	6.62%	5.97%	5.10%	5.15%	5.64%
40	5.29%	6.17%	6.99%	6.90%	8.46%	6.07%	6.65%
60	8.00%	7.51%	6.99%	8.28%	8.20%	3.98%	7.16%
80	7.00%	7.79%	8.41%	7.55%	6.88%	8.13%	7.63%
100	6.50%	7.04%	7.35%	6.84%	6.99%	5.97%	6.84%
Average Return for Holding Period	6.53%	6.72%	7.27%	7.11%	7.13%	5.86%	

Average Annual Rate of Return for All Look back and Holding Periods	6.78%
Average Annual Rate of Return Performance Relative to Benchmark	**3.19%**

Average *Relative* Annual Compound Rate of Return Performance of Study Results versus Benchmark Returns

	Value	Blend	Growth	Average Annual Rate of Return for Capitalization Size
Large Cap	3.77%	4.43%	2.14%	3.45%
Mid Cap	0.36%	0.43%	3.14%	1.31%
Small Cap	2.99%	5.23%	5.91%	4.71%
Average Annual Rate of Return for Investment Style	2.37%	3.36%	3.73%	



Large Capitalization Growth Style

Cells in Green Indicate combinations of look back period and investment holding period where returns calculated by switching the highest 3 Alpha rated funds at the end of a holding period outperform the benchmark.

Relevant Benchmark: Russell 1000® Growth Index

Benchmark Annual Compound rate of return (12/31/1999-12/30/2011)-Dividends Reinvested -1.85%

Compound Annual Rate of Return (Net of all Fund Level Fees) Selecting 3 Highest Alpha Funds

	Selected Investment Holding Period (Days)						
Alpha Calculation Look back Period (Days)	45	70	95	120	145	170	Average Return for Look back Period
20	-1.73%	-1.44%	-0.12%	1.41%	1.11%	0.65%	-0.02%
40	-3.03%	-1.34%	2.30%	3.52%	-0.77%	-0.59%	0.62%
60	3.87%	2.41%	3.23%	1.23%	-1.60%	-4.36%	0.80%
80	0.34%	0.32%	0.33%	-0.04%	-1.93%	1.77%	0.09%
100	0.87%	2.40%	1.21%	0.30%	-0.03%	-1.57%	0.53%
Average for Holding Period	0.07%	0.47%	1.39%	1.29%	-0.64%	-0.82%	

Average for All Look back and Holding Periods 0.29%

Average Performance Relative to Benchmark **2.14%**

Number of Funds analyzed in this category: 209

Large Capitalization Blended Style

Cells in Green Indicate combinations of look back period and investment holding period where returns calculated by switching the highest 3 Alpha rated funds at the end of a holding period outperform the benchmark.

Relevant Benchmark:	Russell 1000® Index
Benchmark Annual Compound rate of return (12/31/1999-12/30/2011)-Dividends Reinvested	0.99%

Compound Annual Rate of Return (Net of all Fund Level Fees) Selecting 3 Highest Alpha Funds

	Selected Investment Holding Period (Days)						
Alpha Calculation Look back Period (Days)	45	70	95	120	145	170	Average Return for Look back Period
20	3.38%	4.36%	6.53%	6.04%	3.13%	3.36%	4.47%
40	5.28%	5.12%	3.57%	5.92%	5.95%	3.10%	4.73%
60	4.72%	6.62%	2.63%	6.38%	9.87%	3.01%	5.54%
80	4.58%	7.09%	5.70%	6.70%	7.58%	6.80%	6.78%
100	4.80%	8.27%	8.42%	4.65%	4.11%	4.91%	5.86%
Average for Holding Period	4.55%	6.29%	5.37%	5.94%	6.13%	4.24%	

Average for All Look back and Holding Periods	5.42%
Average Performance Relative to Benchmark	**4.43%**

Number of Funds analyzed in this category: 212

Large Capitalization Value Style

Cells in Green Indicate combinations of look back period and investment holding period where returns calculated by switching the highest 3 Alpha rated funds at the end of a holding period outperform the benchmark.

Relevant Benchmark:	Russell 1000 Value
Benchmark Annual Compound rate of return (12/31/1999-12/30/2011)-Dividends Reinvested	3.72%

Compound Annual Rate of Return (Net of all Fund Level Fees) Selecting 3 Highest Alpha Funds

	Selected Investment Holding Period (Days)						
Alpha Calculation Look back Period (Days)	45	70	95	120	145	170	Average Return for Look back Period
20	6.42%	8.55%	8.64%	9.70%	5.88%	4.30%	7.25%
40	5.90%	7.65%	6.10%	7.48%	7.97%	4.82%	6.65%
60	8.15%	9.36%	7.76%	9.97%	10.24%	7.01%	8.75%
80	7.02%	9.10%	7.62%	7.38%	7.18%	9.80%	8.02%
100	6.96%	9.14%	7.84%	4.22%	4.34%	8.27%	6.80%
Average for Holding Period	6.89%	8.76%	7.59%	7.75%	7.12%	6.84%	

Average for All Look back and Holding Periods	7.49%
Average Performance Relative to Benchmark	**3.77%**

Number of Funds analyzed in this category: 142

Mid Capitalization Growth Style

Cells in Green Indicate combinations of look back period and investment holding period where returns calculated by switching the highest 3 Alpha rated funds at the end of a holding period outperform the benchmark.

Relevant Benchmark:	Russell Midcap® Growth Index
Benchmark Annual Compound rate of return (12/31/1999-12/30/2011)-Dividends Reinvested	1.48%

Compound Annual Rate of Return (Net of all Fund Level Fees) Selecting 3 Highest Alpha Funds

	Selected Investment Holding Period (Days)						
Alpha Calculation Look back Period (Days)	45	70	95	120	145	170	Average Return for Look back Period
20	4.28%	1.65%	5.80%	1.72%	3.32%	2.05%	3.13%
40	4.19%	5.33%	8.03%	2.64%	6.57%	5.35%	5.35%
60	6.64%	6.67%	7.19%	5.08%	6.13%	2.18%	5.65%
80	3.84%	5.17%	7.85%	3.85%	5.74%	5.78%	5.37%
100	3.53%	4.07%	6.24%	1.79%	4.33%	1.70%	3.63%
Average for Holding Period	4.49%	4.58%	7.02%	3.02%	5.22%	3.41%	

Average for All Look back and Holding Periods	4.62%
Average Performance Relative to Benchmark	**3.14%**

Number of Funds analyzed in this category: 119

Mid Capitalization Blend Style

Cells in Green Indicate combinations of look back period and investment holding period where returns calculated by switching the highest 3 Alpha rated funds at the end of a holding period outperform the benchmark.

Relevant Benchmark: Russell Midcap® Index

Benchmark Annual Compound rate of return (12/31/1999-12/30/2011)-Dividends Reinvested 6.06%

Compound Annual Rate of Return (Net of all Fund Level Fees) Selecting 3 Highest Alpha Funds

	Selected Investment Holding Period (Days)						
Alpha Calculation Look back Period (Days)	45	70	95	120	145	170	Average Return for Look back Period
20	5.38%	3.14%	5.92%	4.60%	3.47%	5.09%	4.60%
40	4.99%	5.17%	6.16%	3.48%	10.06%	5.79%	5.94%
60	5.80%	7.11%	9.10%	8.79%	8.35%	3.03%	7.03%
80	6.24%	6.96%	10.10%	8.66%	7.21%	9.71%	8.15%
100	6.83%	10.74%	4.95%	3.90%	5.65%	8.29%	6.70%
Average for Holding Period	5.85%	6.62%	7.25%	5.89%	6.95%	6.38%	

Average for All Look back and Holding Periods 6.49%

Average Performance Relative to Benchmark 0.43%

Number of Funds analyzed in this category: 82

Mid Capitalization Value Style

Cells in Green Indicate combinations of look back period and investment holding period where returns calculated by switching the highest 3 Alpha rated funds at the end of a holding period outperform the benchmark.

Relevant Benchmark: Russell Midcap® Value Index

Benchmark Annual Compound rate of return (12/31/1999-12/30/2011)-Dividends Reinvested 8.19%

Compound Annual Rate of Return (Net of all Fund Level Fees) Selecting 3 Highest Alpha Funds

Alpha Calculation Look back Period (Days)	Selected Investment Holding Period (Days) 45	70	95	120	145	170	Average Return for Look back Period
20	6.57%	7.05%	7.98%	8.11%	7.76%	7.96%	7.57%
40	8.11%	8.17%	7.89%	9.21%	10.26%	7.19%	8.47%
60	9.67%	8.85%	6.53%	10.64%	12.01%	6.60%	9.05%
80	9.00%	9.41%	9.81%	9.76%	9.35%	8.58%	9.32%
100	3.53%	9.21%	9.78%	8.59%	9.08%	9.68%	8.31%
Average for Holding Period	7.38%	8.54%	8.40%	9.26%	9.70%	8.00%	

Average for All Look back and Holding Periods 8.55%

Average Performance Relative to Benchmark 0.36%

Number of Funds analyzed in this category: 51

Small Capitalization Growth Style

Cells in Green Indicate combinations of look back period and investment holding period where returns calculated by switching the highest 3 Alpha rated funds at the end of a holding period outperform the benchmark.

Relevant Benchmark: Russell 2000® Growth Index
Benchmark Annual Compound rate of return (12/31/1999-12/30/2011)-Dividends Reinvested 0.89%

Compound Annual Rate of Return (Net of all Fund Level Fees) Selecting 3 Highest Alpha Funds

	Selected Investment Holding Period (Days)						
Alpha Calculation Look back Period (Days)	45	70	95	120	145	170	Average Return for Look back Period
20	7.71%	5.32%	6.32%	3.81%	0.39%	4.77%	4.72%
40	4.24%	5.95%	6.60%	5.28%	10.02%	7.02%	6.52%
60	9.94%	6.89%	5.05%	7.40%	6.31%	1.47%	6.18%
80	8.76%	8.29%	10.00%	10.46%	7.56%	8.63%	8.95%
100	7.86%	9.07%	8.79%	5.80%	8.16%	6.04%	7.57%
Average for Holding Period	7.70%	7.11%	7.35%	6.55%	6.49%	5.58%	

Average for All Look back and Holding Periods 6.80%
Average Performance Relative to Benchmark 5.91%

Number of Funds analyzed in this category: 111

Small Capitalization Blended Style

Cells in Green Indicate combinations of look back period and investment holding period where returns calculated by switching the highest 3 Alpha rated funds at the end of a holding period outperform the benchmark.

Relevant Benchmark: Russell 2000®

Benchmark Annual Compound rate of return (12/31/1999-12/30/2011)-Dividends Reinvested 4.75%

Compound Annual Rate of Return (Net of all Fund Level Fees) Selecting 3 Highest Alpha Funds

	Selected Investment Holding Period (Days)						
Alpha Calculation Look back Period (Days)	45	70	95	120	145	170	Average Return for Look back Period
20	9.21%	7.92%	9.16%	9.62%	8.53%	7.00%	8.57%
40	8.67%	8.68%	12.49%	13.71%	12.26%	9.69%	10.92%
60	10.22%	9.12%	8.66%	11.10%	11.85%	7.66%	9.77%
80	11.80%	11.83%	12.68%	10.91%	6.76%	9.75%	10.62%
100	11.21%	11.70%	10.39%	7.44%	10.46%	8.93%	9.78%
Average for Holding Period	10.22%	9.85%	10.67%	10.55%	9.97%	8.60%	

Average for All Look back and Holding Periods 9.98%

Average Performance Relative to Benchmark 5.23%

Number of Funds analyzed in this category: 94

Small Capitalization Value Style

Cells in Green Indicate combinations of look back period and investment holding period where returns calculated by switching the highest 3 Alpha rated funds at the end of a holding period outperform the benchmark.

Relevant Benchmark: Russell 2000® Value Index

Benchmark Annual Compound rate of return (12/31/1999-12/30/2011)-Dividends Reinvested 8.42%

Compound Annual Rate of Return (Net of all Fund Level Fees) Selecting 3 Highest Alpha Funds

	Selected Investment Holding Period (Days)						
Alpha Calculation Look back Period (Days)	45	70	95	120	145	170	Average Return for Look back Period
20	11.56%	9.42%	9.31%	8.74%	12.32%	11.21%	10.43%
40	9.24%	10.78%	9.82%	10.88%	13.83%	12.25%	11.13%
60	13.04%	10.51%	12.79%	13.96%	10.65%	9.26%	11.70%
80	11.40%	11.90%	11.59%	10.23%	12.43%	12.39%	11.66%
100	11.55%	13.26%	11.94%	12.58%	10.90%	12.54%	12.13%
Average for Holding Period	11.36%	11.17%	11.09%	11.28%	12.03%	11.53%	

Average for All Look back and Holding Periods 11.41%

Average Performance Relative to Benchmark 2.99%

Number of Funds analyzed in this category: 50

Conclusions:

In this study 193 of the 225 studied combinations of look back and holding period outperformed their relevant benchmark, while 32 combinations failed to outperform. The null hypothesis that the rates of return will not be higher than the benchmark rate of return can therefore be rejected with 99% confidence level. This indicates that short term alpha, as defined in this study, can be used to select mutual funds from within an asset category, and over an extended period of time those funds can be expected to outperform the benchmarks.

The system aggregate annual average compound rate of return 6.78% exceeds the average benchmark aggregate annual compound rate of return by 3.19% per year. An annual incremental return of more than 3% over the averages can greatly increase the value of investment portfolios and enhance the financial security of clients.

This study confirms and expands on the research done by Jegadeesh and Titman (“*Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency”*, Journal of Finance, Vol.8, Issue 1, 1993), Wermer (“*Investment Momentum Strategies of Mutual Funds, Performance Persistence, and Survivorship Bias”*, 1997) and Jegadeesh & Titman (“*Momentum”*, 2001) as well as Sassetti and Tani ("Dynamic Asset Allocation Using Sector Rotation",2003).

In each of the aforementioned studies, the authors concluded in different manners that price momentum can be a significant predictor of future investment performance; however, each study focused primarily on the persistency effect of *individual stocks* held within a mutual fund, rather than the performance persistence of *the fund.*

It should be noted that the best combination of look back periods and investment holding length are a look back of 60 to 80 days, with a holding period of 95 to 120 days. Holding periods and look back periods that are either shorter or longer, tend to lead to a reduction in returns, albeit still providing benchmark outperformance.

The fact that all 25 aggregate combinations of holding periods and look back periods provide excess return over the benchmark is a very strong indication of the validity of the model. The results obtained show that there is no single "mountain of outperformance" sticking above a "sea of underperformance", but rather that a large range of input variables produce predictive values, which can be used to select funds to generate benchmark exceeding returns. There are no extreme local maxima in the results set further validates the robustness of this fund selection approach.

Furthermore, this study only uses 2 variable, look back and holding period applied to one variable; the price of the securities. This greatly reduces the risk of "curve fitted" results common in more complex investment management systems.

This is a relatively easy to compute and apply strategy, which only requires the three to four no cost trades per year for each fund. It can easily be integrated into a strategic asset allocation portfolio and significantly enhance the value of the advice given by the investment professional.

The practitioner desiring to implement this strategy in their practice could define their own universe of mutual funds, download the price data matching the look back period, and then using Excel calculate the Alpha as described above for each fund, and then rank them for suitability for inclusion in the client portfolio.

Additionally studies have been done by the author where the investments are not constrained by asset classes, and significant additional returns over those shown in this study have been obtained. However, as the focus of this paper was to study whether short term mutual fund alpha can be a profitable fund selection tool, the study was constrained to the most difficult parameters, rotating funds exclusively within a particular asset class.

I believe that this study makes a compelling argument to implement a technical fund selection strategy as an overlay to any strategic asset allocation model, to benefit the client and allow the financial professional to point to tangible superior investment results.