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– Seeing Through Walls –

Bringing Greater Transparency To Mutual Fund and Hedge Fund Analysis

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Introduction

The following report reviews traditional applications of Returns-Based Style Analysis (RBSA) and details a new proprietary Dynamic Style Analysis (DSA) methodology developed by Markov Processes International, LLC (MPI) improving upon RBSA to provide hedge fund and hedge fund of funds managers with an unprecedented view into the workings of individual funds for due diligence, performance analysis and risk management.

MPI and RBSA

Over the past eight years, MPI's Stylus Pro Suite, a proprietary software application for Returns-Based Style Analysis (RBSA), has helped investment professionals across the globe to gain insight into portfolio structure and identify shifts using only historical performance data.

For example, using only mutual fund daily net asset values (NAV), MPI's technology can help to verify whether a fund manager was buying technology stocks and selling financials in the last several weeks, or perhaps selling equities while buying bonds. By providing this vital added level of transparency, MPI's tools have been widely adopted by financial services organizations for use in risk management, competitive intelligence, investment research and product development.

MPI's founders were the first to develop a returns-based tool for daily analysis. Since inception, MPI's applications have garnered accolades from prominent members of the investment community including Nobel Laureate Bill Sharpe, the originator of returns-based style analysis. (see Appendix 1).

MPI's Stylus Pro application is used by investment research analysts to prepare for portfolio manager interviews and assists in manager searches for subadvisors or acquisitions. The application can also be used to provide valuable daily analysis of funds to track fund shifts that could save investors millions if applied early enough, especially following major fund transitions. Following is an example of just such an application of the technology.

RBSA as Early Warning Tool

On May 14, 2001, The Wall Street Journal article *"Two Fidelity Funds Suffer After Manager's Departure,"* described how a dramatic strategy shift in one of the largest Fidelity funds caused tremendous losses to unsuspecting investors.

George Vanderheiden, one of the most prominent investors in the industry and the manager of Fidelity Destiny I and Fidelity Advisor Growth Opportunities funds ($36B under management during his tenure as fund manager), ran a bearish portfolio amid the tech bubble in the late 1990s. According to the fund's report it maintained only about 12% in tech stocks in early 2000.

In February 2000, Mr. Vanderheiden resigned and a new manager, Karen Firestone, took over and rapidly accelerated tech stock acquisition to 40% in just in two months. In May 2000, the technology market collapsed and by May 2001 fund investors realize two distressing facts (a) they had, in fact, invested in a very aggressive portfolio and (b) instead of making 22-23% -

assuming the fund maintained Vanderheiden's original portfolio at the time of his departure - they lost 20% with the new manager, and in the end lost well over 40% in opportunity cost.

The chart below (Figure 1) shows the performance of large technology stocks from the late 1990s – 2001 and provides a setting for fund dynamics during the management change.

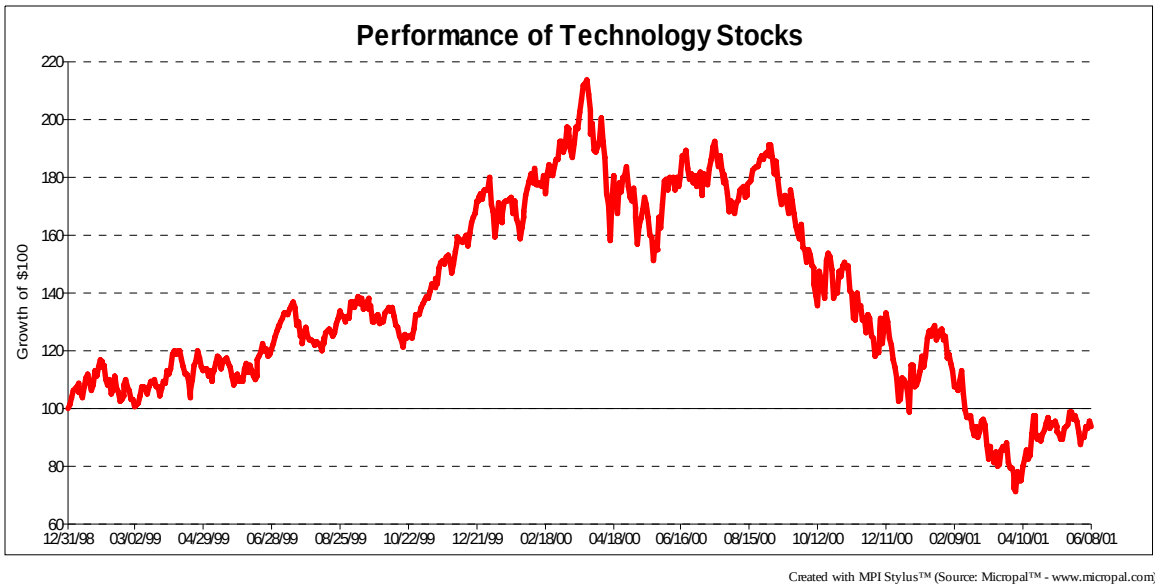


Figure 1. Performance of Technology Index

The following will demonstrate that an analysis of the fund's daily NAVs using MPI tools could have provided an early warning to investors and could have helped them gain insight into the internal dynamics of the fund even when holdings data is not available.

The focus of Returns-Based analysis is in finding a dynamic portfolio of generic market indices that tracks a fund's performance as close as possible. For the analysis of the Destiny Fund, we used only fund daily NAVs and S&P 500 Index sector returns. Holdings information was not used. The result of this analysis is provided in the area chart below (Figure 2). In this chart each color represents the percentage weight of an index in the "style" portfolio (the portfolio that best explains the manager's return behavior). The area above the zero line represents long positions while the area below the zero line represents short positions. If one draws a vertical line at any time point, it will be divided by color bands proportionally to the amounts allocated to each index in the portfolio.

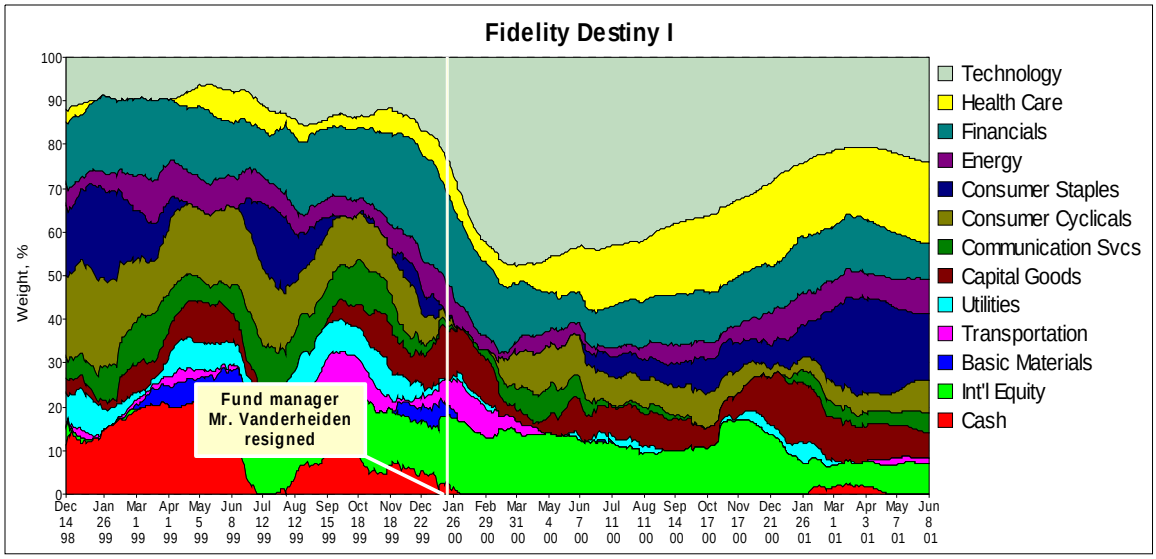


Figure 2. Results of Daily Analysis

Note that the overall dynamics of the fund positions match the article numbers resulting in the bond position diminishing rapidly following the departure of the veteran manager. The timing of accumulation of technology stocks is also confirmed. We separated the technology position on the chart below (Figure 3) and placed labels with the numbers cited in the article on the chart to assist in following the manager strategy (according to manager interviews).

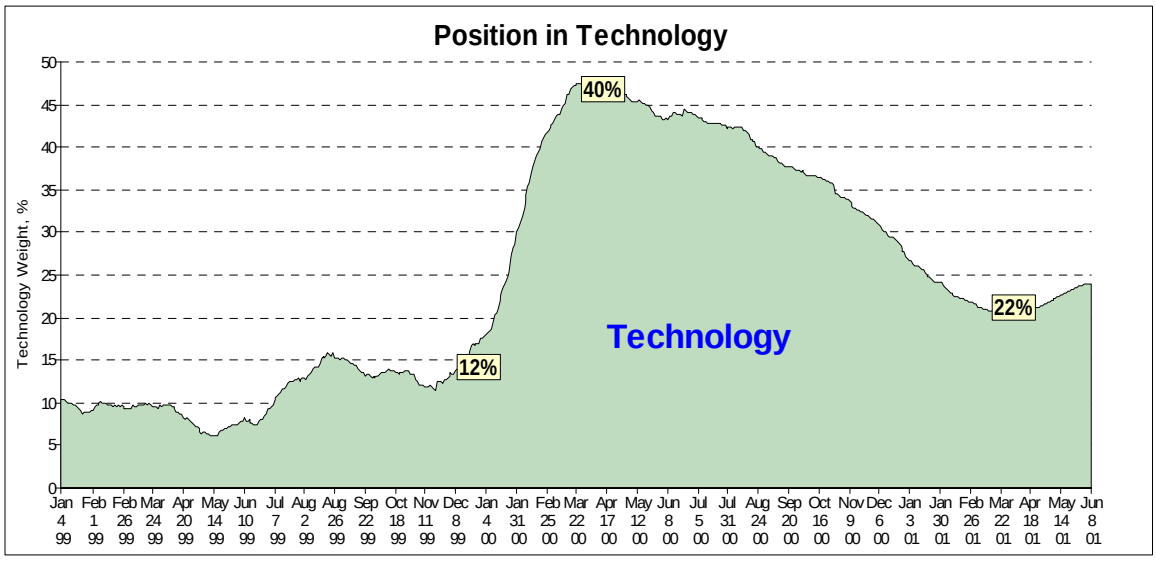


Figure 3. Technology Allocations from Daily Analysis

Note that dynamics of the tech positions are confirmed with remarkable accuracy, providing a strong validation that daily fund NAVs contain a wealth of information that can be used to benefit investors.

Now, MPI has improved on RBSA to meet the unique needs of the hedge fund market. Using the knowledge base from developing traditional RBSA technology and its experience analyzing

alternative investments, MPI focused on applying an improved methodology to address the intricacies and "behind-the scenes" processes of the hedge fund market.

MPI's Tools Help to "Reverse-Engineer" Hedge Funds – Applying New RBSA Methodologies for Better Hedge Fund Transparency

It is MPI's belief and expectation that hedge fund analysis should achieve the same level of transparency and insight as with traditional mutual funds. Until recently, the applicability of returns-based analysis to alternative investment products was relatively limited. As compared with traditional investments, hedge funds may take significant short positions, employ leverage and engage in very rapid, almost instantaneous strategy changes with the help of derivatives. Unfortunately, traditional "window-based" regression techniques are limited in their ability to handle these complex investments.

To address the limitations of traditional RBSA in dealing with hedge funds, MPI recently introduced a new methodology, Dynamic Style Analysis (DSA), specifically designed to improve the returns-based analysis of hedge funds. There are two significant applications for this methodology: Due Diligence and Investor Alert /Fraud Detection. Case study examples for each of these applications follow.

A Case Study in Due Diligence

One of the most important applications of this patent-pending technology lies in hedge fund due diligence. Since hedge funds are not as tightly regulated as mutual funds, they are not subject to the same level of disclosure. Performance data is mostly reported on a monthly basis, holdings are not reported with any regularity and the role of both qualitative and quantitative due diligence has increased tremendously. By using monthly fund NAV, MPI's new technology allows one to understand the source of a fund's performance and verify whether it matches with its stated strategy. Below we provide an example of such analysis using a recently published article in Barron's.

In an article "*Bipolar Disorder*" (Barron's – June 13, 2005), Ray Dalio, Chief Investment Officer of Bridgewater Associates described certain macro bets of the firm's hedge fund strategy. Bridgewater, based in Westport, CT, manages nearly $120 billion in institutional money and runs one of the best performing hedge funds.

Below are some excerpts from the interview describing the fund's macro bets:

- "…we are short the euro against the dollar.

  When did you start shorting the euro?
  Last December because of Europe's economic stagnation. We have built up the position since."

- "We have big spread positions: Essentially, we are long European bonds and Japanese bonds even though interest rates are very low. Against that, we have short positions in U.K. 10-year gilts and U.S. Treasury bonds."

- "…We are long commodities. Oil is my favorite, but I also favor gold and copper."

- "I'm particularly long Australian and Canadian equities."

For MPI's analysis of this fund, we used fixed income and equity indices from Merrill Lynch and Citigroup. We also used the Euro return index to track the fund's exposure to Euro currency. The Bridgewater Pure Alpha hedge fund returns were taken from the HFR database (Source: Chicago-based Hedge Fund Research). At the time of the interview, only data through April 2005 was available.

Using the above time series, MPI Stylus and its DSA technique derived a dynamic portfolio of market indices that could have produced similar performance over the past several years. The results of this analysis are presented in the area chart below (Figure 4).

In Figure 4 each color represents the percentage weight of an index in such a portfolio. The area above the zero line represents long positions while the area below the zero line represents short positions. If one draws a vertical line at any time point, it will be divided by color bands proportionally to the amounts allocated to each index in the portfolio.

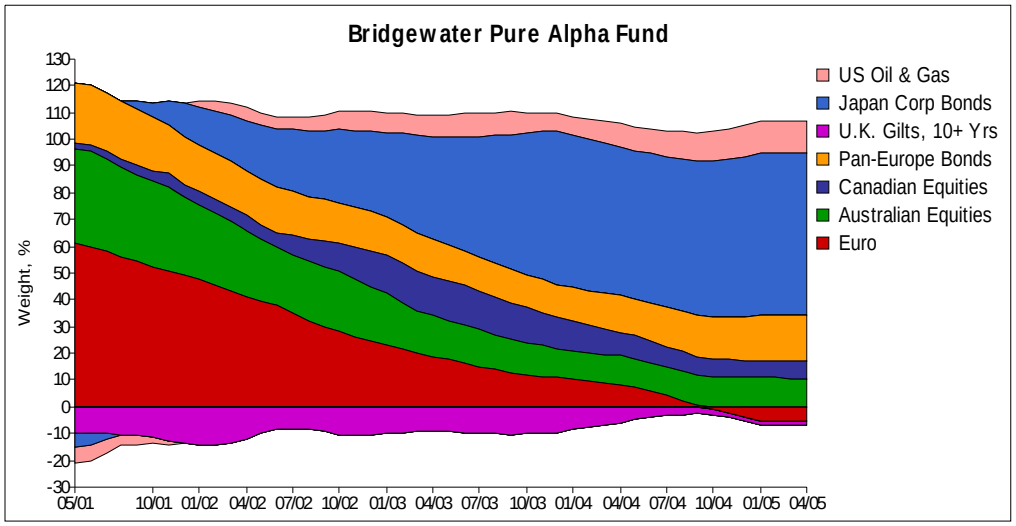


Figure 4. Monthly MPI DSA Analysis – Estimated Asset Allocations

It is clear from this analysis that the MPI Stylus Hedge Fund model picked up long and short positions correctly. Note the long position in both Canadian and Australian equities has been correctly identified, as well as European and Japanese bonds. At the same time, the fund is showing a short position in 10Y+ UK Gilts and the position in Euro switched from long to short at the beginning of 2005 – consistent with the manager's disclosure information.

The performance chart below (Figure 5) is crucial in the due diligence analysis of a fund. It shows cumulative performance to date of the "fund-tracking portfolio" consisting of generic market indices with weights corresponding to the area chart above. Each point on the line chart shows performance (total return) from a date through the last date (April 2005).

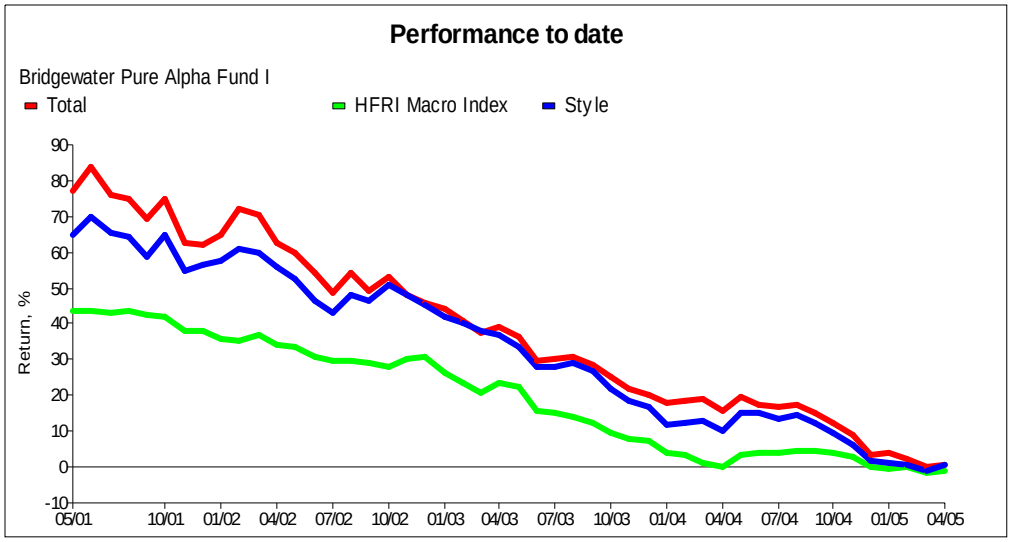


Figure 5. Tracking Fund Performance with Generic Assets

It is clear from Figure 5 that over the past three years the generic portfolio tracks the Bridgewater fund very well. This tells us that (a) the manager's story is credible and matches well with its performance numbers and (b) most of the fund's superior performance vs. its peers can be explained by macro bets rather than individual sector/security selection. Therefore, the "Alpha" in the fund's name is related to the execution of a superior macro strategy

However, there are times when analysis yields a more disturbing view of the fund – one where significant fraud has been indicated by the results.

Investor Alert and Fraud Detection

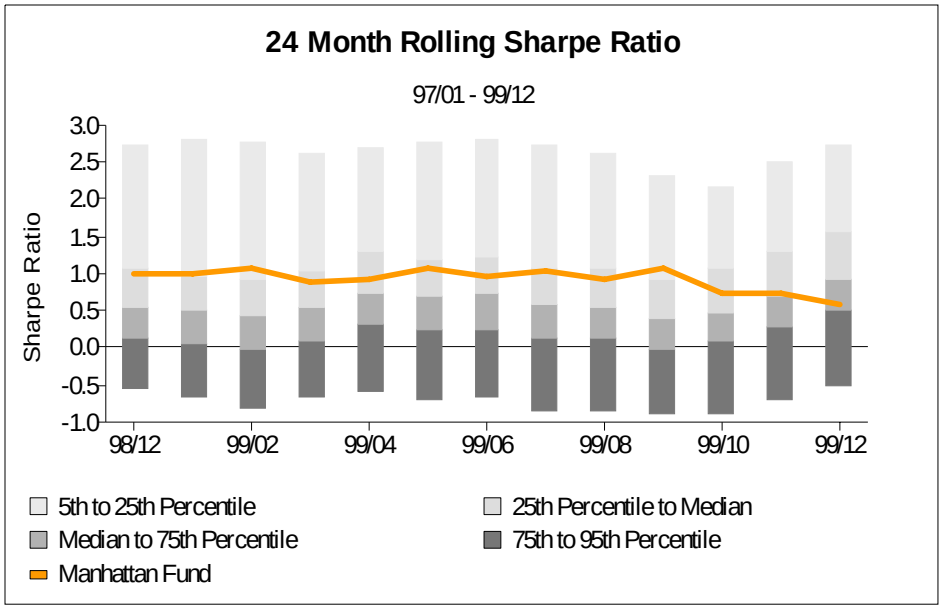
It is not always the case that a fund's performance numbers match the story of its manager. In such cases MPI's tools are indispensable in detecting outright fraud. While it is known that hedge fund managers often perform "smoothing" of their returns by over- and understating returns for some months, the case study below illustrates a perfect example of systematic forgery. MPI's DSA methodology works effectively to identify both cases.

According to the Securities and Exchange Commission Litigation Release No. 16412 (January 19, 2000), on January 18, 2000, the SEC filed an emergency enforcement action charging Michael Berger, a 28-year-old Austrian native, with securities fraud. Charged as well were Manhattan Investment Fund Ltd., a hedge fund organized and managed by Berger with approximately 280 investors, and Manhattan Capital Management Inc., an investment advisor owned by Berger. The SEC alleged that starting in September 1996, Manhattan Investment Fund began to sustain market losses that ultimately totaled more than $300 million, even as Berger was reporting to investors that the fund had returns of between 12 and 27 percent annually.

On November 13, 2001, the Honorable Denise Cote of the United States District Court for the Southern District of New York found Berger liable in securities fraud and ordered fine of $20 million. "In her opinion and order, Judge Cote found that Berger commenced his fraudulent scheme almost immediately after the Fund began its operations in mid-1996. Judge Cote

further found that, as a result of Berger's trading strategy, the Fund consistently suffered losses which ultimately totaled nearly $400 million. Instead of accurately reporting the losses the Fund was experiencing, however Berger created fictitious account statements which substantially overstated the market value of the Fund's holdings."[1]

In this analysis of the Manhattan Fund we will focus on the ability of MPI's DSA methodology to detect fraud using the fund's reported monthly returns from January 1997 through December 1999. During this time, Michael Berger readily supplied investors with performance results. Fund performance statistics looked very good and the Sharpe Ratio, a common measure of the performance efficiency of hedge funds, failed to provide any warning to investors. On the contrary, rolling 24 month Sharpe Ratios were extremely stable, when compared to the peer group of about 300 Equity Hedge and Market Neutral funds from the HFR database (Figure 6). In fact, it was the stability of the fund's efficiency that primarily attracted investors to this fund amid high market volatility and uncertainty.



Created with MPI Stylus™

Figure 6. Manhattan Fund Sharpe Ratio Compared to Peers

In our analysis, we followed the path of a doubtful analyst or investor trying to find justification for reported performance results given Berger's description of the strategy (shorting tech shares). For this analysis, we used Dow Jones US sector indices.

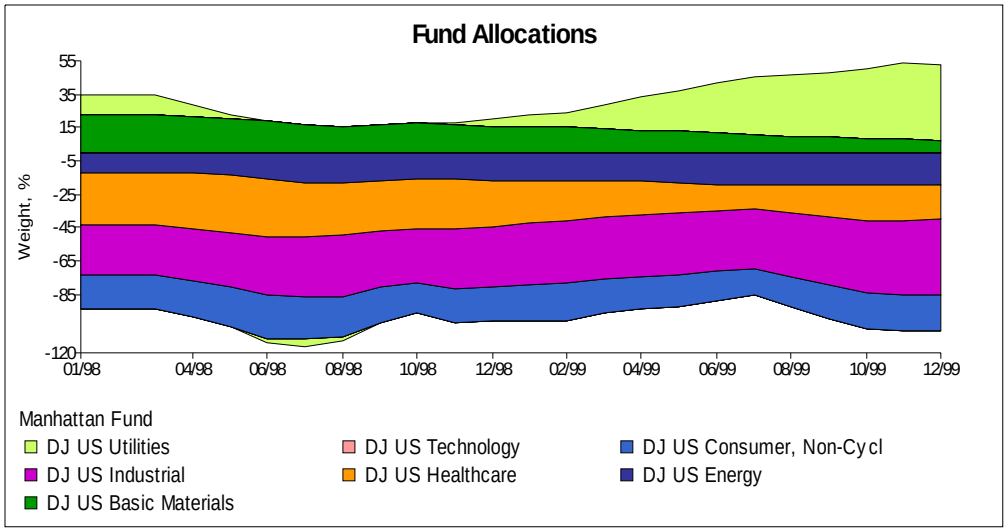


Figure 7. Monthly MPI DSA Analysis – Potential Sector Exposures

The Figure 7 chart shows a "potential" strategy that produced results that would match the ones of the Manhattan Fund. The main short positions in this strategy are in consumer, industrial and healthcare stocks. Nothing here implies the strategic shorting of technology shares claimed by Berger.

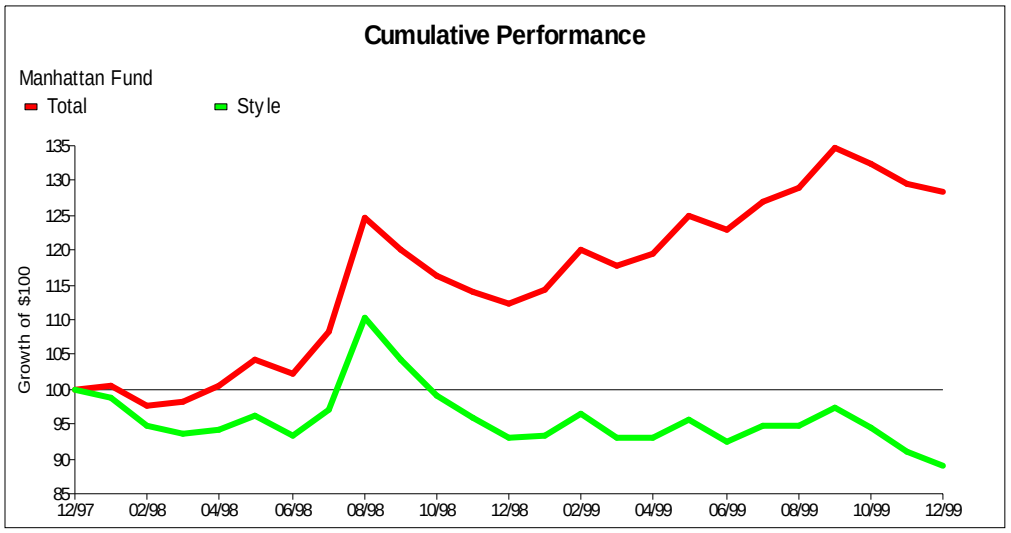


Figure 8. Fund Performance vs. Hypothetical Tracking Portfolio

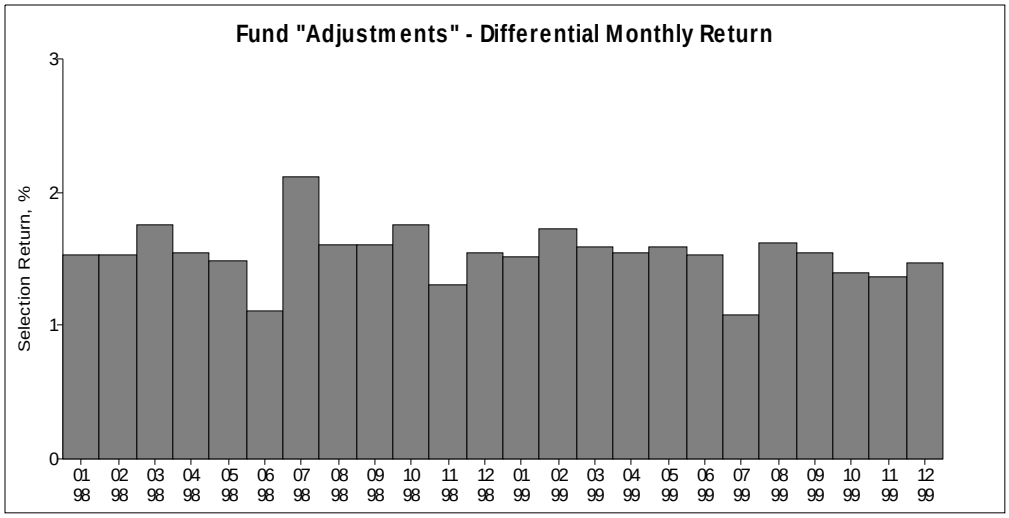


Figure 9. Differential Returns – Indication of Possible Fraud

A careful analysis of the Performance chart in Figure 8 shows that the fund's compounded growth line (red) could be obtained from the growth line of the portfolio driven by sectors (green) by rotating it upwards. Such linear difference can be obtained by adding a constant number on a monthly basis to the sector portfolio from Figure 8. This difference is presented in Figure . There is little volatility in these numbers and they show that about 2% was constantly added monthly from an unknown source. A steady stream of monthly Differential Returns is very unusual for a regular fund and is a clear indication of either return smoothing or fraud. All of which has been indicated by the DSA analysis of monthly data.

Summary

Since its inception as a new financial analysis technology in the early 1990s, returns-based style analysis has become a ubiquitous and essential tool in the analysis of traditional mutual funds and other managed accounts. Such investments, it should be noted, offer a wealth of other due diligence opportunities such as holdings, etc. Hedge Funds, unfortunately for analysts and other investors, offer very little information or tangible clues as to their actual management decisions and there are even fewer tools available that can shed any light on what is really happening behind the scenes.

Until now, returns-based style analysis – which has been so successful with traditional managers - has offered hedge fund analysts with tantalizing, but often insufficient information. MPI's new Dynamic Style Analysis technique is designed to overcome many of the limitations that traditional RBSA has in dealing with alternative investments so that a brighter spotlight can be shined on the management and behavior of these popular and often secretive funds. Especially in the current climate of heightened due diligence, it is more important than ever that hedge fund investors and their analysts have the best tools available to better understand their possible investments options and, if necessary, to defend their decisions.

About MPI

Markov Processes International, LLC (MPI) leads the industry in developing superior analysis and reporting solutions for financial services organizations. MPI's Stylus series of applications and customized consulting services provide more than 180 client firms and 1,500 users with improved integration, analysis, reporting and distribution of investment information. For more information visit www.markovprocesses.com.

APPENDIX 1:

"In most instances, returns-based analysis won't notify you immediately of a radical shift in investment style. But, said Mr. Sharpe, Michael Markov, a programmer of returns-based analysis products who licenses a version of his own, is promising the ability to quickly identify style shifts."

Quote from William F. Sharpe – "Old Controversy Reignites Over Returns-Based Analysis" – Pensions & Investments, February 3, 1997.

[1]Securities and Exchange Commission Litigation Release No. 17230 / November 13, 2001