



A document by the Ossiam

RESEARCH & INVESTMENT TEAM

gestion@ossiam.com

Attention:

Date: March 6th 2014

Topic: **Adding non-systematic decision-making to smart beta strategies, a risky bet?**

Smart beta is a new breed of investments which relies on a quantitative investment process in order to correct inefficiencies of capitalization-weighted portfolios. It is based on academic research findings implemented in a transparent way and supplemented with protective mechanisms, such as portfolio constraints, to allow the strategies to work reliably. But should these strategies be managed passively, or should they be under the supervision of managers who are free to change systematic models with discretionary decisions?

Here we discuss the ways in which a discretionary active layer in a systematic portfolio might change its characteristics. If a manager has the freedom to alter a strategy model, this will result in higher risk, greater turnover and increased probability of style drift. It is difficult to find evidence that these repercussions are compensated with higher returns, because managers are not free from behavioral biases and are reluctant to deviate too much from the mainstream. The best approach is to put a particular focus on the model design *a priori* and to address the possible issues regarding robustness via disciplined rules, rather than to start from a poorly-defined systematic base and try to correct the issues “along the way” by discretionary tweaks and interventions, which in reality will bring plenty of additional risks to the portfolio.

■ **Systematic and non-systematic investments use similar quantitative tools and share the same systematic and model risks**

The main characteristics of an investment are shaped by its objective, not by the way the investment decisions are taken, i.e. systematically or based on discretionary judgment. The objective will determine the main risk exposures and will largely explain the performance pattern. For example, if a portfolio achieves lower volatility, it would be misleading to attribute this result to ongoing discretionary supervision. A simple systematic strategy like choosing stocks with the lowest past volatility would provide similar results. All managers, systematic and discretionary alike, need quantitative tools to make complex decisions, and those pursuing identical objectives have the same tools and models at their disposal. This means that, irrespective of whether the decisions are built into a systematic process, or taken by a discretionary manager, the same estimation and model risks inherent to quantitative investing will be present in both cases.

■ **Discretionary decisions tend to increase portfolio risk and concentration compared to a purely systematic portfolio**

Discretionary decisions move portfolios away from the model optimum. If a risk is defined as the likelihood of failing to reach the investment objective, the non-systematic management will more likely increase said risk than decrease it. Discretionary changes will rather be made in order to pursue additional objectives, like performance enhancement, to the detriment of the portfolio’s initially-defined objective.

■ **Active supervision opens the door to behavioral biases, such as overconfidence**

Non-systematic investors tend to (i) take more risk in up markets, (ii) misestimate probabilities of rare events such as extremely good and bad returns, (iii) hold under-diversified portfolios and (iv) rebalance too often. Recent research has shown that professional managers are not immune to these biases, and discretionary decisions might result in losses as well as gains. Moreover, a manager’s attempt to time the risk exposures might produce significant model drift and translate into additional sources of risk for the portfolio.

■ **Active views are limited by the structural pressures of the investment industry, such as aversion to underperform the benchmark and peers**

Rarely is a discretionary manager free from pressures coming from the benchmark and peer performance, as they are reluctant to accept long periods of underperformance. To limit underperformance, managers tend to align portfolio exposure to that of the benchmark and peers, a phenomenon known as closet indexing. One of the consequences of this aversion to underperformance is limited willingness to avoid exposure to assets with bubble-like characteristics, once they’ve been included in an equivalent systematic

portfolio. Another consequence is that during market downturns, the discretionary portfolio will appear more “systematic” because, as research shows, the underperformance aversion increases in turbulent times.

Smart beta portfolios are built upon a set of rules with the use of quantitative models and are rebalanced following a predefined periodic schedule. What happens if one adds the possibility for a manager to alter the model portfolio allocation and to change the portfolio rebalancing schedule at their discretion?

First of all, some things will not change. If the investment objective of a smart beta strategy remains the same, then the main risks will be the same in both systematic and discretionary implementations. However, discretionary decisions introduce style drift in such a way that the investment is no longer comparable to its systematic counterpart. Neither will the discretionary management eliminate model risk. The use of quantitative tools is unavoidable even for discretionary players when they have to calculate risk or valuation estimates or to build optimal portfolios. For example, a value manager applies screenings using balance-sheet ratios to select stocks. This requires a valuation model built on certain assumptions. Even the best available model has its limitations and is never model-risk free. However sporadic discretionary tweaking the model estimates with the aim of reducing model risk can hardly add value. It is better to make the model design more robust in advance and to perform a thorough model validation.

While systematic portfolios reflect model decisions, discretionary managers might alter the model output. However active deviations move the portfolio away from the model optimum. If the risk is defined as a likelihood of not reaching the investment objective, the discretionary manager’s input will more likely increase the risk than decrease it. Take, for example, minimum variance investing. The portfolio objective is to deliver the lowest possible portfolio volatility: discretionary changes in the model minimum volatility portfolio will increase the ex-post portfolio volatility. Of course, if the underlying portfolio strategy is poorly designed, the manager could make logical corrections to the model allocation. But the question is: why start from an ill-defined model portfolio in the first place? If the chosen model is appropriate, the manager’s discretionary changes will clearly be made in order to pursue some additional objectives, such as performance enhancement, in detriment to the principal portfolio objective. This loss of focus on the primary objective will lead to a greater risk of not reaching it. Another source of increased risk when applying the “active filters” is greater portfolio concentration. This simply stems from the fact that a manager will exclude some assets chosen by the model abstaining from introducing new assets that didn’t pass the model screen.

Discretionary managers tend to rebalance smart beta portfolios more frequently in order to react to changes in the market conditions and implement their views. Research on behavioral biases in asset management reveals a direct link between an investor’s overconfidence and their trading frequency (Statman, Thorley and Vorkink, 2006). An immediate consequence is higher turnover with increased transaction costs. A prompt manager’s intervention also does not guarantee loss avoidance. For example, a sudden liquidation of a big quant portfolio produced two-digit losses in the whole equity quant hedge fund sector during the week of August 6th 2007 (Khandani and Lo, 2007). Faced with mounting losses, many of the affected funds cut their exposures before 10th of August, when the reversal occurred. This caused the funds that had rebalanced to lose more than 30% of their value in just one week, while the other funds ended up losing only around 5% over the same period.

It is worth noting that, even if managers have the freedom to reshape a portfolio, they might decide not to use this freedom, as occurs with *closet indexing*, referred to earlier. This term defines active funds that in reality don’t deviate much from the composition of their benchmarks and have very low levels of tracking error. The literature (Petajisto, 2013) estimates that a third of mutual funds in the US in 2009 were closet indexers. A likely explanation of this phenomenon is the high aversion to the risk to underperform the benchmark, especially during a down market.

Another interesting example of peer and benchmark pressure is shown in the paper of Brunnermeier and Nagel’s paper, 2004. They found strong evidence that hedge funds did not play against the IT bubble but rather rode it. As an example, they provided a detailed comparison between Julian Robertson’s fund Tiger Management and Soros’s Quantum Fund. In 1999, Tiger Management decided to sell all its exposures to the technology sector to preserve investors’ capital from a potential technology bubble crash. In the meantime, the Quantum Fund decided to increase their technology exposure. Exhibit 1 shows the exposure to the highest quintile P/S (Price to Sales) in the NASDAQ stocks. The highest P/S essentially means the most overpriced stocks. In 1999, we can see that Tiger Management had no exposure to these stocks while Quantum Fund exposure increased to 60%. By looking at their inflows/outflows (Exhibit 2), we notice that for the same period, Tiger Management showed significant outflows while Quantum Fund attracted new investors. In the end, Tiger Management lost 25% of its assets under management. In March 2000, Tiger Management closed its fund, just a few months before the bubble crashed, while the Quantum Fund still exists.

Conclusion

Addition of discretionary supervision in smart beta strategies does not appear as efficient from a risk point of view. Notwithstanding a manager’s skills, the discretionary portfolios will tend to show greater risk, higher concentration and higher turnover than comparable systematic portfolios. Moreover, discretionary intervention could produce style drift and further distance the strategy from its initial objective. In practice, it is difficult for managers to resist benchmark and peer pressure or to play against a bubble for long periods of time, which limits the performance enhancement potential that one could expect from a discretionary intervention. Choosing a discretionary managed smart beta product doesn’t mean investors have no homework to do; they still need to understand how the model used in the portfolio construction works and to ask for clear attribution of the value added between the systematic benchmark and the discretionary manager’s input.

References:

- Brunnermeier and Nagel, “Hedge funds and the technology bubble”, *The Journal of Finance*, Vol. 59, N. 5, 2004
- Khadani A. and Lo A. “What happened to the quants in August 2007?”, NBER Working paper, 2008
- Petajisto A. “Active share and mutual fund performance”, SSRN paper, January 2013
- Statman M., Thorley S. and Vorkink K., 2006 “Investor overconfidence and trading volume”, *Review of Financial Studies*, 19, 1531 - 1565.

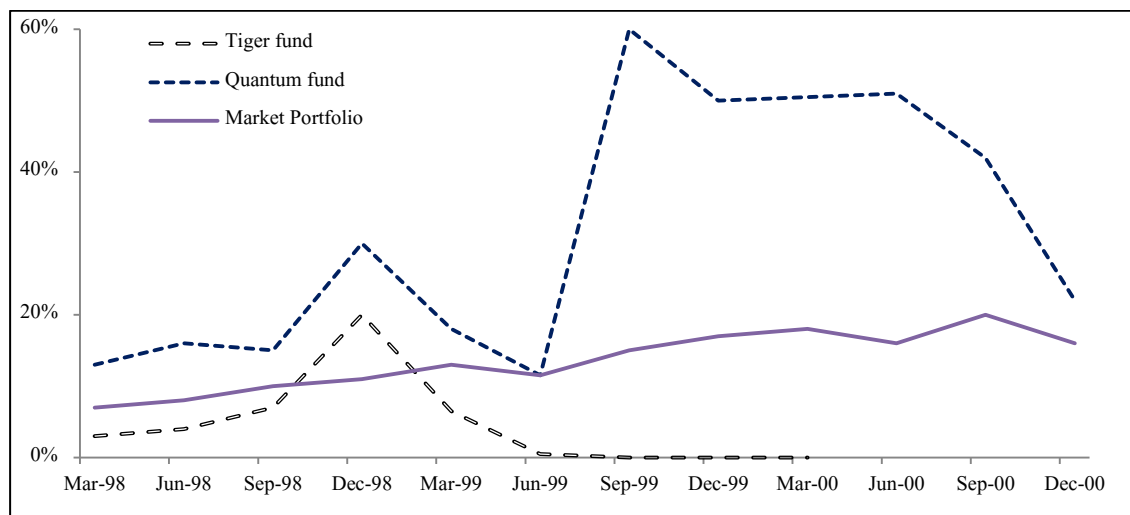


Exhibit 1: Exposure to the highest P/S quintiles in NASDAQ stocks.
 Source: Brunnermeier and Nagel, *Hedge funds and the technology bubble*

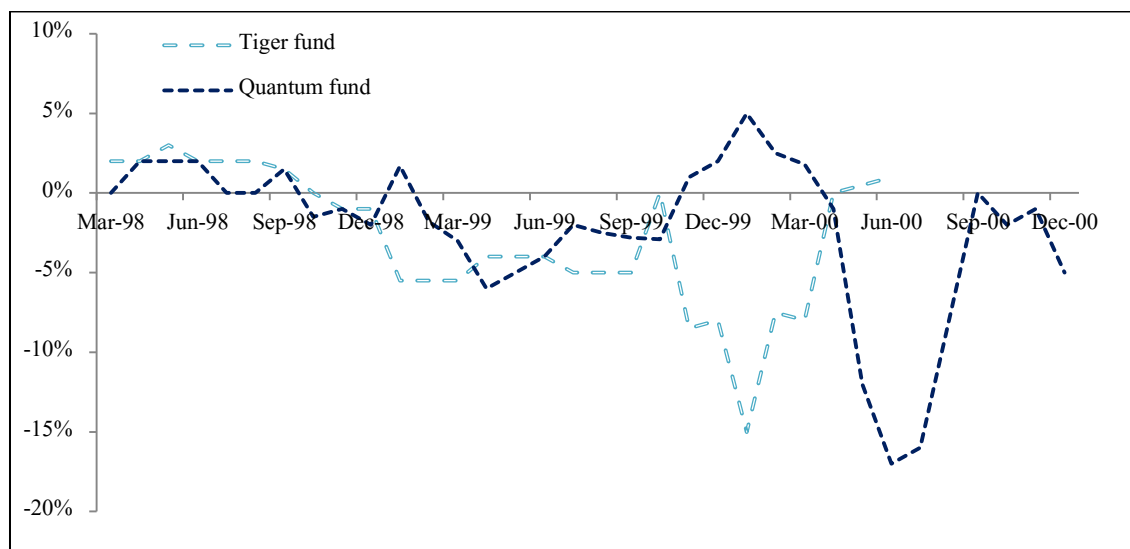


Exhibit 2: Inflows/outflows as % of AUM for Tiger Management and Quantum Fund.
 Source: Brunnermeier and Nagel, *Hedge funds and the technology bubble*

About Ossiam

Ossiam is a research-driven French asset management firm (authorized by the Autorité des Marchés Financiers) and specializes in delivering smart beta* solutions. Efficient indexing is at the core of Ossiam's business model. The firm was founded in response to a post-subprime crisis demand from investors for simplicity, liquidity and transparency. Given the environment, there was a growing need among investors for enhanced beta exposure and risk hedging. Ossiam is focused on the development of innovative investment solutions for investors via a new generation of indices.

**Smart beta' refers to systematically managed, non-market-cap-weighted strategies covering any asset class.*

This document is of a commercial and not of a regulatory nature.

Ossiam, a subsidiary of Natixis Global Asset Management, is a French asset manager authorized by the Autorité des Marchés Financiers (Agreement No. GP-10000016). Although information contained herein is from sources believed to be reliable, Ossiam makes no representation or warranty regarding the accuracy of any information of which it is not the source. The information presented in this document is based on market data at a given moment and may change from time to time.

This material has been prepared solely for informational purposes only and it is not intended to be and should not be considered as an offer, or a solicitation of an offer, or an invitation or a personal recommendation to buy or sell participating shares in any Ossiam Fund, or any security or financial instrument, or to participate in any investment strategy, directly or indirectly.

It is intended for use only by those recipients to whom it is made directly available by Ossiam. Ossiam will not treat recipients of this material as its clients by virtue of their receiving this material.

This material reflects the views and opinions of the individual authors at this date and in no way the official position or advices of any kind of these authors or of Ossiam and thus does not engage the responsibility of Ossiam nor of any of its officers or employees. All performance information set forth herein is based on historical data and, in some cases, hypothetical data, and may reflect certain assumptions with respect to fees, expenses, taxes, capital charges, allocations and other factors that affect the computation of the returns.

Past performance is not necessarily a guide to future performance. Any opinions expressed herein are statements of our judgment on this date and are subject to change without notice. Ossiam assume no fiduciary responsibility or liability for any consequences, financial or otherwise, arising from, an investment in any security or financial instrument described herein or in any other security, or from the implementation of any investment strategy.

This information contained herein is not intended for distribution to, or use by, any person or entity in any country or jurisdiction where to do so would be contrary to law or regulation or which would subject Ossiam to any registration requirements in these jurisdictions.

This material may not be distributed, published, or reproduced, in whole or in part.