Theta Quarterly Review

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The Asymmetry of Absolute Return Investing

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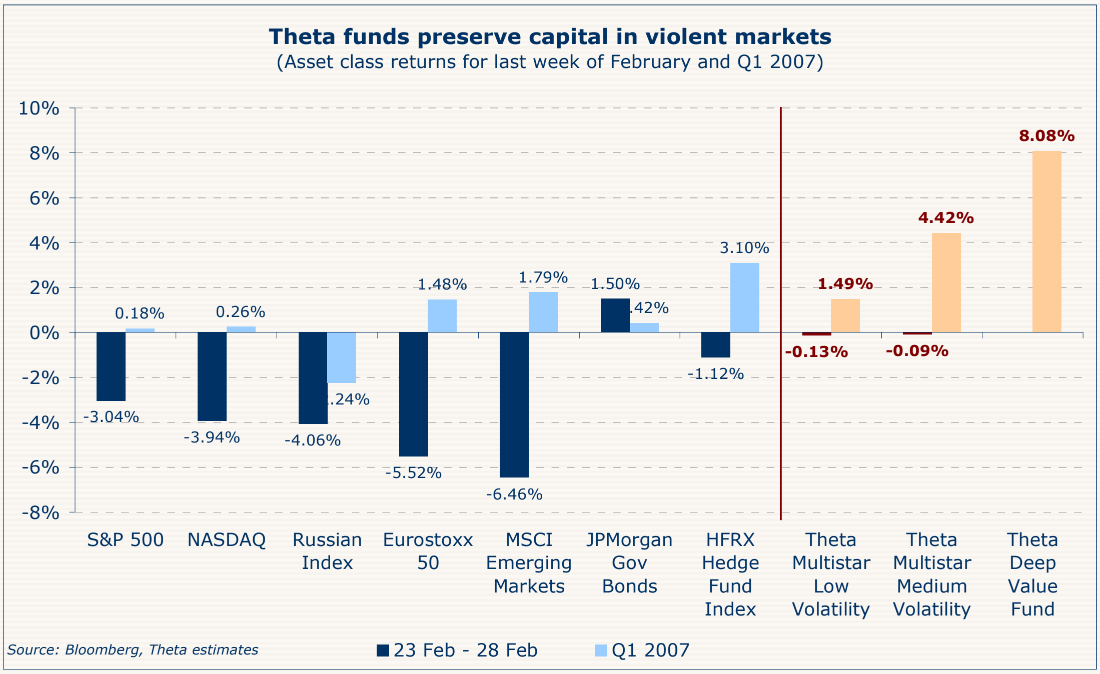
Market review

Similar to previous years, 2007 started on a solid note in most financial markets across the globe. Investor risk appetite was initially strong but received a fierce blow in the last two days of February when global equity markets sold off, led by emerging markets. Further, the US housing market suddenly took centre stage as financial analysts, journalists, investors and other 'specialists' who preferred to remain silent until *after the fact*, fell over each other to preach doom and gloom in the US housing market and its impact on US subprime mortgage-backed securities.

We expressed serious concerns about the state of complacency in global credit markets about a year ago, and we have taken actions to position our portfolios accordingly. While credit markets continued to rally in the second half of last year, we are happy to note that some of our positions paid off very well this quarter. Most notably our investment in a fund with a short position in risky tranches of US subprime residential mortgage-backed securities which we established about 9 months ago. In combination with high-quality returns (i.e. generated by deal-specific rather than overall market risk) from other funds, our contrarian position in this segment of the credit market did not only help to protect our investors' capital but even generated a strong return in some of our portfolios in the challenging month of February. Exhibit 1 below illustrates the point: while global equity markets sold off heavily during the last few days of February, our portfolios preserved capital and managed to generate decent returns for the first quarter of 2007.

Exhibit 1 **Capital preservation in violent markets**



On Correlation and Compounding

This brings us to an often-heard critique about hedge funds in recent years: strong and positive correlation to equities. While the correlation between (fund of) hedge fund returns and equity markets can indeed be high at times, it is a very poor measure of risk for the absolute return investor because it does not take into account the **asymmetry** of hedge fund returns. In particular, correlation only reflects the number of occasions that hedge funds and equities move in the same direction, but does not tell us anything about the magnitude of these co-movements. Consider the following numerical example, in which we compare three hypothetical monthly return series:

- Equity market: each monthly return is equal to the previous, but with the opposite sign;
- Fund A: a hedge fund which is fully invested in equities with a constant leverage of 2 and leverage cost of 3% per year;
- Fund B: a hedge fund without leverage which captures 50% of the upside of equities but only 20% of the downside. In fact, since 1990, funds of hedge funds (measured by monthly returns of the HFR Fund of Funds Index) captured exactly 50% of the upside of the MSCI World Equity Index, but only 20% of the downside.

Exhibit 2 Capital preservation in violent markets

Month	Equity	Fund A	Fund B
1	4.0%	7.8%	2.0%
2	-4.0%	-8.3%	-0.8%
3	4.0%	7.8%	2.0%
4	-4.0%	-8.3%	-0.8%
5	4.0%	7.8%	2.0%
6	-4.0%	-8.3%	-0.8%
7	4.0%	7.8%	2.0%
8	-4.0%	-8.3%	-0.8%
9	4.0%	7.8%	2.0%
10	-4.0%	-8.3%	-0.8%
11	4.0%	7.8%	2.0%
12	-4.0%	-8.3%	-0.8%
Correlation	1.0	1.0	1.0
Beta	1.0	2.0	0.4
Monthly volatility	4.2%	8.4%	1.5%
Cumulative return	-1.0%	-6.6%	7.3%

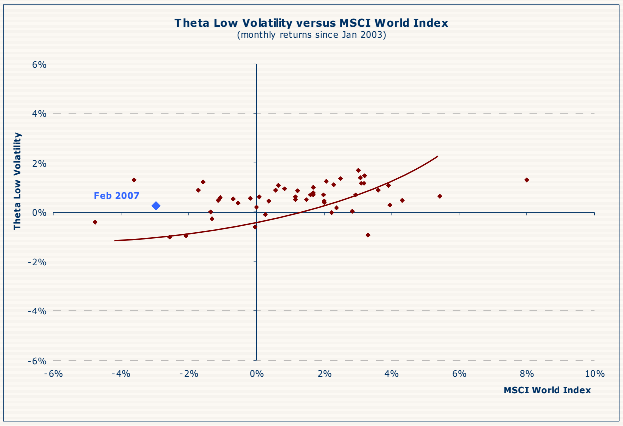
Source: Theta Capital Management

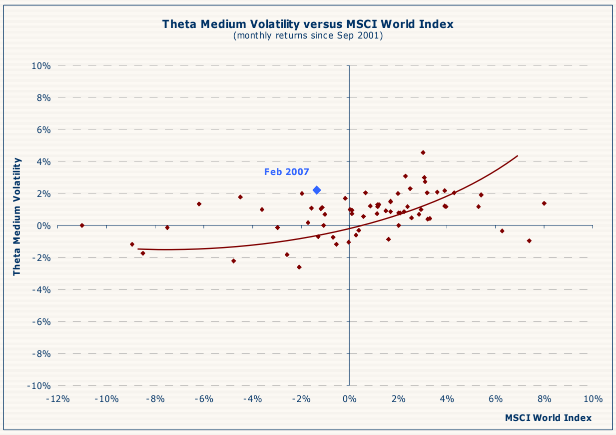
The equity market in our example has six up months of 4% and an equal number of down months of 4%, but the power of (negative) compounding ensures that we end up with a negative -1% after one year. Clearly, the two times levered fund (Fund A) performs even worse. Due to its leverage costs, its monthly losses are larger than its monthly gains: a return profile which is severely punished by the harsh mathematics of compounding: -6.6% after one year. Note however, that the correlation of Fund A with the equity market is 1; correlation is clearly a poor measure of risk. Beta does a lot better, since it takes into account the volatility of Fund A, which is exactly twice that of equities. Now consider Fund B (which return profile relative to equities resembles that of a fund of hedge funds): perfectly correlated with equities and a beta of 0.4. While this will be considered rather high for a fund of hedge funds, we show that – although slightly better than correlation – beta does not adequately reflect the power of the asymmetrical return profile which is typical for a good fund of hedge fund investment: Fund B generates a positive return of more than seven times the loss of equities: +7.3% after just one year.

Active risk management by a fund of funds manager, as well as its underlying hedge funds, prevents large losses and it is large losses that kill the rate at which capital compounds[1]. Therefore, it is less relevant to talk about hedge fund returns being correlated to equities. The absolute return investor is actually quite happy with positive correlation when markets go up, provided that downside risks are actively managed.

Turning to Theta's own reality, Exhibit 3 below shows the asymmetric return profiles of the Theta Low and Medium Volatility portfolios, which are the result of actively managing risk on the portfolio level, whereby risk is defined in absolute terms, i.e. we aim to protect investor capital and do not track some benchmark. Note that the asymmetry of returns that we target refers to both the *magnitude* and the *frequency* of positive versus negative returns. Interestingly, Theta Multistar Low Volatility captured 40% of the positive returns of the MSCI World, but *only 7% of the negative returns*. For Theta Multistar Medium Volatility, these numbers were 62% and 22%, respectively.

Exhibit 3 Asymmetric return profiles enable stable wealth accumulation





All markets are equal but some are more equal than others

On previous occasions, we have written about the state of complacency in global markets in which investors continue to display strong risk appetite, as evidenced by low equity (implied) volatility and historically tight spreads on risky assets such as credits, emerging markets equities and bonds and small cap stocks. This has also impacted the behavior of hedge fund managers in recent years. Arbitrage funds have sold volatility (collected premiums), and directional funds have tried to benefit from the strong uptrend in equity and credit markets across the globe[2]. For long/short equity funds, the strategy simply is to increase net exposure and maintain a long bias. Distressed debt and other credit managers are generally not highly correlated with equities. However, as the credit cycle matured over the past three years, they have increasingly been investing in post-restructuring equities, thus increasing their equity

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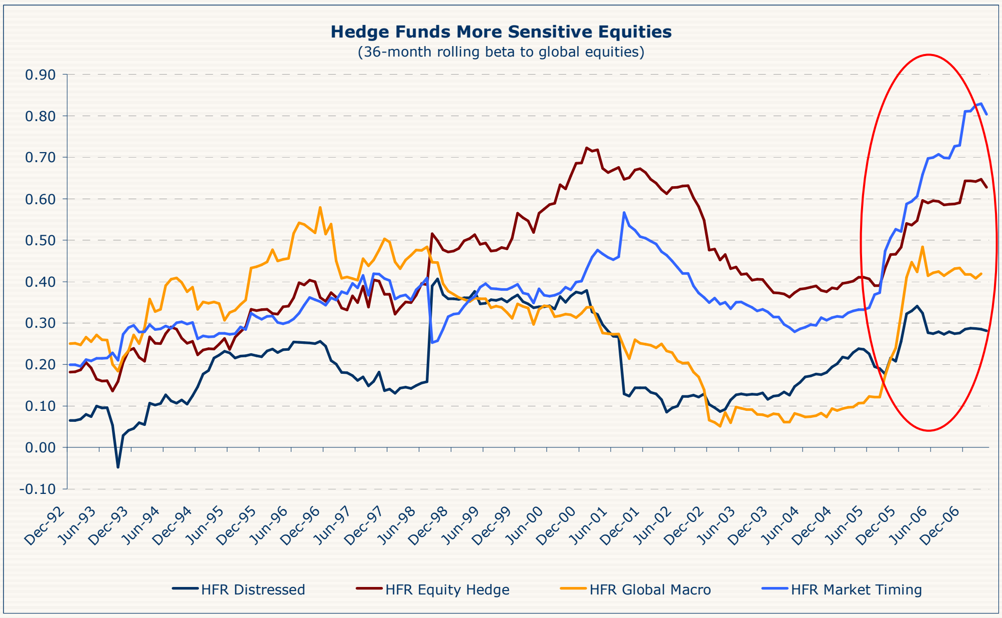
1 Albert Einstein called compounding the 8th wonder of the world: "Compounding is mankind's greatest invention because it allows for the reliable, systematic accumulation of wealth."

2 Note that the seller of an option receives premium for taking on the risk of an extreme event and a lower expected probability of an extreme event would translate into a lower required option premium, i.e. lower implied volatility of the option sold. Through this mechanism, the "writing options strategy" has been both cause and consequence of lower equity market volatility.

market exposure. Finally, global macro and CTA managers aim to profit from trends in different asset classes. Their large exposure to equities is related to the strong uptrend in global equities and emerging markets since early 2003 (most likely in combination with diminishing opportunities in currency and fixed income markets). The result has been an increased sensitivity of hedge funds to equity market returns, as shown in Exhibit 4 below.

Exhibit 4 Directional hedge funds more sensitive to equities in recent years



Also, as a result of financial integration in the last 20 years, movements in global asset prices have become more synchronized. Exhibit 5 below plots two 'covariance indices' measuring the degree of co-movement between individual world equity and bond markets[3]. In essence, the covariance index reflects the proportion of the portfolio risk due to co-movements between individual markets, both within equities and bonds. For example, the covariance index shows that the riskiness of a global portfolio of equities could fall by 75% if co-movements between individual equity markets were absent and individual markets would be the only risk drivers. The significant and prolonged increase in co-movements between markets illustrates how hard it has become for a global investor to build and maintain a well-diversified portfolio of global assets.

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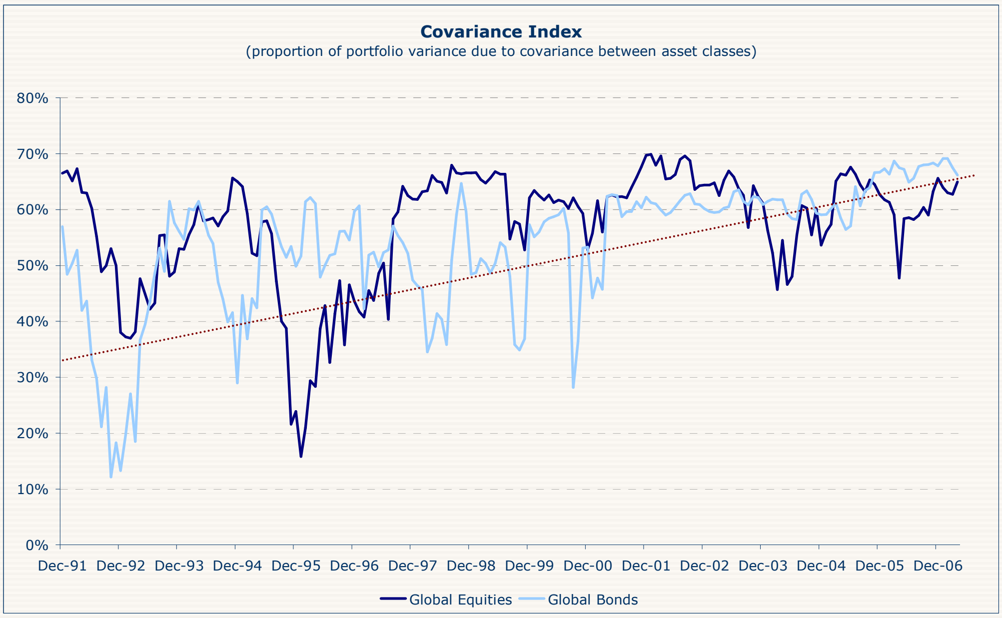
[3] The basic idea is to decompose the risk (volatility) of a global portfolio of equities and bonds into 1) volatility of the constituent individual markets (US, Germany, Japan and the UK) and 2) the co-movements between those individual markets. The covariance indices are computed as $1 - \sum \alpha_i^2 \mathrm{Var}(x_i) / \mathrm{Var}(\sum \alpha_i x_i)$ and thus reflect the proportion of the variance of the global portfolio due to co-movements between individual markets. (Methodology derived from BIS Paper No. 29, *The recent behaviour of financial market volatility,* August 2006). Covariance is a measure of co-movement which takes into account the correlation between variables and their individual volatilities.

Exhibit 5 Global markets become more synchronized



Interestingly, the same observation holds for a portfolio of hedge fund managers and strategies; they have become much more correlated in recent years, albeit at a slightly lower level. Exhibit 6 below illustrates that, for a portfolio of hedge funds which is well-diversified across hedge fund strategies, about 75% of the risk comes from the co-movements between the strategies, as opposed to the risk (and therefore the expected return) associated with any individual hedge fund strategy[4]. This implies that the diversification benefits of mixing such strategies together in a portfolio context have been dramatically reduced and finding uncorrelated individual hedge funds becomes increasingly important. The next paragraph provides a discussion on how we deal with this challenge at Theta Capital: a focus on *bottom-up* manager selection as opposed to *top-down* tactical strategy allocation.

One additional problem is the growing institutionalization of hedge fund investing with a widespread use of increasingly standardized risk models. Forced by their institutional investor base, many of the larger hedge funds have migrated to a more controlled approach to taking market risk. Simply said, if everybody is using the same models (which are predominantly geared towards managing market risk, rather than generating absolute returns), it should be no surprise to find that investment strategies have become more correlated. Moreover, due to a disproportionate focus on these risk models the unique characteristics of the hedge fund's underlying positions will have a proportionally smaller impact on the portfolio return and the added value of fundamental security analysis decreases. As a result of these institutional developments, funds of hedge funds' return profiles (whose main proposition is to offer well-diversified portfolios of diligently selected hedge funds) have become more correlated as well.

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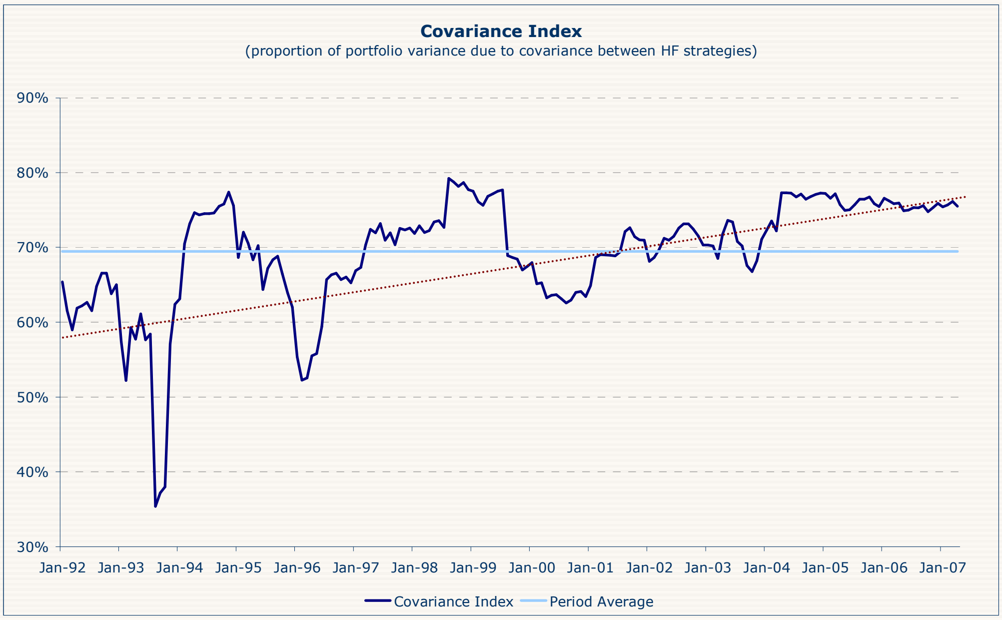
[4] The hedge fund portfolio is a weighted portfolio of all sub-strategy indices of the HFRI Hedge Fund Index, with weights equal to the respective share (measured by assets under management) of the strategy in the overall index.

Exhibit 6 **Hedge fund strategies provide little diversification**



High correlation of hedge funds with other hedge funds as well as with global equity markets, obviously poses a challenge for building a well-diversified portfolio of hedge funds with the objective of providing an absolute return independent of overall market movements. At Theta, we deal with this challenge in various ways.

Focus on individual managers, rather than strategies

It has always been our belief that our added value lies in the bottom-up selection of individual hedge fund managers with the flexibility to adjust to changing market environments and investment opportunities. We always look for hedge funds that are *willing and able* to trade the market from the short side. In recent months, we increased our focus on hedge funds which expect to realize their upside from negative market events. It is our experience that fund managers with an independent mind are often *willing* to take a contrarian view and that those who are *able* often manage funds with below average sizes. In particular, we increased exposure to:

- Event-driven funds whose returns are more driven by deal-specific rather than market risk. We look for managers who are concentrated in unique niche spaces, self-sourced deals with a focus on catalysts and active downside protection. We expect these managers to give us more time horizon diversification and less sensitivity to short-term market movements;
- Equity managers with an active hedging policy (taking advantage of cheap protection provided by low implied option volatilities) and a more neutral approach to the overall market. Note that this does not necessary imply less risk, it only means less market risk and more idiosyncratic risk - exactly what is needed to generate alpha.

Portfolio construction equals risk management

On the portfolio level, we take an active approach to risk management and continuously strive to improve our methodologies. The following examples illustrate our line of thought.

- Mapping of hedge funds in terms of their exposure to market risk (beta to equities, bonds, credit, emerging markets etc.) and non-market risk factors (liquidity risk, counterparty risk, operational risk, business risk). Hedge funds consist of a variety of investment strategies, risks and exposures. The goal of this mapping exercise is to find a consistent set of return and risk characteristics for individual hedge funds and hedge fund portfolios. Each hedge fund investment is represented by some combination of systematic (market) risk factors, plus a risk premium reflecting the investment's liquidity risk, operational risk, extreme risk, single manager/business risk. The output from this exercise is a ***Risk DNA***, which enables us to assess the added value of a fund's risk profile to our portfolios as well as compare the fund against its benchmark or peer group[5];
- Risk management on a forward-looking basis. Given the disadvantages of analyzing historical performance data (just because something has not happened in the past, does not mean it will not happen in the future), we use Monte Carlo simulations to generate more realistic scenarios for the future behavior of our portfolios. This enables us to account for dynamic correlations between individual funds, the occurrence of operational failures, trading rules and other path dependent behavior. The outcome of this stress-testing feeds back into our portfolio construction process and may lead to adjusted allocations to single funds and strategies;

Outlook

We are satisfied with our portfolios' performance this quarter as our defensive views paid off nicely. The violent market moves in February showed that a delicate balance can collapse quickly when a sudden shift in any of the drivers of the benign credit environment occurs. In our view, the value of liquidity can not be underestimated in times when everybody is buying illiquid assets. We want to be greedy when others are fearful; i.e. we prefer to be providers of liquidity when others need it most.

As a result of the active risk management approach described above, we believe that our portfolios are better hedged with respect to tail risk associated with significant equity market turmoil. At the same time, our funds retain their ability to perform well in an environment of strong equity returns. It is our objective to produce strong positive returns **across all market environments**, and not just when it is easy to be long on a tailwind of global liquidity.

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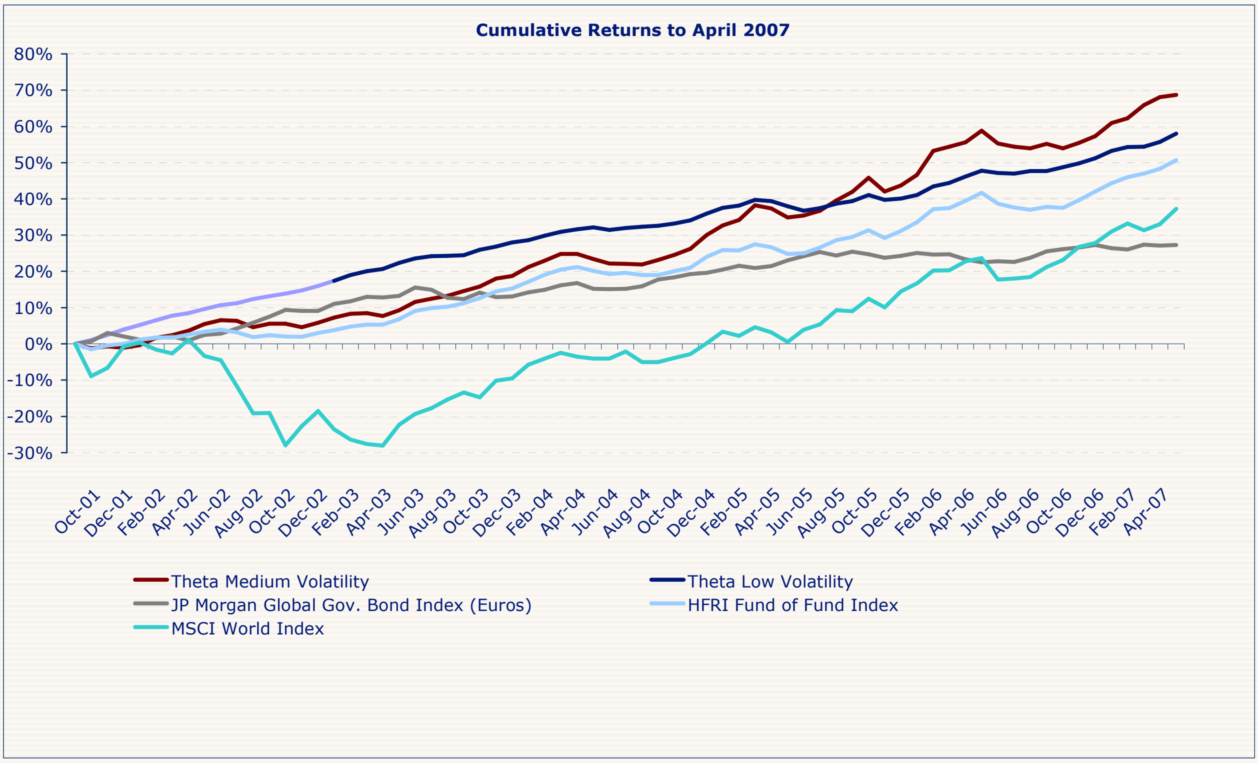
[5] Wikipedia: 'DNA contains the genetic instructions for the development and functioning of living organisms'. Since a hedge fund manager is a human beings rather than a 'dead asset' such as a stock or bond, trying to construct a DNA profile seems like a sensible way to assess a fund's role in our investment portfolio's.



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