

CORE/SATELLITE APPROACH

Hedge funds strategies for traditional investors

Mathieu Vaissié presents a pragmatic solution for investors to build their core hedge fund portfolio and then shows how they can implement a style rotation to design a satellite hedge fund portfolio. This core/satellite approach to alternatives can reduce risk exposure as well as increasing returns

For traditional investors, the rationale behind hedge fund investing is twofold. On the one hand, it is argued that hedge funds may provide superior risk-adjusted returns, due to the skills of hedge fund managers and flexibility in trading strategies. Indeed, talented hedge fund managers may succeed in creating value through factor timing strategies (i.e. dynamic betas) and/or fund picking (i.e. pure alpha). These have been labelled alpha benefits.

On the other hand, hedge funds appear to provide appealing diversification properties with respect to traditional asset classes through their risk profile (i.e. linear and non-linear exposures to a wide variety of risk factors). In terms of core/satellite management, which, we recall, consists of separating out beta management (i.e. choice and construction of a benchmark) and alpha management (i.e. management of active risk), this means that hedge funds may find their place in both the core and satellite portfolio of traditional investors. For the sake of clarity, we will focus on the design of hedge fund portfolios to allow for optimal integration in the core portfolio of traditional investors.

PRAGMATIC SOLUTION

We aim to present a pragmatic solution for investors to build their core (hedge fund) portfolio and then show how investors can implement a simple style rotation strategy to design their satellite (hedge fund) portfolio. We will conclude the article with an analysis of the benefits



“IMPROVEMENT IN THE RETURN DIMENSION WAS NOT ACCOMPANIED BY DETERIORATION IN THE RISK DIMENSION”

of the core/satellite approach to designing portfolios of hedge funds.

First, in an attempt to capitalise on hedge funds' beta benefits in a top-down approach, investors must be able to rely on robust techniques for optimisation that account for both investors' aversion to extreme risks, and the presence of parameter uncertainty, two problems that are exacerbated in the alternative arena. A pragmatic but robust way to do this involves focusing on the

minimum risk portfolio (see Amenc and Martellini (2002) for further details). In order to incorporate extreme risks in the optimisation procedure, we suggest defining the risk dimension as the expansion to the value-at-risk proposed in Cornish and Fisher (1937). Furthermore, since the objective of traditional investors integrating hedge funds in their core portfolio is generally to maximise diversification benefits, we did not try to minimise the value-at-risk of the investor's hedge fund portfolio.

STRATEGIC ALLOCATION

Instead, we looked for the strategic allocation across hedge fund strategies that allows the value-at-risk of the investor's global portfolio (i.e. traditional asset classes and hedge fund strategies) to be minimised. For illustration purposes we focused on the standpoint of an investor with a 20 per cent stocks/80 per cent bonds allocation. The resulting strategic allocation across hedge fund strategies was then dynamically rebalanced to ensure that the investor's core portfolio remained the minimum risk portfolio over time. We used Edhec's series of (non-investable) hedge fund indices to proxy the performance of hedge fund strategies.

Second, in an attempt to design a satellite (hedge fund) portfolio with a risk profile and in turn diversification properties that remain consistent with those of the core (hedge fund) portfolio, we used the extension to the Black-Litterman model proposed by Martellini et al.

(2005). As recently highlighted in the literature (see Amenc et al. (2003)), there is at least as much evidence of predictability in hedge fund returns as there is in stock and bond returns. We therefore decided to boost the return of the core (hedge fund) portfolio with a style rotation strategy (i.e. dynamic betas).

The Bayesian model we used allows active views on hedge fund style performance to be implemented in a consistent way that avoids the pitfalls of standard optimisation procedures. We relied on a simple univariate conditional factor analysis to form these active views.

We then mixed our active views with the neutral views inferred from the strategic allocation of the core (hedge fund) portfolio and thus obtained the allocation of the satellite (hedge fund) portfolio. This tactical allocation was rebalanced on a monthly basis to account for the evolution of the investor's information set, over time. Again, we used Edhec's series of (non-investable) hedge fund indices to proxy the performance of hedge fund strategies.

Finally, in an attempt to assess the benefits of our approach in terms of an improvement in the risk-adjusted performance of the investor's hedge fund portfolio, we formed four distinct portfolios. In the base case, we simply considered the minimum risk portfolio (i.e. no active views were formulated and 100 per cent of the capital was invested in the core hedge fund portfolio). The three other portfolios are invested in both the core (hedge fund) portfolio and the satellite (hedge fund) portfolio.

The weight of the satellite (hedge

Figure one: Performance of active allocation strategies – from January 2000 through December 2004

	MinVaR Portfolio	B&L Portfolio 1	B&L Portfolio 2	B&L Portfolio 3
Mean annual return	8.79%	9.79%	10.48%	10.71%
Volatility	4.29%	4.32%	4.39%	4.46%
VaR(95%)	1.33%	1.21%	1.17%	1.19%
Sharpe ratio (r=3%)	1.58	1.80	1.93	1.95
Tracking error		0.86%	1.24%	1.37%
Information ratio		1.17	1.37	1.41

Source: Edhec Risk and Asset Management Research Centre. This research was sponsored by SGAM AI

fund) portfolio is directly linked to the confidence we have in our active views (i.e. the more confidence we have, the more significant the allocation to the satellite (hedge fund) portfolio). We therefore defined three different levels of confidence and generated the corresponding hedge fund portfolios (i.e. B&L Portfolio 1 corresponds to the most conservative strategy while B&L Portfolio 3 corresponds to the most aggressive strategy). As can be seen from figure one, the approach presented in this article leads to a significant increase in the level of the performance of the investor's hedge fund investments.

AGGRESSIVE STRATEGIES

As one might have expected, the most aggressive strategies (i.e. with the highest proportion of capital allocated to the satellite (hedge fund) portfolio) yielded the highest returns. Interestingly, this improvement in the return dimension was not accompanied by a deterioration in the risk dimension. Indeed, while the level of volatility increased slightly, the level of the value-at-risk

fell a bit. This naturally leads to a significant improvement in risk-adjusted performance indicators such as the Sharpe ratio. The dramatic increase in the level of the information ratio confirms that we can boost performance while leaving the risk profile unchanged.

As a conclusion, had our fictional traditional investor implemented the core/satellite approach presented in this article to design his hedge fund investments, he would not only have succeeded in reducing the level of risk of his global portfolio, but also in enhancing its level of return.

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References

- Amenc N., El Bied, S. and L. Martellini, 2003, Evidence of Predictability in Hedge Fund Returns, *Financial Analysts Journal*, Vol.59, N°5, p.32-46.
- Amenc, N., and L. Martellini, 2002, Portfolio Optimization and Hedge Fund Style Allocation Decisions, *Journal of Alternative Investments*, Vol.5, N°2, p.7-20.
- Cornish, E. A. and R.A. Fisher, 1937, Moments and Cumulants in the Specification of Distributions, *Revue de l'Institut International de Statistique*, Vol.4, p.1-14.
- Martellini, L., Vaissié, M. and V. Ziemann, 2005, Investing in Hedge Funds: Adding Value through Active Style Allocation Decisions, *Journal of Portfolio Management*, forthcoming.



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