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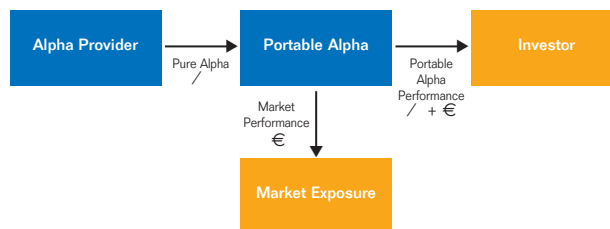
Successfully implementing portable alpha strategies for institutional investors

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Portable alpha techniques consist in reconsidering the traditional way to invest money with fund managers by separating the alpha («idiosyncratic», i.e. non correlated returns) from the beta (market or «systemic» return), in order to enhance returns over a particular market benchmark. When investing with a mutual fund manager, the management fees are meant to be paying the manager for the extra return (alpha) he produces over the benchmark, not for the beta exposure, which could easily be obtained through derivatives or ETF (Exchange Traded Fund) at very little cost.

The objective of portable alpha solutions is to enable investors to maintain the beta exposure they need, while allocating to specific alpha providers. For example, an insurance company is typically in need of both duration exposure to match its liabilities and of alpha returns to increase yield. It can achieve both objectives by executing a portable alpha transaction achieving exposure to both a bond index and a hedge-fund portfolio. With such a transaction, alpha is obtained without the risk of duration mismatch.

Table 1 | Portable alpha mechanism with hedge funds



Portfolio Results Enhancer: Alpha Transportation - Efficient Beta Exposure

Source: Lehman Brothers

How does a portable alpha transaction work?

Let's take a simple example: I am investing in the European equity markets with a long only fund manager. This manager produces an annual return of 10% with a volatility of 15% on average. Assuming the Dow Jones EURO STOXX 50SM Index average annual return is 12% with a volatility of 15%, I would be better off investing in a tracker fund (ETF) on the Dow Jones EURO STOXX 50SM Index for a cost of around 20 bps per annum; my net average annual return would be 11.80%. Alternatively, if I know a fund (typically a hedge-fund) with no/low correlation with the Dow Jones EURO STOXX 50SM Index, I could synthetically obtain exposure to the Dow Jones EURO STOXX 50SM through a swap instead of using an

ETF, and use the cash to invest into the hedge fund. My transport cost is $\text{libor} + 20 \text{ bps}$ for obtaining exposure to the Dow Jones EURO STOXX 50SM Index, which represents my break-even to outperform the index; hence if the hedge fund returns are above $\text{libor} + 20 \text{ bps}$ on average I will outperform the index. Instead of the above transaction, I could have invested the cash in an ETF to replicate the Dow Jones EURO STOXX 50SM Index and entered into a swap to obtain exposure to the hedge fund, but my transport cost would have been around $\text{libor} + 100 \text{ bps}$. To summarise, we can list a number of principles driving portable alpha solutions:

- › It is a leverage play since my cash works twice; I am long alpha and long beta.
- › It is more efficient to leverage market exposure than fund exposure.
- › It is appropriate to use portable alpha when managers are unlikely to outperform their benchmark, by transporting the alpha from another manager onto that same benchmark.

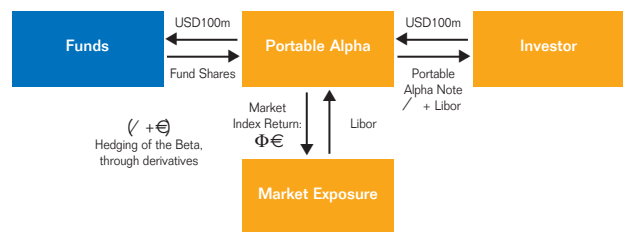
Extracting alpha from hedge funds? Many hedge funds have a directional bias. But once we start constructing baskets or funds of hedge funds, mixing various managers and strategies, the result is generally a stable and non-volatile source of return with a low correlation with equity and bond markets, making hedge funds an obvious source of alpha. Most investors look at funds of hedge funds, as they offer the same risk/return characteristics as baskets of hedge funds and are able to generate extra returns by having a dynamic allocation to strategies and underlying managers.

Funds of hedge funds are therefore an appealing source of alpha for portable alpha transactions, despite their limited liquidity which range from monthly to semi-annually. As most funds of hedge funds have a slight correlation with equity markets, a portable alpha transaction with funds of hedge funds will technically require a beta adjustment which reduces/eliminates the beta exposure by the natural beta in order to achieve exposure to the market only once. That can be achieved by the fund manager or by the structured product provider by taking into account changes in correlations on a regular basis.

Extracting alpha from mutual funds? Mutual funds can generate alpha especially in the equity world. Some managers are active managers (actually some of them are hedge funds managers running mutual funds) and manage to

generate an alpha return combined with beta exposure. Extracting their alpha will consist in investing in their fund and in being short the market by the quantity of beta they generate (almost one generally), turning them into a market neutral fund yielding libor (coming from the short) + alpha. If you design a note linked to this package, you achieve a pure alpha play, as described in Table 2. You could also invest synthetically into a beta source to achieve another form of portable alpha transaction. The transport cost will again be $\text{libor} + 20 \text{ bp}$, and you will need the mutual fund net of its beta exposure to return at least 20bp to outperform the market.

Table 2 | Extracting alpha from long only funds



Source: Lehman Brothers

Combining alpha and beta

There is no limit in combining alpha sources with beta exposures. The beta source does not necessarily come from the same market as the benchmark of the fund: I can extract alpha from equities and combine it with a bond index which is more likely to be used as a beta source. For example, very few bond managers can beat or even replicate the Lehman Global Aggregate Index, which is widely representing the global bond market with more than 10,000 issues and 2,000 names. As can be seen in Table 5, alpha is extremely elusive in the fixed income world. Most fixed income managers under-perform the Lehman Global Aggregate Index (even gross of fees). Equity managers have better opportunities to add alpha in long only strategies. The opportunity cost is lower in fixed income. Since median managers actually return negative alpha, it makes sense to receive «just» the index return as a bond investor.

Understanding the risks associated with portable alpha

Portable alpha transactions are quite an attractive proposition to enter into, as outperforming the market and its

benchmark seems quite easy. So, where is the catch? There must be a number of risks associated with its implementation. First, investors need to understand the leveraged nature of the transaction. With the same cash I am making two bets, one in an alpha provider, the second one being long the market. Being long the market is probably acceptable as it is my current mandate or objective, but what if my alpha provider is now long a similar market or starts to correlate highly with my market? That may substantially increase the volatility of my investment up to an undesirable level. To avoid this kind of situation, diversifying the source of alpha through non directional managers like hedge funds can be a good solution. This nonetheless calls for a sufficient degree of diversification in terms of managers and strategies as well as for a dynamic allocation to try and limit correlation with the market.

Being leveraged two times technically means that the maximum loss of such a strategy is 200% of my invested capital. One way to limit that exposure to only 100% is to go for a packaged solution where the swap providing the synthetic exposure to the market is collateralised by the hedge funds shares in a segregated vehicle as described in Table 3.

The segregated vehicle will automatically buy or sell hedge-funds shares so as to settle the gains or losses of the swap and therefore not reach the point where the liabilities of the vehicle become greater than the assets in case of a market fall.

The second risk is obviously that the fund managers' returns generate less alpha than expected. That again can be addressed by combining enough managers and strategies, so that the alpha remains stable over time.

The third risk is that short-term rates increase, making the break-even level too high for the alpha providers to beat. This risk can be hedged by using derivatives such as caps on the interest rates option market, but the cost of the option

should on the other hand not be to the disadvantage of performance.

To summarise, one should understand the risks associated in committing to a portable alpha strategy and eventually limit those risks by using a segregated structure and by paying attention to the sustainability of the alpha provided by the fund portfolio.

What structured solutions are available?

Investors can follow two routes to construct portable alpha solutions: with a fund manager or with a bank. Besides the structuring aspects, there are pros and cons for both solutions. A fund manager will typically be able to fine-tune more precisely the beta exposure because he will be managing the alpha source and thus he better understands the specifics of his own fund. On the other hand, a fund manager only represents a single source of alpha whereas a bank can combine various sources of alpha into one vehicle.

So the two approaches are quite different, although the structuring package could be the same as described in Tables 3 and 4.

Portable alpha note: A portable alpha note repackages a complex portable alpha strategy into a simple bond which achieves the payoff of that strategy. The bank arranging that note executes all the structural aspects, which are:

- › Create an SPV where all the assets are segregated,
- › Invest into the alpha providing fund shares, and;
- › Put in place a total return swap between the SPV and the bank (usually the arranger). The swap is collateralised by the fund shares. Thus, the investor does not need to enter into any collateral agreement with the bank. That also means that the note holder is not liable for any loss in excess of the initial investment (non

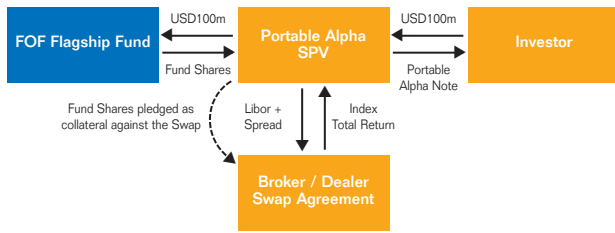
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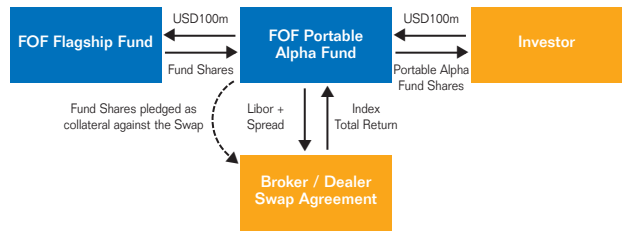
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Table 3 | Portable alpha - notes wrap



Source: Lehman Brothers

Table 4 | Portable alpha - fund wrap



Source: Lehman Brothers

recourse structure). The bank is also in charge of rebalancing the portable alpha strategy by adjusting the swap notional size to the value of the fund shares and vice versa. So it is really a comprehensive service provided by the bank, and the structure can be tailor-made (maturity, re-balancing frequency, beta adjustment, coupons, etc.)

Portable alpha fund: Creating a portable alpha fund is not very different from a portable alpha note. The fund manager establishes a portable alpha fund which holds the portable alpha assets. The main advantage is that this fund can be open-ended, thus open for new «subscriptions» every month for all clients and as a consequence. The fund format can accept lower minimum investments. Additionally,

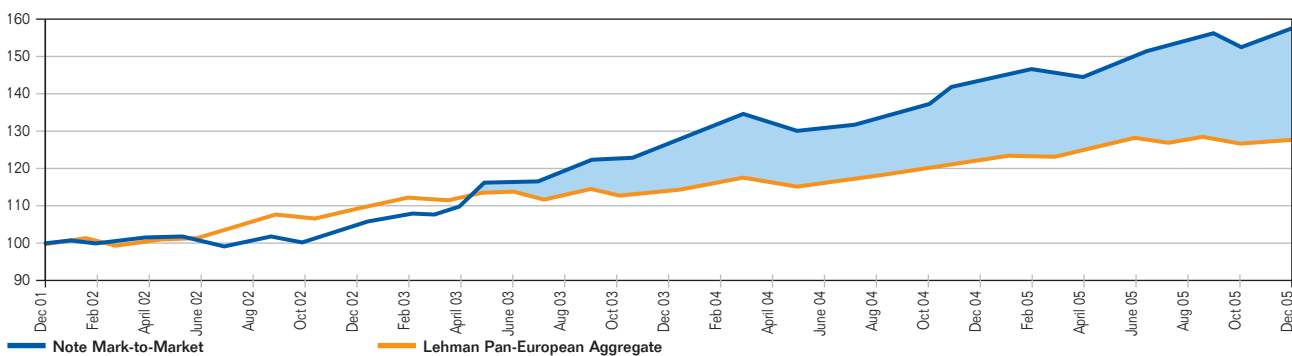
the fund manager is developing a track record and is not limited by any fixed maturity.

Simulation of portable alpha strategies using historical returns

Portable alpha strategy with bond indices as the benchmark. For the back tests (simulations) below, we decided to use the Lehman Pan-European Aggregate Index as the market source (beta) and the HFR Fund Weighted Index (a hedge fund index), as the alpha source. We have assumed no SWAP rebalancing (i.e. even if the collateral value increases we kept the notional of the SWAP identical). The back test (simulation) was run over the last

Table 5 | Portable alpha simulation with pan european aggregate as the benchmark

Simulated performance of the alpha note since end of December 2001*



Fund / Notes	Value after 4 years	Annualized Return
Lehman Pan-European Aggregate:	128.74	6.51%
Alpha Note (in EUR):	157.46	12.01%

Pan European Aggregate Alpha Note													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
2002	0.90%	-0.82%	0.66%	1.15%	-0.05%	-0.51%	-1.66%	1.86%	0.23%	-0.27%	2.30%	1.74%	5.6%
2003	1.58%	0.97%	-0.31%	2.48%	5.37%	1.03%	-0.37%	1.70%	2.38%	0.79%	0.65%	2.86%	20.8%
2004	2.07%	2.09%	1.12%	-2.25%	-0.68%	0.85%	-0.20%	1.20%	1.72%	1.41%	3.26%	1.79%	13.0%
2005	0.48%	1.02%	-0.57%	-0.34%	1.59%	2.05%	1.29%	1.27%	1.20%	-2.14%	1.20%	1.96%	9.3%

Portable Alpha Note Annualized Average Return: 12.01% % Positive Month: 72.9%
 Portable Alpha Note Annualized Standard Deviation: 12.01% Average Monthly Return: 0.96%

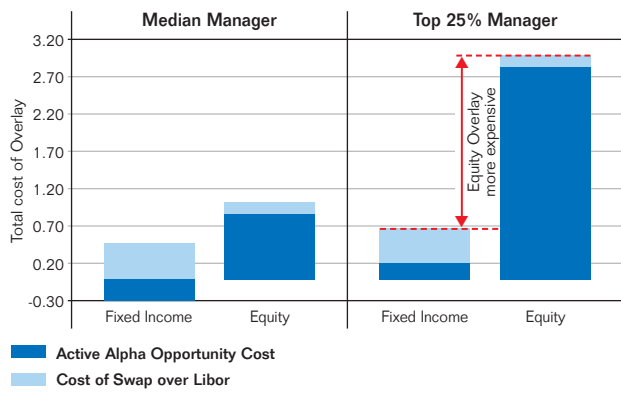
Source: Lehman Brothers

4 years, ending December 2005. The observed volatility of the alpha note is almost unchanged at 4.82% because of the low correlation between the alpha and the beta source. (Lehman Pan-European Aggregate Index volatility is 3.05% over the same period and HFR Fund Weighted Index volatility is 4.75%). The annualised return, however, increases from 6.51% for the Lehman Pan-European Aggregate to 12.01% for the portable alpha note!

Portable alpha strategy with equity indices as the benchmark. For this back test (simulation) we decided to use the Dow Jones EURO STOXX 50SM Index as the market source (beta) and the same HFR Fund Weighted Index as the alpha source. Again, we have assumed no SWAP rebalancing. We deliberately chose to start the back tests at the beginning of 2002, in order to test the strategy in a shaky environment for equities. The alpha note would have returned 7.62% per annum instead of 1.34% for equities. The volatility would have increased from 21% to 25%, as the correlation is significant between the two asset classes. As a conclusion, we can easily see that the portable alpha strategy, whether it be implemented in a note or fund format, is a cheap and efficient way of transporting the beneficial alpha of the non-directional hedge funds returns onto the benchmark returns corresponding to one's objectives without suffering any significant risk increase.

Table 6: Performance statistics for active index managers

	10 year median manager	less index (S&P500 or Lehman Agg)	less assumed fees	equals median active alpha
Equity	12.43% (465 managers)	11.08%	50 bps	85 bps
Fixed Income	7.52% (147 managers)	7.66%	15 bps	(29) bps
	10 year 25th percentile	less index (S&P500 or Lehman Agg)	less assumed fees	equals median active alpha
Equity	14.42% (465 managers)	11.08%	50 bps	284 bps
Fixed Income	8.03% (147 managers)	7.66%	15 bps	22 bps



Source: Evestment Alliance thru 9/30/2004

Table 7 | Portable alpha simulation with DJ EURO STOXX 50SM as the benchmark

Simulated performance of the alpha note since end of December 2001*

Fund / Notes	Value after 4 years	Annualized Return
DJ EURO STOXX 50 SM :	105.48	1.34%
Alpha Note (in EUR):	134.19	7.62%

DJ EURO STOXX 50 SM Alpha Note													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
2002	-3.15%	-2.04%	6.40%	-5.02%	-3.44%	-10.41%	-17.92%	1.76%	-21.98%	16.60%	8.96%	-11.06%	-38.9%
2003	-5.14%	-5.13%	-4.95%	20.38%	6.50%	6.03%	5.91%	3.95%	-4.28%	10.23%	3.25%	6.67%	48.8%
2004	4.92%	3.00%	-2.41%	-1.50%	-1.28%	3.44%	-3.80%	-1.38%	3.68%	3.51%	5.19%	3.83%	18.0%
2005	0.54%	3.91%	-1.29%	-4.71%	5.60%	4.39%	5.82%	-0.90%	5.57%	-4.25%	4.41%	4.43%	25.2%

Portable Alpha Note Annualized Average Return: 7.62% % Positive Month: 56.3%
 Portable Alpha Note Annualized Standard Deviation: 25.76% Average Monthly Return: 0.89%

Source: Lehman Brothers

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