

# Hedge Funds Allocation Strategies: Re-examining the Convergence & Directional Style in the Current Economic Climate

By

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## ***Abstract***

*This white paper compares and contrasts two broad categories of hedge-fund investments: The directional and the convergence styles. It starts by describing the characteristics of a directional strategy as often equivalent to holding a ‘long-option’ position then compares it to a convergence strategy which resembles holding a ‘short-option’ one. The payoff profile of both types of strategies is discussed within a statistical betting framework.*

*Next, the paper explains how risk is less readily visible in a convergence strategy and is not properly accounted for using the traditional performance evaluation measures such as the Sharpe and Sortino ratios. Further, the Sharpe and Sortino ratios do not fully capture the significant potential returns of a directional strategy and unfairly reward the observed returns of convergence strategies. The net result is a distortion of true performance favoring convergence strategies such as fixed-income type hedge funds, at the expense of directional strategies such as global macro & CTAs.*

*The paper then presents a brief assessment of the actual economic conditions and moves on to recommend an overweighting of directional strategies in light of the current economic climate.*

## **The ‘Long-Option’ Payoff Profile**

In simplified terms, holding an ‘out of the money long-option’ involves paying a premium (a net debit) in exchange of a small chance to earn a large profit if the underlying makes a sufficient move in the desired direction. This strategy is structurally similar to buying an insurance policy where a premium is paid to ensure against a relatively infrequent adverse event. The distribution of the expected returns under such a strategy is usually characterized by a series of frequent small losses corresponding to the majority of cases in which the option (or insurance premium) expires worthless, coupled with less frequent but large gains corresponding to the fewer occurrences where the option turns a relatively big profit.

## **The ‘Short-Option’ Payoff Profile**

In contrast to the long option case, holding an ‘out of the money short-option’ involves receiving a premium in exchange of a reasonable chance of keeping that premium assuming that the underlying will not make a large enough move in the undesired direction. The distribution of the expected returns under such a strategy is usually characterized by many frequent small gains corresponding to the majority of cases in which the option sold expires worthless, coupled with large but less frequent gains corresponding to the occurrences where the option produces a loss to the seller. (Note: some references & further discussions on optionality profiles can be found in the papers of W. Fung & D. Hsieh.)

### **Directional vs. Convergence Strategies**

A directional strategy with a ‘long-volatility’ bias typically exhibits a payoff profile close to the one of a ‘long-option’, producing infrequent large gains along with a series of small losses. A convergence strategy with a ‘short-volatility’ bias on the other hand exhibits a payoff profile close to the one of a ‘short-option’, producing frequent & apparently steady gains along with some large losses.

It is insightful to classify hedge funds strategies in terms of their payoff profile and whether they generally belong to a ‘long-option’ or a ‘short-option’ category. For instance, a convertible arbitrage, a fixed-income credit arbitrage, a risk arbitrage, or a relative value strategy typically produces a ‘short-option’ return distribution. Such a return distribution is often found in convergence trading where the payoff pattern is made of frequent small gains and infrequent large losses. The opposite is true for directional trading which typically produces the payoff profile of holding a ‘long-option’.

This fundamental difference in the payoff structure of both types of strategies is more readily visible in the skewness of the frequency distribution chart (histogram) showing an asymmetry of the monthly returns. ‘Long-option’ types strategies have a positive skew (i.e. a mean return exceeding the median return), as a direct result of a small percentage of large winners coupled with a large percentage of small losses. A ‘short-option’ strategy exhibits negative skewness (i.e. a mean monthly return below the median return), as a direct result of a small percentage of large losing trades coupled with a high percentage of small winners.

While both types of strategies may theoretically achieve the same expected return in the long run, it is the convergence type (‘short-option’) funds which are notorious for ‘blowing up’ without advance warning or after exhibiting a long history of positive returns. Many of them are constantly exposed to the possibility of very large losses due to either outright excessive leverage or due to a more opaque type of leverage such as ‘gamma risk’. Such ‘blow-ups’, hence, only become a matter of time. No matter how infrequently an adverse market move is expected to occur, given enough time, such a small probability becomes a virtual certainty. While we rarely hear of an insurance buyer going broke, we do hear of insurance companies going bankrupt after natural disasters.

The above leads us to the next section that discusses the adequacy of using traditional performance measures such as the Sharpe and Sortino ratios as proxies for forward looking risk-reward analysis & estimation of both strategies.

### **Risk & Returns Transparency and Estimation**

A directional strategy usually uses a finite bet-size, where risk is known and capped at the outset of the trade. This is done by using a stop-loss order, purchasing an option to hedge the underlying, or purchasing a plain option without a position in the underlying. Since risk is capped and profits can run with any favorable market move, any surprise will likely be to the upside in such a strategy. The Sharpe or Sortino ratios are backward looking and do not account for this upside potential awaiting to be tapped (i.e. The value of low risk positioning with an upside potential is unaccounted for).

On the other hand, in the case of a convergence strategy, returns are more or less known and capped by the spread or option premium received at trade initiation while risk tends to be understated as there is always a finite probability of a major loss waiting to happen (i.e. There is no penalty assigned for the risky positioning and the downside risk is unaccounted for).

Therefore, in the Sharpe and Sortino ratios, risk, as measured by the *observed* volatility, tends to be understated for convergence strategies, while for directional strategies, the return estimate derived from the *observed* monthly returns tends to be understated.

Such a distortion in the Sharpe & Sortino performance measures clearly benefits the convergence / 'short-option' type strategies at the expense of the directional / 'long-option' type ones. Further, this erroneous measurement can easily lead fund managers to over-allocate to the 'short-option' strategies at the expense of the 'long-option' ones in their quest to optimize their portfolio.

Better performance measures, like the Omega ratio and given sufficient history, aim at overcoming the deficiencies of the Sharpe and Sortino ratios by using a more comprehensive probabilistic approach to account for the risk-reward of a strategy. Worst case scenario analysis and simulations are also needed when analyzing complex portfolios and needing to determine the hypothetical risk & return.

### **Current Economic Climate: Consideration to Systemic Risk**

The recent history, with the exception of isolated 'blow-ups' such as LTCM and which was contained by the Fed, has been rather good for convergence type strategies. The future may prove to be much less friendly to such strategies. To a large extent, many fixed-income hedge fund strategies have increasingly operated and produced their results under the assumptions of ample liquidity, overly subdued interest rates, low credit risk, and low counterparty risk.

Fundamental economic research and recent data has been producing further evidence of the growing risks of financial imbalances and credit deterioration, both domestically and globally, and which could result in significant adverse moves in the markets. By and large, currency risk, interest rate risk, credit risk, and counterparty risk, have not been properly evaluated and considered. One reference on this topic is the January '05 issue of the Bank Credit Analyst which thoroughly makes the case of the unsustainability and the inevitable bust of the 'Super Debt Cycle'.

The fast recent appreciation in precious metals and deterioration in the housing sector seem to be confirming such market suspicions and pointing to violent market moves & turbulent times ahead.

### **Conclusion**

It would be wise to plan for the worst and hope for the best. Systemic risk and the probability of 'fat tail' market events seems to be increasing. The convergence funds effectively operate as insurance sellers while the directional funds operate as insurance purchasers. Any significant market move will likely reward the directional funds and significantly hurt the convergence/fixed-income type hedge funds exhibiting a 'short-option' payoff profile.

Downside risk management and avoiding crippling losses are absolute tenets of investment success in the long run. This is the golden rule to hold with utmost respect.