

## Research Paper Number 94

### Quantitative Selection of Long-Short Hedge Funds

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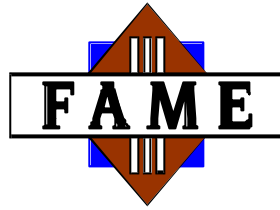
**Kaifeng Chen, Alexander Passow "Quantitative Selection of Long-Short Hedge Funds", in *Financial Letters*, 2003, vol. 1, issue 4.**

#### Abstract:

We develop a quantitative model to select hedge funds in the long-short equity sector. The selection strategy is verified on a survivorship-bias-free hedge fund database, from January 1990 to September 2002. We focus on the hedge funds acting exclusively in the U.S. market. We identify Fama-French factors and GSCI as the risk factors. Based on the evidence that many hedge funds do not exhibit persistent performance, we believe that persistent alpha is not generated based on publicly available information and opportunistic changes of exposure with respect to the risk factors. Instead we expect moderate exposure funds to be those who establish investment decisions based on special information or proprietary research. A hedge fund selection strategy is introduced and checked with out-of-sample data. A simulation of hedge funds from 1927 to 2002 is conducted. The funds selected according to our strategy demonstrate superior performance persistently.

#### Executive Summary:

The huge capital inflow into hedge funds has motivated this study. Whereas the mean-variance community likes the diversification benefits provided by hedge funds, "searching for alpha" (Ineichen, 2002) is the major force behind their increasing popularity. The second component of the return, the exposure to market beta, is cheaply available by investing in traditional asset classes, such as the index funds. In this paper we focus on a specific point for hedge fund investments: the selection of hedged equity funds, which cover (a) long-short equity, (b)



dedicated short bias as well as (c) equity market neutral. This style has the largest market share in the hedge fund sector. We concentrate our investigations on hedged equity funds for the following reasons:

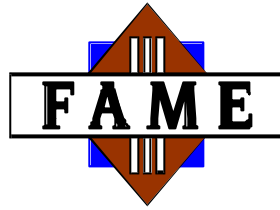
1. The huge capacity. Inasmuch as the investment universe is the whole equity market the considered funds are not expected to suffer decreasing returns with increased number of investors in the market, as it is anticipated for event-driven and relative-value hedge funds.
2. The excellent liquidity. It allows more favorable leveraging schemes for widely applied structured products, for example principal protected notes (PPNs).

The attractiveness of hedged equity funds is partly due to the anticipation of expected lower returns for arbitrage based strategies. However, performance and the benefit of ample liquidity are confronted with the difficulty to identify skilled managers. The genesis of the solution to this problem is the capital-asset-pricing-model, CAPM. A substantial improvement can be achieved with the Fama and French (FF) (1992) factors. Their model takes besides (1) market beta the exposure to portfolios consisting of (2) long high and short low book-to-market stocks and (3) long small and short big market-value companies into account.

In a recent work covering all hedge fund strategies, Agarwal and Naik (2002) were investigating additional factors for hedge funds. They found that the whole universe of long-short hedge fund returns is exposed to FF factors and the Goldman Sachs Commodity Index (GSCI). Their research used hedge fund indices, while our study deals with individual hedge funds. Additionally, we believe that the Russell 3000 is the appropriate benchmark only for hedge funds investing exclusively in the U.S. markets.

Based on this established research, we developed a quantitative model for hedged equity fund selection, based on FF and GSCI risk factors (FF-GSCI model). It was confirmed that controlling the exposure is key to achieving a better absolute and risk-adjusted performance. Whilst market beta is commonly considered as the main source of risk by practitioners, the two remaining FF factors, as well as GSCI, should attract even more attention. Their volatility is comparable to those of the market, but there is no positive drift in the long run. Thus, these factors lack the compensation for the risk taken.

To give our model an economic reasoning, we identified five types of hedged equity managers. Four among them are described as “market timers”, which we do not expect to perform persistently in the long run. The remaining type is described as “skilled”. This type of manager uses internal research, proprietary models and takes decisions non-discretionarily, based foremost on special information. Additionally, the target type is not expected to place bets on risk factors leading to excessive exposures.



Our selection methodology de-selects those managers with large exposure to one or more risk factors. Filtering out these funds leads to higher risk adjusted returns than the whole hedged equity fund universe. This finding could be confirmed in several market environments. In declining or flat markets our multi-factor selection model selected funds with significantly higher risk adjusted returns and alphas than funds (1) selected only with respect to a strict market exposure constraint and (2) the whole hedged equity universe. Additionally our model does not discriminate against funds with moderate exposure, which admits participation from favorable market environments and its positive drift in the long run. This presumption was verified by testing our model in a bull market scenario, which lasted until March 2000.

Finally we performed an out of sample test. We considered a fund of hedge fund (FoF), who sets up a hedged equity module in December 2001. The FoF is supposed to select funds either (1) randomly, (2) based on a strict market exposure constraint or (3) with respect to our multi factor selection model. Comparison of the performance until September 2002 shows some interesting results: The difficult market environment, with S&P 500 declining more than 35%, explains significant losses of the whole hedged equity universe. Although our selection model allows moderate exposure to the market, FF-GSCI selected funds protected the investment.

Furthermore, the average volatility of our selected funds was 60% below its peers. Even in this exceptional bearish environment funds with a strict market exposure constraint did not outperform our selection model. On the contrary, the significance of positive returns is higher for FF-GSCI selected funds, compared to funds only selected with respect to market exposure constraint. Furthermore it could be found that so-called “lemons” take excessive exposure to one or more of the risk factors and can also be identified with our selection methodology.

To summarize, we demand candidate funds maintain moderate exposure with respect to all risk factors simultaneously. We show that our fund selection, with a weak exposure constraint on each factor, leads to higher performance persistence and increases the probability of finding significant alpha generators. From a short- and mid-term risk management perspective the method protects from “lemon picking”.

Furthermore, the selected funds exhibit better downward protection, while maintaining the capability to participate from positive (market) trends. The latter due to the fact that funds with moderate exposure are not discriminated per se. Our findings were verified through a whole market cycle. A simulation of hedge fund returns from 1927 to 1990 was conducted. Our model successfully passed the stress tests of “Black Friday in 1929” and “Black Monday in 1987”. Our study is constrained to the U.S. market. An application of the strategy to other markets, for example to European or Asian markets, is straightforward and can be completed by switching to the appropriate benchmarks.