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Prisma Finds 40 Managers Optimal for FOFs

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JERSEY CITY, N.J. (HedgeWorld.com)—The answer to the question of how many hedge fund managers should be in a fund of funds portfolio has been the Holy Grail for the fund of funds industry. If a fund of funds manager's goal is to both outperform a hypothetical benchmark and generate the highest return potential, coming up with a number like 40 may seem a bit arbitrary. But this optimal figure is based on the findings of a recent research paper by Prisma Capital Partners, a fund of funds based in Jersey City, N.J. The paper was published in the January-April issue of the journal Pensions.

"We investigate the optimal number of hedge funds required to be held in a fund-of-funds portfolio with the objective of beating a hypothetical benchmark (T-Bill returns [plus] 2.5%) catering to the needs of institutional investor," said Kartik Patel, senior risk associate at Prisma, in an email interview. Mr. Patel also is the author of the paper, "How Many Fund Managers Does A Fund-Of-Funds Need?"

Prisma is not new to quantitative research. Its head of risk, Emanuel Derman, is also a professor at Columbia University and director of the school's financial engineering program. Prisma has been involved for years in building a proprietary system of risk tools used for portfolio construction and strategy allocation.

Funds of funds are popular among institutional investors as they provide high risk-adjusted returns with a low correlation to the markets. They are estimated to account for 42% of the total assets managed by hedge funds. Approximately 60% of the assets in funds of funds belong to institutional investors.

Building the best portfolios is a pressing matter for the industry, and one daunting question has always been how many hedge fund managers a fund of funds portfolio should have. Too few can yield better returns but generate more risk because they are less diversified. Too many managers offer a cushion of safety while potentially damping performance.

Several academics have addressed the question in various studies. Among them are heavy-hitter quants such as François-Serge L'habitant, professor of finance at Edhec Business School in France, and Harry Kat, professor of risk management and director of the Alternative Investment Research Centre at the Cass Business School in London. Mr. L'habitant concluded that no more than five to 10 funds are required to diversify the portfolio while Mr. Kat put the cap at 15 managers.

Every study is different and results are determined by the assumptions and factors involved in conducting the research. Prisma's paper is a little different from other papers in terms of its choice of the hedge fund universe, its benchmark, the performance goals and the sampling methodology.

"Starting with a universe of managers in Credit Suisse Hedge fund index, and using the simulation technique of random
sampling, we create portfolios of different sizes,” wrote Mr. Patel in his email.

Most academic research before has used the Hedge Fund Research Inc. hedge fund index, which is considered the largest in size, said Mr. Patel in a phone interview. The idea of using the CS/Tremont hedge fund index was based on the assumption that this universe was more representative of funds that institutional investors would invest in given the index rules for inclusion in the index, which include minimum assets under management of $50 million and a one-year track record, he said.

Prisma chose a benchmark of 2.5% over the three-month Treasury yield because the benchmark investors give to absolute return mandate funds of funds ranges from the three-month Treasury rate to a spread of 5% over the bill, Mr. Patel explained. The 2.5% spread on top of the Treasury rate falls in the middle of the range.

But the most original technique used to achieve the results is the simulation technique of random sampling Mr. Patel used to create portfolios of different sizes. To make the approach more representative of the real hedge fund universe, he incorporated strategy diversification in his random sampling approach.

"The main criterion we use in deciding upon the optimal number of managers is the simulated portfolio’s ability of beating the benchmark with a high confidence level,” Mr. Patel wrote in his email. "Using strategy diversification (by equal weighting different strategies) to simulate a typical diversified fund-of-funds portfolio, we find that 40 managers are sufficient to beat the benchmark with a high confidence level.”

Prisma described two methods used for the samplings: naïve diversification and strategy diversification.

With the naïve diversification methodology, Mr. Patel randomly selected—without regard for strategy—various numbers of funds from among the 254 in the Credit Suisse/Tremont index that had at least a five-year track record from 2002 to 2006 and equal weighted them to create portfolios. For each number of funds selected—10 funds, 20 funds, 30 funds, 40 funds etc.—Prisma created 1,000 different randomly generated portfolios. The firm then calculated the annual return for each separate portfolio in the years 2002, 2003, 2004, 2005 and 2006 and determined whether a portfolio beat its benchmark in a given year.

One result from this methodology was portfolios with a disproportional long/short weighting, since that strategy represents 42% of the total Credit Suisse index universe. Because 2002 was a bear market year for stocks, and since the portfolios generated using the naïve diversification methodology were heavily weighted toward equity hedge funds, long/short returns were not satisfying and did not meet the goal of producing high returns.

The second approach, strategy diversification, also used random selection, but this time within specific strategy buckets. The algorithm was the same as before except that this time, Mr. Patel drew an equal number of funds from each strategy. Such a method is preferable to the naïve diversification approach because it is more representative of a typical diversified fund of funds portfolio, according to Prisma.

Mr. Patel then built portfolios with different numbers of managers. He graphed the portfolio returns, looking at 5% and 95% confidence levels of excess returns in the years 2002, 2004 and 2006. From that he produced three charts per year. Each chart identified excess returns as a function of the number of managers in a portfolio. The graph allowed a clear read of the various levels of excess return for portfolios of 10 managers versus portfolios of 20, 30, 40 or 50 managers.

The criteria selected by Mr. Patel for determining the optimal number of managers was twofold: Underperforming the benchmark was the main risk he considered. But he also took into account a return factor: what portfolio size was likely to produce the highest returns. This is roughly why institutional investors allocate to funds of funds to begin with: They seek the best risk-adjusted returns.

Looking at the range of possible returns as a function of the number of managers in a portfolio and for the three selected years, Mr. Patel concluded that for the universe and benchmark selected in his study, a diversified portfolio of approximately 40 managers was optimal for a fund of funds.

Mr. Patel found that the smallest portfolios had the greatest potential to generate excess returns; for instance portfolios of 10 managers yielded the best returns. However, the portfolios with the fewest managers also had a greater risk of not outperforming their benchmark. On the other hand, including more managers in a portfolio lowered the excess returns,
but increased the chance that the portfolio would outperform its benchmark. Only portfolios with 40 managers matched both criteria required by institutional managers: that they out perform the benchmark and generate high returns.

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