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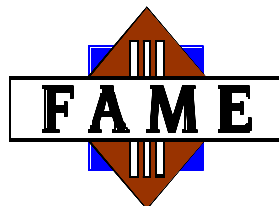

Research Paper Number 52

Hedge Fund Diversification: How Much Is Enough?

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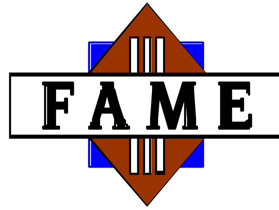
Abstract:
There are many benefits to investing in hedge funds, particularly when using a diversified multi-strategy approach. Over the recent years, multi-strategy funds of hedge funds have flourished and are now the favorite investment vehicles of institutional investors to discover the world of alternative investments. More recently, funds of hedge funds that specialize within an investment style have also emerged. Both types of funds put forward their ability to diversify risks by spreading them over several managers. However, diversifying a hedge fund portfolio also raises a number of issues, such as the optimal number of hedge funds to really benefit from diversification, and the influence of diversification on the various statistics of the return distribution (e.g. expected return, skewness, kurtosis, correlation with traditional asset classes, value at risk and other tail statistics). In this paper, using a large database of hedge funds over the 1990-2001 period, we study the impact of diversification on naively constructed (randomly chosen and equally weighted) hedge fund portfolios. We also provide some insight into style diversification benefits, as well as the inter-temporal evolution of diversification effects on hedge funds.

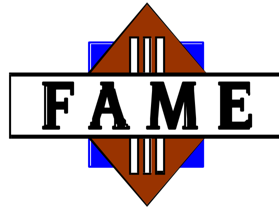
Executive Summary:
After two years of bear markets, traditional assets such as equities, fixed income and even real estate are no longer considered to generate attractive returns. Family offices, discretionary



portfolio managers, institutional investors, high-net work individuals and the private banks that manage their own funds are therefore looking for more sophisticated ways to reach their investment objectives. Most of these investors have now allocated up to 5% or more of their portfolios to alternative strategies, and even the most conservative ones are dipping a toe in the water. Among the set of potential candidates, hedge funds have progressively gained acceptance as a core asset class, thanks to their consistent absolute returns and low correlation with traditional assets. This makes them a valuable tool for the diversification of conventional equity market risk. Consequently, the hedge fund industry is getting larger and larger every day, to the point that the capacity of hedge fund managers to digest the flows of new money regularly pouring into their funds is regularly questioned.

Despite this apparent success, there is still a remarkable lack of understanding and information about the hedge funds industry amongst individual investors, advisers, and institutions. Keynes' observation that diversification is protection against ignorance is best illustrated by the fact that most institutions prefer gaining their exposure through funds of hedge funds, which give them instant diversification … and free them from the responsibility of monitoring individual managers. However, the proliferation of funds of hedge funds - which vary greatly in the number of underlying managers (5 to 100), the strategies on which they focus (diversified vs. sector or geographically focused) as well as their asset allocation strategy, if any – should not hide the fact that diversification in hedge funds is not as easy as it seems. In particular, diversification in hedge funds can be made at two levels. Diversification by investment style involves investment in a number of strategies (long-short, global macro, convertible arbitrage, etc.) to reduce exposure to individual style exposures, while diversification by judgment recommends that investors diversify across a number of managers within a particular investment style, in order to avoid performance solely being determined by one manager's skills. While the benefits of diversification have been widely studied and documented for traditional assets, the research on hedge fund diversification has been rather scarce. For a long time, it was limited to measuring the effects of including a hedge fund index in a traditional strategic asset allocation. It is only recently that a few papers started investing in the issue of how many hedge funds were required in a hedge fund portfolio to efficiently reduce volatility. The answers vary greatly depending on the sample considered and the time-period investigated. In this paper, we therefore reconsider the problem of hedge fund diversification. Our approach relies on the naïve diversification strategies that were suggested in the early 1950s: we simply build equally weighted portfolios of randomly selected hedge funds. By repeating the process several times and studying the characteristics of the resulting portfolios (50,000 in total), we are able to study the impact of naively increasing the number of hedge funds in a portfolio.

Our first empirical findings tend to demonstrate that diversification works well in a mean-variance space. That is, increasing the number of hedge funds in a hedge fund portfolio decreases the portfolio's volatility, while maintaining its average return level. Downside risk statistics (such



as maximum monthly loss, maximum drawdown or value at risk) are also reduced in larger-size hedge fund portfolios. This seems to validate the existence of funds of funds as useful investment vehicles. However, when one goes beyond the mean-variance framework and considers additional factors such as skewness and kurtosis, diversification is far from being a free lunch. For several strategies, diversification reduces positive skewness, may even generate negative skewness, and increases kurtosis, i.e. there is a trade-off between profit potential and reduced probability of loss. In addition, the correlation with the S&P 500 of large-sized hedge fund portfolios increases, which clearly evidences the dangers of diversification overkill, that is, the attempt of advisors to incorporate an unwieldy number of hedge funds in their portfolio construction process. Since most of the diversification benefits are reached for small-sized portfolios (typically 5 to 10 hedge funds), it therefore seems that hedge fund portfolios should rather be cautious on their allocations past this number of funds.

Our empirical findings also illustrate the difference between diversification by investment style and diversification by judgement. Clearly, the benefit of increasing managers within a strategy is a function of the homogeneity or heterogeneity of the sample from which the managers are drawn. Style diversification (diversification by investment style) obviously provides better opportunities for diversification than diversification by judgment. In that respect, it also seems that information about investment style reported by fund managers should be used in the portfolio construction process, albeit naïve, to increase the diversification benefits.