AN ELABORATION ON THE DIFFICULTIES WITH USING STANDARD PERFORMANCE EVALUATION MEASURES IN ALTERNATIVE INVESTMENTS

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Focusing on the difficulty of using standard measures to evaluate a number of hedge fund strategies and after reviewing these difficulties, this article will highlight the current state-of-the-art methodologies in this area.

Standard Tools: the Sharpe Ratio

A number of alternative investment strategies are able to show high headline returns because of their use of leverage. In order to be able to compare dissimilar investments, investors frequently use the Sharpe ratio to get a clear idea of the risk assumed when investing in a particular strategy.

The trouble with the Sharpe ratio results from its identification of risk as the standard deviation of returns around the investment's mean. This is appropriate only if the investment's return distribution is symmetric. Because empirical studies from the 1970's showed that diversified portfolios of equities have returns that appear to be distributed in a symmetric fashion, the use of the Sharpe ratio has become widespread in investment evaluation.

But if an investment's returns are highly skewed as with option strategies, the use of the Sharpe ratio is inappropriate. One can increase the Sharpe ratio of an investment by selling fairly valued options: in this case, an investor is accepting the possibility of negatively skewed outcomes in exchange for improving the investment's average return.

The fact that investors have a preference for positively skewed outcomes and an aversion to negatively skewed outcomes is not captured by a risk measure that equally weights the two types of outcomes.

Standard Tools: Mean-Variance Optimisation

Under current investment practice, how an investor defines the risk of an individual investment has a dramatic impact on portfolio structure. A typical investment programme's portfolio construction process now consists of maximising the return of a portfolio of investments subject to minimising some risk criterion.

The caveat with this quantitative method is that the chosen risk criterion has a huge influence on the chosen mix of strategies and assets for a portfolio. Risk measurement becomes the flip side of asset allocation.

The risk criterion typically used in this quantitative process is the variance around a portfolio's mean returns. Again, as in the Sharpe ratio discussion, this is inappropriate if an investment has highly skewed outcomes. Does an investor really want to overweight investments that may provide very large negative outcomes in return for incremental return?

What this is leading up to is that conventional analytical tools are only appropriate for investments that do not have short-option-type risks.

A Number of Alternative Investment Strategies Have Short-Option-Like Risks

A number of alternative investment strategies actually have short-option-like risk profiles. These strategies include relative-value bond funds, equity risk arbitrage, equity option market-making, value-versus-growth equity strategies, and high-yield currency investing.

For example with relative-value bond funds, this kind of investment earns its returns by taking on the illiquid assets that international banks desire to lay off when in need of reducing risk. The fund hedges this risk by shorting liquid assets. A relative-value bond fund thereby provides a reinsurance function for financial institutions, but it also exposes the fund to liquidity crises. As a result, an examination of empirical data shows that relative-value bond funds have short-option-like returns. An investor in such funds assumes the risk of systemic financial distress and provides other investors with the flexibility of being able to readily liquidate their investments. A relative-value bond fund is in essence providing real options to other investors.

With these alternative investment strategies, investors appear to earn their returns due to assuming risk positions in a risk-averse financial world. They are earning a "risk premium" rather than earning excess returns due to manager skill.

One problem for the risk and performance measurement of risk-premia strategies is that while one may be earning a return due to being exposed to a catastrophic risk, an empirical measure may not show this if the Big Event has not occurred yet. This is a particular problem for hedge fund track records, which can be quite short.

Academic Solution: Asset-Based Style Factors

The current academic thinking on how to evaluate alternative investment strategies, which may have short-option-type risk and likely have brief track records, is to use "asset-based style factors" to characterise an investment.

Ideally, financial economists would prefer to come up with the universe of fundamental risk factors that can explain the time-series behaviour of an investment's returns rather than just explain an investment's return based on other asset returns. In other words, if an investment's return cannot be explained by its exposure to the market, what are the additional underlying risk factors of special hedging concern to investors (that give rise to the investment's return)? But that effort has not been fruitful as yet. Instead, linking a portfolio, whether it is a mutual fund or a hedge fund, to a limited set of investment styles has been a lot more empirically successful.

William Sharpe, the creator of the Sharpe ratio, originally used this approach in 1992 to model mutual fund risk. A current effort by academics is to extend this approach to hedge funds. (This effort has been spearheaded by William Fung of the Centre for Hedge Research and Education, London Business School and David Hsieh of Duke University and also by Vikas Agarwal and Narayan Naik of the London Business School.) In addition to including various asset classes and rule-based investment styles, they also explicitly include options as explanatory factors of a hedge fund's returns.

The idea is if an investor can link a hedge fund's returns to its underlying "style factors," then one can use the style factor's longer history of returns to evaluate the specific hedge fund. Presumably the return history of the style factor would be long enough so that if the hedge fund incorporates a short-event-risk-type strategy, the magnitude of the losses that have occurred (and perhaps could occur) would be apparent from the long-term data.

Practitioner Solution: "Generic Model Decomposition"

At this point, the best published, practical ➥

application of using the "asset-based style factor" approach is contained in a chapter by Andrew Weisman (of Nikko Securities International) and Jerome Abernathy (of Stonebrook Structured Products LLC) in the recent book, Risk Budgeting[1].

Based on a qualitative review of an individual hedge fund, the authors decide which assets and option types that the investment likely has an exposure to. They then use an optimisation technique that fits the hedge fund's returns to these exposures. The particular non-parametric, non-linear optimisation technique they choose is based on their experience of which characteristics are most important in evaluating a manager. They try to capture the manager's large winning and losing months, the manager's use of leverage, and the inflection points of the manager's returns.

One of their examples emphasise why such an approach is needed. The authors bring up a mortgage-backed securities manager who had a historical Sharpe ratio of 4.99 using performance data from July 1995 to August 1998. A decomposition of the type of exposures in such a portfolio reveals that the pattern of reported returns would only have been achievable with substantial leverage and short option exposure. After August 1998, this manager reported a very large loss.

If an investor uses the reported Sharpe ratio as their basis of investment, they may unwittingly be maximising risk rather than risk-adjusted return, according to the authors.

Weisman and Abernathy take the investment performance produced by the likely factors driving a portfolio's return and compare it with the manager's reported performance. They notice a tendency for manager performance to be less volatile than the performance produced by their optimisation. They hypothesise that, given that certain over-the-counter securities are difficult to value since they are illiquid, their owners may underestimate the periodic changes in the value of these holdings. With their derived performance figures, the authors are in a position to evaluate the real underlying volatility of a portfolio and thereby adjust the risk measure used in evaluating a manager.

The authors note that if an investor uses conventional methods for evaluating hedge fund investments, one may be unwittingly maximising illiquidity.

Practical Advice: Have an Understanding of the Source of an Investment's Returns

As a final note, if one has an economic understanding of the source of an investment's returns, that investor is likely in a good position to decide whether its risks, however they are defined, are appropriate for him or her. If we understand that a number of alternative investment strategies provide returns because the investor is being paid to bear risks others would prefer to lay off or not take on, then we have to conclude that alternative investments are not appropriate for everyone. After all, we cannot all be providers of insurance. ■

Author's Note: A version of this article originally appeared in the October 2001 issue of Risk & Reward magazine.

1 'Risk Budgeting: a new approach to investing', ed. Leslie Rahl, Capital Market Risk Advisors, Inc. (Risk Books, 2000)

HEDGE FUND RISK MANAGEMENT

The Alternative Investment Management Association (AIMA) commissioned Capital Market Risk Advisors, Inc. (CMRA) to conduct AIMA's first comprehensive review of fund of funds investing due for release by Summer 2002. As part of this project, a series of surveys were issued to institutional investors, fund of funds managers and hedge fund managers to question them on various issues, such as risk management and transparency.

The analysis of the survey responses is on-going although the results will represent only one thrust of the research. A summary of the results on **transparency** was released in January 2002 and we are releasing this summary on **risk management** due to the importance of this issue to many funds and investors.

Risk Management - Summary

- 14% of individual hedge funds and 19% of funds of funds have had "risk budgets" assigned by investors, while 27% of investors say they have assigned "risk budgets" to their funds and 7% are studying the idea.
- Only 43% of funds of funds that rely on managers to track their risk vs. budget feel they understand the details of the risk calculations performed by each of their managers and calibrate and aggregate risk across managers.
- 61% of both individual hedge funds and funds of funds include risk limits in their investment guidelines.
- 79% of both individual hedge funds and funds of funds have written risk management policies and procedures, but only 56% of investors do.
- 59% of funds of funds, 54% of individual hedge funds, but only 4% of investors have their risk management practices and procedures independently reviewed.
- 57% of funds of funds claim to compute VAR for their overall fund of funds but in some cases it is unclear on how they do it since they don't get position level data.
- 89% of funds of funds indicate that they provide formal NAV monthly, 7% quarterly and 4% bi-weekly.
- Leverage is defined in a variety of ways by funds of funds and by individual hedge funds. Funds of funds are most likely to use gross balance sheet asset to equity while most hedge funds use other measures such as 10 years swap equivalent, gross balance sheet leverage, or margin and equity ratio.

We plan to release the full fund of funds paper during the summer of 2002 that will cover:

- Diversification
- Comparison Bias
- The Future of Fund of Funds
- Advantages & disadvantages of fund of funds vs. individual hedge fund investing
- Transparency
  - Portfolio constitution
  - Performance and risk attribution
  - Liquidity
  - Service providers
  - Fees

For further information, please contact Leslie Rahl, CMRA, on tel. +1 212-404-6101. ■

	Funds of Funds	Hedge Funds
Gross balance sheet assets to equity	69%	28%
Gross balance sheet assets to equity adjusted for off balance sheet transactions	27%	19%
VAR to equity	4%	19%
Other	-	38%