The Impact of Hedge Funds on Risk Budgeting

Philip Niles explains why hedge funds are useful in creating risk budgeting methodology.

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The concept of risk, beyond any doubt, is at the forefront of the minds of those working in the alternative investment industry. The drive towards understanding and mitigating risk within an investment framework has been resolute and almost universal. More than ever, investors are seeking to understand risk at both the individual investment level as well as the risk that a particular investment adds to a total portfolio. And though the concept is nothing new, risk budgeting has taken on a revived importance and has enjoyed its own renaissance.

At first glance, one might not necessarily consider hedge funds a useful tool in the risk budgeting process. The truth is in fact quite the opposite: hedge funds are extremely useful resources for those seeking to pursue a diligent and measured risk budgeting methodology. Given the risky reputation of hedge funds, this seems counter-intuitive. However, it is the very risk profile of hedge funds that makes this so. Before getting ahead of ourselves, it would be useful to momentarily digress to ensure we are all working with the same definition of risk budgeting and what that process entails.

Risk Budgeting Defined and Explored

Risk budgeting, put simply, is the process of allocating risk across an entire portfolio. It involves measuring the amount of risk an investor is actually taking, quantifying how much risk the investor is truly willing to bear, and then spreading that risk across a portfolio. Quite generally, this process allows a money manager to target specific risk levels and exposures throughout a total portfolio.

Increasingly, a number of investors in alternative investments are beginning to look at the concept of risk budgeting with renewed focus and attention. Given the market upheaval seen over the last few years, capital allocators have begun to see risk from a total portfolio basis. A by-product of the credit crisis is that what once were seen as distinct investments comprising a portfolio were revealed to actually be more correlated than expected. This meant that a “diversified” portfolio was not actually as diversified as originally thought. And truly, the downside pain experienced by some investors was too much to bear.

This can be especially true for certain institutional investors with shorter-term horizons or those who can withstand only a given level of volatility. Private endowment funds and insurance companies are readily available examples of groups where portfolio fluctuation is a veritable concern and must be closely monitored and measured. The risk budgeting process is a key tool for these investors since a risk tolerance can be defined in advance and a portfolio can be constructed to maximize returns for this given level of risk.

A Concrete Example

To start, see Exhibit 1 below for a chart outlining the expected return, standard deviation, and Sharpe ratios for a number of assets in which an investor is considering an investment:

Exhibit 1
Expected Return, Standard Deviation, and Sharpe Ratios, 1990-2005

Asset Class	Expected Return	Standard Deviation	Sharpe Ratio
S&P 500	12.43%	18.42%	0.43
10 Year Treasury	8.48%	8.13%	0.49
NASDAQ	16.38%	35.08%	0.34
EAFE	4.87%	19.91%	0.02
HFRI Composite	14.94%	11.42%	0.92
HFRI Fund of Funds	10.43%	9.51%	0.62
Cash	4.49%	1.93%	N/A

Source: Anson (2006)

Now suppose an investor wishes to invest in technology stocks and has a total risk budget of 15%. That is, the investor is willing to tolerate an annual standard deviation of returns of no more than 15%. Unfortunately, the appropriate investment (an investment in the NASDAQ) has an annual standard deviation in excess of 35%, which far outweighs the prescribed risk budget. In isolation, the investor cannot participate in the technology-focused investment that is desired. However, by combining the technology investment with a hedge fund investment, the investor can not only invest in technology stocks, but also diversify the portfolio and augment return.

After determining the correlations between the asset classes, one can determine the optimal allocation to hedge funds and technology stocks so that the investor can hit the 15% risk target (this author will spare the reader the math). It turns out that the investor can invest 30% of the portfolio in the NASDAQ and the remaining 70% in a hedge fund of funds (as represented by the HFRI Fund of Funds asset listed above) and maintain a 15% risk tolerance for the portfolio as a whole. This is the power of the risk budgeting process: effectively, the investor can "buy" units of risk by investing in hedge funds. As mentioned, this runs counter-intuitive to conventional wisdom; hedge funds are considered to be very risky investments by the public at large. However, from Exhibit 1, we can see that this is simply not the case. Both of the hedge fund assets in fact display lower annual standard deviations than comparable stock market investments in either the S&P 500 or the NASDAQ.

Furthermore, the Sharpe ratio for the given assets presents an even more compelling argument for the inclusion of hedge funds in a portfolio. Recall that the Sharpe ratio measures the excess return generated by an investment which is then standardized for the excess risk taken to earn that return. The idea is that the higher the Sharpe ratio, the more an investor is being compensated for taking on additional risk in an investment. Clearly, the hedge fund assets listed above, with Sharpe ratios of 0.92 and 0.62, are well out in front of the other investments. This means that, even if hedge funds were "riskier" investments than stocks on the basis of standard deviation, investors are still more than compensated for this extra risk with excess returns.

The Magic of Correlation

Truly, correlation is the key behind an effective risk budgeting program. As mentioned, to achieve an optimal portfolio, one must determine the correlations between the asset classes. Exhibit 2 below outlines the correlations between all of the assets in Exhibit 1:

Exhibit 2
Correlation Matrix

	S&P 500	10 Year	NASDAQ	EAFE	HFRI Composite	HFRI FOF
			Treasury			
S&P 500	1	0.1	0.84	0.64	0.62	0.33
10 Year Treasury	0.1	1	-0.18	-0.24	-0.01	-0.06
NASDAQ	0.84	-0.18	1	0.73	0.74	0.46
EAFE	0.64	-0.24	0.73	1	0.53	0.29
HFRI Composite	0.62	-0.01	0.74	0.53	1	0.81
HFRI FOF	0.33	-0.06	0.46	0.29	0.81	1

Source: Anson (2006)

In our above example, we were combining a hedge fund of funds investment with the NASDAQ in a portfolio and we came up with an optimal weight of 70% in hedge funds and 30% in the NASDAQ. We can see that this is advantageous because of the less-than-perfect correlation between the two assets of 0.46. It is this less-than-perfect correlation that is exploited in the risk budgeting process. An investor is able to diversify the portfolio and target a specific risk level without sacrificing their upside return. In fact, depending on the investments held and in what proportion, the investor may be able to actually increase return while controlling risk.

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Conclusion

Risk budgeting is certainly not a new concept, but it is being given renewed attention as focus in the money management profession has shifted from a blind pursuit of absolute return in favour of prudent, risk-adjusted returns. From the above discussion, we can see that returns do not need to be sacrificed in favour of risk aversion. Ironically enough, the inclusion of hedge funds (which most consider to be "risky" investments) in a portfolio can actually reduce total portfolio volatility. In addition, as outlined above, investors can have access to investments that may typically fall outside of their risk tolerance because they are viewed within a total portfolio perspective rather than as isolated investments. A sensible portfolio can be fairly simply constructed which offers an optimal blend of assets based on the risk preferences of a given investor. In a time when risk is on the tip of everyone's tongues, risk budgeting can help assure that the pill is not too bitter to swallow. *