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How to include offshore funds of hedge funds (FoHF's) in the offshore asset allocation mix.

Executive summary

- Various quantitative approaches exist for South African retirement funds to formulate the optimal offshore allocation to offshore FoHF's;
- Unlike traditional asset classes for which reliable stochastic models and estimations of long term parameters are available, offshore hedge funds cannot be modelled with the same amount of confidence, in spite of recent progress in academic research. Hence, a pragmatic approach by substituting bonds or supplementing part of the traditional asset classes (i.e. equities and bonds) with FoHF's, is viewed as the preferred approach to include offshore hedge funds in the overall asset allocation mix;
- Manager selection is a key decision in the entire asset allocation process. Selecting a "best of breed manager" but choosing a suboptimal solution in the context of the liability profile of the fund, will negate all aspects of a prudent asset allocation exercise;
- A one product fits all approach used by many offshore fund of hedge fund managers is not the right answer.
- Retirement funds need to consider a solution that meets their very specific needs in order to finalize the entire allocation process when hedge funds are considered as part of the offshore asset allocation mix.

Introduction

Funds of hedge funds (FoHF's) are increasingly being incorporated into the offshore port-



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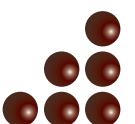
folio allocations of South African retirement funds. This approach is in line with that of international retirement funds, which are now responsible for approximately 50%¹ of all new offshore hedge fund inflows. Retirement funds' actual experiences as well as academic studies present ample evidence of the diversification benefits in terms of adding FoHF's to the total offshore portfolio mix.

In this issue of Oracle, we discuss the various quantitative approaches that South African retirement funds have implemented to date in defining the most optimal allocation of FoHF's in the offshore asset allocation mix.

Traditional or conventional approach

The traditional or conventional approach treats offshore hedge funds as a separate asset class i.e. offshore hedge funds are optimized and added to the total portfolio as a complement to traditional offshore asset classes. A full discussion of whether hedge funds are a separate asset class or not, is beyond the scope of this article.

This approach is fairly unsophisticated and starts with the optimization of traditional offshore asset classes such as offshore equities, bonds, property and cash to determine the most optimal policy mix. The optimal policy mix is then adjusted and re-engineered by adding various allocations of offshore FoHF's to determine a revised most optimal policy mix on





the efficient frontier. This is called a **two-stage quantitative asset allocation process**.

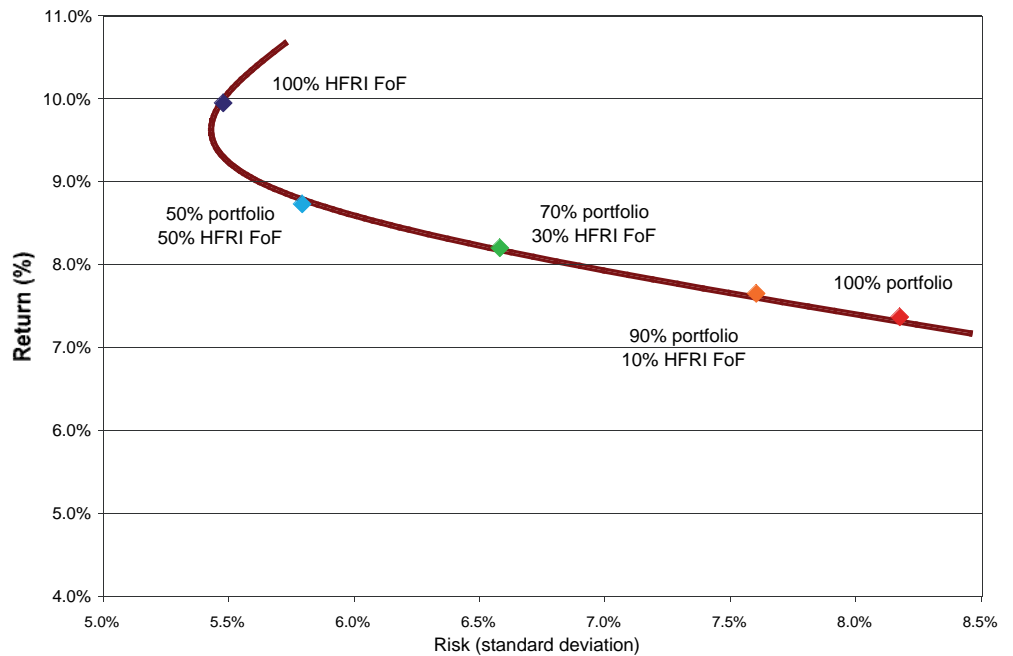
The optimization initially involves using historical data as the key inputs. **Figure 1** shows an efficient frontier based on data since 1990. The efficient frontier shows the annualized return and risk results of various portfolio mixes. The 100% portfolio allocation² was used as a proxy of where we believe the average South African retirement funds offshore allocation had been over the past 16 years, excluding offshore hedge fund investments.

We then introduced a 10% allocation to offshore hedge funds (as presented by the HFRI FoF index – a proxy of 750 FoHF's) after which we increased this allocation to 100% offshore

hedge fund assets. The most optimal portfolio in figure 1, based on a simple backward quantitative exercise allocates 100% to FoHF's - producing the highest output of return for units of risk taken i.e. approximately 10% return versus 5.5% risk. Research conducted by Lamm³ also shows that retrospective quantitative portfolio optimization assigns a 100% portfolio weighting to offshore hedge funds.

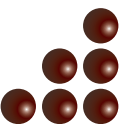
The main reason is because offshore FoHF's have outperformed offshore equities, bonds and cash over the long term, but they also demonstrated to achieve these superior returns at less volatility and modest correlation versus equities, and similar volatility and low correlation versus bonds.

Figure 1



According to [Singer, Brian & Terhaar – 2002]⁴ this approach is fraught and appears to offer a “free lunch” – *“Unconstrained optimized portfolio mixes contain absurdly large allocations to these low-risk, high-return investments”*.

No investment decision can ever be made by simply looking at historical numbers. To overcome this issue, investors then optimize for forward-looking return and risk expectations. Both the backward-looking as well as forward-





looking results are then combined.

A key issue in any such optimization is that investors need to take into account that offshore hedge fund returns are not normally distributed i.e. asymmetrical, which means that a simple return and standard deviation approach as followed above is inappropriate since it presumes normally distributed returns in the efficient frontier calculations. Other ratios such as the Omega function[#] need to be borne into the equation. Many retirement funds have now started to incorporate such additional risk return measurements in their initial quantitative optimization.

[#]Omega is an investment performance measure that allows for the assessment of asymmetrical return distributions. It defines risk with respect to the downside and upside volatility of returns comprising the entire return distribution of a portfolio.

Once all these issues are taken into account do the investor then include a qualitative overlay i.e. their subjective assessment of issues such as how liquidity, complexity, regulatory issues, pricing requirements and other offshore

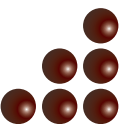
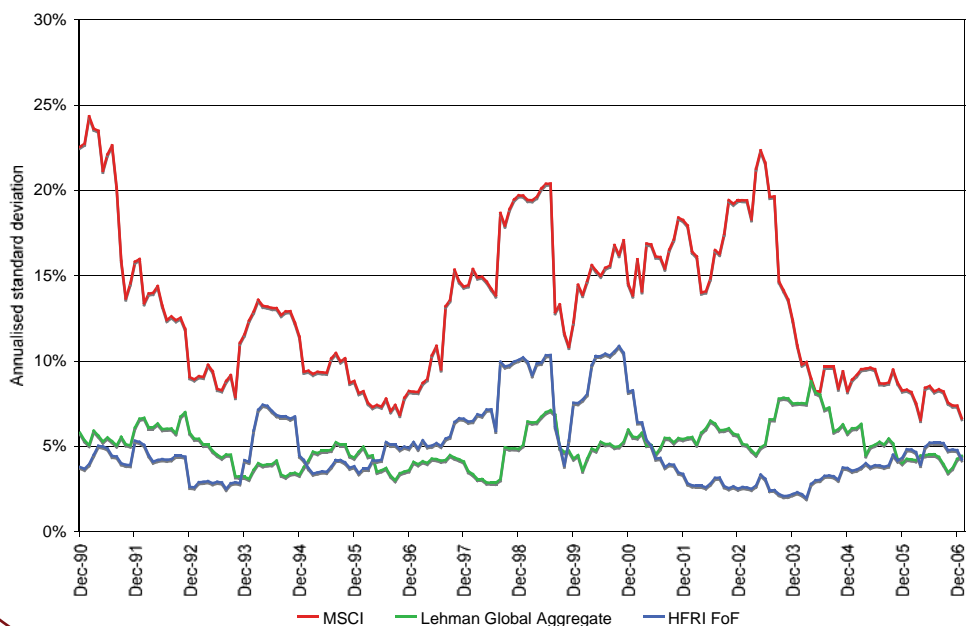
hedge fund requirements impact the previous optimization results. How these qualitative issues result in an adjustment of the quantitative allocation mix is hard to define but typically it reduces the allocation to the offshore hedge fund component from 15% to a level of 5% to 10% of total fund assets.

Substitution of bonds

This approach differs from the traditional approach with offshore hedge funds being excluded from the opportunity set to model the optimal asset allocation mix. The offshore bond weighting, as determined through the optimization, is then either fully or partially substituted with an investment in offshore hedge funds.

The difficulty in modeling offshore hedge funds i.e. the absence of long term performance history (only 16 and a half years of data exists), difficulty in projecting long term risk & return parameters and sensitivity to small adjustments in the quantitative optimization process are the main reasons why offshore hedge funds are not included in the quantitative optimization models.

Figure 2



"..... there is no satisfactory existing model for hedge fund returns, in spite of recent progress in academic research on the subject – Martellini & Volker"⁵

Historically, offshore hedge funds have demonstrated similar risk (volatility) characteristics to offshore bonds and lower volatility than offshore equities. In the graph (Figure 2), we show the volatility of the Lehman Global Bond Index, MSCI World Equity Index and peer group HFRI fund of hedge fund indices.

Retirement funds that fully or partially substitute the offshore bond allocation with offshore hedge funds make either a strategic or tactical decision. A tactical decision could be made when the trustees want bond type volatility, but have a specific view on the direction of shorter-term interest rates. e.g. decide to increase the offshore hedge fund allocation when the trustees are concerned about interest rate increases in offshore markets but require a bond or bond plus type return.

The strategic allocation to offshore bonds could be a relatively large weighting i.e. some funds have a 50% or 60% offshore bond allocation, which means that if the entire offshore bond allocation is to be substituted with offshore hedge funds, the trustees may again apply qualitative constraints– similar to that of the traditional approach.

Manager selection then becomes very important because the investor needs to select a solution that compliments bonds. Selecting a manager or solution that provides equity type return and risk characteristics could result in the entire optimization exercise being futile.

Lastly, if the offshore bond substitution is done for tactical reasons, the skill set required making the right timing decision to switch in and out of bonds, and reduced liquidity associated with offshore hedge funds, could lead to adverse results. Offshore hedge funds should be seen as a long-term investment strategy in line with how investors view the time horizon for traditional asset classes.

Supplement of traditional asset classes

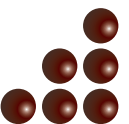
This approach excludes offshore hedge funds from the initial quantitative modeling of the optimal strategic asset allocation mix, with offshore hedge funds rather being considered as complementary investment strategies for offshore bonds and equities.

The absence of offshore hedge funds from the list of "asset classes" (first step) don't lead to the omission of offshore hedge funds from the opportunity set to establish the optimal asset allocation mix.

The (second step) is then to add offshore FoHF's to supplement the strategic asset allocation mix by reducing the risk and /or enhance the returns or to improve the risk adjusted position of the asset allocation mix. This is carried out by selecting a FoHF solution which complements the specific strategic mix of traditional assets i.e. equities and /or bonds & cash. For example: -

STEP 1: *The optimization (asset / liability) exercise defined a maximum weighting of 15% to offshore assets. The long-term offshore asset allocation mix was defined as 50% equities and 50% bonds. Of total fund assets 7.5% is therefore allocated to offshore equities and 7.5% offshore bonds.*

STEP 2: *Quantitative and qualitative research motivates the trustees to incorporate offshore hedge funds into the allocation mix. A decision is made to supplement 30% of the bond weighting (e.g. i.e. 2.25% of total fund assets) and 30% of the equity weighting (e.g. i.e. 2.25% of total fund assets) to an offshore FOHF manager to improve the portfolio's overall risk/return ratio. A total allocation of 5% is therefore made to offshore fund of hedge funds. In this example the selected FOHF manager / solution will in simplistic terms therefore have an equal allocation towards non-directional hedge fund strategies (i.e. bond type characteristics) and an equal allocation to more directional strategies (i.e. equity type characteristics).*





This approach allows trustees to overcome the “dilemma’s” faced with the traditional approach whereby offshore hedge funds are included in the policy mix as a separate asset class. The key issue here is again the selection of the most optimal offshore hedge fund solution i.e. a solution that is more orientated to bonds i.e. 80% non directional and 20% directional will not be optimal for the above requirements.

Investors should therefore not only select the best of breed fund of hedge fund manager but

also select a solution which meets the specific risk and return requirements of their fund. Investors need to be aware that most offshore fund of hedge fund managers sell product i.e. they believe a one product fits all approach is sufficient for all clients. Finding the most optimal offshore fund of hedge fund solution or selecting a fund of hedge fund manager that tailor-makes an optimal solution for the investor is therefore the key to finalizing the entire allocation process to offshore hedge funds.

ACKNOWLEDGMENTS

¹ Casey, Quirk & Acito / The Bank of New York (2004). “Institutional Demand for Hedge Funds”

² 54% equities / 38% bonds / 8% cash

³ R. McFall Lamm, Jr (2004). “Why not 100% Hedge Funds? Still a viable approach”

⁴ B Singer, Brian D and Kevin Terhaar - UBS Asset Management (2002). “Appropriate Policy Allocation for Alternative Investments”

⁵ Martellini, L & Volker, Z. Edhec Risk and Management Research Centre (2005). “The benefits of hedge funds in asset liability management” - (Sep)

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