

“... where the betas are zero and the excess returns are all above average”

Emanuel Derman takes an excited step into the alternative world of profit and funds of funds



Recently I became interested in ‘alternative investment management’, the now-fashionable euphemism (NFE) for hedge funds. Hedge funds started out as unregulated investments for HNWIs¹, the NFE for rich guys. For 2% of your principal and 20% of the upside, they promise you Absolute Return, a name that deserves to grace a yacht or a religious rock group.

Unlike wealthy individuals, until now institutions have mostly shunned hedge funds, investing instead in simple stocks and bonds, which provide beta. Pick the beta you’re comfortable with, according to the capital asset pricing model, and the expected return will come. That notion began to look a little shopworn as the great bull market petered out, hence the recent great proliferation of hedge funds.

Welcome to Alphaville, where the betas are all smaller than any pre-assigned number and the alphas are all above average. Theoretically, alpha is the intercept of the regression line of a stock’s moves against those of the market. If you have no market exposure, alpha’s somewhat ill-defined, but who’s worried about definitions?

Now institutions have also started investing in hedge funds, and they need to understand their risks. In Alphaville, people do stat arb or trade collateralised mortgage obligations, swaptions, convertibles and credit derivatives, using complex dynamic strategies. Hence the rise of the fund of funds (FoFs) to provide both diversity and expertise. According to Hedgeworld.com: “Funds of funds are an essential source of capital for many hedge fund man-

agers. Institutions and individuals usually enter the alternative asset field via funds of funds, which may be responsible for channelling one third or more of the US\$700 billion in total hedge fund assets into various strategies”.

I’ve been learning about FoFs. I’ve especially benefited from the insights of Iraj Kani² and Andrew Weisman³. Though a FoF looks like a bunch of sophisticated proprietary trading desks within a large investment bank, there’s one big difference: transparency. At an investment bank, you can see the traders’ positions, the foundation of value-at-risk and scenario analysis. At a FoF you cannot know the positions of most of the funds you invest in, though that is slowly changing.

What can you do about understanding hedge fund risk? Ideally, you want to know the distri-

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bution of each fund’s future returns... dream on. You can’t always (ever?) get what you want. Broadly speaking, all you can really hope to know in this life are a fund’s historical net asset values (NAV), its current positions and its style. What can you do with those characteristics?

Any hedge fund will give you its monthly NAVs. (How accurate those marks are is questionable, and has been the subject of many articles.) With this time series you can analyse the fund’s statistics, calculate its VAR and covariance, and there are several commercial risk systems that do this. That’s useful, but imperfect: a sample’s estimates cannot reflect the ‘true’ distribution – some extreme events occur too rarely to provide reliable statistics.

With positions you can go one step better. Some hedge funds will supply their positions to an intermediary, a risk management vendor whose software and database will let you run enterprise-style risk reports on the funds’ actual positions, which are visible to the vendor but remain hidden from the FoF itself. The statistics

of a fund’s assets are better than the statistics of the fund, especially when some of the assets are nonlinear. As institutions become larger players in FoFs and exert more pressure for transparency, this approach is likely to become more common.

But meanwhile, not all funds provide positions, and anyhow, positions aren’t everything. Hedge funds can trade dynamically. A high-frequency stat-arb computer program may be rolling over the fund’s entire portfolio several times a day. Knowing what stocks they own at some instant doesn’t tell you much about their risk. What you really want to know is what they are doing.

The great insight of derivatives theory is that options can be replicated by dynamic trading strategies, and that, vice versa, each such strategy is equivalent to a derivative security. Recently, several researchers, among them Bill Fung and David Hsieh, have pointed out the usefulness of trying to view a hedge fund as a portfolio of options. Convertible funds are obviously long options, but Fung and Hsieh have suggested that trend-following hedge funds that don’t even trade options are nevertheless effectively long a straddle. A straddle is not market-neutral: though its average beta may be zero, its instantaneous beta is sometimes positive and sometimes negative.

I find the notion that hedge funds are portfolios of options immensely attractive. An option is the ideal instrument for unlimited upside exposure and limited downside risk, exactly what the denizens of Alphaville are seeking. Recently, risk systems that look at hedge funds in this way are beginning to appear too.

Options theory is the most successful analytical tool in finance. Therefore, if you can map a fund into a proxy of options, you have a wonderful method of understanding its performance and the nonlinear risks that can destroy its value. Alpha is, then, what a real fund earns over and above this options proxy. ■

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¹ High-net-worth individuals

² Iraj Kani and I have been studying how to match the risk and return of hedge funds using options

³ See Weisman’s talk on Alpha Hedging delivered at the Risk Quant Congress and the Society for Quantitative Analysts in New York