

# Defensive or offensive?

**Jerry Haworth** argues that options-based volatility strategies have five ‘killer apps’ that make them better tail-risk hedges than managed futures – as long as you buy them at the right time

## Options Strategies Commentary

A question we often get asked at 36 South is whether ‘tail-risk hedging’ is worthwhile and if so, which is more efficient and effective: managed futures or volatility-based strategies?

Firstly, we are dealing with an event, or series of ‘lower-tail’ events, which occur less than 1% of the time, are unexpected and tend to have serious consequences. The answer as to whether to insure against these events is yes – if it has a positive expected return or marginal utility, or if it increases the reward/risk ratio of the portfolio.

So tail-risk insurance should be undertaken if the amount paid out in insurance premium is less than the expected gain should the event occur. Here is an example: for the last 1,000 years, an earthquake occurs in Zone A on average once every 50 years; the insurance cost per annum is \$100, the pay-off on event is \$10,000. It is clear to see that the expected breakeven is  $\$100 \times 50 = \$5,000$ , so anything greater as a pay-off on event is a ‘positive expected return’ and will, if done consistently over a period long enough to let the law of large numbers rule, produce the profit (being the difference between expected returns and payoff on event, or  $\$10,000 - \$5,000 = \$5,000$  every 50 years, on average).

But tail-risk insurance should also be undertaken if the marginal utility of the returns in the event of a tail-event pay-off is greater than the marginal cost of returns foregone when the markets were up. So tail-risk hedging is still worthwhile even if the expected payoff is negative.

The marginal utility of returns is different, depending on where the overall market is. Positive returns during a lower-tail event like 2008 are much more valuable than when the assets markets are up strongly and everybody is making money. Hence the ‘insurance’ aspect of tail-risk hedging: the overall return expectation can be negative but still worthwhile. People buy fire insurance on their houses even though they know it is expensive, simply because the event consequences are too high to bear.

Lastly, tail-risk hedging, even with marginally negative returns, can increase the risk/reward ratio by significantly dampening volatility.

Nonetheless, there are times when tail-risk hedging is a bad idea – normally, when everybody wants it! This is where it attracts bad press. Both managed futures and volatility-based strategies make their best returns not in a high volatility environment but, rather, while volatility is increasing. Volatility is cyclical in nature but counter-intuitive and most investors tend to buy tail risk when it is expensive (once volatility is already high) and ignore it when it is cheap.

Imagine this analogy. You bought turkey life insurance from a ‘turkey’ life insurance company. Just before Thanksgiving, the firm would view nine-month turkey mortality tables and conclude that the life insurance could be written cheaply as there had been so few turkey mortalities between January and October. But after Christmas and Thanksgiving (the dual turkey genocide period), life insurance companies would price turkey life insurance very expen-

sively, based on recent traumatic events.

To summarise, tail-risk hedging can be worthwhile as a ‘positive return expectation’ activity, or with a slight negative return expectation but a high marginal utility in the occurrence of the event, or in response to a significant reduction in portfolio volatility. Volatility-based strategies are normally prohibitively expensive to buy just after a tail event.

So which is the better to tail-risk hedge, managed futures or volatility-based strategies? The answer is, I’m afraid, ‘It depends’.

It is important to understand that, while both strategies can provide negatively-correlated returns when they are needed, in general, managed futures and volatility-based strategies are trading two different market phenomena and provide those returns in different ways. Managed futures tend to generate returns from market environments where the serial correlation of returns are high and markets are making long terms moves in a single direction – trending environments. Volatility-based strategies, where they are based on being ‘long-volatility’, make returns from the markets’ perception of an increase in risk, and sudden large swings in price.

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So managed futures’ performance comes when markets are moving from one significant value area to another. Volatility-based strategies can generate returns even though the move hasn’t happened yet but investors view the probability of such a move to be heightened. In this case, the option premiums will reflect the greater potential future volatility by having higher prices so VBS funds can ‘fade’ the move even before it has begun. As such, it is no surprise that volatility-based strategies are very good at protecting against sudden unexpected moves in markets, while managed futures tend to give investors participation in trends – and where that is a bear trend in equities, that will help offset losses in an equity portfolio.

Managed futures are a better hedge when volatility is very expensive – that is, when it is greater than one standard deviation above its long-term mean. They also have a wider array of underlying assets to choose from. They do usually perform well in tail events.

But there are five ‘killer apps’ they do not have in their bag that volatility-based strategies do.

First, when a market ‘gaps’ down – which one could reasonably expect to happen in an unexpected event – managed futures may or may not be positioned correctly. They could well have the opposite position and face the prospect



**Jerry Haworth**

of large losses if the markets move far enough, quickly enough. Volatility-based strategies’ on the other hand, hold options which pay off in a tail-event period. There is no question whether they are in or on the right side or not. They are. So while managed futures tend to suffer from ‘gap risk’ – markets moving too fast for traders to hedge – volatility-based strategies with structural long-option positions can provide immediate participation in ‘gap’ moves, so putting the two together in a wider portfolio has obvious immediate benefits.

Second, volatility-based strategies have the ability to put on a lot higher notional exposure than managed futures, especially when volatility is extremely low. The lower the volatility, the higher the notional exposure you can get for the same price. Managed futures don’t have nearly the same ability.

Third, volatility-based strategies have positive convexity: profitable positions grow in size the worse the situation becomes. Managed futures have to keep adding to the portfolio in order to achieve this.

Fourth, volatility-based strategies’ liquidity is actually enhanced in a crisis as demand for the ‘tail’ options grows exponentially, thanks to the counter-intuitive nature of volatility alluded to earlier.

Fifth, volatility-based strategies have another ‘potential return’ horse in the race – volatility itself. If uncertainty rises without assets even moving, volatility-based strategies strategies re-value upward as the price of options are based largely on implicit assumptions on future volatility. You don’t get this with managed futures.

To sum it all up, when specifically looking to hedge tail risk, volatility-based strategies seem to have clear advantages in a lower volatility environment and managed futures in an extreme volatility environment. Both have a place in a portfolio due to the qualities they share, their ability to be uncorrelated in tail events and their risk/reward ratio-enhancing properties.

Tail-risk insurance should be bought with a longer horizon in mind and implemented only when the pay-off makes sense. And in this way investors do not need a sense of market timing to capitalise – just patience. ▶