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Highlights From

The Benefits of Selling Volatility

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The Benefits of Selling Volatility

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The following text provides highlights from Cambridge Associates' March 2011 research report on the benefits of selling volatility. Our complete analysis of this strategy, including a discussion of the design of a short strangle portfolio, is available only to clients of Cambridge Associates. Investors should not rely on this excerpt for guidance regarding the suitability of a selling volatility strategy for their portfolio.

Over the past several years, we have often discussed the possibility that future investment returns will look quite different (and potentially much weaker) than the average returns realized in the twentieth century, and that investors may be forced to choose between unpleasant options—e.g., cut spending dramatically and potentially underinvest in the institution, or continue to spend at elevated levels and risk permanent impairment of the endowment. Partly for this reason, many investors have begun to seek returns in less traditional areas—for example, scaling back long-only equity exposure (market beta) and using the proceeds to fund investments in vehicles such as hedge funds (alpha and more market-neutral exposure).

With this in mind, we propose investors consider selling volatility. More specifically, investors should take a serious look at the benefits of a fully collateralized option-selling program designed to capture the historical spread between implied volatility (e.g., the VIX) and *realized* volatility. There has been a persistent historical premium for implied volatility relative to realized volatility. While there is no single accepted theory as to why this is so, the most compelling one may be the simplest. To wit, given that the majority of option buyers are looking to hedge against (or profit from) a specific event, while option sellers are essentially looking for income, sellers are likely to be more price sensitive than buyers. For example, an investor buying index puts to protect against a sharp market drawdown is unlikely to haggle over a few extra cents on the option, since the risk of not buying the option and seeing

the market crater would probably outweigh the small additional cost; the option seller, on the other hand, is much more likely to care about extra pennies given the absence of upside potential. Said a slightly different way, the option seller is in effect being compensated for providing insurance to the option buyer. Whatever the reason, the premium has been remarkably persistent over time—since 1990, implied volatility has been higher than subsequently realized volatility in 86.9% of monthly observations, with a mean difference of 4.5 percentage points.

Over the past 20 years, a strategy of systematically selling out of the money puts and calls on the S&P 500 Index (a short strangle portfolio) would not only have soundly beaten equity returns with lower volatility, but also offered similar returns to the median hedge fund manager tracked by Cambridge Associates, albeit with slightly higher volatility (see chart on the following page).¹ Such a strategy would also have offered significantly better transparency and liquidity than most hedge funds.

The benefits of the strategy, as well as its limitations, are perhaps best illustrated during crisis periods, when the strategy has consistently posted better returns than equities, but has been less successful relative to hedge funds. For example, from November 30, 2007, through the end of February

¹ Results include estimated transaction costs, but not manager fees. However, they also exclude interest earned on cash balances from option sales, which should roughly offset fees.

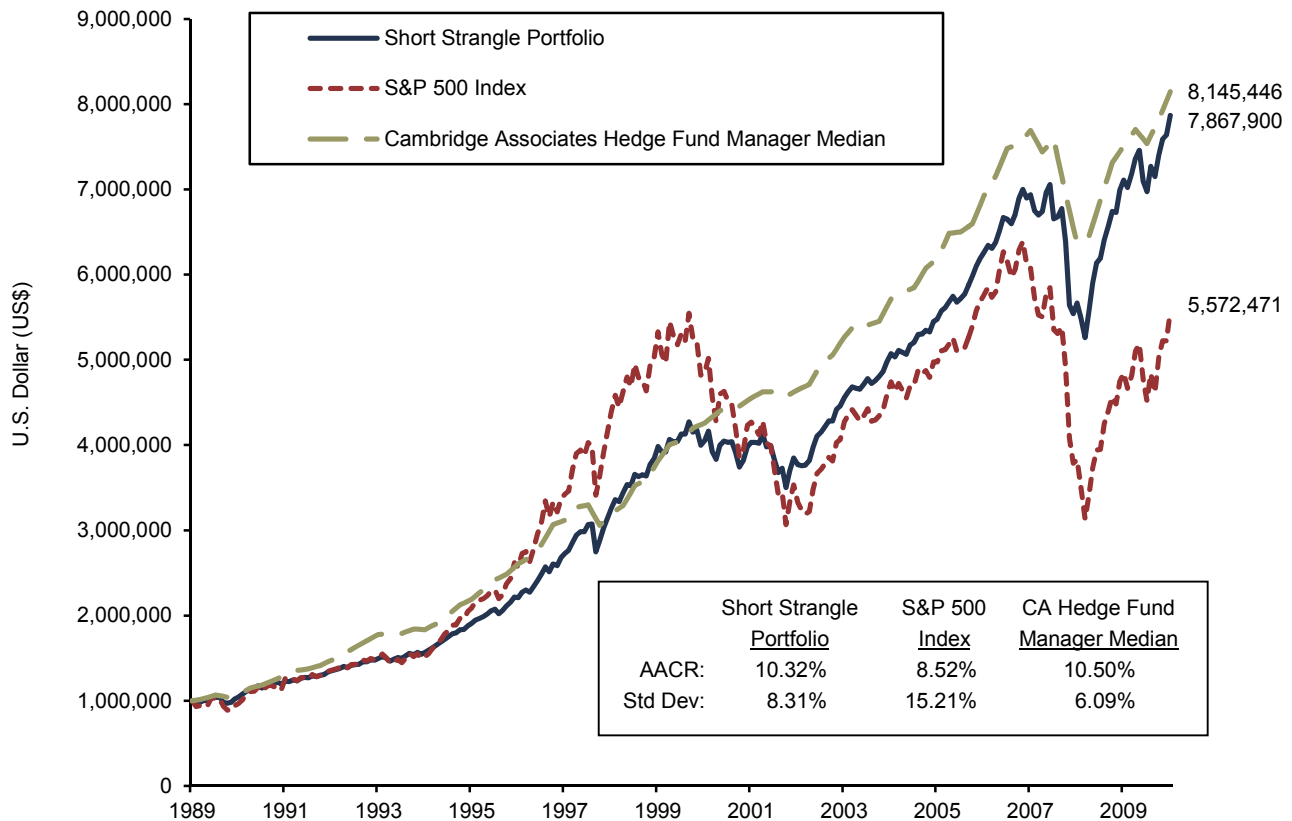
2009, the strategy returned -24.9% versus -51.0% for the S&P 500, -21.4% for the HFRI Fund Weighted Composite Index, and -14.5% for the median manager tracked by Cambridge Associates. During the tech bust, meanwhile, the strategy returned -13.8%, which compared quite favorably to the -43.8% return for the S&P, but lagged the HFRI Fund Weighted Composite Index (-2.1%) and the CA manager median (14.1%) by wide margins. While this analysis focuses on the U.S. market, any market with sufficient liquidity and options coverage should support this strategy. Returns for comparable strategies in U.K. and continental European markets have been similar to those of the U.S.-based strategy, and such markets obviously have ample liquidity. Unfortunately, the same cannot be said for most

emerging markets, and thus the strategy will likely not make sense for investors based in such markets.

The most significant drawback of the strategy is that it has market exposure due to its fully collateralized nature, and will thus track the overall market to some degree. While this is likely to be mitigated during crisis periods as volatility spikes, thus driving up premium income, the experience during the tech bust should not be dismissed—while a volatility-selling strategy cushioned losses during this period, it badly lagged hedge funds, many of which saw the bust coming and adjusted portfolios accordingly. Further, and perhaps a bigger worry, is that after a certain percentage decline, the strategy offers *no* cushion against

Cumulative Wealth of a Fully Collateralized Short Strangle Portfolio Against Various Indices

December 31, 1989 – December 31, 2010 • December 31, 1989 = \$1,000,000



Sources: Cambridge Associates LLC Investment Manager Database, The Clifton Group, Standard & Poor's, and Thomson Datastream. Notes: Data are monthly. The fully collateralized short strangle portfolio consists of 50% S&P 500 ETF (SPY) and 50% Treasury bills. Each month, 20-delta puts and calls are sold and rolled over. Performance reflects the gains on collateral and option premium income received each month and is meant to reflect expected transaction costs associated with options trades, but not expected investment management fees. Short strangle data are simulated and provided by The Clifton Group. Data for Cambridge Associates Hedge Fund Manager Median are quarterly and monthly returns are extrapolated for cumulative wealth.

additional losses, and will basically track the market. (Said differently, it offers a fixed monthly cushion on a variable liability.) This is because once the market value falls below the put strike price, further declines will be consistent with losses in the market, as the liability associated with the sale of puts increases dollar for dollar with the market decline. Although losses would be offset by gains from the put and call premiums and income from the T-bills, those return sources are fixed, while the downside depends on market action. Conversely, the strategy also caps gains, as once the market appreciates past the call strike price, further gains in the equity portion of the portfolio are needed to cover the appreciating cost of the call.² Should the market decline below the strike price of the sold put, the portfolio effectively becomes 100% equities (until options are rolled, of course), while if the market rises above the strike price of the call, the portfolio becomes 100% T-bills.

Such issues provide context for understanding why this strategy can vary significantly from hedge funds in some periods, but perform similarly in others. A short strangle strategy emphatically should *not* be expected to behave like a hedge fund during outlier periods. The strategy not only has *zero* chance of ever putting up huge return numbers, but is also exposed to significant losses in the case of a sustained market downturn; hedge funds, by contrast, have historically provided better protection on the downside, while also participating (albeit to a lesser degree) in market rallies. The bottom line is that while long-term returns have been broadly comparable to those of hedge funds, investors should take this with a large grain of salt—selling volatility should by no means be considered akin to a hedge fund program.

Investors should also consider that while historical returns look terrific, we have yet to see a back-tested strategy that didn't! And of course, for investors uncomfortable using derivatives-based strategies, this strategy will be a nonstarter.

Even taking such concerns into consideration, there are underlying reasons to believe the returns realized by a volatility-selling strategy are repeatable, and that such strategies may therefore deserve a place in investor portfolios; however, as with any investment strategy, wide adoption would likely impact prices and depress future returns. ■

² For the period studied, equity prices rose above the call strike price 20.6% of the time, and fell below the put strike price 10.7% of the time.