

**December 31, 2012**

***“During the war they saw airplanes land with lots of good materials, and they want the same thing to happen now. So they've arranged to imitate things like runways, to put fires along the sides of the runways, to make a wooden hut for a man to sit in, with two wooden pieces on his head like headphones and bars of bamboo sticking out like antennas—he's the controller—and they wait for the airplanes to land. They're doing everything right. The form is perfect. It looks exactly the way it looked before. But it doesn't work. No airplanes land. So I call these things cargo cult science, because they follow all the apparent precepts and forms of scientific investigation, but they're missing something essential, because the planes don't land.”***

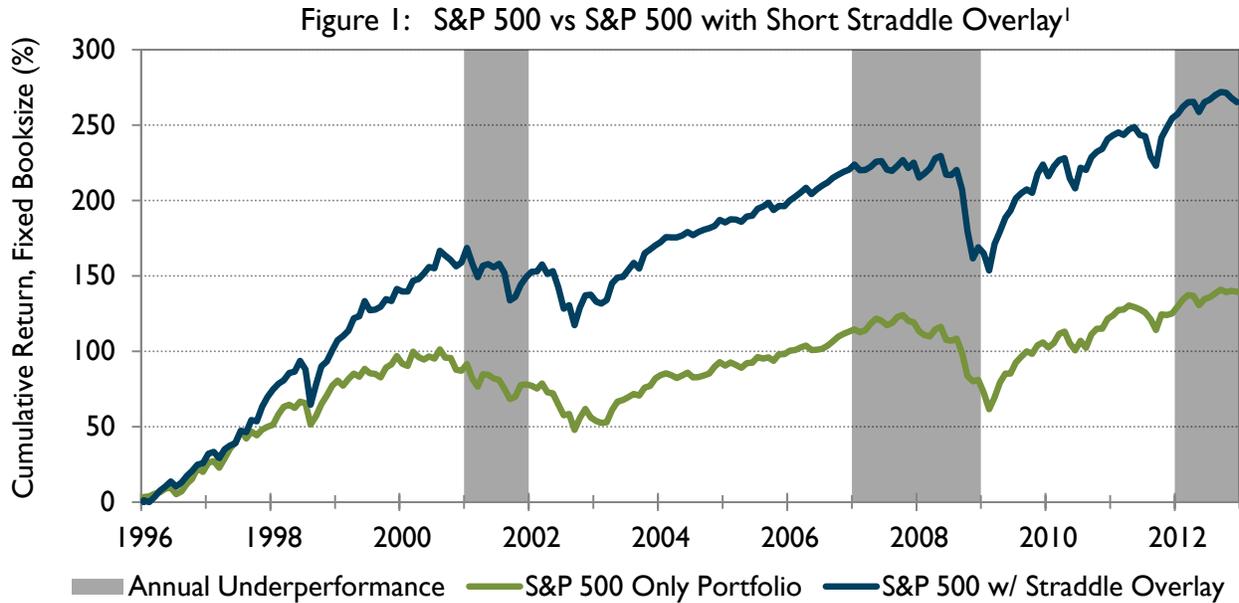
— **Richard Feynman, from the Caltech commencement address given in 1974**

“Cargo cult trading” is a term that has many parallels to Feynman’s observations. The tribal societies of New Guinea observed the aircraft of World War II bringing in large amounts of goods. When the war ended, the tribes engaged in ritualistic practices mimicking the behavior that they had observed and awaited material riches to fall from non-existent aircraft. Similarly, some traders attempt to profit by mimicry. Cargo cult trading starts with the glorification of the one-off windfall gain. The hero purports that it was an easy and obvious trade. This gives the novice trader a feeling that he too can enjoy similar successes through imitation.

Online trading platforms fully equipped with real-time quotes, light-speed execution, and the buzzing bells of news alerts gives all the cargo cult tools necessary to “trade like the pros.” This is just part of the illusion that trading is easy. Having the “institutional” resources does not ensure success. The trader first needs a definable edge and then the discipline for implementing the investment process.

This past year, the media has promoted simple strategies of selling calls, selling puts... selling every option! This recommendation, however, is a stark reversal after the 2008 crisis where many of the same market pundits promoted the opposite trade and recommended buying options.

While hindsight (and the pundits’ after-the-fact recommendations) is perfect, predicting the future is exceedingly difficult. As such, before actually trading, it is worth exploring how simple option strategies perform over many years if systematically executed. Figures 1 and 2 describe the performance of an option overlay strategy that sells monthly straddles against a long stock position. We find that, while the overlay tends to be profitable, in the years of underperformance the increased volatility and drawdowns may be intolerable. Alternatively, Figures 3 and 4 describe the performance of a strategy that buys monthly put options against a long stock position. This backtest shows that systematically buying downside puts for protection can greatly erode the value of a portfolio over long durations.

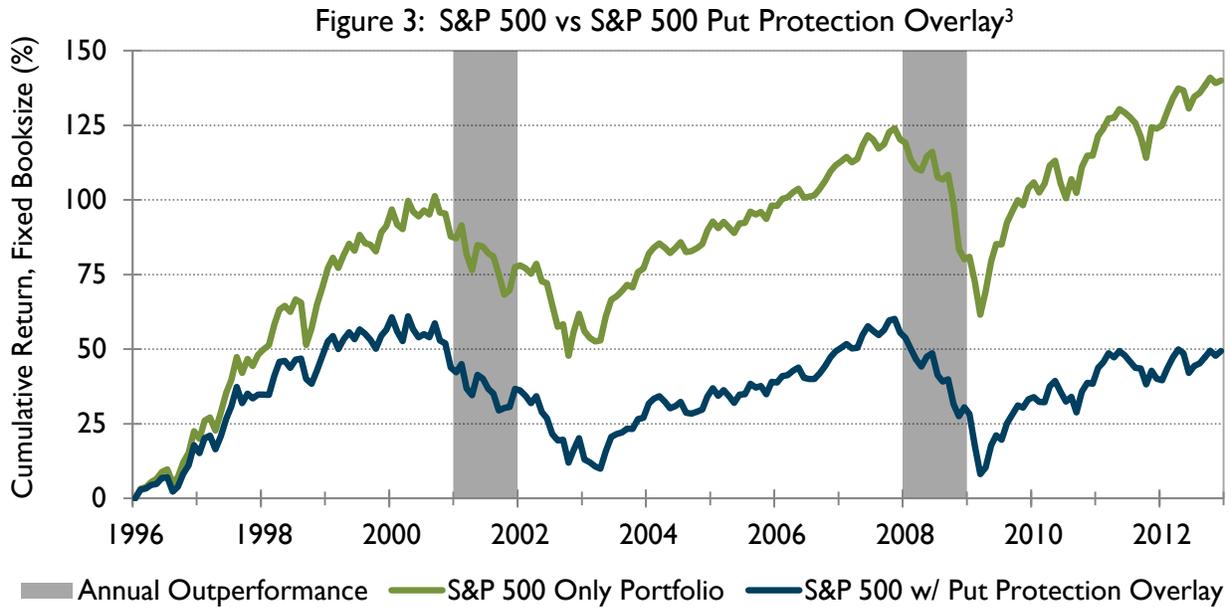


	Performance of Short Straddle Option Overlay		
	All Months	Months of Positive Returns	Months of Negative Returns
Annualized Average Return	7.4%	30.7%	-30.3%
Annualized Volatility	11.9%	7.2%	9.6%
Sharpe Ratio (0% risk-free)	0.6	4.3	-3.2
Worst Monthly Return	-14.7%	0.0%	-14.7%
Best Monthly Return	9.6%	9.6%	-0.1%
Number of Months	204	126	78

Figure 2: Backtest performance of S&P 500 short straddle option overlay.<sup>2</sup>

<sup>1</sup> Short straddle overlay is an options strategy that sells a 1-month at-the-money straddle (in a notional amount equal to stock portfolio) every month and rolls positions at expiration. S&P 500 portfolio is represented by SPY and reinvests dividends. The notional book size is fixed, and portfolio is rebalanced monthly. Shaded areas indicate the years when the combined portfolio underperformed the S&P 500-only portfolio.

<sup>2</sup> First column contains statistics over all months. The second and third columns contain statistics in months when the short straddle overlay delivers positive or negative returns, respectively. Statistics computed using monthly returns. Data from January 1996 to December 2012.



Performance of Put Protection Option Overlay			
	All Months	Months of Positive Returns	Months of Negative Returns
Annualized Average Return	-5.3%	26.1%	-12.0%
Annualized Volatility	6.5%	8.8%	3.6%
Sharpe Ratio (0% risk-free)	-0.8	3.0	-3.3
Worst Monthly Return	-7.2%	0.0%	-7.2%
Best Monthly Return	11.3%	11.3%	0.0%
Number of Months	204	36	168

Figure 4: Backtest performance of S&P 500 put protection option overlay.<sup>4</sup>

<sup>3</sup> Put protection overlay is an options strategy that buys 1-month 5% out-of-the-money puts (in a notional amount equal to 95% of stock portfolio) every month and rolls positions at expiration. The S&P 500 portfolio is represented by SPY and reinvests dividends. The notional book size is fixed, and portfolio is rebalanced monthly. The shaded areas indicate the years when the combined portfolio *outperformed* the S&P 500-only portfolio.

<sup>4</sup> First column contains statistics over all months. The second and third columns contain statistics in months when the put protection overlay delivers positive or negative returns, respectively. Statistics computed using monthly returns. Data from January 1996 to December 2012.

Using our 17-year backtests, we find that systematically buying or selling options can have varying effects on overall performance. It is difficult to favor either strategy as a permanent overlay unless additional return volatility and potential drawdowns are tolerable. It is evident that when these strategies underperform, the negative effects may lead to challenging trading decisions that the cargo cult trader may not be expecting in the absence of seeing a longer time series of data.

Is an investor being fairly compensated for bearing the risk of long or short options, or is he just executing a cargo cult trade? An option can seem to be cheap and still be profitably sold for long periods before a drawdown occurs, making the strategy appear to have a higher success rate than expected. Conversely, an investor can buy statistically expensive options and still earn outsized returns on their protection strategy if timed well.

The answer to the question above lies in the derivation of the “fair value” of an option and building a process around it. Fair value can be defined as the value where the expected payoff equals the premiums paid, estimated over long periods of time. For example, an investor who buys an option could consistently lose money until an event occurs and a large gain is made, bringing the strategy back to breakeven. Trying to time the events, or even just the years, when a simple long or short options strategy will win can be a challenging game.

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