

An Assessment of the Effect on Investment Returns
of Writing Call Options
January 2009

Selling call options can increase the return and reduce the variability of the return for a portfolio. Coons Advisors has outperformed the S&P 500 during the period since 2002 using several variations of the approach. The strategy involves purchasing a broad-based exchange traded fund, such as S&P Depository Receipts (ticker: SPY), and selling call options on the fund at the next expiration date. An important source of incremental return from this strategy is that the expected volatility that affects option pricing has been greater than realized volatility.¹

The following analysis calculates the potential contribution from selling call options on SPY to the total return of a portfolio during January 2005 to December 2008. The portfolio is assumed to have been invested entirely in SPY, but the return attributable to the call writing is transportable to any portfolio to the extent that the manager would be willing to accept basis risk.² A potential application would be to pair the option writing on an index fund with a portfolio of individual securities that is designed to track or exceed the return on the index while excluding equity securities of certain companies.

The selling of call options added 6.4 percentage points to the annualized return on the portfolio and lowered the variability of monthly returns. The total return on the portfolio was -5.2% annualized without selling calls and +1.2% including selling the calls. The period analyzed included a significant bull market in SPY and a significant bear market in SPY. The selling of call options added to the total return of the portfolio during both periods, but made most of its contribution during the bear market phase. The analysis also showed that returns were sensitive to how far into or out of the money the calls were written.

Data

The following analysis uses data on SPY, which is an exchange traded fund that holds all of the S&P 500 Index stocks, and options on SPY that are traded on the CBOE. The period of the analysis is limited by availability of the options data to January 24, 2005 through December 19, 2008. The dataset consists of high, low, open and close prices for

¹ Barry Feldman and Dhruv Roy, "Passive Options-based Investment Strategies: The Case of the CBOE S&P 500 BuyWrite Index," Ibbotson Associates, July 28, 2004, pp. 16-17.

² In this case, basis risk is the possibility that the return on the underlying portfolio will be different from the return on the security that has been shorted by selling call options on it.

SPY and for each option strike price for each trading day and option expiration date during the period.

Simulation

The returns were calculated based on 85,000 shares of SPY purchased at the opening price on January 24, 2005. Starting on that date, 850 call options for the next expiration date (from 25 days to 33 days later) were sold at the average of the high and low prices for the day. No changes were made to the portfolio between expiration dates.

Calls were sold at a synthetic at-the-money strike by selling calls both at the strike price just above and the strike price just below the opening price of SPY in the proportion necessary to achieve a weighted average strike price equal to the opening price of SPY.

The cash was credited to the portfolio and invested in a hypothetical money market account paying the 3-month T-bill yield until the next expiration date. In the few cases when the cash accumulated from selling options was insufficient to satisfy an option exercise, the borrowing rate was assumed to be three times the T-bill yield.

At each expiration date, if the closing price of SPY was higher than a strike price, then the account was debited by the amount necessary to satisfy the option exercise. The process of selling call options was repeated on each Monday following an expiration date through the final expiration date of the analysis on December 19, 2008.

Results

The selling of call options added significantly to the return on the portfolio over the entire period and lowered the variability of the monthly returns, as shown in Exhibit 1. The SPY portfolio alone decreased from \$9.953 million at the outset to \$8.096 million at the end of the period. With income from the call writing included, however, the value of the portfolio increased to \$10.589 million.

The total return on the SPY portfolio alone from January 24, 2004 to December 19, 2008 was -5.2% annualized. The selling of call options raised the return by 6.4 percentage points to +1.2% annualized.

Without the call writing, monthly returns varied from a maximum of +4.8% to a minimum of -16.5% (a spread of 21.3 percentage points) and averaged -0.4% with a standard deviation of 4.0%. With the call writing, the range of monthly returns narrowed to +4.2% to -10.0% (a spread of 14.2 percentage points), the average improved by 0.5 percentage points to +0.1%, and the standard deviation decreased from 4.0% to 2.7%.

The period covered provided a robust test of the strategy because it included substantial portions of a bull market and a bear market. The table in Exhibit 1 shows returns for the

bull market (January 24, 2005 to October 19, 2007) and bear market (October 19, 2007 to December 19, 2008) sub-periods. The return on the underlying portfolio was +10.6% annualized during the bull market and -37.3% annualized during the bear market.

Not surprisingly, almost all of the contribution of the call writing came during the bear market phase. During the bull market phase, the call writing added 1.4 percentage points (annualized) to the return on the equity portfolio. During the bear market phase, the call writing added 14.4 percentage points (annualized). The market value of the portfolio, including the cumulative income from call writing, exceeded the market value of the underlying portfolio in 29 of the 33 months during the bull phase and in all 14 months of the bear phase.

The return from call writing was very sensitive to how far the options were written in or out of the money. Exhibit 2 shows the results for strike prices ranging from 4% in the money to 4% out of the money for the entire period and for the two sub-periods. For the entire period, the highest income from call writing was achieved by writing options 2% in the money. The income dropped significantly into negative territory at 4% in the money. During the bull phase, the highest income was achieved writing calls at the money. During the bear phase, the highest income was achieved writing calls 3% in the money.

Conclusion

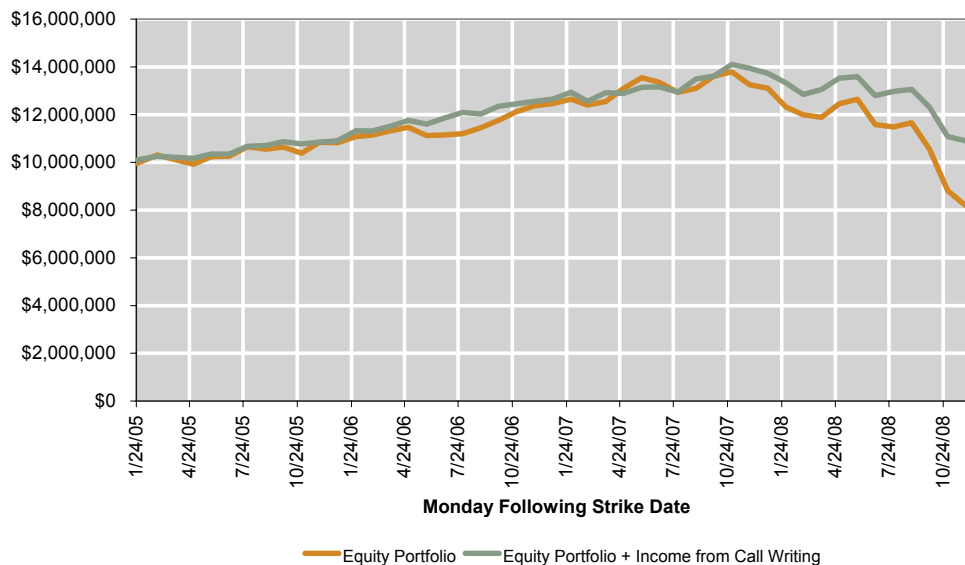
Pairing a program of call writing on a security with an underlying portfolio of similar underlying securities can add modestly to investment returns during bull market phases and very significantly to investment returns during bear market phases. As a result, the strategy can add to returns over the entire cycle.

The approach can be transported to portfolios that differ from the securities underlying the options to the extent that the manager can measure and control basis risk. The strategy can be implemented in the account that holds the underlying securities provided that it is a margin account. The contribution of the options strategy would be more clear if it was conducted in a separate account.

The contribution from call writing to the total return of the portfolio was very sensitive to the degree to which options were written in or out of the money. The analysis assumed a strict rules-based approach. A manager potentially could achieve even better results to the extent that it could accurately select more advantageous strike prices based on the prevailing market environment (e.g., bull or bear market).

Exhibit 1

**Market Value of Hypothetical Portfolio
With and Without Income from Call Writing**

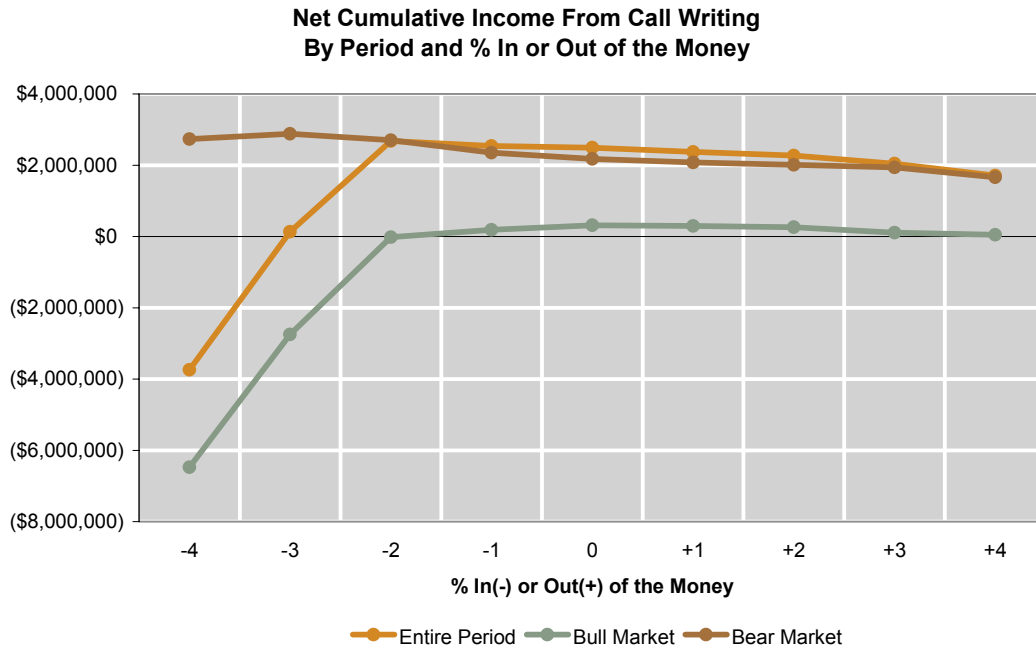


	Equity Portfolio	With Call Writing	Difference Attributable to Call Writing ¹
Return			
Rising Market (1/24/05-10/19/07)	33.2%	38.1%	4.9%
Falling Market (10/19/07-12/19/08)	-38.9%	-24.1%	14.9%
Entire Period (1/24/05-12/19/08)	-18.7%	4.9%	23.5%
Annual Rate			
Rising Market (1/24/05-10/19/07)	10.6%	12.0%	1.4%
Falling Market (10/19/07-12/19/08)	-37.3%	-23.0%	14.4%
Entire Period (1/24/05-12/19/08)	-5.2%	1.2%	6.4%
Monthly % Changes (1/24/05-12/19/08)			
Maximum	4.8%	4.2%	6.5%
Minimum	-16.5%	-10.0%	-4.6%
Mean	-0.4%	0.1%	0.5%
Std Dev	4.0%	2.7%	2.2%

Note: The equity portfolio consists of 85,000 shares of SPY purchased at the opening price on 1/24/05. The analysis assumes that 850 contracts were written at the money at the average of the high and low prices on each Monday after the strike date of the previous contract. The estimated income from call writing includes amounts subtracted when options were in the money at expiration plus interest at the 3-month T-Bill rate or a charge of 3x the T-Bill rate for borrowed funds. The analysis further assumes that all option contracts were held until expiration or assignment. Returns do not include transaction costs or other expenses.

¹Summary statistics for the monthly % changes are calculated from the differences in monthly % changes on the equity portfolio without call writing and the equity portfolio with call writing.

Exhibit 2



**Net Cumulative Income From Call Writing
By Period and % In or Out of the Money**

% In(-)/Out(+) of the Money	All	Bull	Bear
	1/24/05 - 12/19/08	1/24/05 - 10/19/07	10/19/07 - 12/19/08
-4	(\$3,736,442)	(\$6,469,578)	\$2,733,137
-3	134,554	(2,748,178)	2,882,732
-2	2,677,866	(20,145)	2,698,011
-1	2,541,987	187,047	2,354,940
0	2,493,869	316,471	2,177,399
+1	2,369,224	294,137	2,075,087
+2	2,274,628	262,835	2,011,793
+3	2,042,574	105,453	1,937,121
+4	1,709,675	48,776	1,660,899

Note: The dollar amounts in The table above are the net cumulative income from writing call options at the corresponding strike prices for the corresponding periods. Income includes premiums received for writing the options, plus interest on the accumulated cash, minus any amounts necessary to settle options that were assigned when the closing price of the underlying security was above the strike price on the exercise date. Each amount in bold is the maximum for the period.