

Investment Research

Hedging with Put Options: A Costly Endeavor

BALLENTINE PARTNERS | ANDREW HACKER, CFA | OCTOBER 2018

After a decade-long economic expansion and bull market in US stocks, investors are understandably nervous about downside risk. Global economic policy uncertainty rose sharply in 2018, fueled by the threat of a trade war among the world's largest economies. With the stock market crash of 2008-'09 a distant but still painful memory, many investors are asking about efficient ways to protect their hard-won gains of the last decade.

One of the primary tools that investors consider to protect their equity portfolios is the purchase of put options, which provide a dollar-for-dollar increase in value as stocks decline below some predetermined level (the strike price). With the CBOE Volatility Index (VIX), which serves as a proxy for the price of options, trading well below its long term average, the thought of buying some "cheap" portfolio insurance through the purchase of puts is increasingly appealing to taxable investors with appreciated holdings.

Unfortunately, hedging downside risk with options is often a costly proposition. Taxable investors considering options for downside protection should be wary of embedded tax-inefficiencies. The short to

medium-term nature of options means that most are taxed at onerous short term capital gains rates, sharply reducing the neutralizing benefits of owning puts when stock prices are falling. This article will discuss the benefits and drawbacks of using options to hedge risk and touch on alternative ways of reducing risk in a portfolio that minimize hedging cost and tax impact.

Buying Put Options to Hedge Market Risk

An option's fundamental value is tied to the underlying asset's realized volatility through expiration. An S&P 500 index option purchased with an implied volatility of 12% (a low level compared to its history) will produce a significant loss for the buyer if the index realizes only 6% volatility. The price paid for the option (implied volatility) relative to its fundamental value (realized volatility through expiration) is what drives returns. On an annual basis since 2004, average S&P 500 implied volatility has been higher than realized volatility in every year except 2008¹.

The spread between implied and realized volatility is known as the volatility risk premium. Over the

¹ "Implied vs. Realized Volatility." *Tastytrade Blog*, tastytradenetwork.squarespace.com/tt/blog/implied-vs-realized-volatility.

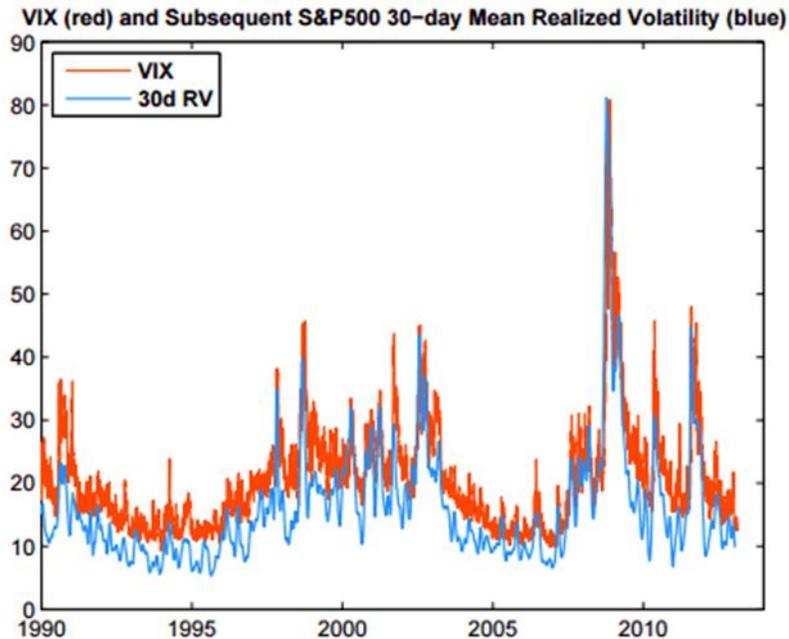


Fig 1. Implied vs realized volatility from: Cooper, Tony. "Easy Volatility Investing." SSRN, 23 Apr. 2013, papers.ssrn.com/sol3/papers.cfm?abstract_id=2255327.

period January 2, 1990 through June 30, 2014, the volatility risk premium of the S&P 500 averaged +3.4% and was positive 88% of the time². In other words, options have tended to be overpriced in the vast majority of environments.

There are several factors explaining the volatility risk premium and its corresponding drag on hedged portfolio returns. Academic studies argue that net demand pressure for options leads to higher prices and a positive volatility premium. Market-making firms do not have access to perfect hedging tools; therefore, they require compensation for taking on additional risk. Others posit that the phenomenon is a result of the perceived risk of the market. Since the world is predominantly long equities, the main risk is to the downside. A common anecdote to describe price behavior is "markets take the stairs

up and the elevator down." The sellers of put options take on the key directional risk of the market and demand a premium as compensation. The result is that puts tend to be more expensive than calls, with out-of-the-money puts being the most expensive. Unfortunately, those pricey out-of-the-money puts are often the very contracts purchased by investors as "cheap" portfolio insurance.

The tendency for portfolio hedgers to overpay for put protection can create a significant drag on returns. From 2005 to 2015, a buy and hold SPY ETF (Exchange Traded Fund) strategy would have generated a cumulative return of 101.5%³. The same portfolio, hedged monthly using 5% out-of-the-money puts (a common hedging strategy) returned just 12% cumulatively. By choosing a lower-cost put,

² "Still Not Cheap: Portfolio Protection in Calm Markets." AQR Capital Management, www.aqr.com/Insights/Research/Journal-Article/Still-Not-Cheap-Portfolio-Protection-in-Calm-Markets.

³ "Varghese, Sonu. "The Cost of Tail Risk Protection." Convex Capital Management, 15 Oct. 2015, www.convexcm.com/the-cost-of-tail-risk-protection.

purchased 10% out-of-the-money, an investor could have increased their cumulative return to 38.5%. A 2015 study by AQR Capital Management found that the volatility component of put protection alone reduced annualized returns by 2%.⁴ In short, put protection can destroy value, especially when compounded over long time periods.

Beyond the cost considerations, an effective put strategy must consider a number of other variables. What is the appropriate strike price? (Closer to the money options are more expensive.) What is the right expiration date? (Longer time periods are more expensive.) What is the right hedge ratio (the proportion of the stock portfolio to be protected – the higher the proportion, the more expensive)? A miscalculation on any one of these questions could result in getting the market call right, but having the strategy nevertheless fail to provide the desired protection.

Nevertheless, there are situations when hedging might be the best course of action to achieve an investor’s objectives. The impact of taxes must be considered if hedging is determined to be the best course of action. Proceeds from the sale or exercise of stock options held for less than one year are taxed at short term capital gains rates. However, options on stock indexes and futures contracts are afforded 60% long term, 40% short term treatment irrespective of their holding period. Therefore, taxable investors intent on purchasing options should strongly consider options on indexes instead of on the ETFs (which are viewed as stocks) that track them. (For a more detailed discussion of this topic, please see the Appendix).

Using a Collar Strategy

While we are clearly biased against the use of put protection for the reasons cited above, options are still sometimes the best way to help meet particular investment objectives (e.g., short term exposure to concentrated stocks). Where that is the case, there are ways to mitigate drawbacks and reduce the premiums (cost) paid for put protection, the most common of which is known as a “collar.” The strategy involves holding stock, a long out-of-the-money put, and a short out-of-the-money call. In Figure 2 below, the blue line shows the payoff outcomes for a collar strategy, while the grey line indicates a long-only portfolio.

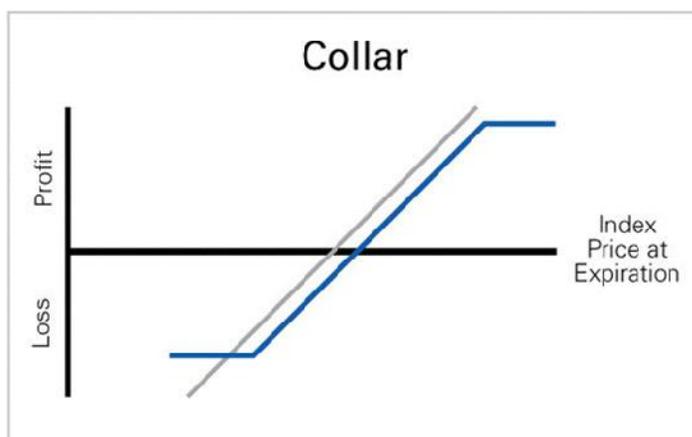


Fig. 2 “The Collar Strategy – Stay Long & Hedge.” *Chicago Board Options Exchange, CBOE, <http://www.cboe.com/blogs/options-hub/2018/09/07/the-collar-strategy-stay-long-hedge>.*

Selling calls generates income, partially offsetting the cost of protection. However, the short call option also caps upside potential. Should the market rally above the call strike price, losses from the short calls will fully offset gains on the underlying stock. Although limiting upside potential, a collar strategy will result in superior outcomes to a put-hedged

⁴ “Still Not Cheap: Portfolio Protection in Calm Markets.” AQR Capital Management, www.aqr.com/Insights/Research/Journal-Article/Still-Not-Cheap-Portfolio-Protection-in-Calm-Markets.

portfolio in down, sideways, and slightly higher market environments. Only in the case of a significant rally will the collar portfolio lag behind. For this reason, the addition of call selling to the strategy is worthy of serious consideration for those investors intent on using puts to control downside risk.

Hedged Mutual Funds and ETFs

Numerous vehicles exist that embed an options strategy within a mutual fund or ETF that owns common stocks. These vehicles combine the attributes of a long put or covered call strategy in a single vehicle, eliminating the need to monitor the options positions and roll the contracts as necessary. Unfortunately, these strategies are extremely tax inefficient. The Invesco S&P 500 BuyWrite ETF has a 5-year tax cost ratio (a measure of how much a fund's annualized returns are reduced by taxes) of more than 2.25% according to Morningstar. We feel that the tax drag associated with these strategies is large enough to be prohibitive for broad use. Please see the Appendix for a more detailed discussion of these strategies and their historical performance.

Our Bottom Line

A sharp market correction can test the patience of even the most experienced investor. Regardless of the method of risk-reduction, client risk appetite,

time horizon, and tax situation need to be carefully considered when evaluating hedging strategies. In our view, portfolio hedging through options should be thought of as more of a last-resort than an initial measure.

Options offer the ability to protect portfolios, but at a significant cost. For clients who are nervous about equity exposure in their portfolios, we would first advocate a change in long-term asset allocation. Rebalancing to a lower-risk long-term allocation reduces portfolio volatility and drawdowns. Of course there are tax costs to rebalancing, but we would rather see a client take profits than spend money on costly hedges. In addition, this approach eliminates the risk of failing to accurately predict the timing or the magnitude of a downturn when deciding which options to buy. The difficulty in getting these calls right is apparent in the commonly cited observation that 90% of all option contracts expire worthless.

Although market declines can be hazardous to one's wealth, the timing of withdrawals from the portfolio can have just as big of an impact. As we have demonstrated (see "Surviving the Next Downturn: A Mental Primer" published in January 2018, ballentinepartners.com/investment-insights), equities tend to recoup losses from even the most severe bear markets within a few years. As a result, staying the course is usually the most successful strategy for maximizing long-term wealth.

About Andrew Hacker, CFA

Andrew is a Research Analyst at the firm and is responsible for research coverage of global equity markets at the firm. His research helps inform portfolio construction, manager selection, and market outlook.

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APPENDIX

Use of Options on Indexes versus Options on ETFs

As we noted, investors choosing to hedge their equity portfolio with options would be better served to utilize index options rather than ETF options. The most liquid index options in the US are those on the CBOE S&P 500 Index, trading under the ticker SPX. In addition to preferential tax treatment, SPX options are cash-settled. Accounts holding in-the-money SPX options at expiration are automatically credited for the value of the option. In contrast, in-the-money options expiring on the S&P 500 ETF (SPY) are exercised into 100 shares of stock per option contract, potentially incurring fees and tax consequences. Put options expire into 100 shares of short stock at expiration, potentially creating administrative headaches for accounts without margin.

Historical Performance of Hedged Mutual Funds and ETFs

Similar to other classes of investments, option strategies may be outsourced via mutual funds and ETFs that embed options within a long equity portfolio. These vehicles employ option-based hedging to generate return outcomes consistent with hedged, collared, or covered call portfolios. Similar to traditional

long-only funds, there are both active and indexed strategies available. Covered call (also known as buy-write) ETFs are one of the most commonly offered indexed strategies. Buy-write ETFs attempt to replicate a covered call strategy on the S&P 500 index. These products aim to provide some downside cushion versus the index, while sacrificing upside potential. As buy-write strategies generally do not employ put hedging, downside risk is not fully hedged. According to Morningstar, the Invesco S&P 500 Buy-Write ETF (PBP) reflects 5-year upside capture of 55% and downside capture of 45%. The downside cushion embedded in covered call strategies can result in lower volatility. PBP's 5-year standard deviation of 5.8% is significantly lower than the S&P 500's 9.5%. Figure 3 presents historical performance for option-based funds and ETFs alongside the S&P 500.

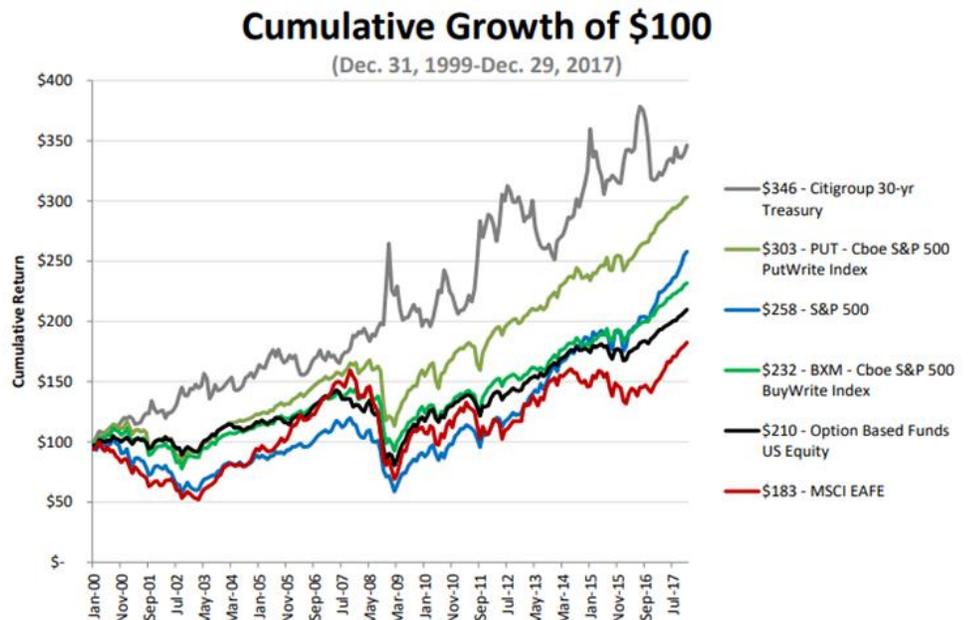


Fig. 3 "Performance Analysis of Option-Based Equity Mutual Funds, CEFs and ETFs: An Update." *Chicago Board Options Exchange, CBOE*, <http://www.cboe.com/micro/buywrite/performance-options-based-funds.pdf>

Over the 18 years ended Dec. 29, 2017, \$100 invested in the CBOE Buy-Write Index would have grown into \$232, slightly underperforming the S&P 500. The US option-based fund category grew to \$210, underperforming the Buy-Write index. The category consists of the 105 oldest and largest option-based mutual funds, closed-end funds and exchanged-traded products. During that same time period, the option based category and Buy-Write index did offer some protection during drawdowns.

When considered in the context of hedging strategies, the performance of the CBOE Buy-Write Index (BXM) is noteworthy. As seen in Figure 4

(Exhibit 7) below, the Buy-Write Index experienced a notably smaller drawdown between 2000 and 2017 than long-only indices.

While indexed option-based strategies, such as covered call ETFs, provide some cushion during drawdowns, active strategies may employ fixed downside protection with put options. Numerous “hedged equity” or “defined risk” products are available from active fund managers. These funds are more likely to fall behind the overall market due to hedging costs. However, some strategies offset those costs through covered call selling and other methods.

Exhibit 7: Maximum Drawdown – Option Based Funds and Benchmark Indices
(Dec. 31, 1999-Dec. 29, 2017)

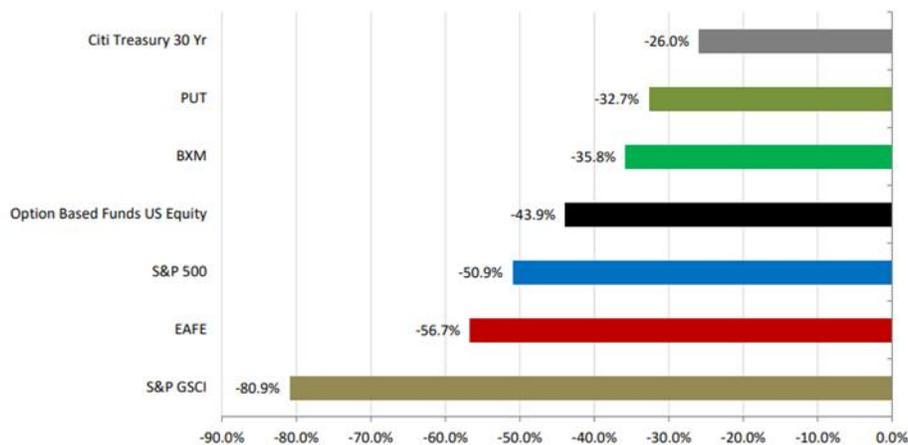


Fig. 4 “Performance Analysis of Option-Based Equity Mutual Funds, CEFs and ETFs: An Update.” *Chicago Board Options Exchange, CBOE*, <http://www.cboe.com/micro/buywrite/performance-options-based-funds.pdf>

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