



# Update on the CBOE BuyWrite and PutWrite Option Indexes

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### Key Highlights

- The Chicago Board of Options Exchange (CBOE) S&P 500 BuyWrite (BXM) and PutWrite (PUT) Indexes have provided attractive risk adjusted returns relative to the S&P 500 index since inception. As an example, the PutWrite Index returned 10.1% vs. 10.3% for the S&P 500 index while incurring about 66% of the risk since their inception in June 30, 1986 through December 31, 2017.
- The benchmark utilization of S&P 500 stocks and S&P 500 index options also provides liquidity for those investors that prefer flexible access to their capital.
- The greater availability of investment vehicles that utilize options, with lower minimums and lower fees, provides greater flexibility for investors to take advantage of these strategies.
- Overlaying options on stocks with unrealized gains can reduce risk without generating a tax liability.

### Investment Implications

- Option writing strategies may be appropriate for investors who:
  - Utilize hedged equity strategies and desire liquidity and transparency.
  - Are challenged by minimum requirements of other hedged strategies.
- Using option writing strategies in conjunction with an existing equity long/short hedge fund allocation can significantly improve liquidity.
- Index options receive a favorable 60% long-term and 40% short-term tax treatment for individual taxable investors.
- Investors should understand the trade-offs of option writing strategies which include:
  - Limited upside during significant market rallies.
  - Potentially limited downside protection compared to other hedging strategies.

## Overview

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Asset Consulting Group wrote a detailed whitepaper on four CBOE index option writing benchmarks in January 2012 that can be found on the CBOE website ([www.CBOE.com](http://www.CBOE.com)). The article reviewed various performance and risk statistics of these indexes since inception highlighting the benefits of these strategies. A majority of the strategies that are available today are based on either the CBOE S&P 500 BuyWrite Index (BXM) or the CBOE S&P 500 PutWrite Index (PUT). This whitepaper provides an update on these two indexes.

## Methodology of the Calculation for the BXM and PUT

We begin by analyzing the benchmark indexes that measure the performance of a portfolio that sells S&P 500 index options on the third Friday of every month.

### CBOE S&P 500 BuyWrite Index

The methodology of the BXM Index is based on buying an S&P 500 index portfolio and writing (selling) the S&P 500 at-the-money (based on the current S&P 500 price) "covered" call option to expire on the third Friday of the month and held until it is cash-settled. After settlement, a new at-the-money call option is written that will expire on the third Friday of the following month.

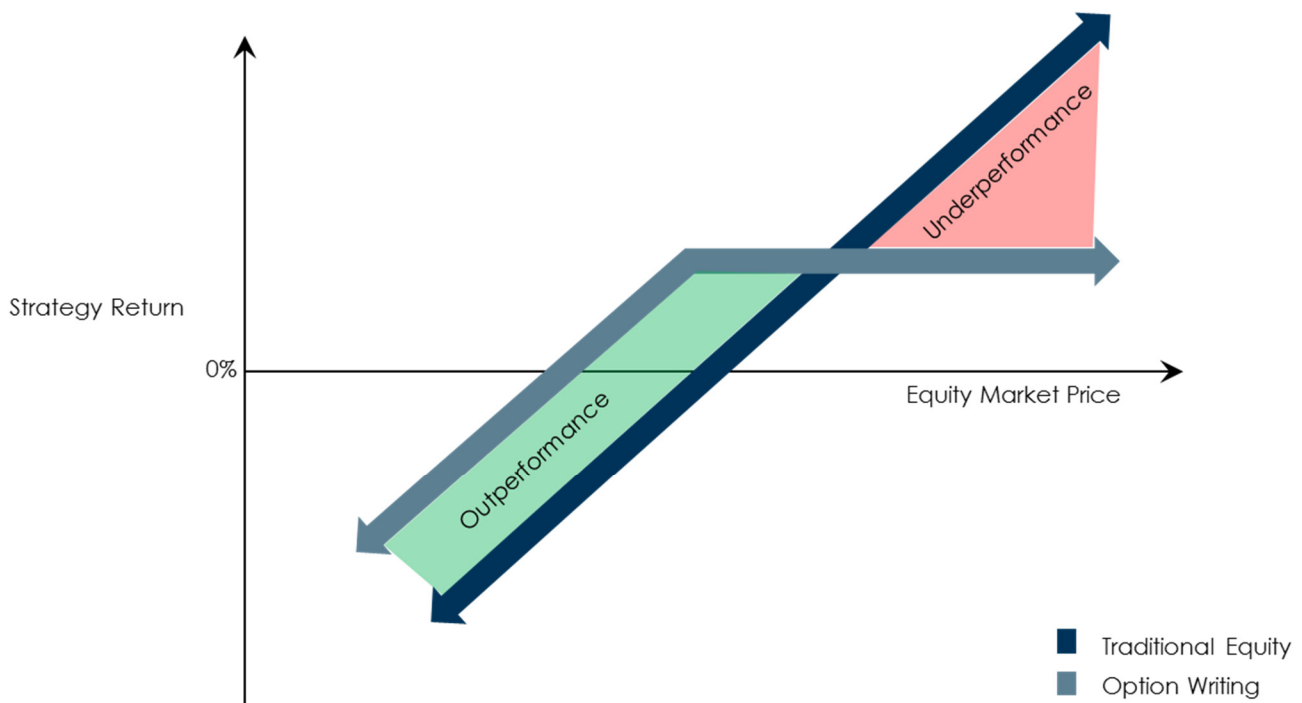
### CBOE S&P 500 PutWrite Index

The methodology of the PUT index writes (sells) a fully cash secured S&P 500 at-the-money put option to expire on the third Friday of the month until it is cash-settled. After settlement, a new at-the-money put option is written that will expire on the third Friday of the following month.

## Performance and Risk Analysis

Exhibit 1 provides an expected payoff diagram of a traditional equity investment versus an option writing strategy. The option writing strategy is beneficial up to a certain point depending on the strike price and premium received.

**Exhibit 1: Expected Payoff: Option Writing vs. Traditional Equity**



**Exhibit 1:** Option income reduces downside in a declining market and provides gains during flat markets. Upside is limited based on the income received and the strike price selected.

Exhibit 2 provides various rolling period returns, risk and alpha (a risk adjusted statistic) through December 31, 2017. The performance over the longer term was similar with about two-thirds the risk. The performance over the shorter term has been limited as the S&P 500 realized above average returns and the risk reduction detracted from performance.

### Exhibit 2: 1-3-5-10-20 Returns

	1 YR Dec-2017	3 YR Dec-2017	5 YR Dec-2017	10 YR Dec-2017	20 YR Dec-2017	Since Inception Jul-1986
<b>Returns</b>						
S&P 500	21.83	11.41	15.79	8.50	7.20	10.28
CBOE S&P 500 BuyWrite	13.00	8.39	8.80	4.89	6.22	8.96
CBOE S&P 500 PutWrite	10.85	8.32	8.71	6.23	7.63	10.08
<b>Standard Deviation</b>						
S&P 500	3.94	10.07	9.49	15.08	14.87	14.89
CBOE S&P 500 BuyWrite	2.16	5.83	5.74	11.32	10.99	10.55
CBOE S&P 500 PutWrite	1.82	5.77	5.66	11.48	10.77	9.90
<b>Alpha</b>						
S&P 500	--	--	--	--	--	--
CBOE S&P 500 BuyWrite	6.26	2.65	1.18	-0.80	1.41	
CBOE S&P 500 PutWrite	4.80	2.58	1.22	0.61	3.09	

**Exhibit 2:** The longer term (20 year and Since Inception) returns versus the S&P 500 are similar with about two-thirds the risk.

Exhibit 3 provides the last 20 calendar year returns for all three indexes. The benefit of the option writing strategy in a year depends on the amount of the premiums received, volatility and the returns of the S&P 500. Generally, there has been a benefit when the S&P 500 has **returned less than 10%** in any given year. The shading represents calendar years where the option writing strategy has outperformed the S&P 500.

### Exhibit 3: Calendar Year Returns 1998 - 2017

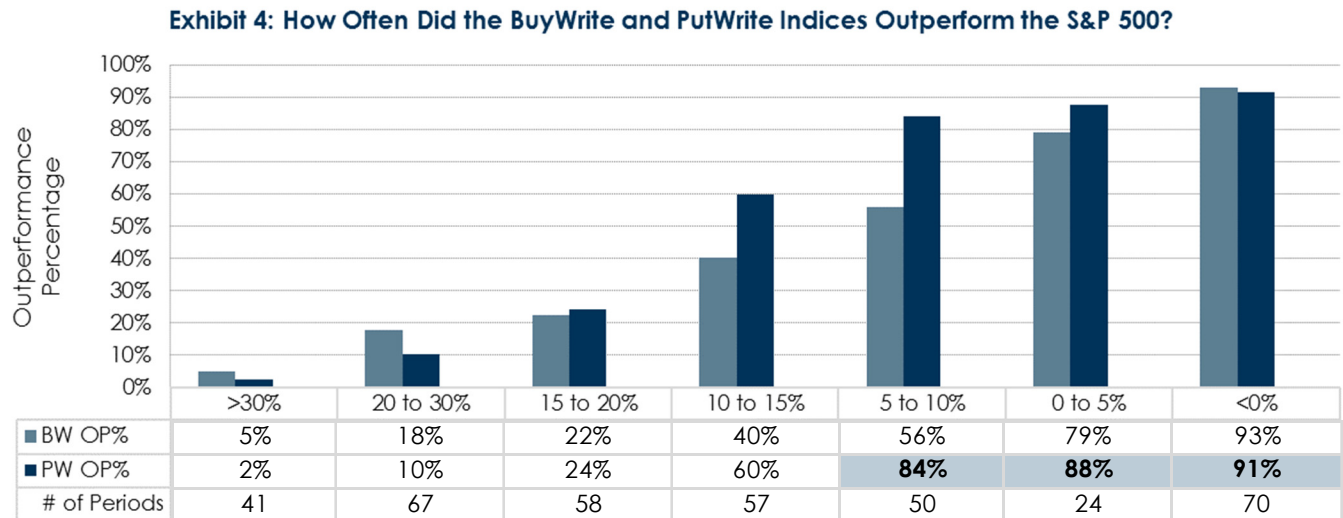
	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
S&P 500	21.83	11.96	1.38	13.69	32.29	16.00	2.11	15.06	26.46	-37.00
CBOE S&P 500 BuyWrite	13.00	7.07	5.24	5.64	13.36	5.21	5.71	5.86	25.91	-28.65
CBOE S&P 500 PutWrite	10.85	7.77	6.40	6.38	12.28	8.14	6.17	9.02	31.51	-26.77
	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998
S&P 500	5.49	15.80	4.91	10.88	28.69	-22.10	-11.88	-9.10	21.04	28.57
CBOE S&P 500 BuyWrite	6.59	13.33	4.25	8.30	19.37	-7.64	-10.92	7.40	21.17	18.95
CBOE S&P 500 PutWrite	9.51	15.16	6.71	9.48	21.77	-8.58	-10.63	13.06	21.01	18.54

### Portfolio Drawdown Analysis

	Aug '00 – Sept '02	Oct '07 – Feb '09
S&P 500	-44.7%	-51.0%
CBOE BXM	-30.2%	-35.8%
CBOE PUT	-27.6%	-31.6%

**Exhibit 3:** Generally, the BXM and PUT have **outperformed during years where the S&P 500 was below 10% or negative**. The shading above indicates calendar years when the respective indexes outperformed the S&P 500.

Exhibit 4 looks at one-year rolling period returns since inception (367 periods) to determine the frequency that option writing has outperformed the S&P 500 within certain ranges. As expected, the S&P 500 outperformed option writing a majority of the time, when the one-year rolling period return was greater than 10%. However, there were some periods of outperformance, even at the higher levels. The PUT outperformed the S&P 500 84% of the time or more when the S&P 500 returned less than 10%.



**Exhibit 4:** Of the 367 rolling one-year periods since inception, the PUT outperformed the S&P 500 84% of the time. The PUT outperformed the S&P 500 around 90% of the time when the S&P 500 returned less than 5%.

## Benefits and Drawbacks

### Benefits

- Long-term **attractive risk-adjusted returns**
- Should **outperform** in a **low return** market
- Implementation is **liquid and transparent**
- Fees are more **in line** with long-only active management
- **Commingled/mutual fund** vehicles exist for simpler execution
- An **overlay** of an existing portfolio can be implemented
- Index options receive **60% long-term 40% short-term** tax treatment for individual taxable investors

### Drawbacks

- **Upside is limited** based on strike price and option premium received
- **Large tracking error** to underlying may occur during above average increases
- **Downside** protection may be **less attractive** than other strategies
- **Limited strategies** with **limited real time** history are available
- **Premium** received in the past couple of years is generally **lower than average** but has been increasing
- The **impact** on increased demand for options is **unknown**
- Option **explanation** can be **challenging**
- Implementation of separate accounts requires **additional documents/decisions**

## Implementation

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Options managers have many tools at their disposal in attempting to match or add alpha over the BXM and PUT benchmarks. These tools include utilizing a combination of calls and puts, utilizing options on various domestic and non-US indexes, varying strike prices, and diversifying option expiration by utilizing weekly versus monthly options. Some managers will focus on option writing to enhance long-only returns as well. The investor should understand the differences and the pros and cons of each methodology prior to investing.

Separate accounts, commingled vehicles, mutual funds and exchange-traded fund vehicles are available depending upon the investor's investable amount and structure. Additional option documents are required for separate accounts. Transferring in-kind stocks with unrealized capital gains as collateral to sell options against can be an attractive way to reduce the risk of the portfolio without recognizing capital gains for taxable investors.

## Summary

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Option writing strategies can be an attractive way to implement hedged equity strategies outright or as a liquid complement to a hedged equity portfolio that uses hedge fund structures. Investors may find the ease of redemption, transparency, relatively lower costs and favorable tax treatment of index option strategies attractive. Recent performance has lagged during a higher than average equity market increase and low volatility. These strategies should be more attractive in a lower return environment. The recent increased volatility should also generate higher premium income that should assist in generating more attractive risk-adjusted relative returns.

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