

## SPX Options

Options on the S&P 500 Index offer investors the potential opportunity to manage large-cap U.S. equity exposure, mitigate portfolio risk, and generate additional options premium income.

Key features of the index options include:

### Cash Settlement, European-Style Exercise, Global Hours

- SPX options have these key features (not shared by ETF options): European-style exercise, with no risk of early assignment, and cash settlement with no unwanted delivery of shares. Global trading hours begin at 2 a.m. Central Time.

### Traditional A.M.-Settled SPX Options

- Trading in the traditional SPX options ceases at the end of the business day (usually a Thursday) preceding the day on which the exercise-settlement value is calculated. The exercise-settlement value (ticker SET) is calculated using the opening sales price in the primary market of each component security on the expiration date, which usually is the third Friday of the expiration month.

### P.M.-Settled Expirations on Mondays, Wednesdays and Fridays

- P.M.-settled SPX options (Weekly options with root symbol of SPXW) have settlements on Mondays, Wednesdays, Fridays, and on the last trading days of the month.

### FLEX® Options and Mini-SPX (XSP<sup>SM</sup>) Options

- FLEX options permit the customization of key contract terms, such as exercise prices, exercise styles and expiration dates. Average daily volume for the cash-settled Mini-SPX (XSP) options (1/10 the size of the SPX options) grew to around 70,000 contracts in 2019.

### Price and Quote Transparency for SEC-Regulated Securities

- Hybrid trading on competitive open outcry and electronic markets, with guarantees by the Options Clearing Corporation (OCC).

### Margin for Covered Calls with ETF Underlying

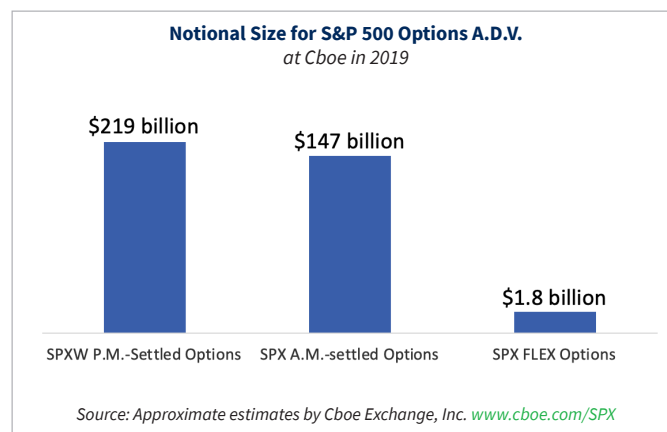
- Offset SPY or IVV ETF exposure on a “covered” basis in a margin account (Cboe Regulatory Circular RG15-183).

### Tax Treatment

- Certain SPX options strategies may receive benefit from 60/40 tax treatment.\*

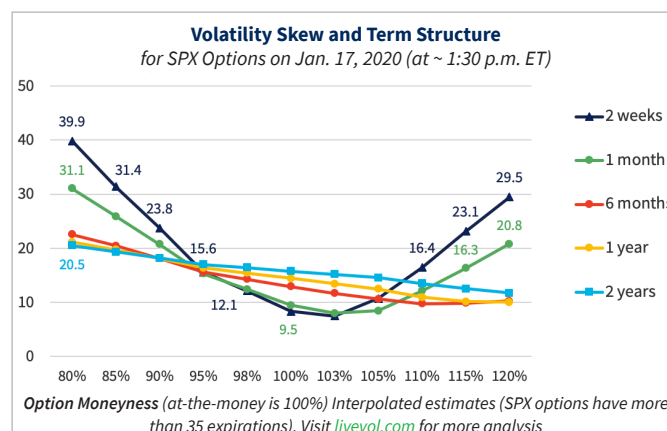
### Large Contract Size

- SPX options have a \$100 multiplier and are ten times the notional size of SPY and IVV ETF options. Investors may benefit from significant commission cost savings with the larger-sized SPX options.



### Volatility Skew and Volatility Risk Premium

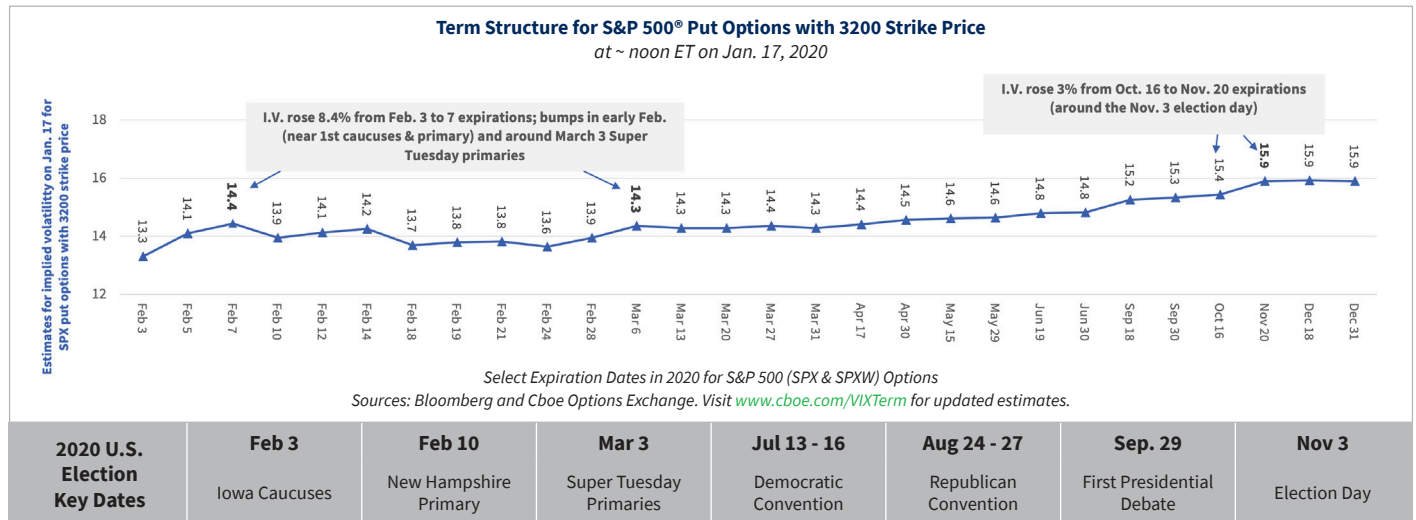
- For the SPX options - (1) the implied volatility for OTM puts generally has been higher than for the ATM options or the OTM calls, and (2) the implied volatility generally has been higher than the realized volatility. See pages 3 and 4 for a discussion of strategies related to these concepts.



\*Under section 1256 of the Tax Code, profit and loss on transactions in certain exchange-traded options, including SPX, are entitled to be taxed at a rate equal to 60% long-term and 40% short-term capital gain or loss, provided that the investor involved and the strategy employed satisfy the criteria of the Tax Code. Investors should consult with their tax advisors to determine how the profit and loss on any particular option strategy will be taxed. Tax laws and regulations change from time to time and may be subject to varying interpretations.

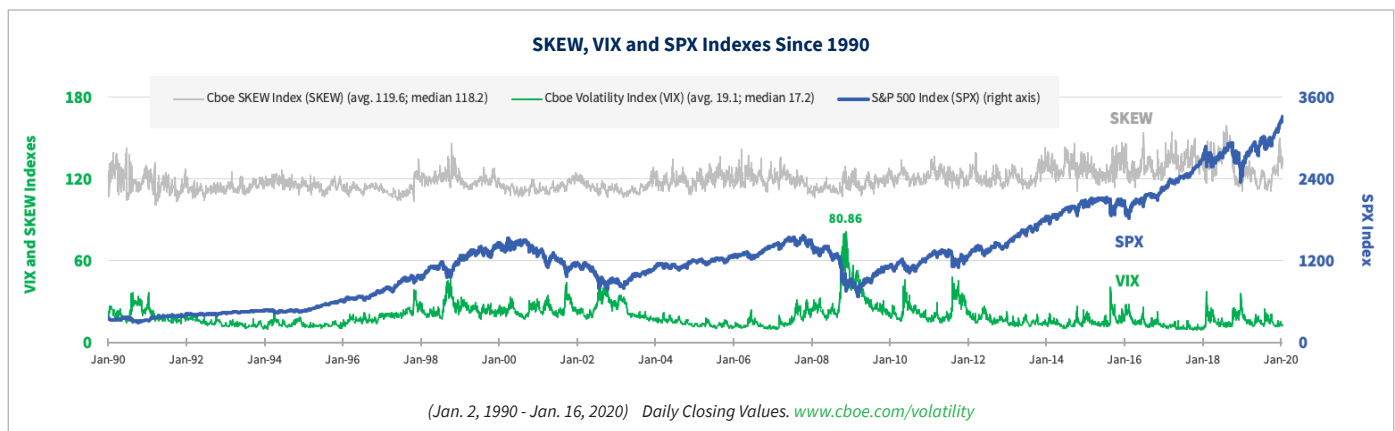
## Term Structure

The implied volatilities for SPX options can vary, depending on factors such as the moneyness and time to expiration.



## SPX 500 Index

Many investors who trade SPX options track the VIX® and SKEW indexes to monitor changes in expected volatility and skew.



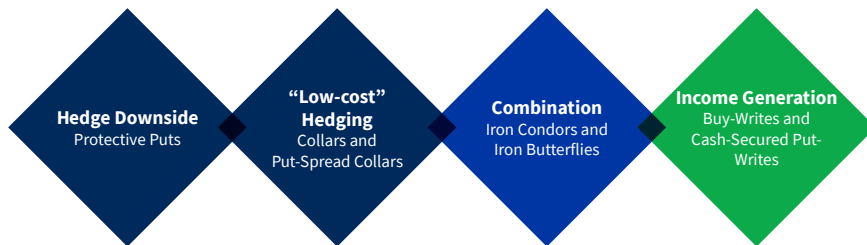
In 2017 the average daily closing level was the highest ever for SKEW Index, and lowest ever for VIX Index.

		Annual Statistics											
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
% Change	S&P 500	<b>-38.5%</b>	23.5%	12.8%	0.0%	13.4%	<b>29.6%</b>	11.4%	-0.7%	9.5%	19.4%	-7.0%	28.9%
	VIX Index	77.8%	<b>-45.8%</b>	-18.1%	31.8%	-23.0%	-23.9%	39.9%	-5.2%	-22.9%	-21.4%	<b>156.7%</b>	<b>-45.8%</b>
Avg. Daily Close	VIX Index	<b>32.7</b>	31.5	22.5	24.2	17.8	14.2	14.2	16.7	15.8	<b>11.1</b>	16.6	15.9
	SKEW Index	<b>113.7</b>	118.1	121.1	122.5	120.8	122.4	129.8	127.5	127.6	<b>134.8</b>	132.6	120.9

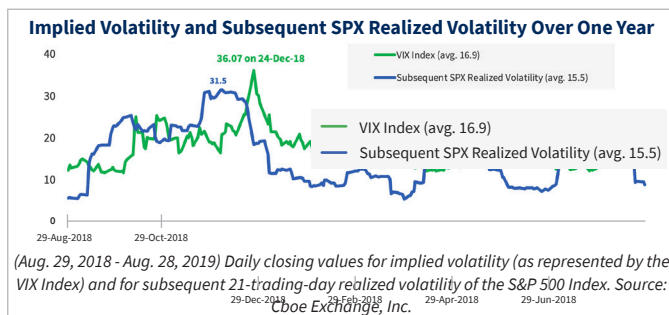
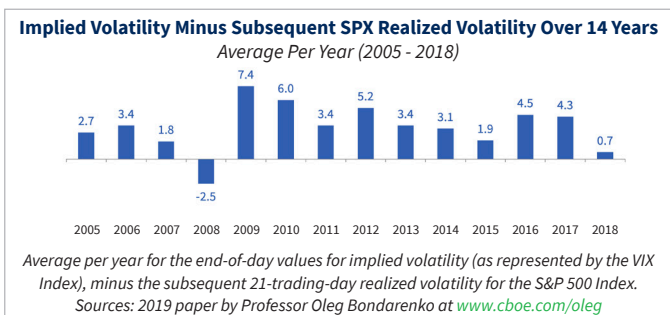
For all years since 1990, the highest values are in highlighted in green and the lowest values are highlighted in red. [www.cboe.com/volatility](http://www.cboe.com/volatility).

## Index Options Strategies

**Strategies** Cboe’s SPX options are designed to provide investors ways to efficiently gain exposure to the global equity markets and execute risk management, hedging, asset allocation and income generation strategies. [www.cboe.com/strategies](http://www.cboe.com/strategies). Some of the many index options strategies include:



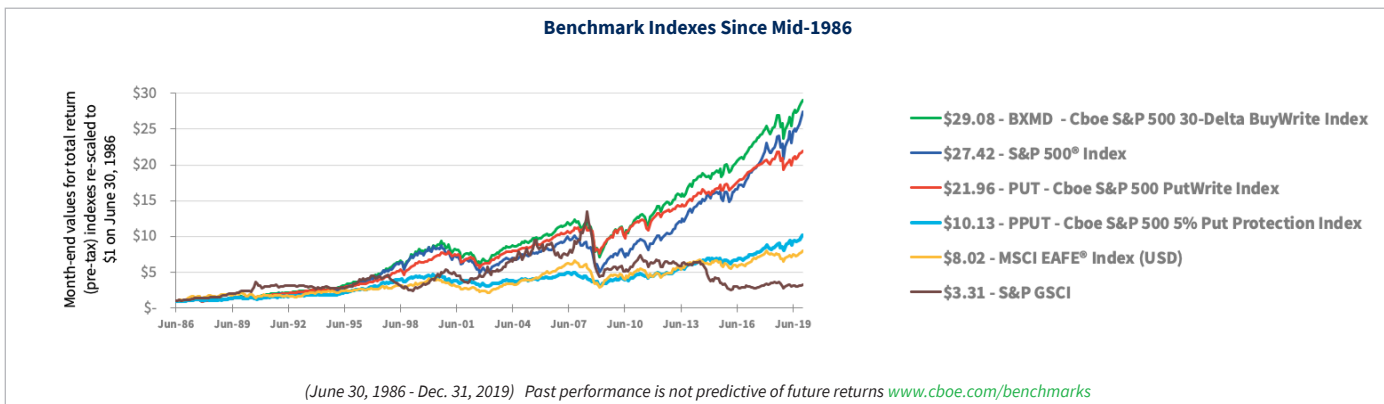
**Implied Volatility Risk Premium (IVRP)** The implied volatility of SPX options often has exceeded the subsequent realized volatility for the SPX Index. The IVRP has facilitated strong risk-adjusted returns by certain options-selling benchmark indexes over more than 33 years (see sections below), but during the past year there have been periods in which SPX realized volatility exceeded the VIX Index.



## Benchmark Indexes and Performance

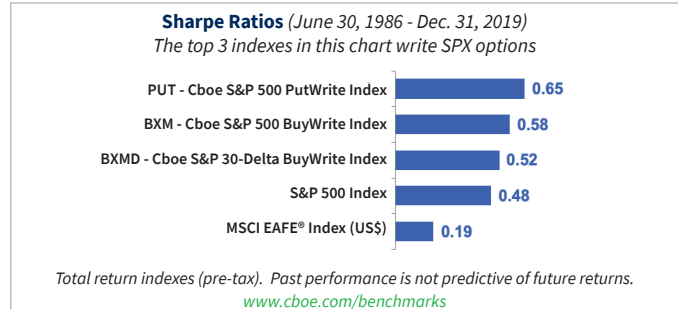
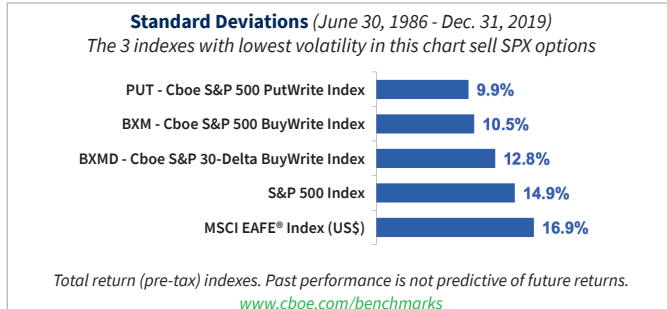
**Dozens of Benchmark Indexes** For investors who would like to compare how hypothetical options-based strategies have performed, Cboe offers dozens of benchmark indexes that sell and/or buy SPX options, including indexes that use 1-week or 1-month options, the Cboe S&P 500 Buffer Protect Index Balanced Series, Cboe S&P 500 Dividend Aristocrats Target Income Index, and several other indexes.

**Performance Since Mid-1986** Cboe’s BXMD Index sells OTM SPX options and had higher returns than five other benchmark indexes in this chart.



## Benchmark Indexes and Performance, Cont.

### Higher Risk-Adjusted Returns and Lower Volatility

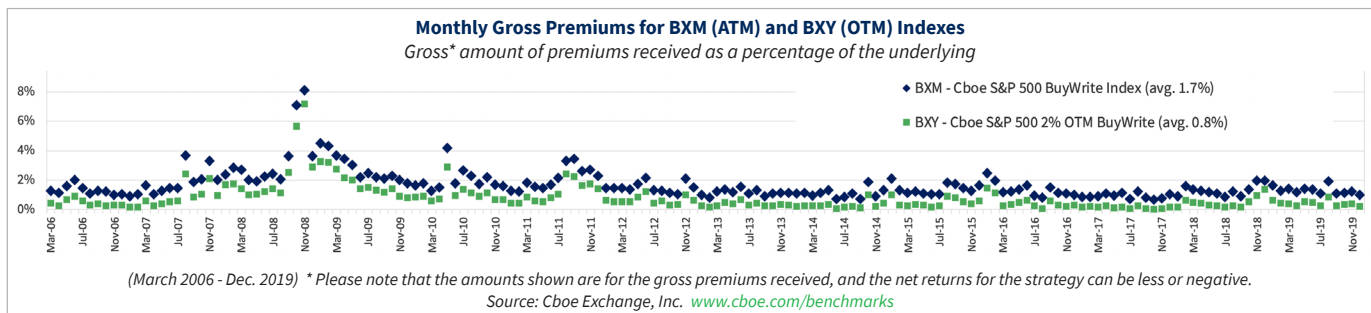


**Less Severe Drawdowns and Higher Risk-Adjusted Returns** When compared to the 2 stock indexes in the table below, all 7 options-based indexes had less severe maximum drawdowns and lower betas. The PUT, BXMD, BXM and RXM indexes all had higher risk-adjusted returns (as measured by the Sharpe and Sortino ratios).

Metrics for 11 Benchmark Indexes								
(June 30, 1986 - Dec. 31, 2019)	Maximum Drawdown	Annualized Return	Standard Deviation	Beta vs. Market	Alpha vs. Market	Sharpe Ratio	Sortino Ratio (MAR = 0.00%)	Skewness
CNDR - Cboe S&P 500 Iron Condor Index	-13.7%	6.1%	7.1%	0.17	4.4%	0.40	1.12	-1.97
PUT - Cboe S&P 500 PutWrite Index	-32.7%	9.7%	9.9%	0.56	3.7%	0.65	1.33	-2.09
CLL - Cboe S&P 500 95-110 Collar Index	-35.5%	7.2%	10.6%	0.65	0.3%	0.38	1.1	-0.18
BXM - Cboe S&P 500 BuyWrite Index	-35.8%	8.7%	10.5%	0.63	2.0%	0.52	1.16	-1.57
PPUT - Cboe S&P 500 5% Put Protection Index	-38.9%	7.2%	12.1%	0.75	-0.6%	0.33	0.92	-0.29
BXMD - Cboe S&P 500 30-Delta BuyWrite Index	-42.7%	10.6%	12.8%	0.82	1.9%	0.58	1.22	-1.11
CLLZ - Cboe S&P 500 Zero-Cost Put Spread Collar	-43.0%	7.5%	11.4%	0.74	-0.2%	0.37	0.95	-1.11
BFLY - Cboe S&P 500 Iron Butterfly Index	-43.7%	4.4%	10.7%	0.12	3.6%	0.11	0.65	-0.01
S&P 500 Index	-51.0%	10.4%	14.9%	1.00	0.0%	0.48	1.04	-0.81
MSCI EAFE Index (US\$)	-56.7%	6.4%	16.9%	0.80	-1.2%	0.19	0.56	-0.41
S&P GSCI	-80.9%	3.6%	20.2%	0.26	2.8%	0.02	0.26	-0.22

Total return (pre-tax) indexes. Sources: Zephyr StyleAdvisor and Cboe Exchange, Inc.

### Monthly Options Income



**Other Related Index Options** Cboe also offers cash-settled options on the VIX® Index, the S&P 100® (OEX) Index, and on 11 Select Sector Indexes.

**White Papers** by Aon Hewitt, Wilshire, Callan, Meketa, Cambridge, Asset Consulting Group and other firms are at [www.cboe.com/BenchmarksPapers](http://www.cboe.com/BenchmarksPapers)

◆ Please visit [Cboe.com/SPX](http://Cboe.com/SPX) for more details.

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