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**OPTIONS
INSTITUTE**

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Hedging With Index Options

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Options

Outline

- **Index Options Overview**
- **CBOE S&P 500 5% Put Protection Index**
- **Buffer Protect Indexes**

Index Options

Introduction

- **SPX options are cash settled options with their value based on the S&P 500 Index**
- **A major use of SPX options by institutions involves buying puts for portfolio insurance purposes**
- **Because of this we tend to see an increase in put volume during times of increased market uncertainty**

Index Options

Cash Settlement

- **Cash settlement is an alternative to physical option settlement**
- **Options on stocks and exchange traded funds that are exercised at expiration result in a transaction in the underlying securities**
- **Index options that are in the money and held through expiration result in a cash transfer**

Index Options

PM vs AM Settlement

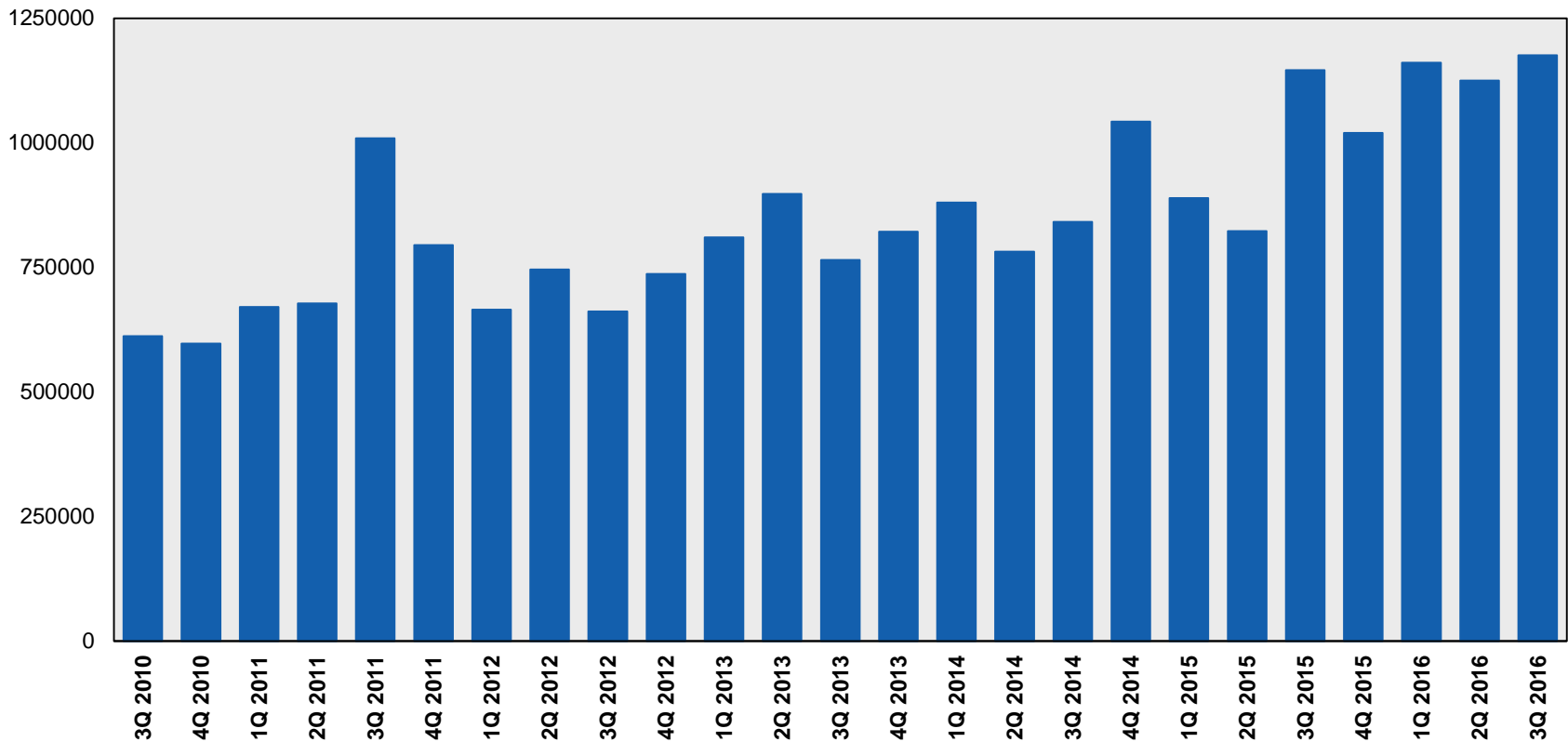
- **PM settlement means that open positions in options and futures will be settled based on closing prices**
- **AM settlement means that an option or future ceases trading the day before expiration and then final settlement is determined using the following day's opening prices**

Warning – there is overnight risk related to AM settlement

Index Options

Volume

Average Daily Volume by Quarter

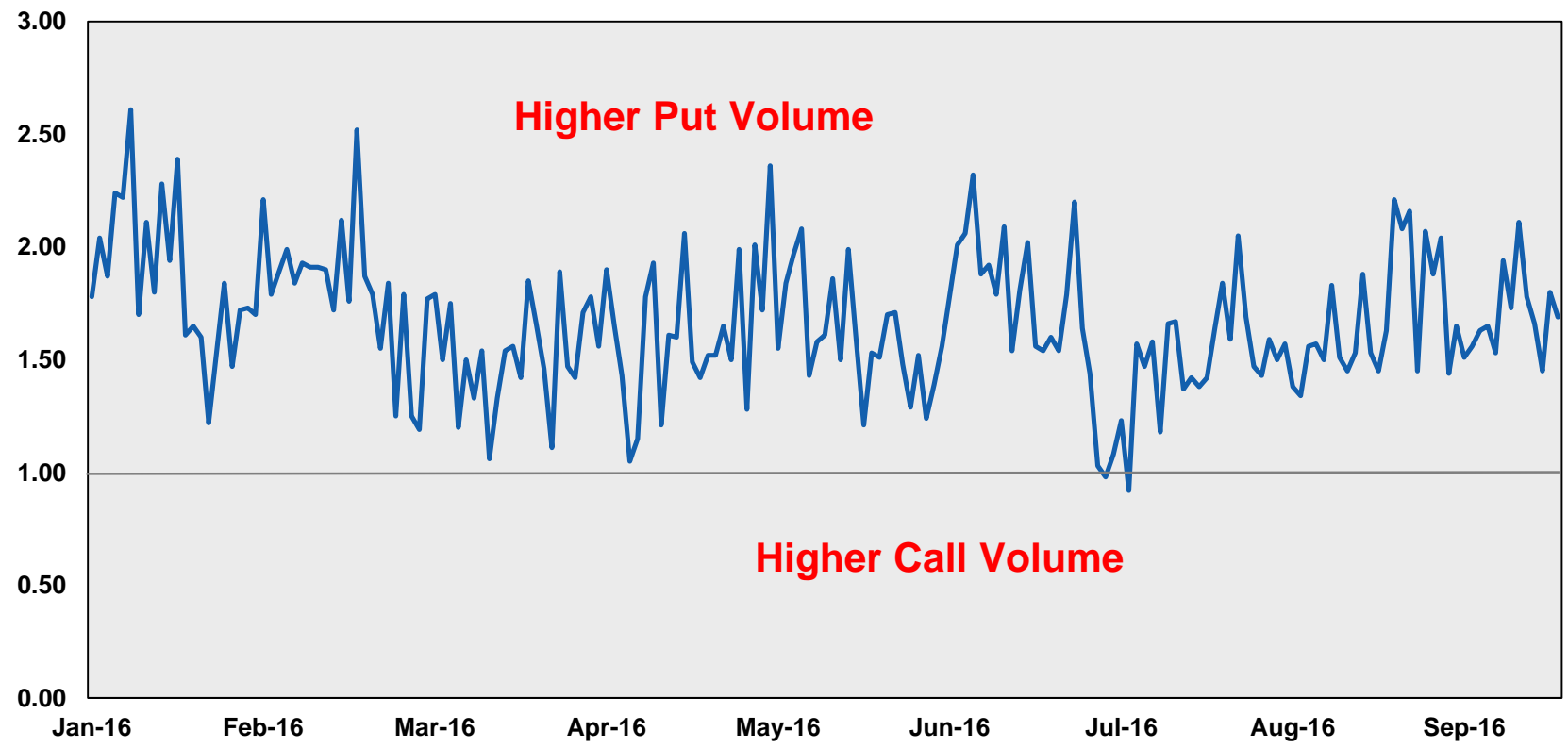


Data source: CBOE

Index Options

Put / Call Ratio

First Nine Months 2016



Data Source: CBOE

Index Options

Contracts

Summary of Available SPX Options

SPX Options Traditional	Ticker	Root Ticker	AM / PM Settlement	Settlement Date	Settlement Type	Exercise Style	ETH Available
SPX	SPX	SPX	AM	3rd Fridays	Cash	European	Yes
SPX Options Non Traditional	Ticker	Root Ticker	AM / PM Settlement	Settlement Date	Settlement Type	Exercise Style	ETH Available
SPX Weeklys	SPX	SPXW	PM	Non 3rd Fridays	Cash	European	Yes
SPX End of Month	SPX	SPXW	PM	Last Trading Day of Month	Cash	European	Yes
SPX Monday Weeklys	SPX	SPXW	PM	Mondays	Cash	European	Yes
SPX Wednesday Weeklys	SPX	SPXW	PM	Wednesdays	Cash	European	Yes
SPX PM	SPXPM	SPXPM	PM	3rd Fridays	Cash	European	Yes

Source: www.cboe.com/spx

Index Options

Available Expirations

SPX as of October 10, 2016

10/10/2016	10/26/2016	11/11/2016	12/30/2016	6/30/2017
10/12/2016	10/28/2016	11/18/2016	1/20/2017	9/15/2017
10/14/2016	10/31/2016	11/25/2016	1/31/2017	9/29/2017
10/17/2016	11/2/2016	11/30/2016	2/28/2017	12/15/2017
10/19/2016	11/4/2016	12/2/2016	3/17/2017	1/19/2018
10/21/2016	11/7/2016	12/9/2016	3/31/2017	6/15/2018
10/24/2016	11/9/2016	12/16/2016	6/16/2017	12/21/2018

Weeklys in Blue

Month End* in Red

Monday Weeklys in Purple

Wednesday Weeklys in Orange

Source: LiveVol Pro

Index Options

Extended Trading Hours

- In March 2015, SPX option trading hours were expanded to open at 2:00 am Chicago time
- There is a 15 minute break between the ETH and regular session from 8:15 am to 8:30 am Chicago time

Chicago Time –

ETH – 2:00 am – 8:15 am

Regular Session – 8:30 am to 3:15 pm

All times are Central (Chicago) time

Index Options

Extended Trading Hours

SPX Options Settlement Day Hours –

PM Settlement
close at 3:00 pm on the
last day of trading

AM Settlement
Do not trade during the extended hours session
These options cease trading at
3:15 pm on the day before settlement

Index Options

SPY Comparison

	Notional Size (SPX at 2000) (SPY at 200)	Exercise-Style	Settlement Type	AM / PM Settlement
SPX	\$200,000	European	Cash	Both
SPY	\$20,000	American	Physical	PM Settled

Index Options

Overview

- **Last year, CBOE entered into a licensing agreement with the London Stock Exchange Group to develop and list options based on several FTSE and Russell Indexes**
- **This agreement makes CBOE the home to Russell 2000[®] Index (RUT) options as of April 1, 2015**
- **CBOE is now committed to providing quality education and trading information on RUT options through The Options Institute and at the CBOE Options Hub blog site**
- **This year, the majority of RUT options went from AM to PM settlement**

Index Options

RUT vs. SPX Comparison

3Q 2011 – 3Q 2016

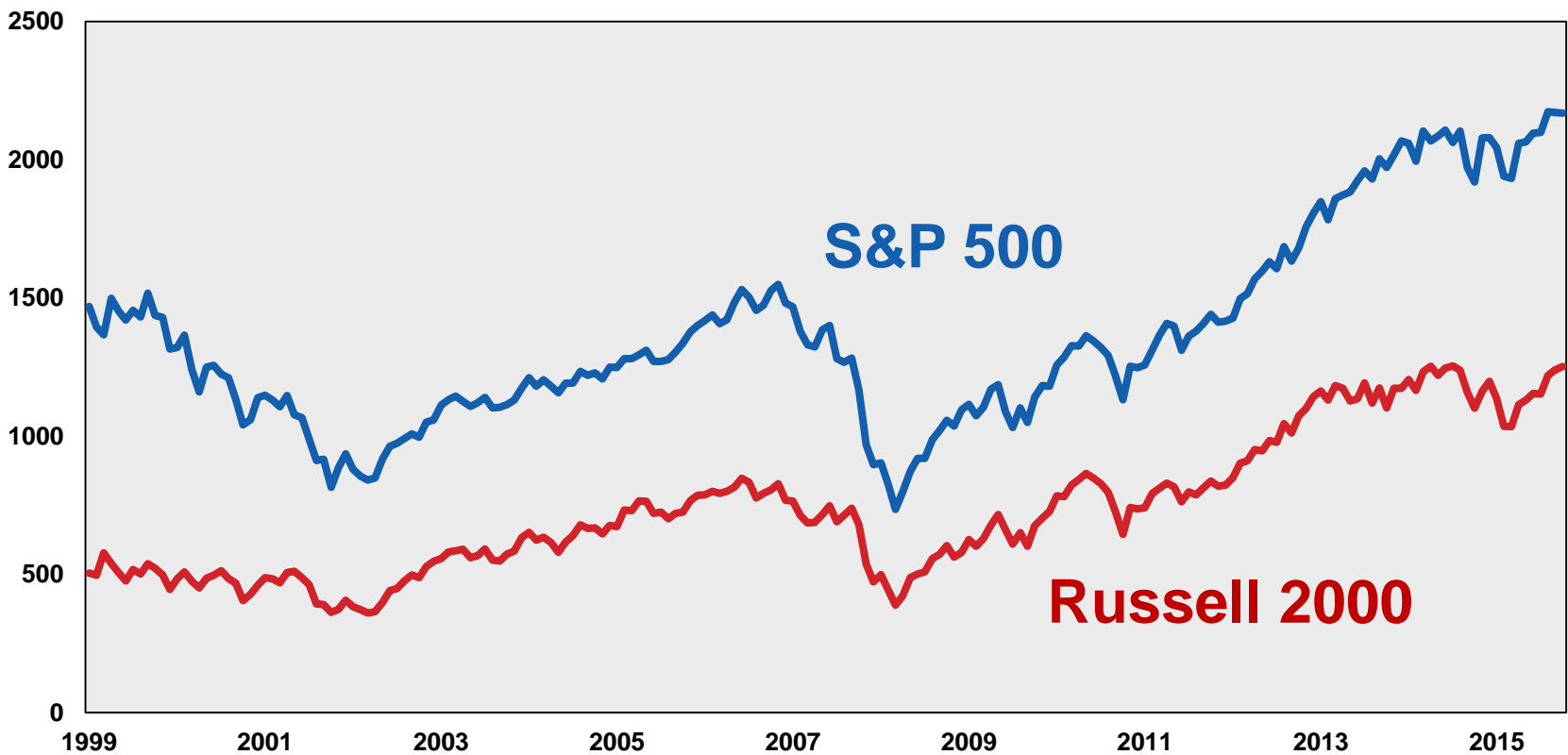
	Russell 2000	S&P 500®
Market Cap	Small Cap	Large Cap
Geographic	Domestic	Global
5 Year Average IV	21.03	16.53

Data Source: CBOE.com

Index Options

RUT vs. SPX Price Performance

Monthly 2000 – 3Q 2016

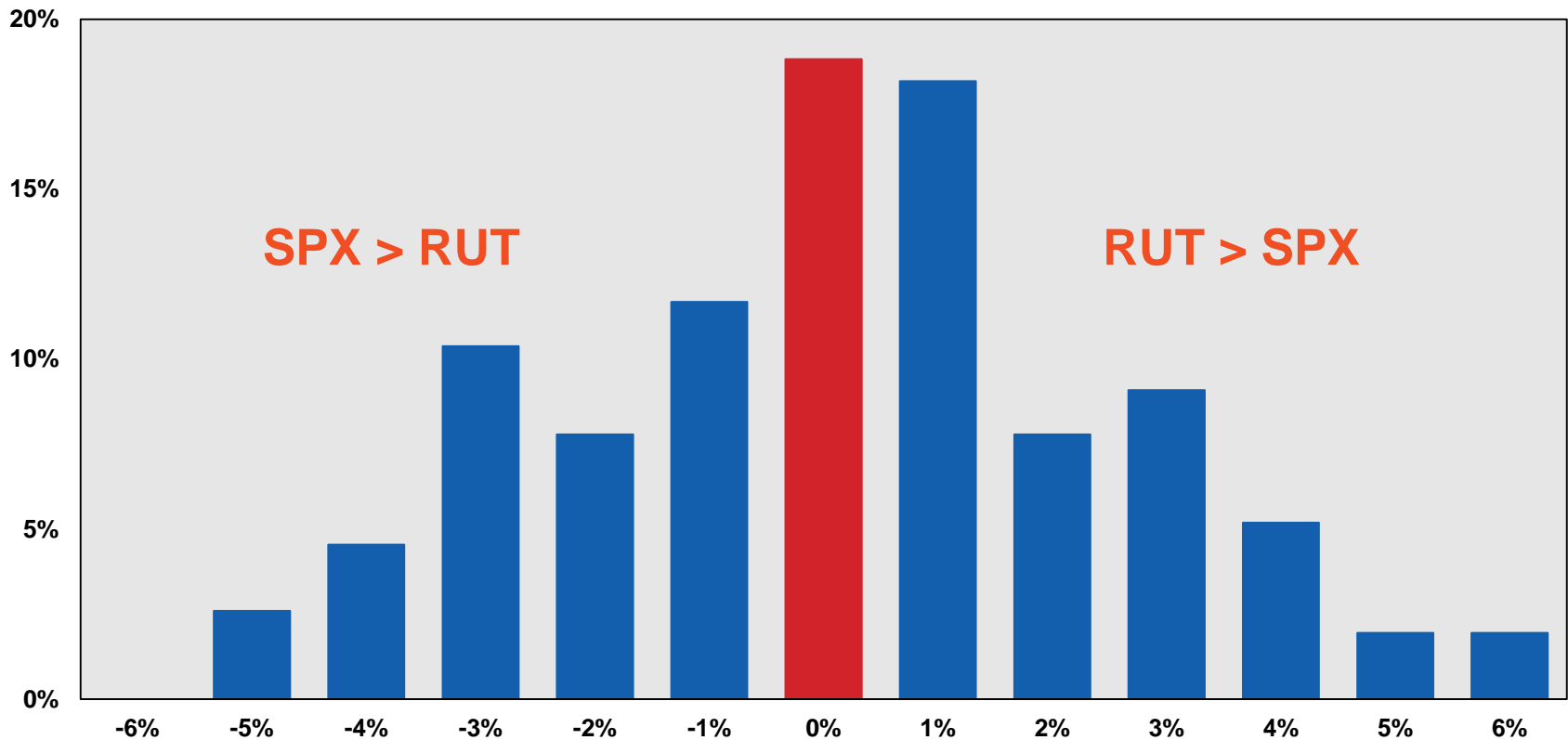


Data Source: Bloomberg

Index Options

RUT vs. SPX Monthly Relative Performance

Russell 2000 vs. S&P 500 2004 – 3Q 2016



Data Source: Bloomberg

CBOE S&P 500 5% Put Protection Index

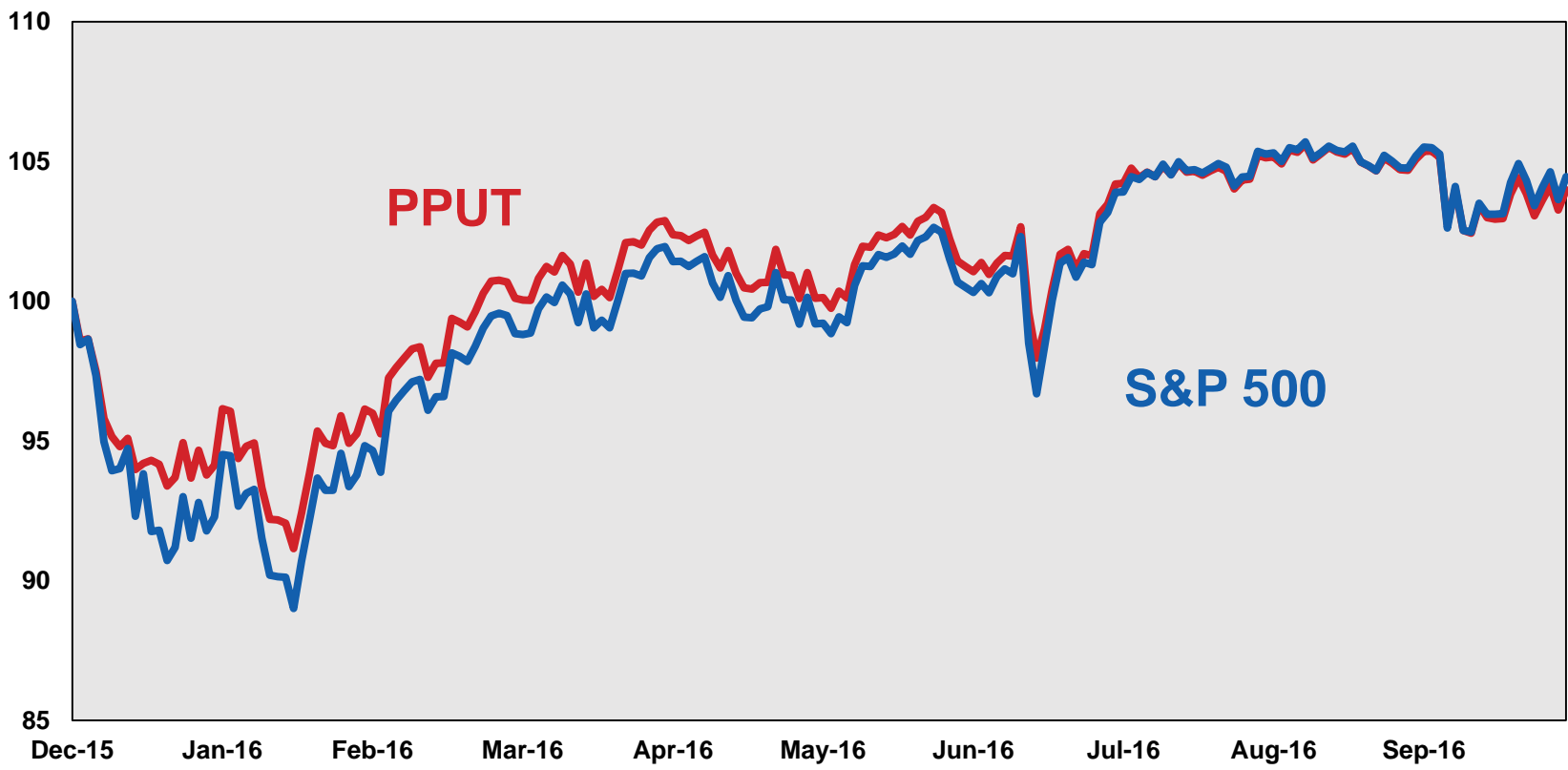
Overview

- **The CBOE S&P 500 5% Put Protection Index (PPUT) tracks a hypothetical strategy that holds a long S&P 500 portfolio and buys 5% OTM SPX put options as a hedge**
- **The portfolio is rebalanced each month on the standard expiration date**
- **There have been a couple of drawdowns in the S&P 500 this year which resulted in decent performance for PPUT**

CBOE S&P 500 5% Put Protection Index

Performance

2016 PPUT vs. S&P 500



Data Source: CBOE.com

CBOE S&P 500 Buffer Protect Indexes

Overview

- **The CBOE S&P 500 Buffer Protect Index Series are Target Outcome Indices**
- **The series of indexes tracks the returns of a hypothetical investment over a period of approximately one year**
- **The strategy seeks to protect against the first 10% of losses due to a decline in the S&P 500 while providing upside performance to a capped level**
- **The capped level is determined on each annual roll date such that there is no cost to enter the hypothetical investment**

CBOE S&P 500 Buffer Protect Indexes

FLEX[®] Options

- Customized equity or index option contracts made available by CBOE
- Customers may designate key contract terms like the exercise price, exercise style, and expiration date
- These options offer the flexibility of OTC options but are guaranteed by The Options Clearing Corporation
- FLEX[®] Options are available on indexes, ETFs, and stocks

CBOE S&P 500 Buffer Protect Indexes

Available Indexes

There are thirteen Index Series Available

- There are twelve monthly series that roll on the third Wednesday of each month (January – December)
- The thirteenth index is a balanced index comprised of the twelve monthly series

CBOE S&P 500 Buffer Protect Indexes

Highlights of Indexes

- **A Buffer Protection Option Strategy is a protection strategy that is generally used in a bear, range-bound, or modest bull market environment**
- **This sort of strategy provides the opportunity for growth to a certain pre-determined level**

CBOE S&P 500 Buffer Protect Indexes

Highlights of Indexes

Strategy Construction –

Buy SPX Call Option with Strike = 50% of S&P 500 Index

Sell SPX Put Option with Strike = 50% of S&P 500 Index

Sell Put Option with Strike = 90% S&P 500 Index

Buy Put Option with Strike = 100% S&P 500 Index

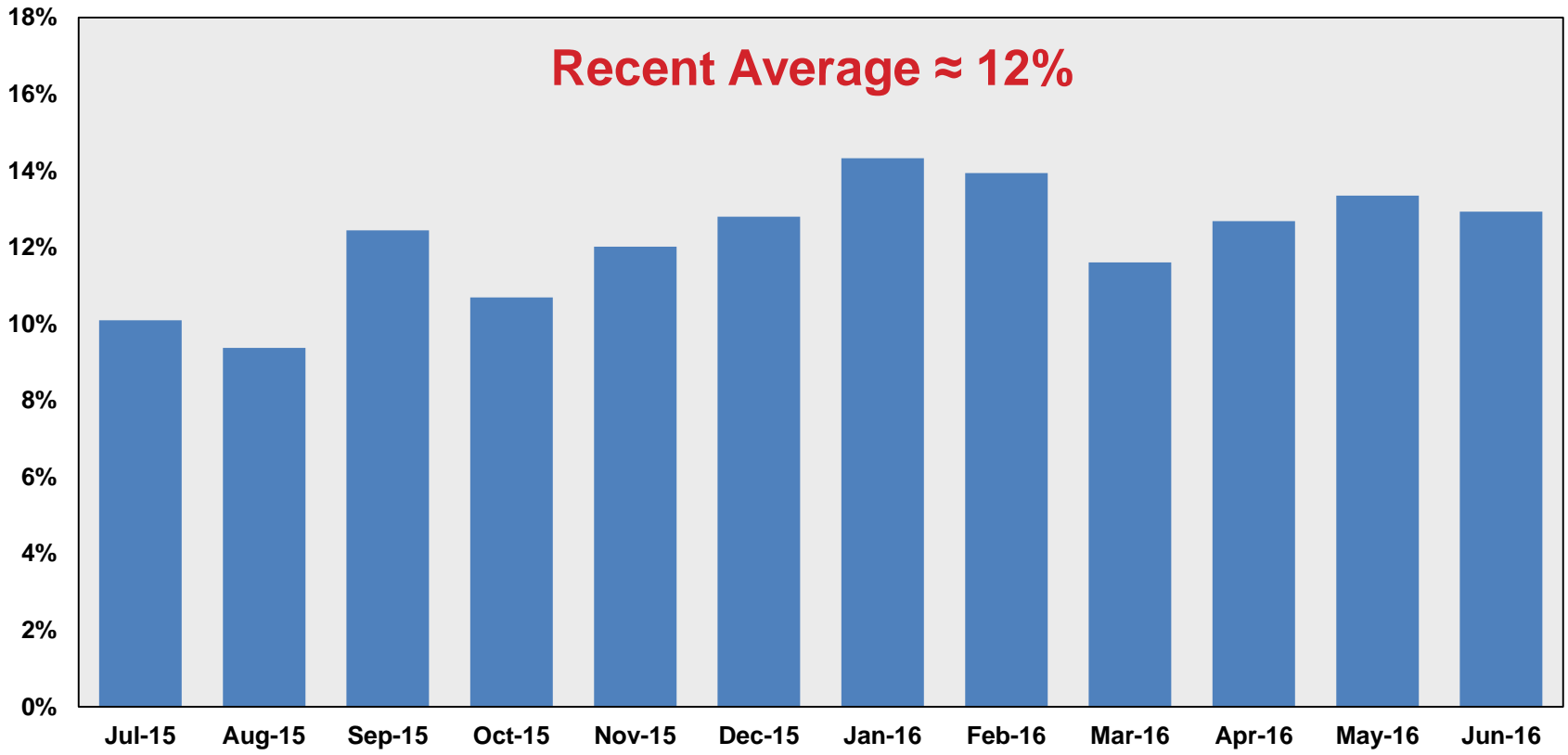
Sell Type A Call Option with Strike = 100% S&P 500 Index

Sell Type B Call Option with Strike = TBD on Cap Roll Date

CBOE S&P 500 Buffer Protect Indexes

Highlights of Indexes

Recent Capped Levels by Monthly Series

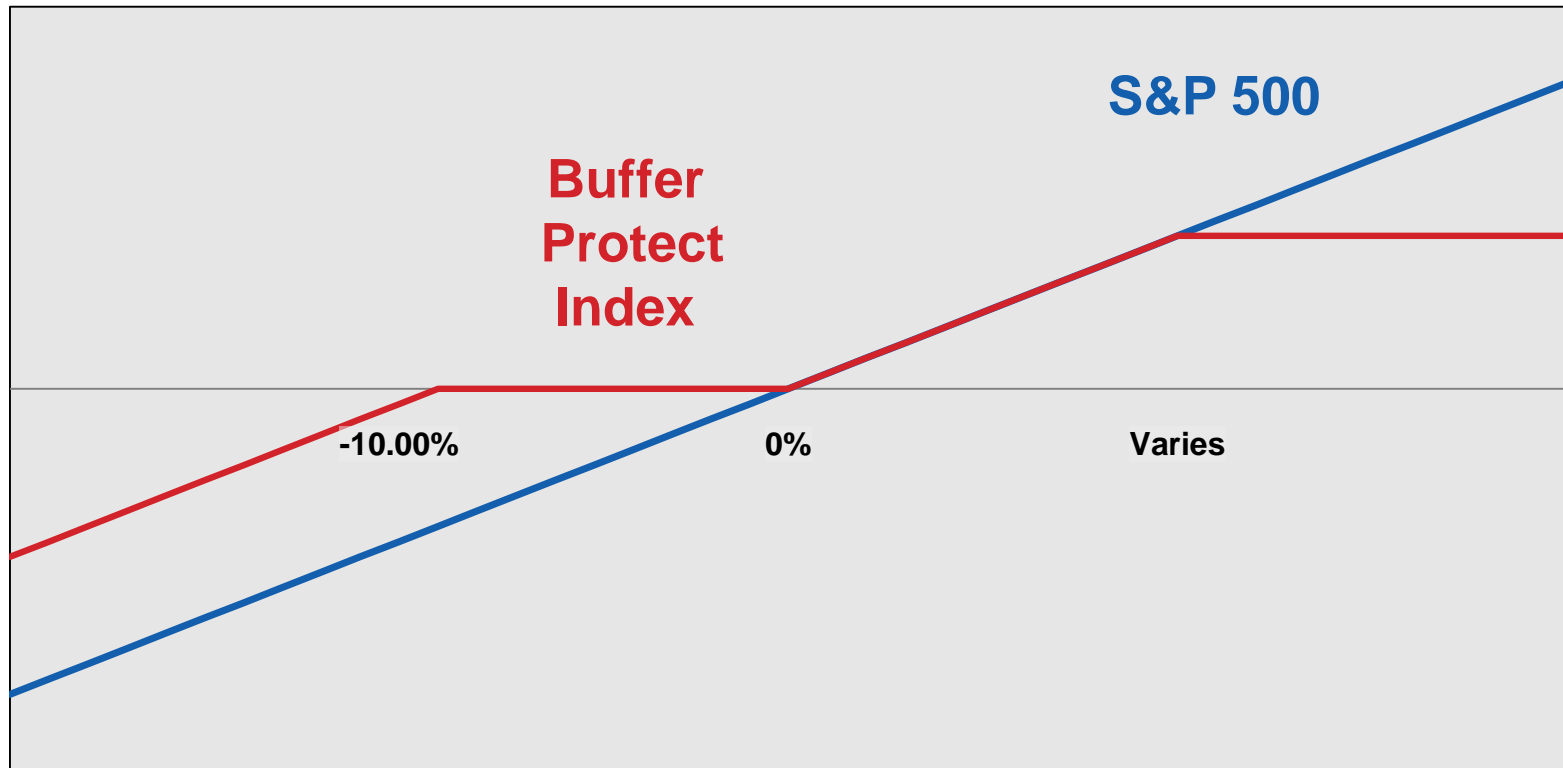


Data Source: CBOE.com

CBOE S&P 500 Buffer Protect Indexes

Strategy Payoff

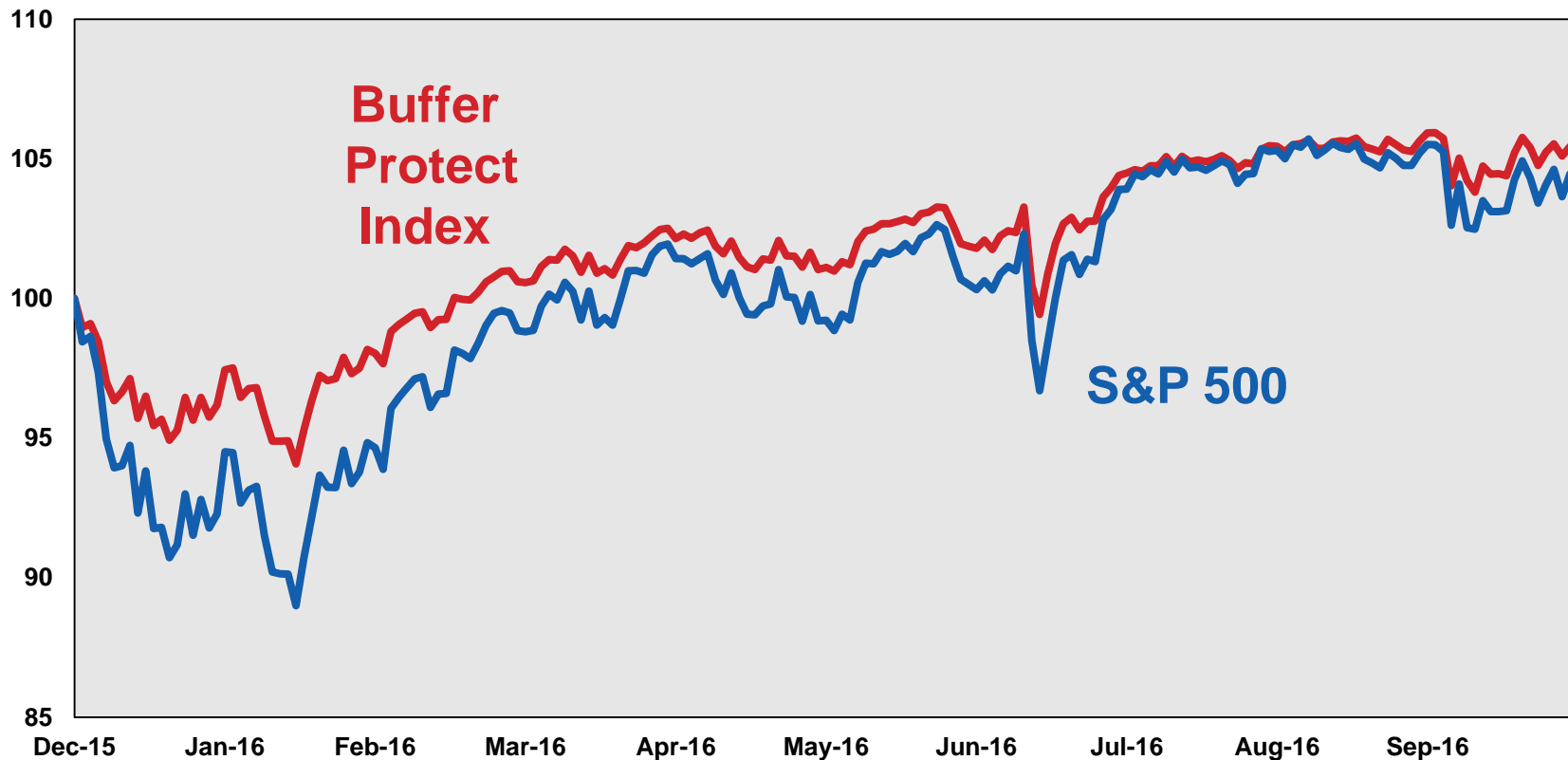
S&P 500 vs. Buffer Protect Index



CBOE S&P 500 Buffer Protect Indexes

2016 Performance

S&P 500 vs. Buffer Protect Index Balanced Series (SPRO)



Data Source: CBOE.com

Hedging With Index Options

Summary

- **Portfolio protection can be expensive, but may be worth the cost when the market comes under pressure**
- **There are alternatives to purchasing put options for portfolio protection**
- **CBOE introduced the Buffer Protect Index to demonstrate the potential performance for one of these alternatives**

Hedging With Index Options

Q&A / Contact / Links

Questions?

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