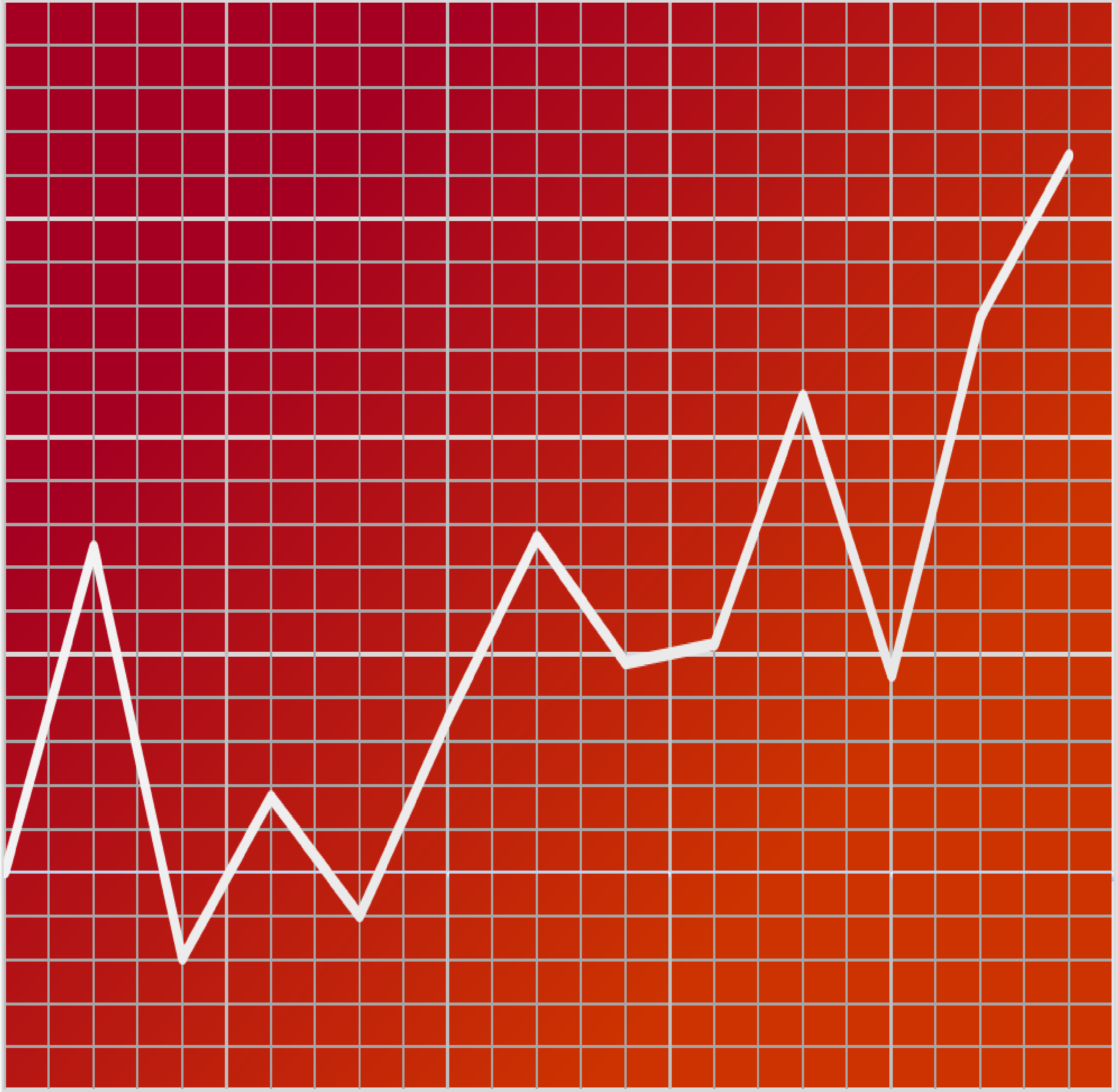
Buffered Funds

What they are and how to create your own



Mike Muhle
Retirement Income Solutions SIG
July 8, 2021

Retirement Income Preferences

- One of the easiest ways to have a large portfolio loss is to not manage your assets during bear markets.
- It is very hard to make up for losses during the retirement phase due to withdrawals for income.
- There is a clear preference for:
  - Sustainable spending
  - Non-decreasing spending (increasing is even better)
- Hence the interest in defined outcome strategies.
  - Specify loss protection amount
  - Specify how much you are willing to sacrifice in gains for this protection
- These are called buffered or structured funds.
- Structured products have existed for a long time. Recently a new breed of ETFs have arisen which are much cheaper and quite flexible.

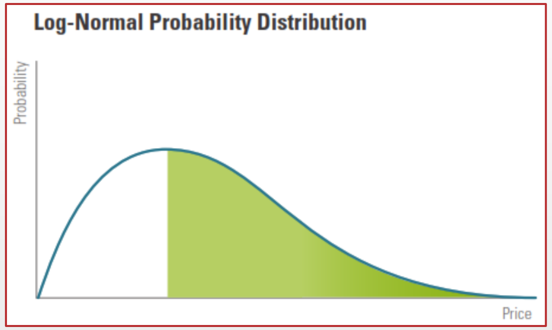
Buffered ETFs

- Based on one year options.
- You specify how much you want to protect – 9%, 10%, 15%, 20%, or 30%.
- You then select how you want to pay for this in terms of caps on the return.
- They are usually linked to an index, primarily the S&P 500.
- There are four major providers: Innovator and First Trust and in 2020 True Shares and Allianz.
- As you purchase these later in time from the initial offering date, the less the protection and lower the cap.

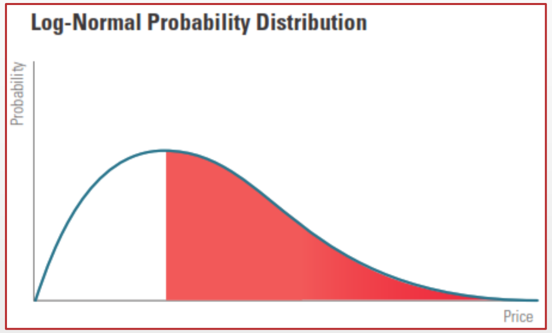
Think of Options as Wedges of Stock Distribution

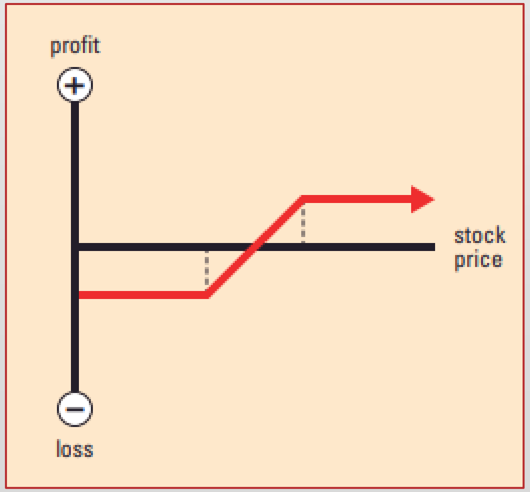
- If you own a stock you have the full stock log normal probability distribution including unlimited loss and unlimited gain.
- Options give you the opportunity to own only parts of the distribution which you have to purchase or sell.
- You give up some gain to protect against a loss.
- This is just the same as an insurance policy you might buy or sell.
- Any option strategy no matter how complex can be boiled down to buying and selling wedges of the probability distribution.

Buy Call Option

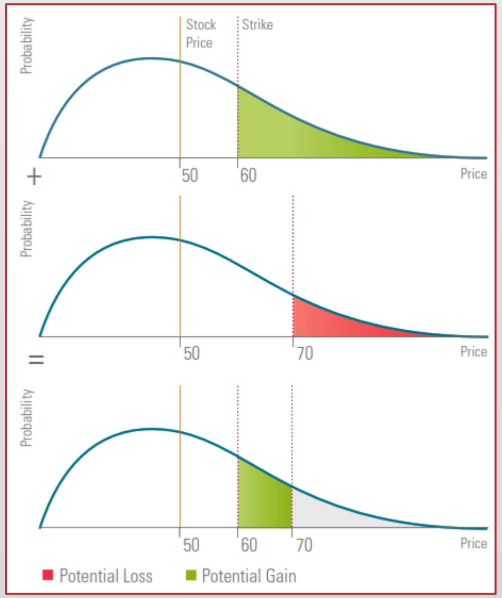


Sell Call Option





Call Spread



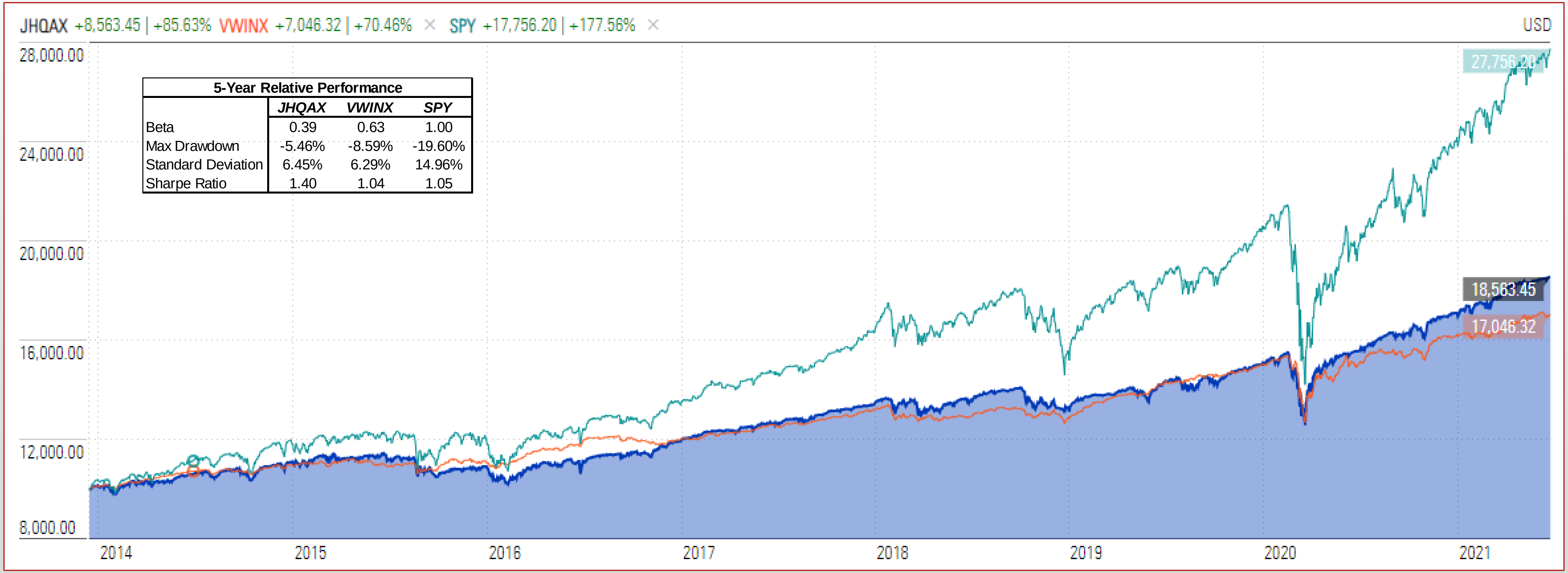
Some History on These Types of Funds

- Strategies like this have been around for a while.
- They started with equity indexed annuities. However, these were structured products and had a bad reputation for high fees and low caps for the protection they offered.
- JP Morgan started to offer a fund called JPMorgan Hedged Equity (JPQAX) in 2014. It is classified as an "Options Trading" asset class by Morningstar.
- It is remarkably transparent in its strategy. It aims to provide smoother equity returns by tempering downside and upside returns via a systematically implemented options strategy. At the start of every quarter, the team purchases put options 5% below the S&P 500's value. To offset the cost of the put option, the team first sells put options 20% out-of-the-money.
- Call options are sold to generate enough option premium income to cover remaining cost of the hedges. Essentially it is a put spread collar.
- The systematic options overlay structure has led to a dependable outcome even in the most volatile markets, such as in the first quarter of 2020, when it contained losses to less than 5%.

JHQAX Performance Versus VWINX

- It generated interest on my part since it compared favorably with Morningstar gold rated fund Vanguard Wellesley Income(VWINX).
- Since its 2014 inception, the strategy has returned 7.8% annualized through August 2020, beating the options-based category average by nearly 4.7 percentage points annualized and has a low fee level.
- By comparison VWINX is a large cap value balanced fund with a primary goal of income. It has been in existence for 50 years.
- Comparison of the two funds provides a good benchmark comparison.

Return and Risk Comparison for JHQAX vs VWINX



5-Year Relative Performance	JHQAX	VWINX	SPY
Beta	0.39	0.63	1.00
Max Drawdown	-5.46%	-8.59%	-19.60%
Standard Deviation	6.45%	6.29%	14.96%
Sharpe Ratio	1.40	1.04	1.05

Strategy Development

- Based on these favorable results I became interested in developing a hedge strategy for some of my more volatile investments using the JHQAX as the model.
- The question becomes one of how to scale to other strategies.
- When creating analogue option strategies one must refer to a term called moneyness.
- Wiki defines moneyness as the relative position of the current price (or future price) of an underlying asset with respect to the strike price of a derivative.
- It has a three fold classification
  - At the money (strike = spot for both call and put)
  - In the money (strike < spot for call and strike > spot for put)
  - Out of the money (strike > spot for call and strike < spot for put)

Moneyness Function

- A moneyness function is a function "***m***" with input the spot price (S) and strike price (K).
- The function can depend on the other parameters of the Black–Scholes model, notably time to expiry (τ), risk free rate (r), and implied volatility (σ).

Simple : $m = S / K$

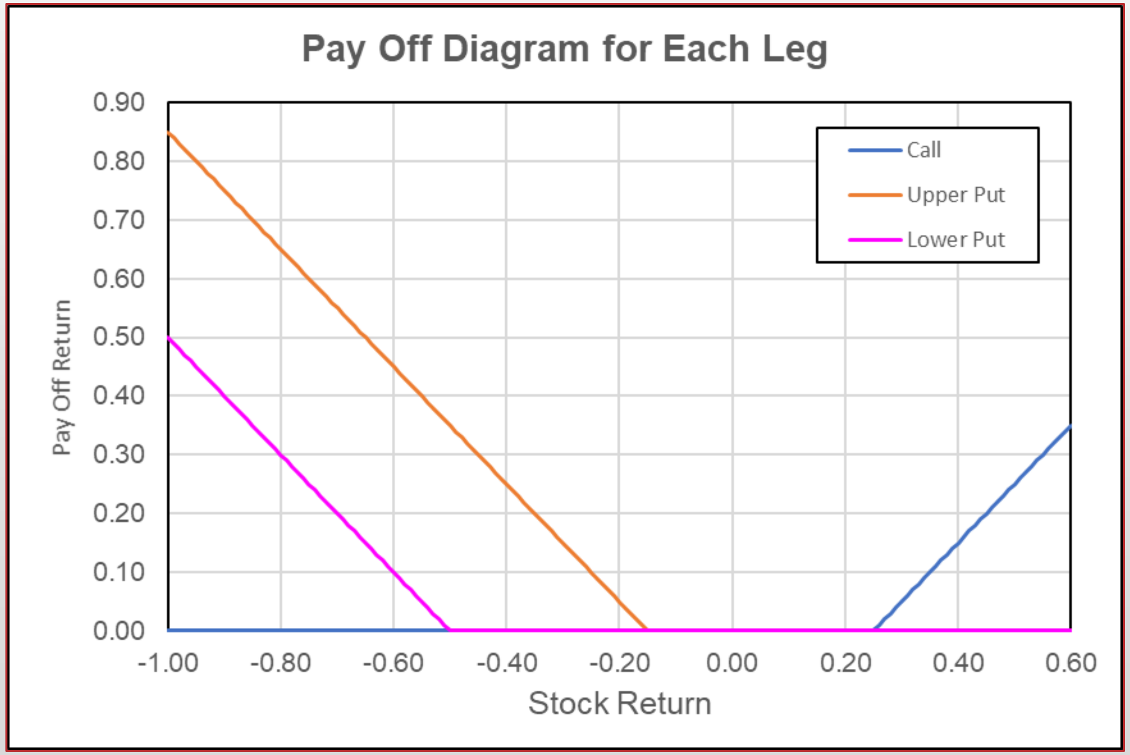
Log Simple: $m = ln(S / K) + rT \approx ln(S / K)$

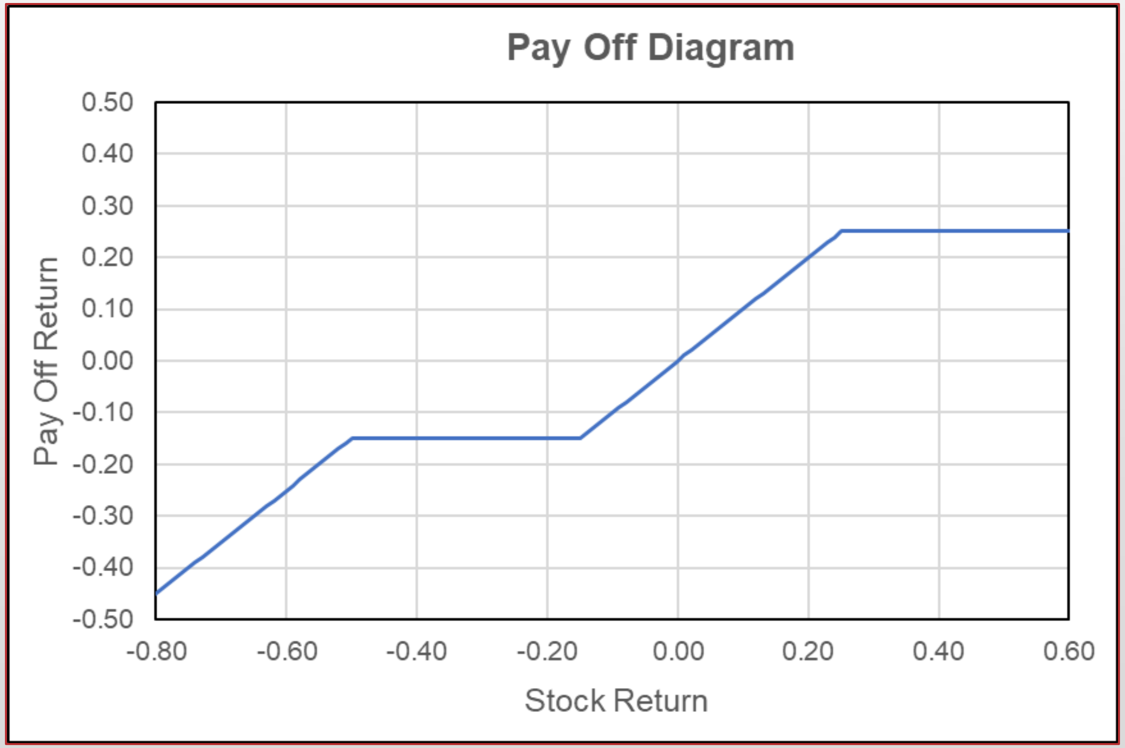
Standardized: $m = \dfrac{ln(S / K) + r\tau}{\sigma\sqrt{\tau}}$

- Note that only the standardized moneyness incorporates all the variables of the option pricing model.

Put Spread Collar

- The JHQAX is a combination of a put spread and a covered call. The covered call pays for the put spread so that it is a costless collar.





Calculation for Moneyness

Underlying	QQQ
Date	24-Feb-21
Expiration	18-Jun-21
Spot Price	324.8
Put1 Pct	5%
Put2 Pct	20%
Call Pct	7.5%
Days	114
Time	0.31

Calculations						
Puts						
Calc Strike	Actual Strike	IV	Bid	Ask	Avg	Delta
309	309	29.70%	14.01	14.09	14.05	9.34
260	260	37.98%	4.68	4.75	4.72	
Calls						
349	345	23.77%	9.52	9.61	9.57	

Moneyness	
Put1	0.301
Put2	1.049
Call	-0.454

N(0,1)	
5% Put	37.9%
20% Put	13.7%
7.50% Call	68.5%
Call - Put2	54.9%

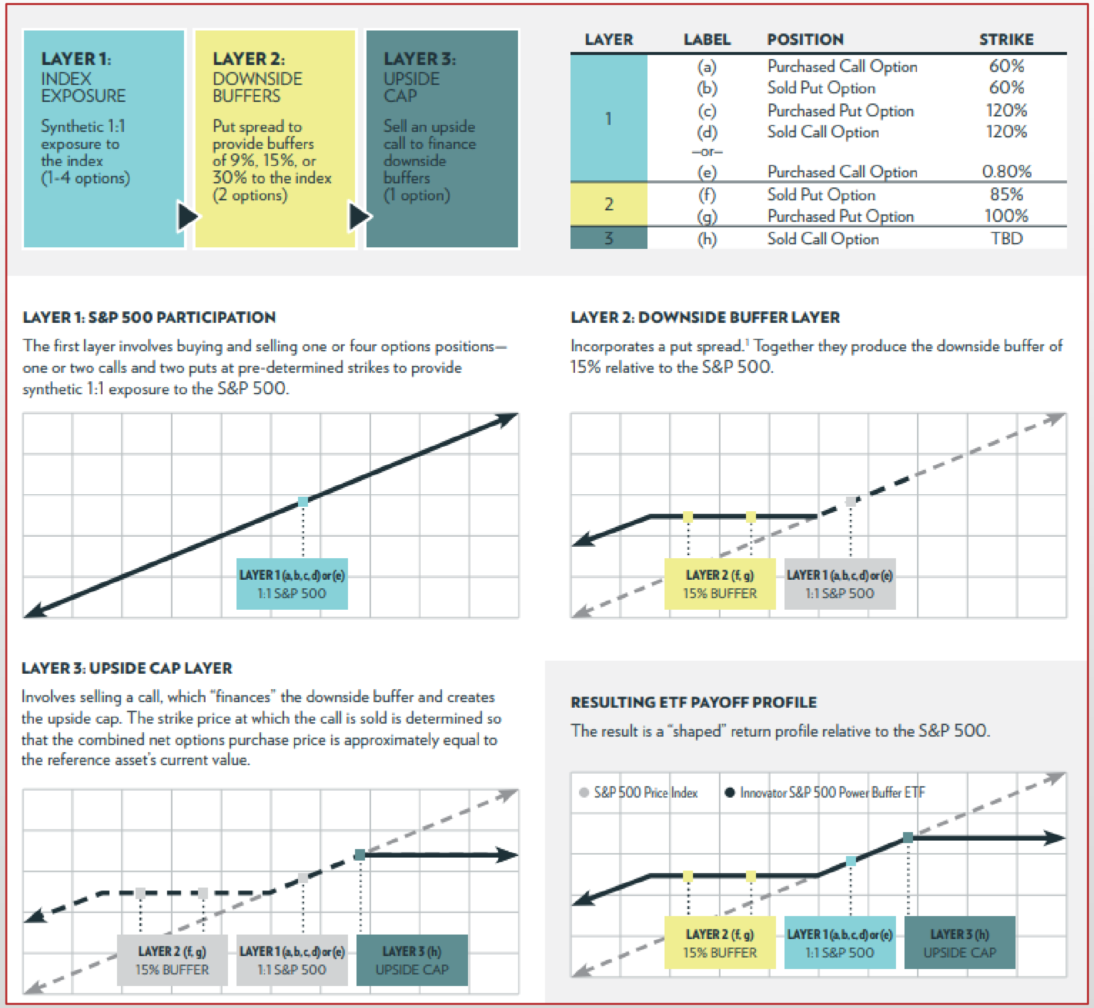
Note that for protecting a 24.2% region of loss you have given up a 31.5% region of gain.

Buffered Funds Debut

- Starting in August of 2018 buffered ETF funds began to appear.
- They were very similar in approach to the JP Morgan mutual fund.
- In many cases they use FLEX options. Theses are CBOE nonstandard options that allow the customer to negotiate various terms.
- Whereas the JP Morgan fund had a basket of selected "higher return" S&P 500 stocks the ETFs used the actual S&P 500 index.
- Enhancements made to this basic buffer approach
  - Capped Accelerated
  - Capped Stacker
  - Capped Accelerated Plus Buffer
  - Uncapped Buffer

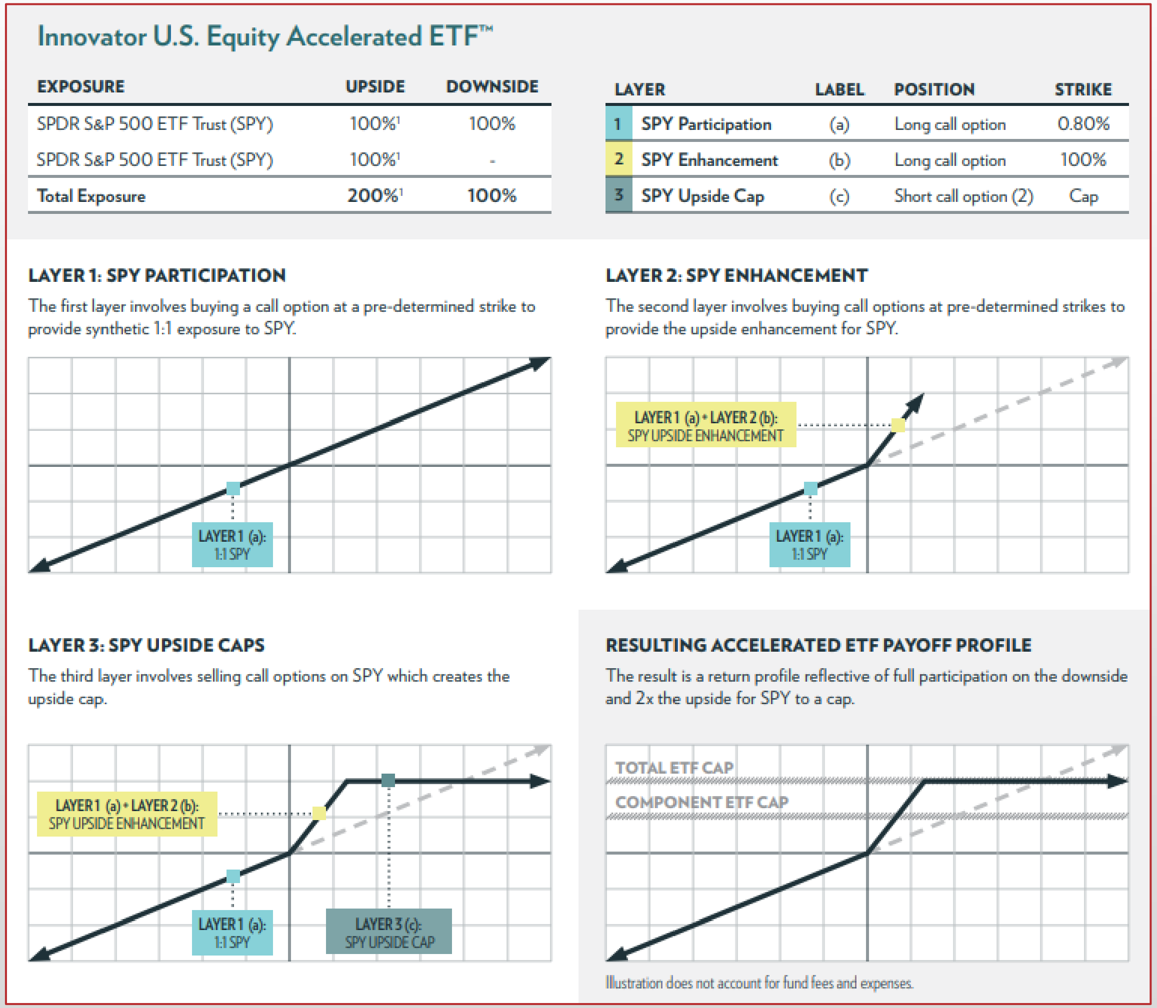
Innovator Buffered ETF

- The buffered ETF is essentially the same as the JP Morgan fund except for the details of the down side buffer.
- The downside put spread buffer can have different ranges: 0% to -9 %, 0% to -15 %, and -5% to -35%.
- You use the credit for the put spread and a covered call to pay for the more expensive put.



Innovator Accelerated ETF

- Accelerated ETFs have a multiple return interval from 0 to a fixed upper level. Beyond this level the return is capped.
- There is no protection on the loss side of the position but it is only the loss of the base asset (1X).
- The call is financed by selling calls.
- A 2:1 ratio of calls options is sold for a 2X ETF, 3:1 for a 3X ETF etc. This sets the cap.



Innovator U.S. Equity Accelerated ETF™

EXPOSURE	UPSIDE	DOWNSIDE
SPDR S&P 500 ETF Trust (SPY)	100%[1]	100%
SPDR S&P 500 ETF Trust (SPY)	100%[1]	-
Total Exposure	200%[1]	100%

LAYER		LABEL	POSITION	STRIKE
1	SPY Participation	(a)	Long call option	0.80%
2	SPY Enhancement	(b)	Long call option	100%
3	SPY Upside Cap	(c)	Short call option (2)	Cap

LAYER 1: SPY PARTICIPATION

The first layer involves buying a call option at a pre-determined strike to provide synthetic 1:1 exposure to SPY.

LAYER 2: SPY ENHANCEMENT

The second layer involves buying call options at pre-determined strikes to provide the upside enhancement for SPY.

LAYER 3: SPY UPSIDE CAPS

The third layer involves selling call options on SPY which creates the upside cap.

RESULTING ACCELERATED ETF PAYOFF PROFILE

The result is a return profile reflective of full participation on the downside and 2x the upside for SPY to a cap.

Illustration does not account for fund fees and expenses.

Innovator Stacker ETF

- This is an interesting concept and is similar to the accelerated ETF but uses a highly correlated asset(s) for the purchased call option.
- The covered calls include all assets including the base asset.
- There is no loss protection but it is only on the base asset (1X).

Innovator Triple Stacker ETF™

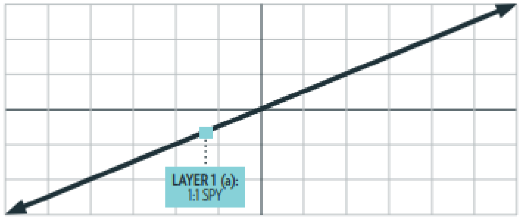
● SPY Upside Participation ● QQQ Upside Participation ● IWM Upside Participation

EXPOSURE	UPSIDE	DOWNSIDE
SPDR S&P 500 ETF Trust (SPY)	100%[1]	100%
Invesco QQQ Trust (QQQ)	100%[1]	-
iShares Russell 2000 ETF (IWM)	100%[1]	-
Total Exposure	**300%[1]**	**100%**

LAYER		LABEL	POSITION	STRIKE
1	**SPY Participation**	(a)	Long call option	0.80%
2	**QQQ Participation**	(b)	Long call option	100%
	IWM Participation	(c)	Long call option	100%
3	**SPY Upside Cap**	(d)	Short call option	Cap
	QQQ Upside Cap	(e)	Short call option	Cap
	IWM Upside Cap	(f)	Short call option	Cap

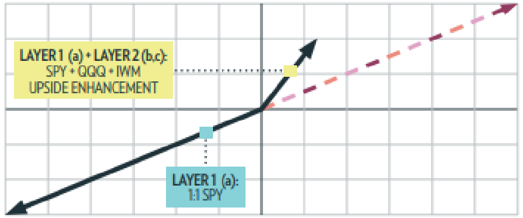
LAYER 1: SPY PARTICIPATION

The first layer involves buying a call option at a pre-determined strike to provide synthetic 1:1 exposure to SPY.



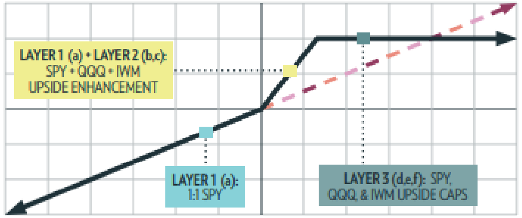
LAYER 2: QQQ AND IWM PARTICIPATION[2]

The second layer involves buying call options at pre-determined strikes to provide the upside enhancement only for QQQ and IWM.



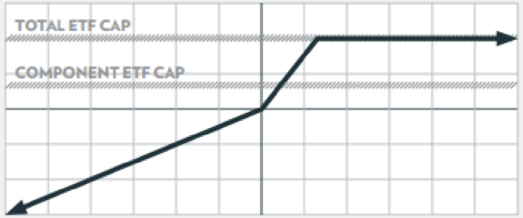
LAYER 3: SPY, QQQ, AND IWM UPSIDE CAPS

The third layer involves selling call options on SPY, QQQ, and IWM, which creates the upside cap.



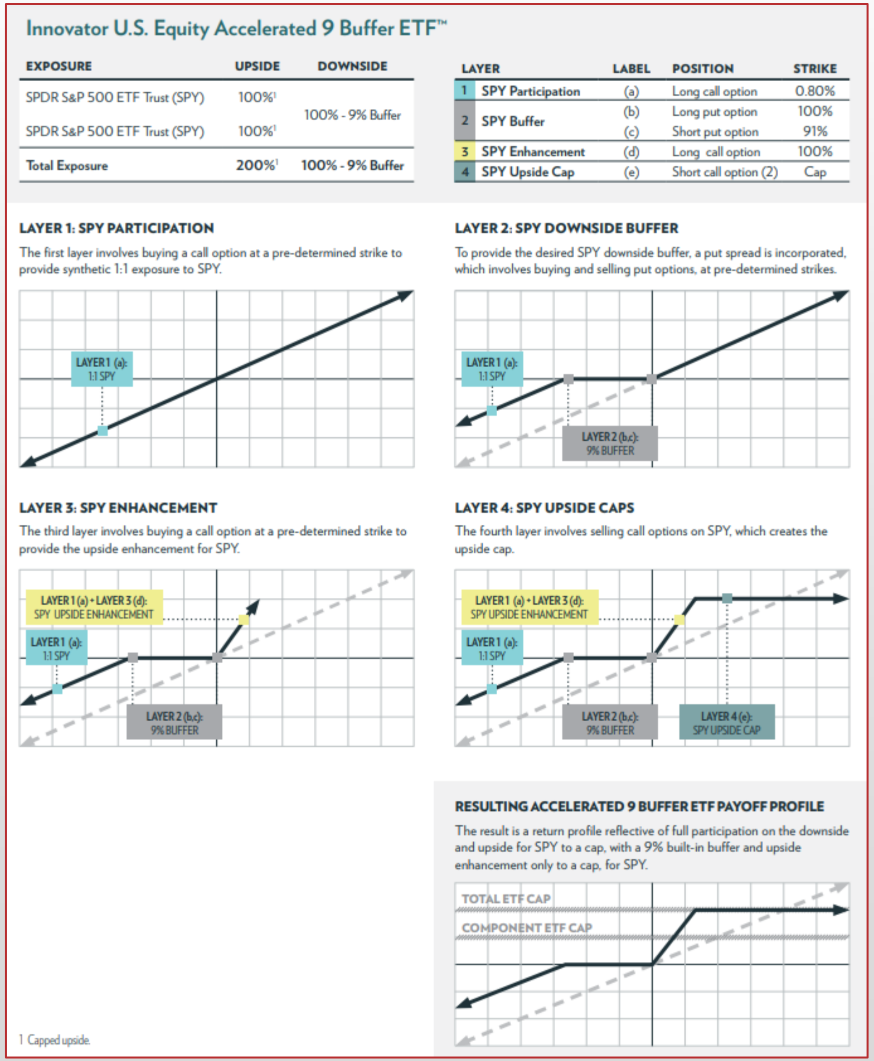
RESULTING TRIPLE STACKER ETF PAYOFF PROFILE

The result is a return profile reflective of full participation on the downside and upside for SPY to a cap, and upside enhancement only to a cap, for QQQ and IWM.



Innovator Accelerated + Buffer ETF

- This type of option adds a buffer to an accelerated ETF.
- The buffer is created using a put spread. Due to the cost of the upside cap only a 9% buffer is provided.



Innovator U.S. Equity Accelerated 9 Buffer ETF™

EXPOSURE	UPSIDE	DOWNSIDE
SPDR S&P 500 ETF Trust (SPY)	100%[1]	100% - 9% Buffer
SPDR S&P 500 ETF Trust (SPY)	100%[1]	
Total Exposure	200%[1]	100% - 9% Buffer

	LAYER	LABEL	POSITION	STRIKE
1	SPY Participation	(a)	Long call option	0.80%
2	SPY Buffer	(b)	Long put option	100%
		(c)	Short put option	91%
3	SPY Enhancement	(d)	Long call option	100%
4	SPY Upside Cap	(e)	Short call option (2)	Cap

LAYER 1: SPY PARTICIPATION

The first layer involves buying a call option at a pre-determined strike to provide synthetic 1:1 exposure to SPY.

LAYER 2: SPY DOWNSIDE BUFFER

To provide the desired SPY downside buffer, a put spread is incorporated, which involves buying and selling put options, at pre-determined strikes.

LAYER 3: SPY ENHANCEMENT

The third layer involves buying a call option at a pre-determined strike to provide the upside enhancement for SPY.

LAYER 4: SPY UPSIDE CAPS

The fourth layer involves selling call options on SPY, which creates the upside cap.

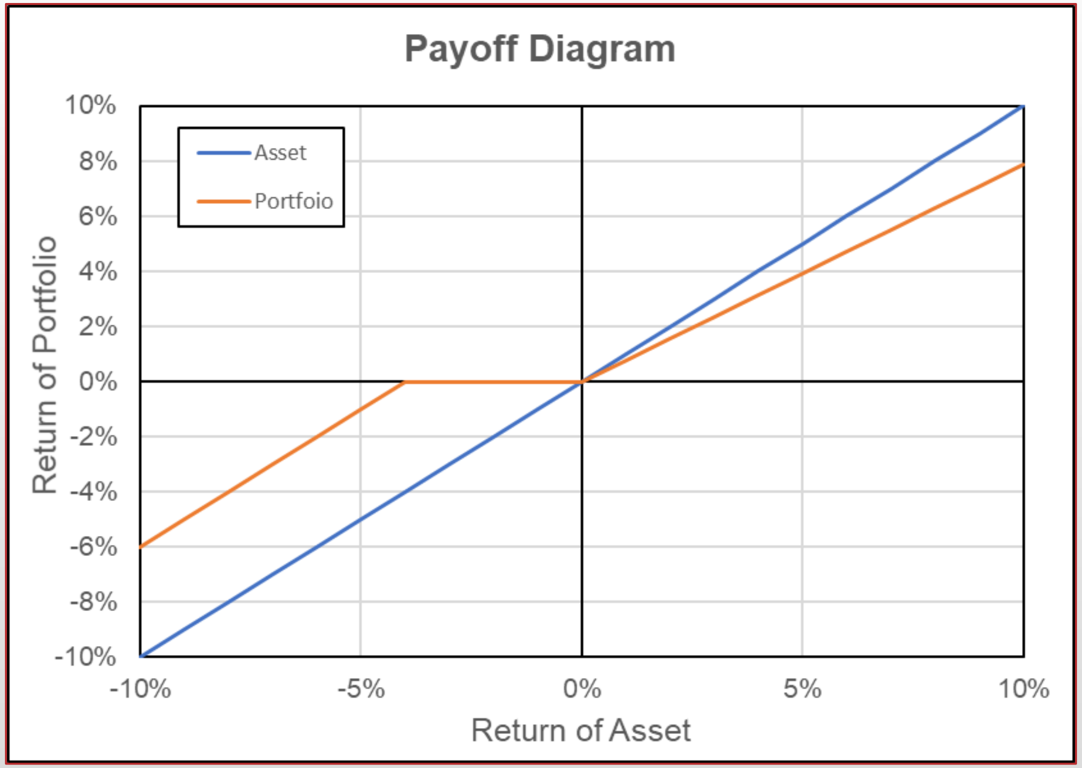
RESULTING ACCELERATED 9 BUFFER ETF PAYOFF PROFILE

The result is a return profile reflective of full participation on the downside and upside for SPY to a cap, with a 9% built-in buffer and upside enhancement only to a cap, for SPY.

1 Capped upside.

Uncapped Buffered ETF

- This is an interesting offering and needs a little more discussion.
- It has an interesting payoff as shown in adjacent panel.
- There is a buffer but the upside is not limited. However, it is trimmed by a certain fraction.
- This type of ETF is only offered by True Shares at present.



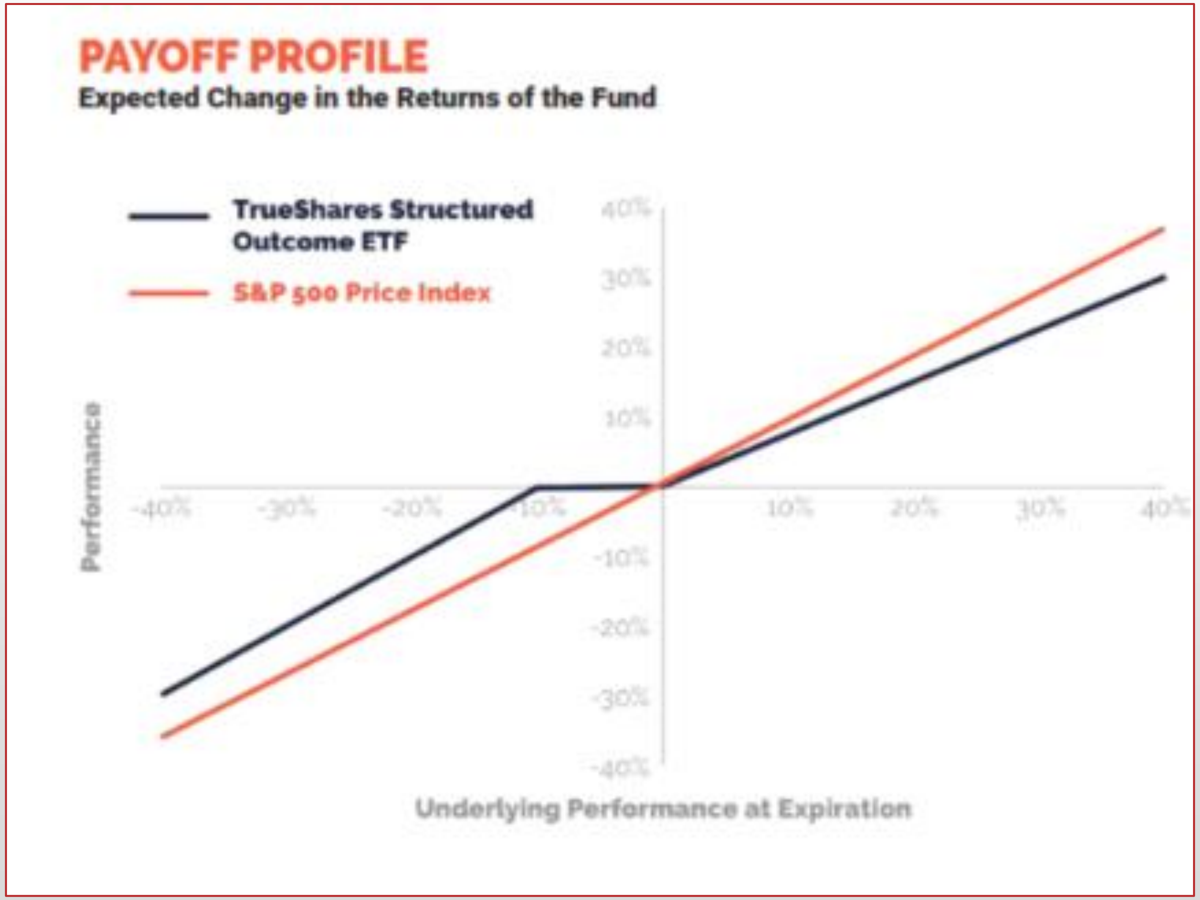
Uncapped Asset Participation History

- This type of financial construct was originally proposed by Zvi Bodie of Bodie, Kane and Marcus fame. His ‘Investments” book is used in most undergraduate finance courses.
- Bodie has also written several books on investing. One of the more interesting ones is “Worry Free Investing”. Bodie promotes life cycle investing and safe investing to fund your retirement.
- If you want to invest in stock market he says there are better ways than buying stocks. He outlines how to use call options and terms the process “Principal Protected Insurance”.
- Bodie prefers using zero coupon bonds and says to use the interest component to buy a call option. Results look very much like the uncapped buffered ETF. However there is no loss on the down side.
- This gives one the sense that there is something unique about this offering that might be preferred.

True Shares Uncapped ETF

FUND DETAILS

Ticker	JULZ
CUSIP	53656F664
Type	Active ETF
Primary Exchange	Cboe BZX
Inception Date	June 30, 2020
Listing Date	July 1, 2020
Est. Upside Market Participation Rate	82-84%
Initial Downside Buffer	10.00%
Investment Period Start Date	July 1, 2020
Investment Period Roll Date	July 1, 2021
Expense Ratio	0.79%
Benchmark	S&P 500 Price Index
Advisor	TrueMark Investments, LLC
Sub-Advisor	SpiderRock Advisors, LLC
Fund Distributor	Foreside Fund Services, LLC



Analysis of Uncapped ETF

- Trueshares website is very transparent and informative.
- Provides the SEC Form N-PORT Part F attachment detailing investments.
- Shows that they use cash secured short put to finance the call option. Strikes and contract amounts provided along with the notional value of each.
- This type of option is similar to a risk reversal option also called a bullish split strike. It reverses volatility skew and provides a hedge.
- Important to note that this is a ratio spread though and not 1:1 in contract size.

	Shares / Principal Amount	Value	Notional Value
SHORT-TERM INVESTMENTS - 98.3%			
Money Market Funds — 0.0% (c)			
First American Treasury Obligations Fund - Class X, 0.06% (a)	118	$ 118	
Total Money Market Funds (Cost $118)		118	
U.S. Treasury Bills - 98.3%			
0.09%, 01/28/2021	8,113,000	8,110,553	
Total U.S. Treasury Bills (Cost $8,111,474)		8,110,553	
TOTAL SHORT-TERM INVESTMENTS (Cost $8,111,592)		8,110,671	
	Number of Contracts (b)		**Notional Value**
PURCHASED OPTIONS - 7.8%			
PURCHASED CALL OPTIONS - 7.8%			
CBOE S&P 500 Index			
Expiration: July 30, 2021, Exercise Price: $329	205	643,866	$ 6,865,245
TOTAL PURCHASED OPTIONS (Cost $565,102)		643,866	
TOTAL INVESTMENTS (Cost $8,676,694) - 106.1%		8,754,537	
Other assets and liabilities, net - (6.1)%		(502,801)	
NET ASSETS - 100.0%		**$ 8,251,736**	

Percentages are stated as a percent of net assets.

CBOE Chicago Board Options Exchange

(a) The rate shown is the annualized seven-day yield at period end.

(b) Each contract has a multiplier of 100.

(c) Less than 0.05%

TrueShares Structured Outcome (August) ETF

Schedule of Written Options

September 30, 2020 (Unaudited)

	Number of Contracts (a)	Value	Notional Value
WRITTEN OPTIONS - (6.0)%			
WRITTEN PUT OPTIONS - (6.0)%			
CBOE S&P 500 Index			
Expiration: July 30, 2021, Exercise Price: $296	274	$ 497,169	$ 9,175,986
TOTAL WRITTEN OPTIONS (Premiums Received $535,016)		**$ 497,169**	

Trueshares Analysis

- Strikes are all ATM on call and 90% of spot on puts.
- Price of put is lower than that of the call but close to 80% so gives a costless option even if buy only 80% shares of call.
- Note that the True Shares are 1-year options. They are likely FLEX options.
- Personally I prefer 3-month options. They have faster time decay and have smaller strike increments. Also cost of the option per day is lower for puts.

JULZ EFT Ratios	
Put/Call Strike	0.8971
Put/Call Price	0.6799
Put/Call Total Cost	0.9080
Put/Call #Contracts	0.749
Call Strike /Spot	1.009
Put Strike /Spot	0.905

Adjusting for Tenor Change

- This shows how one uses the moneyness to change the put option strike price when switching from one-year time to expiration to a three-month time to expiration. SPX was used for the option data.

- The volatility change is obtained from the option listing and the put strike is adjusted to give the same moneyness. The call strike was changed since the three-month data allowed a closer match to the spot price.

Old Put Ratio	89.5%

Date	28-Jun-21
Expiration	17-Jun-22
DTE	0.97

Summary Parameters		
Spot Price		4290.61
Volatility		22.3%
Time		0.97
Risk Free Rate		0.02%
	Strike	Moneyness
Call	4300	-0.0128
Put	3850	0.494

→

New Put Ratio	95.9%

Date	28-Jun-21
Expiration	17-Sep-21
DTE	0.22

Summary Parameters		
Spot Price		4290.61
Volatility		17.4%
Time		0.22
Risk Free Rate		0.02%
	Strike	Moneyness
Call	4295	-0.0119
Put	4121	0.494

Selecting Options for the Uncapped ETF

- Setting up the options for the uncapped ETF is a bit trickier since you need to have a different lot size for the call and put.
- You are using the short put to buy the call option but only a certain fraction of calls. Means you need to buy more than 1 contract.
- Ideally you would like 80% of put contracts. Requires you to sell at least 5 contracts. This gives you a 20% play (1/5). Going to 10 contracts gives you 10% play.
- If possible try to find equities with values below 50.

Example

Expiration Data	
Date	27-Jun-21
Expiration	17-Sep-21
DTE	0.224504

Summary Parameters			
Spot Price		426.61	
Volatility		16%	
Time		0.225	
Risk Free Rate		0.02%	
	Strike	Moneyness	
Call	428	-0.0354	**N(0,1)**
Put	414	0.390	65.2%

← **Probability of profit >= 0**

Summary Parameters		
Spot Price		426.61
Price	Strike	Price
Call	427	9.96
Put	417	7.76
	Ratio	0.78

Target Put Ratio	97%

Target Moneyness	
Call	0.001
Put	0.397

Call Strike = 427

Put Strike	Ratio	Put Ratio
414	0.733	
415	0.754	
416	0.775	
417	0.798	97.7%

Moneyness	
Call	-0.010
Put	0.307

Call Strike = 428

Put Strike	Ratio	
414	0.779	
415	0.801	97.3%
416	0.824	
417	0.848	

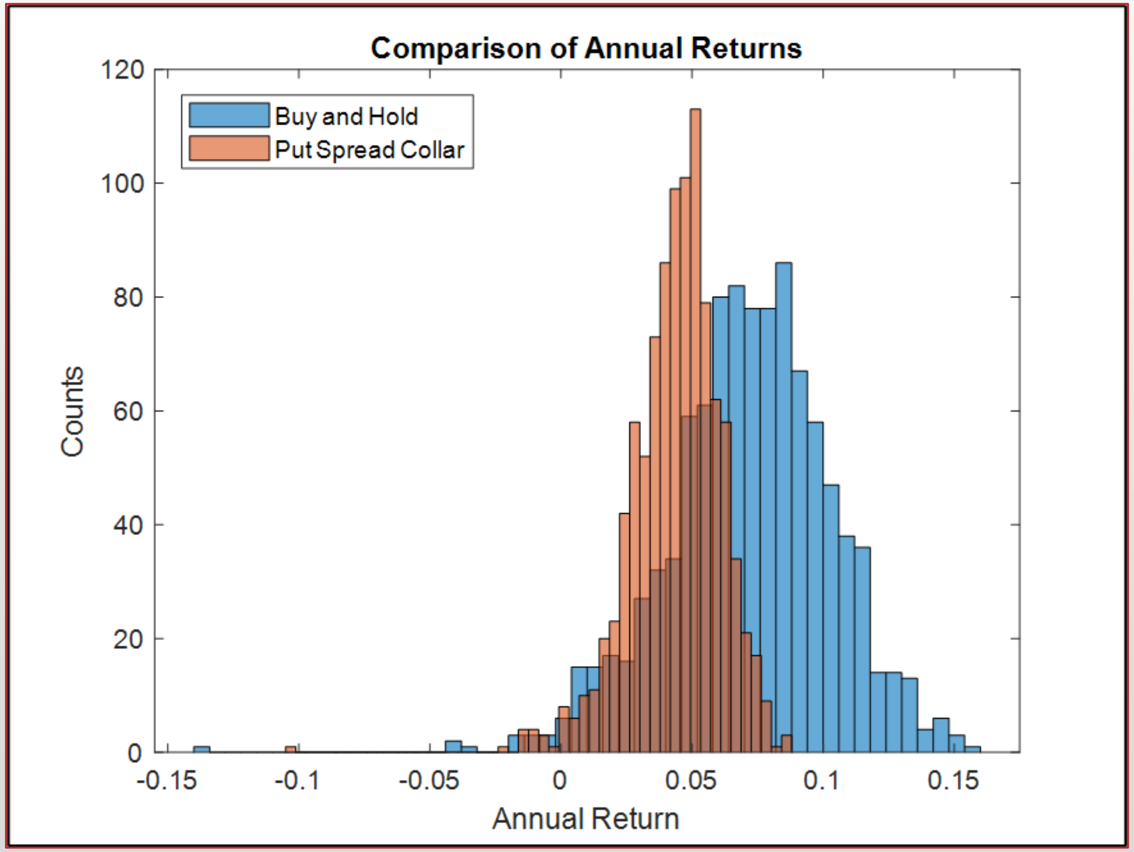
Moneyness	
Call	-0.040
Put	0.363

Comparative Analysis

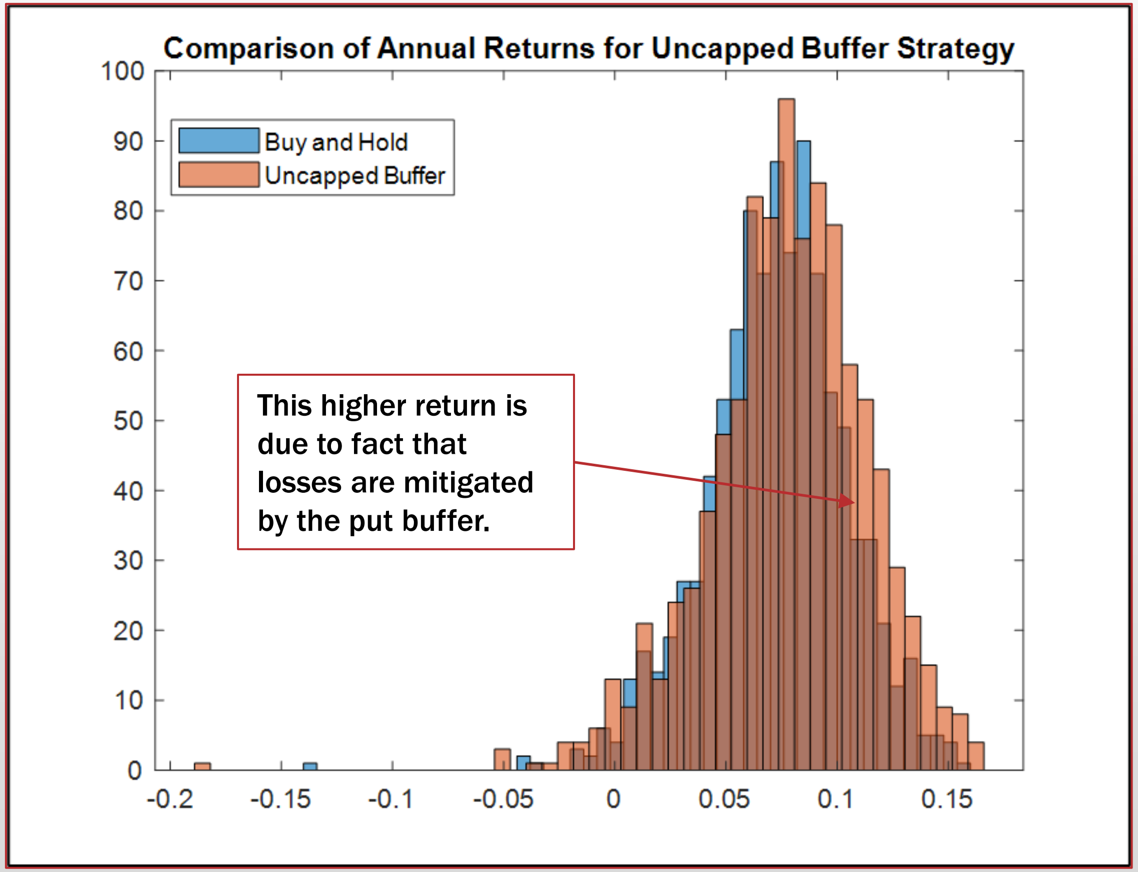
- Over time I have been working at getting a simulation engine working for back testing.
- I now have one I am very confident in, and it is doing a good job. It models both volatility clustering and heavy tailed distributions.
- It is programed in Matlab. It uses two fundamental ideas.
  - GARCH model for volatility clustering
  - Generalized skew t-distribution.
- Easy to generate thousands of simulations in few seconds. Aren't computers great!

Comparative Results for Retirement Life Cycle - Histogram

Put Spread Collar

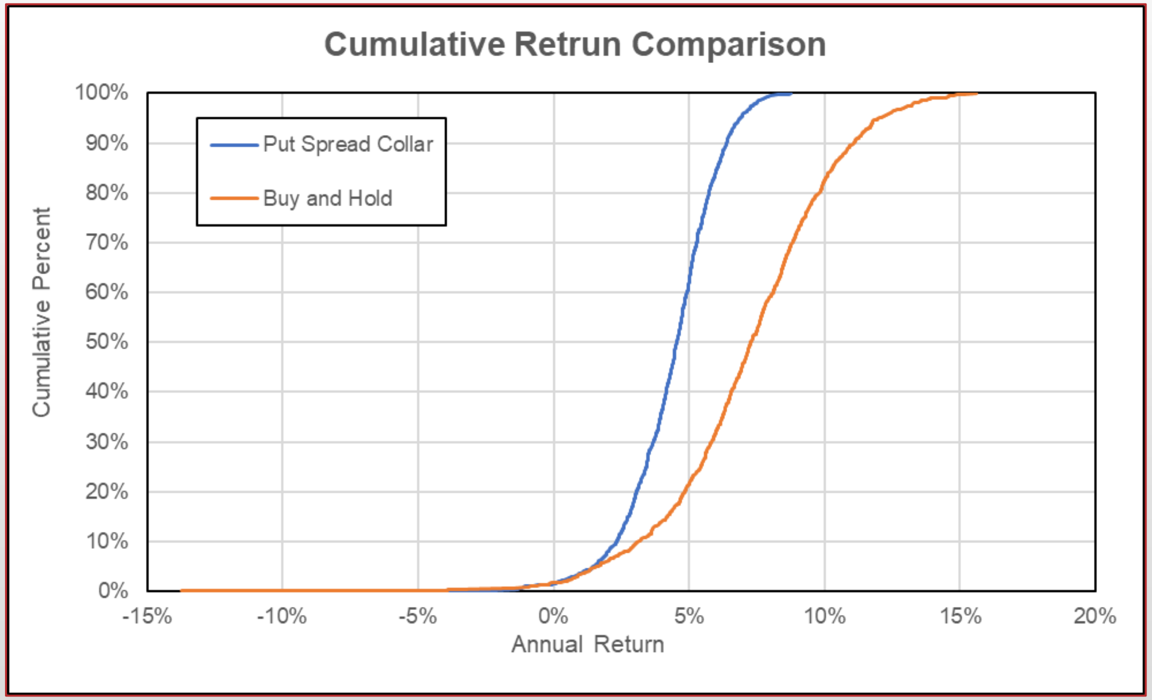


Uncapped Buffer

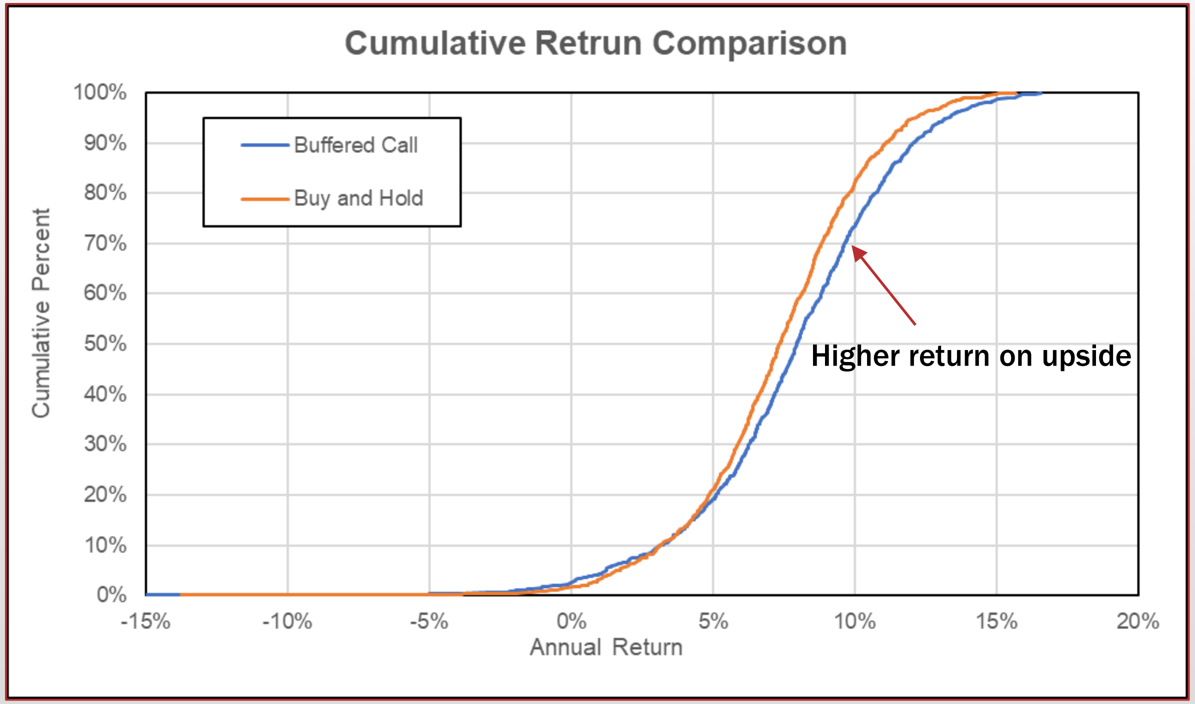


Comparative Results for Retirement Life Cycle - Cumulative Distribution

Put Spread Collar



Uncapped Buffer



Comparative Statistics

- These are complements to the histogram and cumulative distribution plots.
- The put spread collar return is lower but it has much lower beta and higher mean/standard deviation (type of Sharpe ratio). Hence, the adjusted risk is higher compared to buy and hold.
- The buffered call has higher returns and protects on the downside with the sold put. This is proven by fact that you only get 80% of S&P 500 by design.
- Slightly higher spread on the buffered call but this is on the positive return side.

	Put Spread Collar	Buy and Hold
Mean	4.38%	7.24%
Median	4.54%	7.33%
Beta	0.545	1.000
Std Dev	1.72%	3.15%
Skew	-1.124	-0.540
Kurtosis	8.71	4.99
Mean/Std	2.54	2.30

	Buffered Call	Buy and Hold
Mean	7.76%	7.24%
Median	7.94%	7.33%
Beta	1.151	1.000
Std Dev	3.63%	3.15%
Skew	-0.747	-0.540
Kurtosis	5.84	4.99
Mean/Std Dev	2.14	2.30

Conclusions

- Buffered ETFs are an interesting new offering and provide downside protection at a much lower cost than previous offerings (structured products).
- Buffered ETFs offer a wide range of options for many different investors. They have been winning high praise from many advisors for their disruptive influence in the ETF field.
- Put spread collars (especially JP Morgan fund) have very good performance in terms of lower variability for more risk adverse investor and compare favorably with balanced funds.
- Capped buffer strategy appears to be winner in sense of downside protection (hedge) with superior return performance.
- Transparency of buffer funds makes it relatively easy to copy for individual who is interested in indexes not covered by the current offerings.

The End

Questions?

JPMorgan Hedged Equity Fund

A Shares: JHQAX *C Shares: JHQCX* *I Shares: JHEQX* *R5 Shares: JHQPX* *R6 Shares: JHQRX*

Designed to provide capital appreciation through a diversified equity portfolio, while hedging overall market exposure.

APPROACH

- Invests in a portfolio of U.S. large cap stocks while employing a disciplined options strategy that seeks to reduce downside risk in falling markets
- Constructs a diversified U.S. equity portfolio through a proprietary research process designed to identify over- and undervalued stocks while maintaining characteristics similar to the S&P 500
- Seeks to provide a majority of S&P 500 Index's returns with less volatility and less downside

EXPERTISE

Portfolio manager(s) and years of experience
Hamilton Reiner, 33 yrs
Raffaele Zingone, 29 yrs

FUND INFORMATION

Class launch
Dec 13, 2013

Fund number
3067

CUSIP
46637K315

Fund assets
$11.31 bn

Annual expenses (%)
Gross Expenses: 0.88
Net Expenses: 0.85

Minimum initial investment
$1,000

RATINGS

Morningstar Analyst Rating **Bronze** 9/10/2020

Morningstar Star Rating 9/30/20

Overall Morningstar Rating™ ★ ★ ★ ★ ★

Morningstar Category™ Options-based

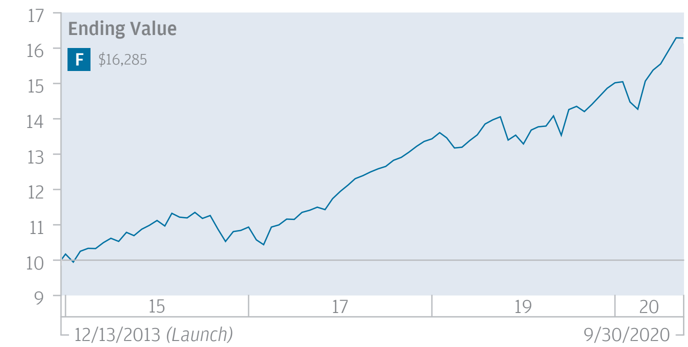
Overall Morningstar ratings 5 stars; 109 funds. Three year rating 5 stars; 109 funds. Five year rating 5 stars; 65 funds. Ten year period, not yet rated. Ratings reflect risk-adjusted performance. Different share classes may have different ratings.

Overall Morningstar Rating™ for a fund is derived from a weighted average of the performance figures associated with its three-, five-, and 10-year (if applicable) Morningstar Rating metrics.

PERFORMANCE

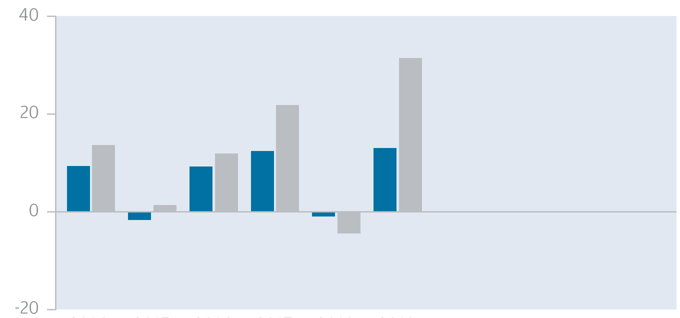
F **Fund**: Class A Shares
B1 **Benchmark 1:** S&P 500 Index
B2 **Benchmark 2:** ICE BofAML 3-Month US Treasury Bill Index

GROWTH OF $10,000



Since inception with dividends and capital gains reinvested. There is no direct correlation between a hypothetical investment and the anticipated performance of the Fund.

CALENDAR YEAR PERFORMANCE (%)



	2014	2015	2016	2017	2018	2019
F	9.36	-1.68	9.26	12.45	-0.92	13.02
B1	13.69	1.38	11.96	21.83	-4.38	31.49

RETURN (%)

	TOTAL RETURN		AVERAGE ANNUAL RETURN			
	3 mos	YTD	1 yr	3 yrs	5 yrs	Launch^
F at NAV	4.71	8.41	13.02	7.70	9.15	7.46
F w/ 5.25% max sales charges	-0.78	2.69	7.09	5.78	7.97	6.62
B1	8.93	5.57	15.15	12.28	14.15	12.10
B2	0.04	0.64	1.10	1.69	1.20	0.89

PERFORMANCE DISCLOSURES

Performance quoted is past performance and is no guarantee of future results. Investment returns and principal value will fluctuate, so shares, when sold, may be worth more or less than original cost. Current performance may be higher or lower than returns shown. Call 1-800-480-4111 for most recent month-end performance.

^Fund performance inception: 12/13/2013

J.P.Morgan Asset Management

HOLDINGS

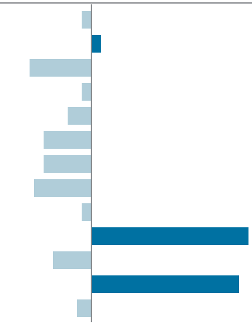
TOP 10 (%)

Apple, Inc.	6.6
Microsoft Corp.	6.3
Amazon.com, Inc.	4.9
S&P 500 Index *	3.3
Facebook, Inc., Class A	2.0
Alphabet, Inc., Class A	1.9
Mastercard, Inc., Class A	1.7
Alphabet, Inc., Class C	1.5
Berkshire Hathaway, Inc., Class B	1.5
Procter & Gamble Co. (The)	1.4

*The inclusion of index option position bought is a hedging strategy because the value of the put tends to increase as the level of the underlying index declines, and this gain in option value will increasingly reflect a decline in the level of the underlying index when its level moves below the option's strike price.

EQUITY SECTORS (%)

Sector	Weighting	Compared to benchmark
Communication Services	10.6	-0.2
Consumer Discretionary	11.8	0.2
Consumer Staples	5.7	-1.3
Energy	1.9	-0.2
Financials	9.2	-0.5
Health Care	13.2	-1.0
Industrials	7.3	-1.0
Information Technology	27.0	-1.2
Materials	2.4	-0.2
Put Options Purchased	3.3	3.3
Real Estate	1.8	-0.8
Short-Term Investments	3.1	3.1
Utilities	2.7	-0.3



PORTFOLIO ANALYSIS

Approximate number of holdings	192
Beta (3-year)	0.37
P/E ratio (1 yr. forecast)	21.75
Wtd. avg. market cap (in billions)	$520.91
Sharpe ratio (3-year)	0.92

Contact JPMorgan Distribution Services, Inc. at 1-800-480-4111 for a prospectus. Carefully consider the fund's objectives, risks, charges and expenses before investing. The prospectus contains this and other fund information. Read it carefully before investing.

Total return figures (for the fund and any index quoted) assume payment of fees and reinvestment of dividends (after the highest applicable foreign withholding tax) and distributions. Without fee waivers, fund returns would have been lower. Due to rounding, some values may not total 100%.

This document is a general communication being provided for informational purposes only. It is educational in nature and not designed to be recommendation for any specific investment product, strategy, plan feature or other purposes. By receiving this communication you agree with the intended purpose described above. Any examples used in this material are generic, hypothetical and for illustration purposes only. None of J.P. Morgan Asset Management, its affiliates or representatives is suggesting that the recipient or any other person take a specific course of action or any action at all. Communications such as this are not impartial and are provided in connection with the advertising and marketing of products and services. Prior to making any investment or financial decisions, an investor should seek individualized advice from personal financial, legal, tax and other professionals that take into account all of the particular facts and circumstances of an investor's own situation.

RISK SUMMARY

The price of equity securities may fluctuate rapidly or unpredictably due to factors affecting individual companies, as well as changes in economic or political conditions. These price movements may result in loss of your investment.

Investments in derivatives may be riskier than other types of investments. They may be more sensitive to changes in economic or market conditions than other types of investments. Derivatives may create leverage, which could lead to greater volatility and losses that significantly exceed the original investment.

Positions in equity options can reduce equity market risk, but can limit the opportunity to profit from an increase in the market value of stocks in exchange for upfront cash at the time of selling the call option. Unusual market conditions or the lack of a ready market for any particular option at a specific time may reduce the effectiveness of option strategies and could result in losses.

Utilizing a strategy with a diversified equity portfolio and derivatives, with a Put/Spread Collar options overlay, may not provide greater market protection than other equity investments nor reduce volatility to the desired extent, as unusual market conditions or the lack of a ready option market could result in losses. Derivatives expose the Fund to risks of mispricing or improper valuation and the Fund may not realize intended benefits due to underperformance. When used for hedging, the change in value of a derivative may not correlate as expected with the risk being hedged.

ANNUAL OPERATING EXPENSES

The Fund's adviser and/or its affiliates have contractually agreed to waive fees and/or reimburse expenses to the extent Total Annual Fund Operating Expenses (excluding acquired fund fees and expenses, dividend and interest expenses related to short sales, interest, taxes, expenses related to litigation and potential litigation and extraordinary expenses) exceed 0.85% of the average daily net assets. The Fund may invest in one or more money market funds advised by the adviser or its affiliates (affiliated money market funds). The Fund's adviser has contractually agreed to waive fees and/or reimburse expenses in an amount sufficient to offset the fees and expenses of the affiliated money market funds incurred by the Fund because of the Fund's investment in such money market funds. This waiver is in effect through 10/31/2020, at which time the adviser and/or its affiliates will determine whether to renew or revise it. The difference between net and gross fees includes all applicable fee waivers and expense reimbursements.

INDEXES

Mutual funds have fees that reduce their performance: indexes do not. You cannot invest directly in an index.

The S&P 500 Index is an unmanaged index generally representative of the performance of large companies in the U.S. stock market. Index levels are in total return USD.

ICE BofAML 3-Month US Treasury Bill Index is comprised of a single issue purchased at the beginning of the month and held for a full month. The index is rebalanced monthly and the issue selected is the outstanding Treasury Bill that matures closest to, but not beyond 3 months from the rebalancing date.

TOP HOLDINGS

The top 10 holdings listed exclude cash and money markets. Holdings are subject to change. The holdings listed should not be considered recommendations to purchase or sell a particular security. Each individual security is calculated as a percentage of the aggregate market value of the securities held in the Fund and does not include the use of derivative positions, where applicable.

ENTITIES

J.P. Morgan Funds are distributed by JPMorgan Distribution Services, Inc., which is an affiliate of JPMorgan Chase & Co. Affiliates of JPMorgan Chase & Co. receive fees for providing various services to the funds. JPMorgan Distribution Services, Inc. is a member of FINRA.

If you are a person with a disability and need additional support in viewing the material, please call us at 1-800-343-1113 for assistance.

The Morningstar Rating™ for funds, or "star rating", is calculated for managed products (including mutual funds, variable annuity and variable life subaccounts, exchange-traded funds, closed-end funds, and separate accounts) with at least a three-year history. Exchange traded funds and open-ended mutual funds are considered a single population for comparative purposes. It is calculated based on a Morningstar Risk-Adjusted Return measure that accounts for variation in a managed product's monthly excess performance, placing more emphasis on downward variations and rewarding consistent performance. The top 10% of products in each product category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars, and the bottom 10% receive 1 star. The Overall Morningstar Rating for a managed product is derived from a weighted average of the performance figures associated with its three-, five-, and 10-year (if applicable) Morningstar Rating metrics. The weights are: 100% three-year rating for 36-59 months of total returns, 60% five-year rating/40% three-year rating for 60-119 months of total returns, and 50% 10- year rating/30% five-year rating/20% three-year rating for 120 or more months of total returns. While the 10-year overall star rating formula seems to give the most weight to the 10-year period, the most recent three-year period actually has the greatest impact because it is included in all three rating periods. Rankings do not take sales loads into account.

J.P. Morgan Asset Management is the brand name for the asset management business of JPMorgan Chase & Co and its affiliates worldwide.

The Morningstar Analyst Rating™ is not a credit or risk rating. It is a subjective evaluation performed by various Morningstar, Inc. subsidiaries ("Manager Research Group") which, in the U.S., is Morningstar Research Services LLC, registered with and governed by the U.S. Securities and Exchange Commission. Funds are evaluated based on five key pillars - process, performance, people, parent and price - to determine how they may likely perform relative to a benchmark over the long term on a risk-adjusted basis. The Analyst Rating scale is Gold, Silver, Bronze, Neutral, Negative. A rating of Gold, Silver or Bronze reflects the expectation of a fund's prospects for outperformance. The expectations and methodologies differ between active and passive funds. Analyst Ratings ultimately reflect the Manager Research Group's overall assessment, are overseen by an Analyst Rating Committee, and are continuously monitored and reevaluated at least every 14 months.

For more details about Morningstar's Analyst Rating, including its methodology, go to https://global.morningstar.com/managerdisclosures/

The Morningstar Analyst Rating should not be used as the sole basis in evaluating a fund, involves unknown risks and uncertainties which may cause the Manager Research Group's expectations not to occur or to differ significantly from what they expected, and should not be considered an offer or solicitation to buy or sell the fund.

DEFINITIONS

Risk measures are calculated based upon the Funds' broad-based index as stated in the prospectus.

Beta measures a fund's volatility in comparison to the market as a whole. A beta of 1.00 indicates a fund has been exactly as volatile as the market.

P/E ratio is the number by which earnings per share is multiplied to estimate a stock's value.

Sharpe ratio measures the fund's excess return compared to a risk-free investment. The higher the Sharpe ratio, the better the returns relative to the risk taken.

AS OF JUNE 30, 2021

AUGZ

TRUESHARES

TrueShares Structured Outcome (August) ETF

FUND DESCRIPTION

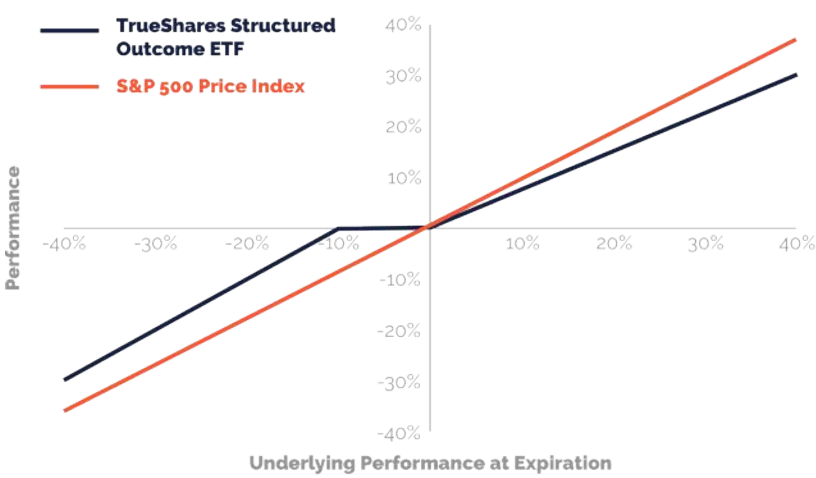
The TrueShares Structured Outcome ETF Series utilizes a “buffer protect” options strategy, that seeks to provide investors with returns (before fees and expenses) that track those of the S&P 500 Price Index while seeking to provide an 8-12% downside buffer (with the advisor targeting 10%) on the first of that index’s losses over a 12-month investment period.[1] The AUGZ defined outcome period begins on August 3, 2020 and resets exactly 12 months later. The strategy is implemented through the purchase and sale of options on the S&P 500 Price Index or an ETF that tracks the S&P 500 Price Index. While there is no guarantee the Fund will be successful in providing these outcomes in any period, the intent of the ETFs in the series is to provide uncapped equity market upside participation (subject to options pricing) with a measure of downside risk mitigation.[2]

WHY INVEST I N TRUESHARES STRUCTURED OUTCOME ETFS

- TrueShares Structured Outcome ETFs are **designed for investors targeting growth from large-capitalization equities while simultaneously seeking to mitigate downside exposure.**
- Similar to structured notes, these ETFs **utilize a defined outcome approach** to create an investment profile that is potentially more appealing than standard long-only equities.
- The strategy targets a **10% downside buffer (before fees and expenses) paired with uncapped upside participation[2] over a 12 month period, a combination we believe is unique to TrueShares.[1]**
- Unlike traditional structured note alternatives, TrueShares ETFs provide **daily liquidity, portfolio transparency, cost efficiency, and no credit risk.** All in a turnkey, Cboe-listed structure.
- The ETFs are sub-advised by SpiderRock Advisors, a Chicago-based asset management firm focused solely on providing custom option overlay strategies by **combining worldclass technology with comprehensive derivatives expertise.**

PAYOFF PROFILE

Expected Change in the Returns of the Fund



FUND DETAILS

Ticker	**AUGZ**
CUSIP	**53656F722**
Type	**Active ETF**
Primary Exchange	**Cboe BZX**
Inception Date	**July 31, 2020**
Listing Date	**August 3, 2020**
Est. Upside Market Participation Rate	**82-84%**
Initial Downside Buffer	**10.00%**
Investment Period Start Date	**August 3, 2020**
Investment Period Roll Date	**August 2, 2021**
Expense Ratio	**0.79%**
Benchmark	**S&P 500 Price Index**
Advisor	**TrueMark Investments, LLC**
Sub-Advisor	**SpiderRock Advisors, LLC**
Fund Distributor	**Foreside Fund Services, LLC**

1. In the event an investor purchases Shares after the date on which the options were entered into or sells Shares prior to the expiration of the options, the buffer that the Fund seeks to provide may not be available and there may be limited to no upside potential. The Fund does not provide principal protection and an investor may experience significant losses on its investment, including the loss of its entire investment.

2. Upside participation over an investment period is subject to options pricing. Due to the cost of the options used by the fund, the correlation of the fund’s performance to that of the S&P 500 Price Index will be less than if the fund invested directly in the S&P 500 Price Index without using options, and could be substantially less.

The chart to the left assumes a 10% buffer. The fund seeks to buffer the first 8-12% of S&P 500 Price Index losses over a 12-month period. For illustrative and discussion purposes only. The chart illustrates the hypothetical returns that the TrueShares Structured Outcome ETFs seek to provide in certain illustrative scenarios for a shareholder that purchases Fund shares on the Initial Investment Day and holds such shares for the entire Investment Period. The returns are based on hypothetical performance of the S&P 500 Price Index. The chart does not take into account payment by the Funds of fees and expenses. ***There is no guarantee that the Funds will be successful in providing these investment outcomes for any Investment Period. Performance shown is hypothetical and based on certain assumptions.*** *A Fund’s actual performance for its options strategy will be determined by the options pricing available in the market at the time the Fund enters its option positions.*

AUGZ

PERFORMANCE (%) As of June 30, 2021

	Since Fund Inception*	1 Year	3 Year	5 Year	Inception Date
AUGZ @ NAV	24.27	-	-	-	7/31/2020
AUGZ @ Market	24.20	-	-	-	7/31/2020
S&P 500 Price Index	31.38	-	-	-	-

Expense Ratio: 0.79%

***As fund is less than a year old, Since Inception performance shown is cumulative.**

Performance data quoted above represents past performance and does not guarantee future results. Investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed or sold in the secondary market, may be worth more or less than the original cost. Investors will incur usual and customary brokerage commissions when buying or selling shares of the exchangetraded funds ("ETFs") in the secondary market, and that, if reflected, the brokerage commissions would reduce the performance returns. Current performance may be lower or higher than the performance shown. Shares are bought and sold at market price not net asset value ("NAV") and are not individually redeemable from the fund. Call 877.774.TRUE for more information.

Index performance does not represent True-Shares fund performance. It is not possible to invest directly in an index. All performance figures assume reinvestment of dividend and capital gains at net asset value; actual returns may differ. Performance 1-year and less are cumulative; performance over 1-year are average annualized total returns. Market price performance is determined using the bid/ask midpoint at 4:00pm Eastern time, when the NAV is typically calculated. NAV price performance is determined using the daily calculated NAV. They do not represent the returns you would receive if you traded shares at other times. Performance figures do not reflect the deduction of taxes that a shareholder would pay on Fund distributions or upon redemption or sale of fund shares.

PORTFOLIO MANAGERS

Eric Metz, CFA
SpiderRock Advisors

Fred Sloneker
SpiderRock Advisors

Jordan Waldrep, CFA
TrueMark Investments