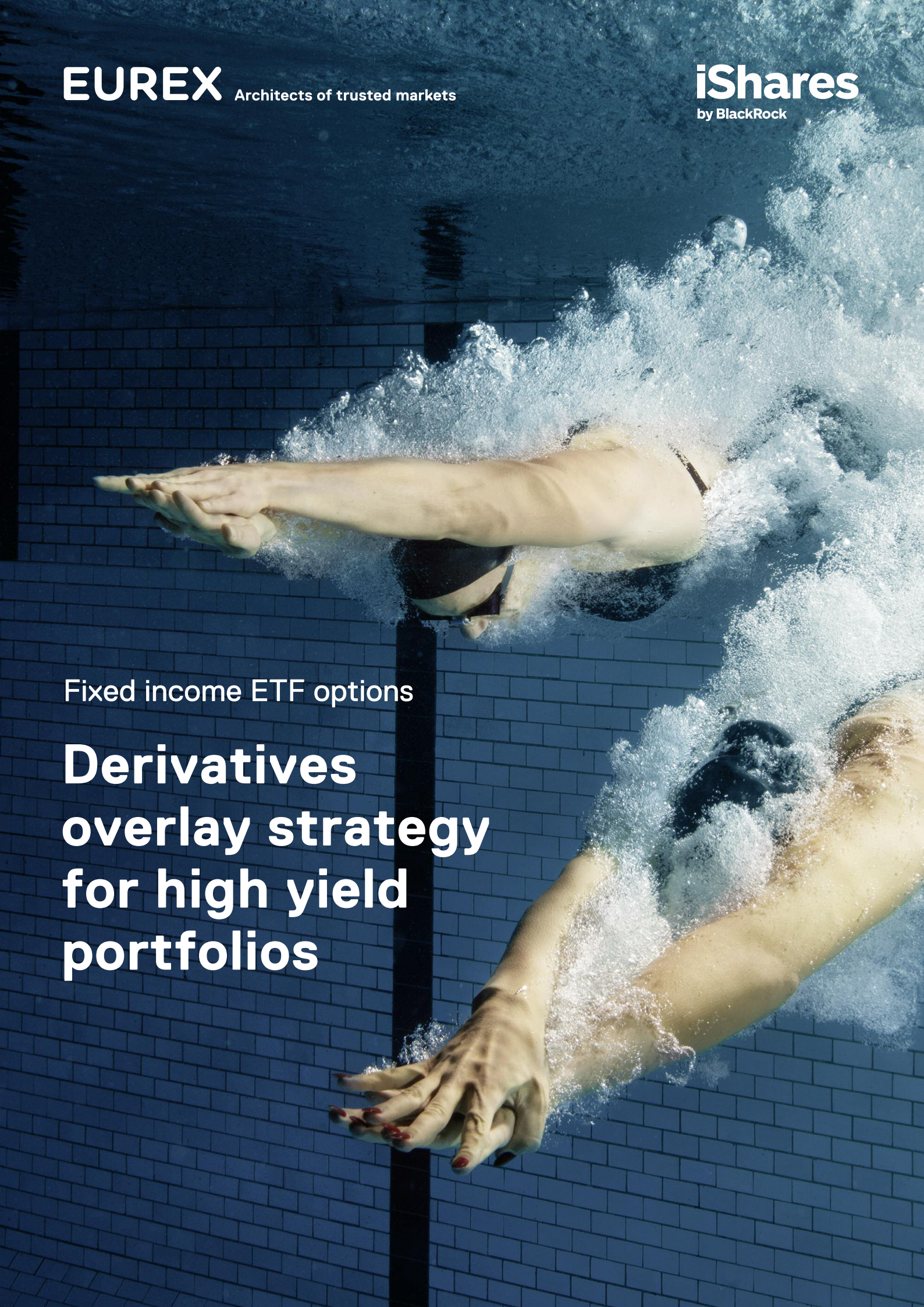


EUREX Architects of trusted markets

iShares
by BlackRock

Fixed income ETF options

**Derivatives
overlay strategy
for high yield
portfolios**



Summary

Eurex fixed income ETF options on UCITS ETFs offer investors tools to manage exposure to credit indices to generate extra income in low volatility markets and hedge credit exposure during periods of volatility. Options on US high yield ETFs can be successfully utilised to generate increased returns and provide an exchange-traded alternative to CDS swaptions with the added benefits of increased transparency and margin efficiency offered from trading listed products.

Fixed income ETF options have seen increased global adoption, with Eurex offering European investors bond ETF options on UCITS underlyings. Eurex offers ETF options on the following UCITS ETFs:

No.	ISIN	Bloomberg	Name	Underlying index	Currency
1	IE00B3F81R35	IEAC LN	iShares Core € Corp Bond UCITS ETF	Bloomberg Euro Corporate Bond Index	EUR
2	IE00B66F4759	IHYG LN	iShares € High Yield Corp Bond UCITS ETF	Markit iBoxx Euro Liquid High Yield Index	EUR
3	IE00B4PY7Y77	IHYU LN	iShares \$ High Yield Corp Bond UCITS ETF	Markit iBoxx USD Liquid High Yield Capped Index	USD
4	IE00B2NPKV68	IEMB LN	iShares J.P. Morgan \$ EM Bond UCITS ETF	JP Morgan EMBI Global Core Index	USD
5	IE0032895942	LQDE LN	iShares \$ Corp Bond UCITS ETF	Markit iBoxx USD Liquid Investment Grade Index	USD
6	IE00BSKRJZ44	IDTL LN	iShares \$ Treasury Bond 20+yr UCITS ETF	ICE U.S. Treasury 20+ Year Bond Index	USD

Derivatives overlay strategy for high yield portfolios

Eurex offers listed fixed income ETF options on UCITS ETFs that cover the core credit markets. These options can be utilized by end investors as part of a derivatives overlay on bond or multi-asset portfolios as well as for taking tactical positions. This short paper investigates the benefits of using US Dollar high yield ETF options combined with a high yield bond portfolio. Shares of the underlying ETF have been used to represent the bond portfolio.

The excess returns generated from the analyzed strategies against a portfolio that is 100% invested in the underlying high yield ETF were calculated to demonstrate how investors could improve their portfolio performance in a variety of market conditions.

The last five years have been predominantly characterized by low volatility across asset classes. However, there have been bouts of heightened volatility over short periods of time. This meant that investors could have often benefited from selling out-of-the-money call options and strangles to generate income. However, buying volatility and put options would have been effective in providing downside protection against these sell-offs.

The ultra-low rates environment and tightening of credit spreads drove investors further down the credit quality spectrum to obtain the necessary yield to fulfill their mandates, increasing the use-case for deploying income-generating option strategies to supplement a portfolio's yield.

Fixed income ETFs continue to see robust asset inflows and provide investors with a range of liquid funds to manage exposure to individual asset classes, letting them optimize fund management, and express market views. Bond ETFs created a new liquidity pool alongside the cash bond market with robust liquidity. This was proven again by the increased usage of bond ETFs in March 2020 to manage risk as the coronavirus pandemic swept the world and market volatility spiked.

Fixed income ETF options provide investors an additional tool to manage credit beta as part of an effective portfolio management strategy enabling them to outperform their corporate bond benchmarks.



Generating income from selling out-of-the-money calls

In the low volatility market environment that pre-dated the coronavirus pandemic, selling call options presented an opportunity for investors to generate income to supplement the yield in their portfolios.

As demonstrated in the graph, selling out-of-the-money call options generated excess returns during the low volatility years of 2015, 2017, 2018 and 2020 compared to being solely invested in the high yield ETF.

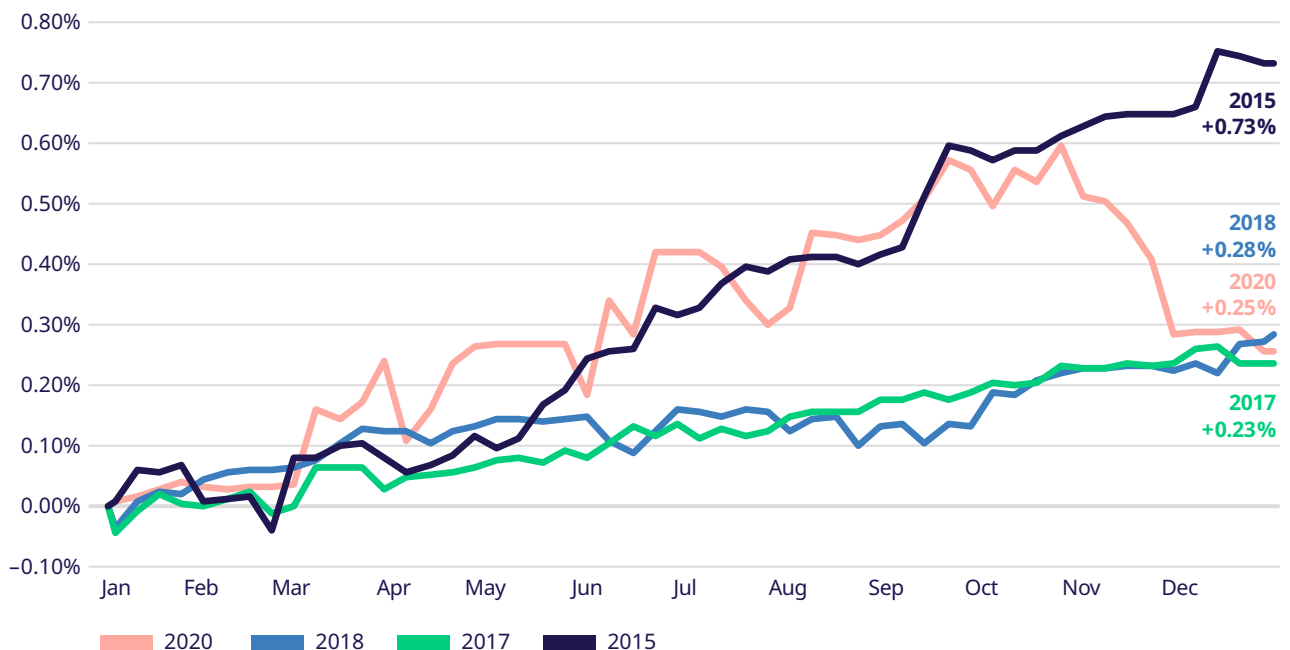
Selling these options would reduce the variance of returns in the portfolio by providing income in exchange for a portion of potential upside returns.

2017 and 2018 were characterized by range-bound high yield spreads in the 300–400bps corridor,

though there was a significant break-out from this range in a bout of volatility towards the end of 2018. The strategy also proved successful in 2015 when spreads were higher and spent the first half of the year in the 420–520bps range before a sustained fall in high yield bonds in the second half of the year, which saw spreads rise to 660bps.

However this strategy also proved effective during the pandemic effected 2020, with investors able to sell out-of-the-money calls at high prices due to the raised implied volatility. Spreads in US high yield rose as high as 1100bps in March before falling steadily throughout the remaining nine months of the year to 360bps.

Excess Return from Selling OTM Calls in a US Dollar High Yield ETF



Selling out-of-the-money call options on a US Dollar High Yield ETF with a notional equivalent to 20% of the overall portfolio. Deltas were around 35–50 depending due to strike price intervals. The rest of the portfolio was invested in US Dollar High Yield ETF shares with distribution reinvested.

Buying straddles for high volatility markets

While it can be difficult to anticipate large spikes in volatility, Eurex's US high yield ETF options offer tools for investors to hedge their portfolios during periods of raised volatility.

A long straddle position as an overlay to holding the underlying ETF, with a notional of 10% of the overall portfolio, would have reduced losses in the first quarter of 2020 by 0.76%. The strategy also offered investors the opportunity to close the position for more than 1.5% of excess return in late March.

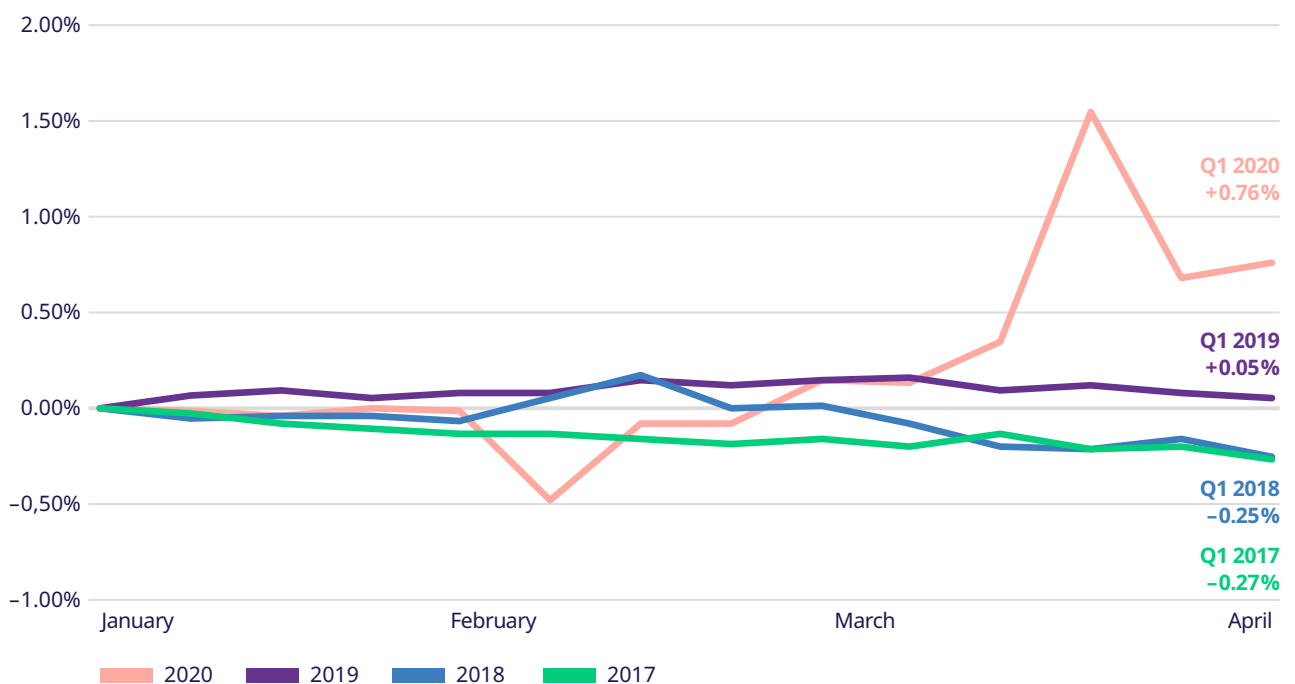
Closing the position would have offset losses in a high yield portfolio and provided capital to invest into markets with large price dislocations and opportunities,

with US high yield spreads being over 900bps in the first week of April.

While effective in the first quarter of 2020, continuing to hold and roll the position throughout the year of 2020 would have resulted in lower returns compared to the portfolio alone due to high implied volatility and subsequently raised option prices throughout the rest of the year.

A straddle would have resulted in losses in the first quarter in recent years, ranging from 0.05% to 0.27% in the absence of a broad market sell-off or rally, though it offered a slight gain in Q1 2019 from a rally in high yield.

Excess Return from Long Straddle in a US Dollar High Yield ETF



Buying at-the-money call and put options with the same strike in US Dollar High Yield ETF options with notionals equivalent to 10% of the overall portfolio. The rest of the portfolio was invested in US Dollar High Yield ETF shares with distribution reinvested.

Selling out-of-the-money strangles to generate income

Selling volatility in high yield is an additional method to generate extra income in a low rate and low volatility environment.

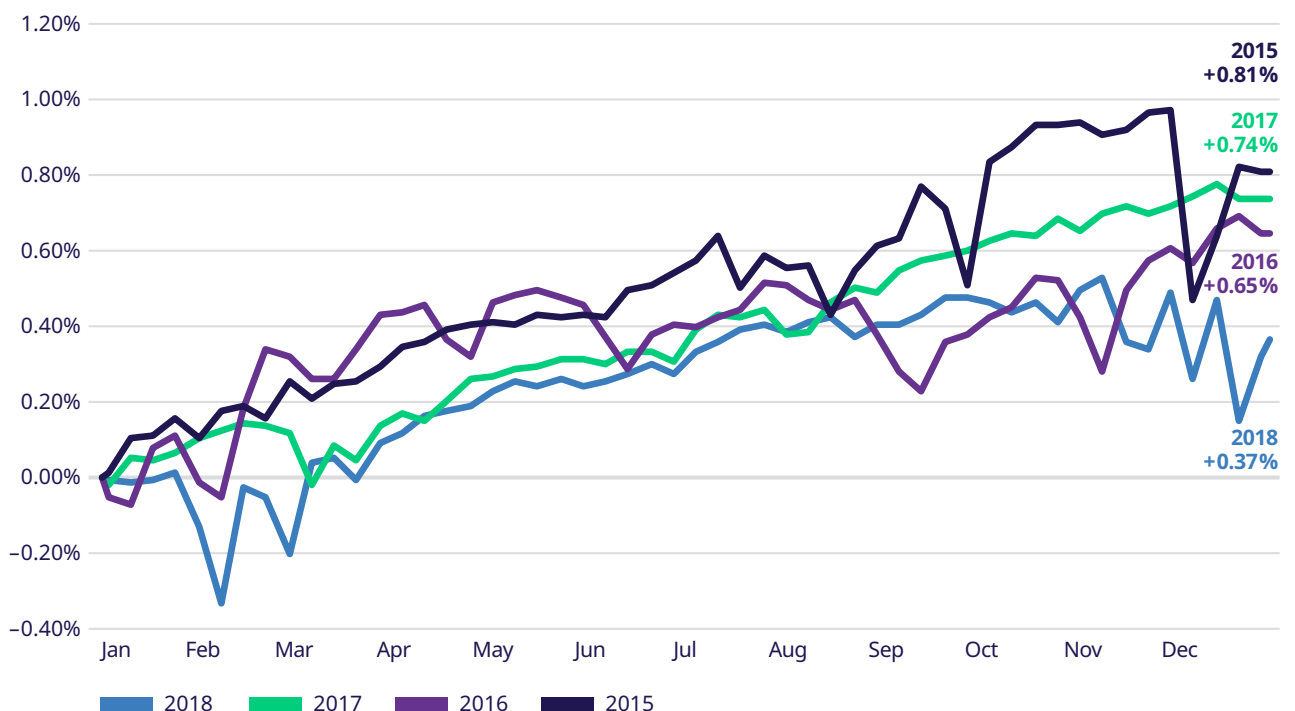
The graphs show the excess return from selling strangles with notional equivalent to 20% of the overall portfolio. The potential excess returns compared to solely holding the underlying ETF ranged from +0.81% in 2015 to +0.65% in 2016.

High yield spreads remained within a 100bps range in 2017 and for the majority of 2018 before a sell-off towards the end of the year, which led to the strategy

generating positive returns in both years. The strategy also proved profitable in 2015 despite a sell-off in the latter half of the year and in 2016, where high yield saw a rally at the start of the year.

The strategy comes at the expense of potential upside return and the potential for increased declines in the case of a large fall in the underlying.

Excess Return from Selling OTM Strangles in a US Dollar High Yield ETF



Selling out-of-the-money call and put options with deltas typically around 20–30 in US Dollar High Yield ETF options with notional equivalent to 20% of the overall portfolio. The rest of the portfolio was invested in US Dollar High Yield ETF shares with distribution reinvested.

Buying out-of-the-money calls to increase beta within a high yield portfolio

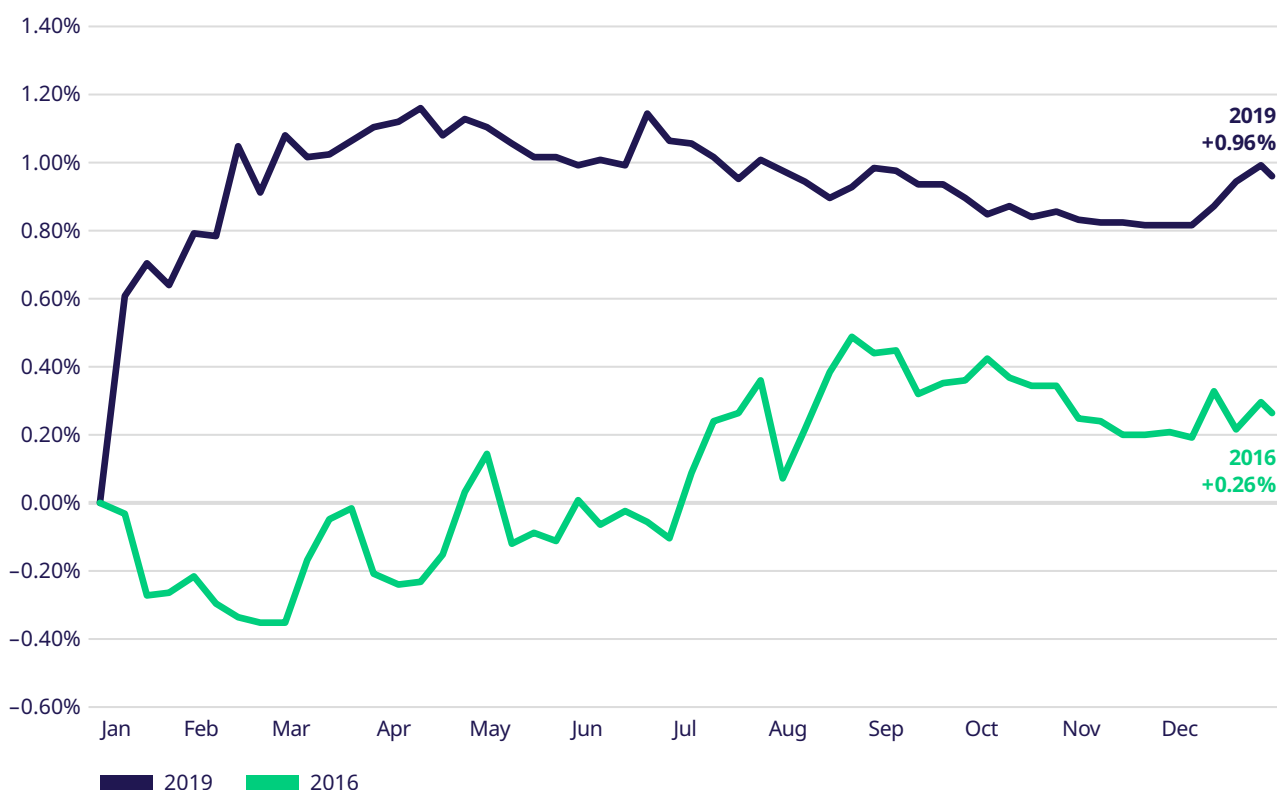
Following sharp sell-offs in high yield in 2015 and 2018, buying out-of-the-money calls to leverage beta within high yield portfolios would have generated excess returns in 2016's and 2019's recovering markets compared to just holding the underlying ETF.

High yield spreads started 2019 at 537bps after rising significantly in November and December 2018. The first quarter of 2019 saw spreads fall over 140bps and the year ended with spreads at 336bps, with call options allowing investors to benefit further

from the rally and resulting in 0.96% of excess return for the year.

2016 saw the sell-off from 2015 continue during the first two months of the year. The call option strategy allowed investors to benefit from the eventual recovery without having to time the market perfectly. The excess returns turned positive later in the year, with the portfolio with the call option overlay outperforming by 0.26%.

Excess Return from Long Call Positions in a US Dollar High Yield ETF



Buying out-of-the-money call options with deltas typically around 40 in US Dollar High Yield ETF options and with notionals equivalent to 20% of the overall portfolio. The rest of the portfolio was invested in US Dollar High Yield ETF shares with distribution reinvested.

Appendix

The strategies were calculated by taking position in the quarterly expiring options in the US Dollar High Yield ETF. These positions were rolled on 14 days before the expiry of the option, with the position in the upcoming expiry being closed and a position in the next quarterly expiry being opened.

Selling OTM Calls in a US Dollar High Yield ETF

Expiry	Mar15	Jun15	Sep15	Dec15	Mar16
Contract	Mar15 Call S91	Jun15 Call S91	Sep15 Call S90	Dec15 Call S87	Mar16 Call S83
Long/short	Short	Short	Short	Short	Short
Position open price	USD 0.75	USD 0.85	USD 0.80	USD 1.03	USD 0.92
Position open date	02/01/2015	06/03/2015	05/06/2015	04/09/2015	04/12/2015
Position close price	USD 0.40	USD 0.10	USD 0.03	USD 0.03	USD 0.57
Position close date	06/03/2015	05/06/2015	04/09/2015	04/12/2015	31/12/2015

Expiry	Mar17	Jun17	Sep17	Dec17	Mar18
Contract	Mar17 Call S88	Jun17 Call S89	Sep17 Call S89	Dec17 Call S89	Mar18 Call S88
Long/short	Short	Short	Short	Short	Short
Position open price	USD 0.35	USD 0.45	USD 0.39	USD 0.39	USD 0.38
Position open date	03/01/2017	03/03/2017	02/06/2017	01/09/2017	01/12/2017
Position close price	USD 0.35	USD 0.10	USD 0.06	USD 0.05	USD 0.37
Position close date	03/03/2017	02/06/2017	01/09/2017	01/12/2017	29/12/2017

Expiry	Mar18	Jun18	Sep18	Dec18	Mar19
Contract	Mar18 Call S88	Jun18 Call S87	Sep18 Call S86	Dec18 Call S86	Mar19 Call S84
Long/short	Short	Short	Short	Short	Short
Position open price	USD 0.30	USD 0.36	USD 0.25	USD 0.31	USD 0.39
Position open date	02/01/2018	02/03/2018	01/06/2018	07/09/2018	07/12/2018
Position close price	USD 0.01	USD 0.01	USD 0.15	USD 0.02	USD 0.21
Position close date	02/03/2018	01/06/2018	07/09/2018	07/12/2018	31/12/2018

Expiry	Mar20	Jun20	Sep20	Dec20	Mar20
Contract	Mar20 Call S89	Jun20 Call S86	Sep20 Call S85	Dec20 Call S85	Mar20 Call S87
Long/short	Short	Short	Short	Short	Short
Position open price	USD 0.22	USD 1.02	USD 1.63	USD 1.26	USD 0.89
Position open date	02/01/2020	06/03/2020	05/06/2020	04/09/2020	04/12/2020
Position close price	USD 0.06	USD 0.39	USD 0.51	USD 1.96	USD 1.02
Position close date	06/03/2020	05/06/2020	04/09/2020	04/12/2020	31/12/2020

Source: Bloomberg, prices shown as bid/ask prices on given dates on CBOE US Dollar High Yield ETF options

Long Straddle in a US Dollar High Yield ETF

Expiry	Mar20		Jun20	
Contract	Mar20 Put S88	Mar20 Call S88	Jun20 Put S85	Jun20 Put S85
Long/short	Long	Long	Long	Long
Position open price	USD 0.89	USD 0.83	USD 3.80	USD 2.53
Position open date	02/01/2020	02/01/2020	06/03/2020	06/03/2020
Position close price	USD 2.82	USD 0.05	USD 10.95	USD 0.01
Position close date	06/03/2020	06/03/2020	03/04/2020	03/04/2020

Expiry	Mar19		Jun19	
Contract	Mar20 Put S88	Mar20 Call S88	Jun20 Put S85	Jun20 Put S85
Long/short	Short	Short	Short	Short
Position open price	USD 1.93	USD 1.18	USD 1.86	USD 0.65
Position open date	02/01/2019	02/01/2019	01/03/2019	01/03/2019
Position close price	USD 0.00	USD 4.50	USD 0.87	USD 0.85
Position close date	01/03/2019	01/03/2019	05/04/2019	05/04/2019

Source: Bloomberg, prices shown as bid/ask prices on given dates on CBOE US Dollar High Yield ETF options

Long Call Positions in a US Dollar High Yield ETF

Expiry	Mar16	Jun16	Sep16	Dec16	Mar17
Contract	Mar16 Call S81	Jun16 Call S82	Sep16 Call S84	Dec16 Call S88	Mar17 Call S86
Long/short	Long	Long	Long	Long	Long
Position open price	USD 1.05	USD 1.13	USD 1.01	USD 0.73	USD 0.98
Position open date	04/01/2016	04/03/2016	03/06/2016	02/09/2016	02/12/2016
Position close price	USD 0.61	USD 1.48	USD 2.51	USD 0.01	USD 1.19
Position close date	04/03/2016	03/06/2016	02/09/2016	02/12/2016	30/12/2016

Expiry	Mar19	Jun19	Sep19	Dec19	Mar20
Contract	Mar19 Call S82	Jun19 Call S87	Sep19 Call S87	Dec19 Call S88	Mar19 Call S88
Long/short	Long	Long	Long	Long	Long
Position open price	USD 0.64	USD 0.28	USD 0.56	USD 0.51	USD 0.21
Position open date	02/01/2019	01/03/2019	07/06/2019	06/09/2019	06/12/2019
Position close price	USD 3.60	USD 0.02	USD 0.41	USD 0.01	USD 0.60
Position close date	01/03/2019	07/06/2019	06/09/2019	06/12/2019	31/12/2019

Source: Bloomberg, prices shown as bid/ask prices on given dates on CBOE US Dollar High Yield ETF options

OTM Strangles in a US Dollar High Yield ETF

Expiry	Mar15		Jun15		Sep15		Dec15		Mar16	
Contract	Mar15 Put S85	Mar15 Call S91	Jun15 Put S86	Jun15 Call S93	Sep15 Put S86	Sep15 Call S91	Dec15 Put S81	Dec15 Put S88	Mar16 Put S78	Mar16 Call S85
Long/short	Short	Short	Short	Short	Short	Short	Short	Short	Short	Short
Position open price	USD 0.90	USD 0.75	USD 0.70	USD 0.25	USD 1.30	USD 0.45	USD 1.14	USD 0.59	USD 0.69	USD 0.30
Position open date	02/01/2015		06/03/2015		05/06/2015		04/09/2015		04/12/2015	
Position close price	USD 0.10	USD 0.40	USD 0.10	USD 0.05	USD 0.91	USD 0.03	USD 0.16	USD 0.03	USD 1.37	USD 0.30
Position close date	06/03/2015		05/06/2015		04/09/2015		04/12/2015		31/12/2015	

Expiry	Mar16		Jun16		Sep16		Dec16		Mar17	
Contract	Mar16 Put S77	Mar16 Call S82	Jun16 Put S76	Jun16 Call S83	Sep16 Put S79	Sep16 Call S86	Dec16 Put S84	Dec16 Put S89	Mar17 Put S82	Mar17 Call S87
Long/short	Short	Short	Short	Short	Short	Short	Short	Short	Short	Short
Position open price	USD 1.11	USD 0.59	USD 0.86	USD 0.60	USD 0.64	USD 0.21	USD 1.02	USD 0.25	USD 1.08	USD 0.49
Position open date	04/01/2016		04/03/2016		03/06/2016		02/09/2016		02/12/2016	
Position close price	USD 0.10	USD 0.31	USD 0.05	USD 0.87	USD 0.04	USD 1.13	USD 0.26	USD 0.03	USD 0.52	USD 0.86
Position close date	04/03/2016		03/06/2016		02/09/2016		02/12/2016		30/12/2016	

Expiry	Mar17		Jun17		Sep17		Dec17		Mar18	
Contract	Mar17 Put S84	Mar17 Call S89	Jun17 Put S85	Jun17 Call S90	Sep17 Put S86	Sep17 Call S90	Dec17 Put S85	Dec17 Put S89	Mar18 Put S84	Mar18 Call S89
Long/short	Short	Short	Short	Short	Short	Short	Short	Short	Short	Short
Position open price	USD 0.62	USD 0.12	USD 0.76	USD 0.21	USD 0.77	USD 0.11	USD 0.64	USD 0.39	USD 0.74	USD 0.12
Position open date	03/01/2017		03/03/2017		02/06/2017		01/09/2017		01/12/2017	
Position close price	USD 0.13	USD 0.10	USD 0.08	USD 0.02	USD 0.05	USD 0.01	USD 0.10	USD 0.05	USD 0.53	USD 0.15
Position close date	03/03/2017		02/06/2017		01/09/2017		01/12/2017		29/12/2017	

Expiry	Mar18		Jun18		Sep18		Dec18		Mar19	
Contract	Mar18 Put S86	Mar18 Call S89	Jun18 Put S83	Jun18 Call S87	Sep18 Put S82	Sep18 Call S86	Dec18 Put S83	Dec18 Put S86	Mar19 Put S80	Mar19 Call S84
Long/short	Short	Short	Short	Short	Short	Short	Short	Short	Short	Short
Position open price	USD 0.50	USD 0.05	USD 1.03	USD 0.36	USD 0.72	USD 0.25	USD 0.63	USD 0.31	USD 0.90	USD 0.39
Position open date	03/01/2018		02/03/2018		01/06/2018		07/09/2018		07/12/2018	
Position close price	USD 0.68	USD 0.04	USD 0.08	USD 0.01	USD 0.04	USD 0.15	USD 0.85	USD 0.02	USD 1.48	USD 0.21
Position close date	02/03/2018		01/06/2018		07/09/2018		07/12/2018		31/12/2018	

Source: Bloomberg, prices shown as bid/ask prices on given dates on CBOE US Dollar High Yield ETF options

Contact us

EUREX SALES

Vassily Pascalis
T +44-20-78 62-72 11
vassily.pascalis@eurex.com

FIXED INCOME ETD PRODUCT DESIGN

Rex Jones
T +49-69-211-178 06
rex.jones@eurex.com

© Eurex, June 2022

Published by

Eurex Frankfurt AG
Mergenthalerallee 61
65760 Eschborn
Germany

www.eurex.com

ARBN Number

Eurex Frankfurt AG ARBN 100 999 764

© 2022 by Deutsche Börse AG. Eurex®, the EX® and EC®-Logo are registered trademarks of Deutsche Börse AG. This publication is published for information purposes only and does not constitute accounting advice, investment advice or an offer, solicitation or recommendation to acquire or dispose of any investment or to engage in any other transaction. While reasonable care has been taken in the preparation of this publication neither Eurex Frankfurt AG, nor any of its affiliates make any representation or warranty regarding the information contained herein. Customers should consider the legal, accounting and regulatory requirements in the jurisdictions relevant to them before using Eurex® products or services. All descriptions, examples and calculations contained in this publication are for illustrative purposes only.

Find out more online at
www.eurex.com/etf