

Eurex Credit Index Futures

Innovating the Listed Euro Credit Ecosystem

December 2023

Agenda

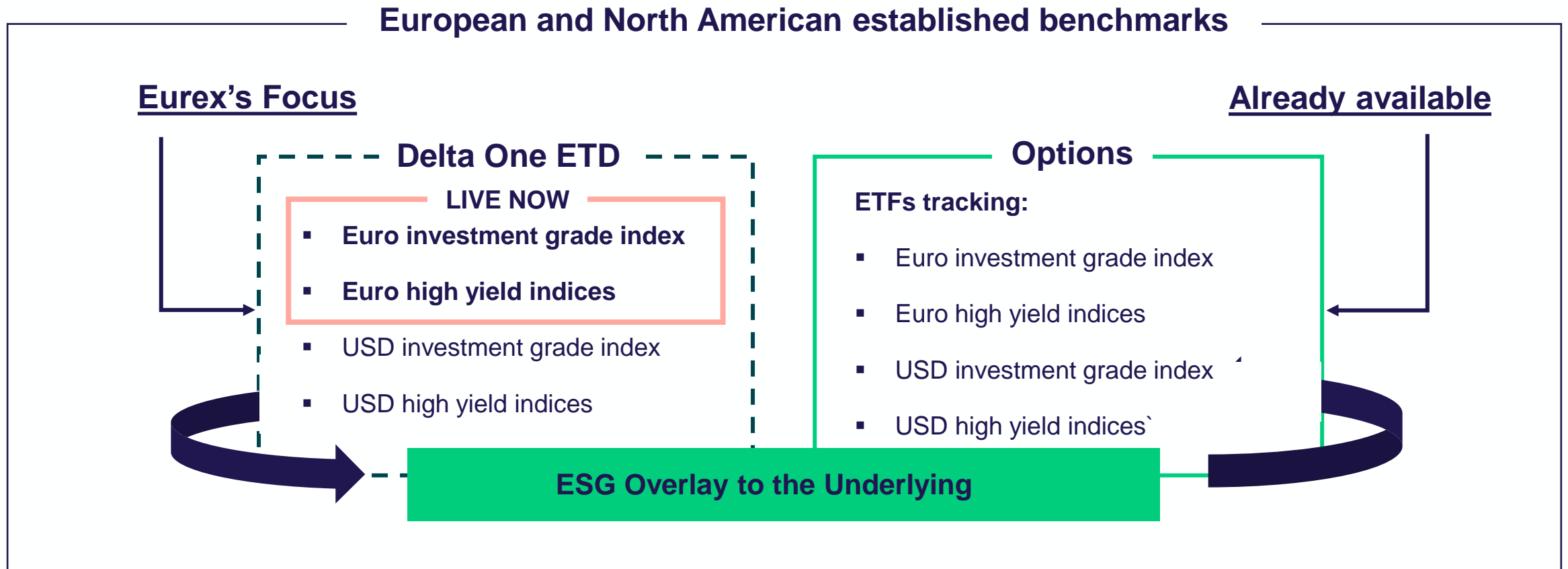
- 1** **Eurex Credit Derivatives at a glance**
- 2** **Understanding the risk and return characteristics of Credit Index Futures**
- 3** **Integrating Credit Index Futures in the credit ecosystem**
- 4** **Comparison with iTraxx Credit Default Swap spreads**
- 5** **Accessing excess return of the Euro investment grade market with futures**

1 Eurex Credit Index Derivatives at a glance

1. What was the driver of launching Credit Index Futures?
2. What Credit Index Futures are available at Eurex?
 - A. Euro Investment Grade Index Futures
 - B. Euro High Yield Index Futures

What was the driver of launching Credit Index Futures?

Eurex does not aim to have single product launches but targets the whole credit ecosystem via a portfolio of products and underlyings.



A Euro Investment Grade Index Futures

Bloomberg MSCI Euro Corporate SRI Index Futures

1. Index Methodology
2. Comparison with non-ESG Euro investment grade benchmarks

Eurex Futures on Euro Corporate SRI Index: Contract Specification






Bloomberg ticker of the index: RECMTREU Index	
Contract Standard	Bloomberg MSCI Euro Corporate SRI Total Return Index Value Unhedged EUR.
Eurex Product Code	FECX
Contract Value	EUR 1,000 per index point which corresponds to around EUR 150,000 in notional.
Minimum Block Trade size	30 corresponding to ca. EUR 5,000,000 in notional.
Price Quotation Tick Size / Tick value	In points with two decimal places / 0.01 Points = EUR 10.
Fees	A-accounts: EUR 0.50 for Orderbook; EUR 0.75 for Off-book. P- and M- accounts: EUR 0.40 for Orderbook; EUR 0.60 for Off-book.
Trading Hours	8:00 a.m. to 7:00 p.m. CET.
Contract Months	The three nearest quarterly months of the March, June, September and December cycle.
Last Trading Day/ Final settlement day	Third Friday of each maturity month if this is an exchange day; otherwise, the exchange day immediately preceding that day; close of trading in the maturing futures on the last trading day is 17:15 CET. Final settlement day is the exchange day immediately following the last trading day.
Final settlement Price	The final settlement price is established by Eurex on the final settlement day of the contract and is based on the closing price of the index (TR, EUR) on the last trading day.
Daily settlement price	Determined from the volume weighted average of all transactions during the minute before 17:15 CET (reference point), provided that more than 5 trades transacted within this period.
Settlement	Cash settlement , payable on the first exchange day after following the expiration day.
Vendor Codes	Bloomberg: LXYA Index; Refinitiv RIC: 0#FECX:

The Euro Corporate SRI Index (RECMTREU Index)











Key Index Statistics	
Components	3,015
Market Value	EUR 1.963 tn
Amount Outstanding	EUR 2.225 tn
Average Coupon	1.55
Average Maturity	5.06
Average Duration	4.72
Rating	A3 / BAA1

Methodology

Index

- Investment Grade, Euro-denominated corporate bond universe satisfying the below criteria:
 -  At least 1 year until final maturity
 -  EURO denominated
 -  Investment Grade (rating BBB or higher)
 -  Minimum amount outstanding of Eur300MM
 -  Fixed Coupon

Exclusions

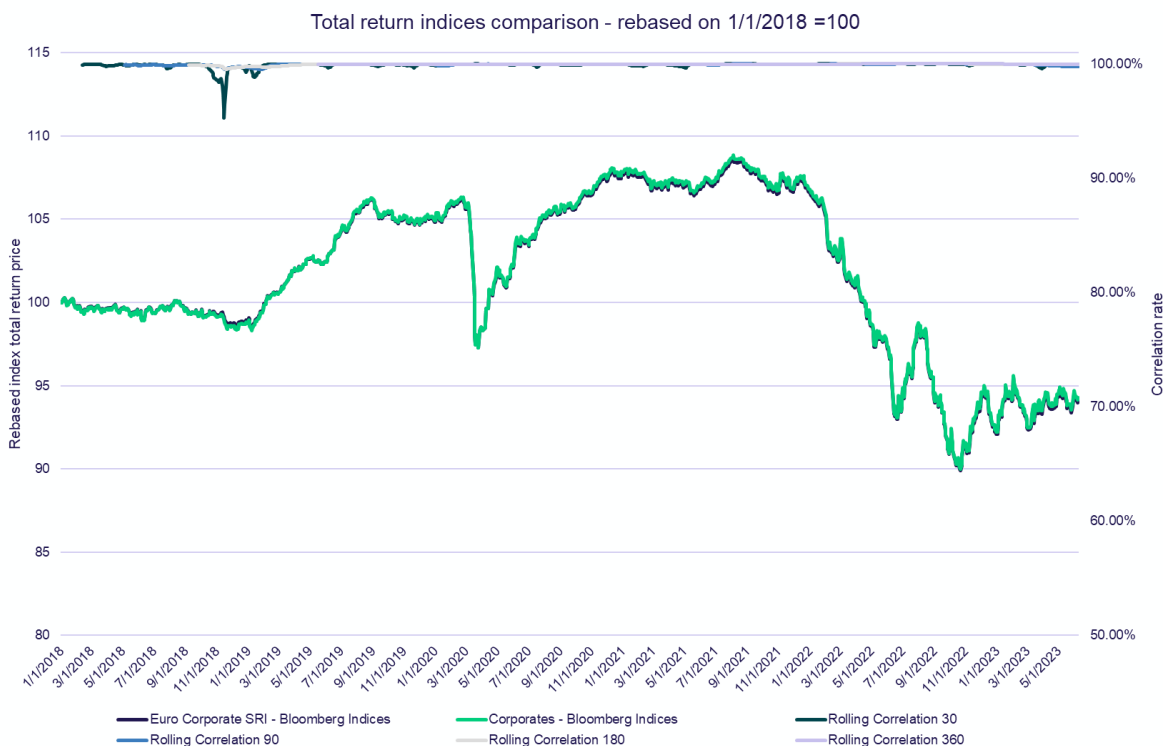
- MSCI Business Involvement Screening: exclude issuers involved in business lines/activities as per the standard Bloomberg MSCI SRI screen:
 -  Alcohol
 -  Gambling
 -  Nuclear Power
 -  Civilian Firearms
 -  Thermal Coal
 -  Tobacco
 -  Adult Entertainment
 -  Genetically Modified Organisms
 -  Military Weapons
 -  Unconventional Oil & Gas
- MSCI ESG Controversy Score: exclude issuers with a Red (0) score – i.e. companies involved in a current, major ESG problem.

Total return comparison with the Euro Corporate Aggregate Index (LECPTREU)

All relevant index key statistics closely match the benchmark



- The ESG Exclusion index closely tracks the Euro Corporate IG benchmark



- The fixed income ESG space lacks an official index benchmark
- The exclusion index plays as de-facto benchmark and was very well received by the buy-side community since its launch

Statistics of Total Returns – 2018/01 to 2023/06

Statistics	SRI Exclusion	Euro Corporate (benchmark)
Annual Average Returns	-1.43%	-1.39%
Annual Average STD	4.34%	4.38%
Average Sharpe Ratio Overall	-0.38	-0.37
Min Daily Return	-2.20%	-2.22%
Max	1.43%	1.42%

Source: Bloomberg terminal

B Euro High Yield Index Futures

Bloomberg Liquidity Screened Euro High Yield Index Futures

1. Contract Specifications
2. Index Methodology
3. Comparison with other Euro high yield index benchmarks

Eurex Futures on Euro High Yield Index (non-ESG): Contract Specification

Bloomberg ticker of the index: BEHLTREU Index


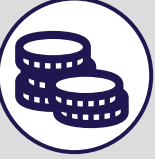






Contract Standard	Futures on Bloomberg Liquidity Screened Euro High Yield Bond Total Return Index Value Unhedged EUR
Eurex Product Code	FEHY
Contract Value	EUR 200 per index point which corresponds to around EUR 50,000 in notional.
Minimum Block Trade size	100 corresponding to ca. EUR 5,000,000 in notional.
Price Quotation Tick Size / Tick value	In points with two decimal places / 0.02 Points = EUR 4.
Fees	A-accounts: EUR 0.50 for Orderbook; EUR 0.75 for Off-book. P- and M- accounts: EUR 0.40 for Orderbook; EUR 0.60 for Off-book.
Trading Hours	8:00 a.m. to 7:00 p.m. CET.
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Daily settlement price	Determined from the volume weighted average of all transactions during the minute before 17:15 CET (reference point), provided that more than 5 trades transacted within this period.
Settlement	Cash settlement , payable on the first exchange day after following the expiration day.
Vendor Codes	Bloomberg: AHWA Index; Refinitiv RIC: 0#FEHY:

Index Methodology

The Bloomberg Liquidity Screened Euro High Yield Index provides a reliable benchmark for the Euro HY space and is well correlated with the iBoxx HY index.

Key Index Statistics	
Components	532
Market Value	EUR 260.9 bn
Amount Outstanding	EUR 301.1 bn
Average Coupon	3.57
Average Maturity	3.93 Y
Average Duration	3.55 Y
Rating	BA3 / B1

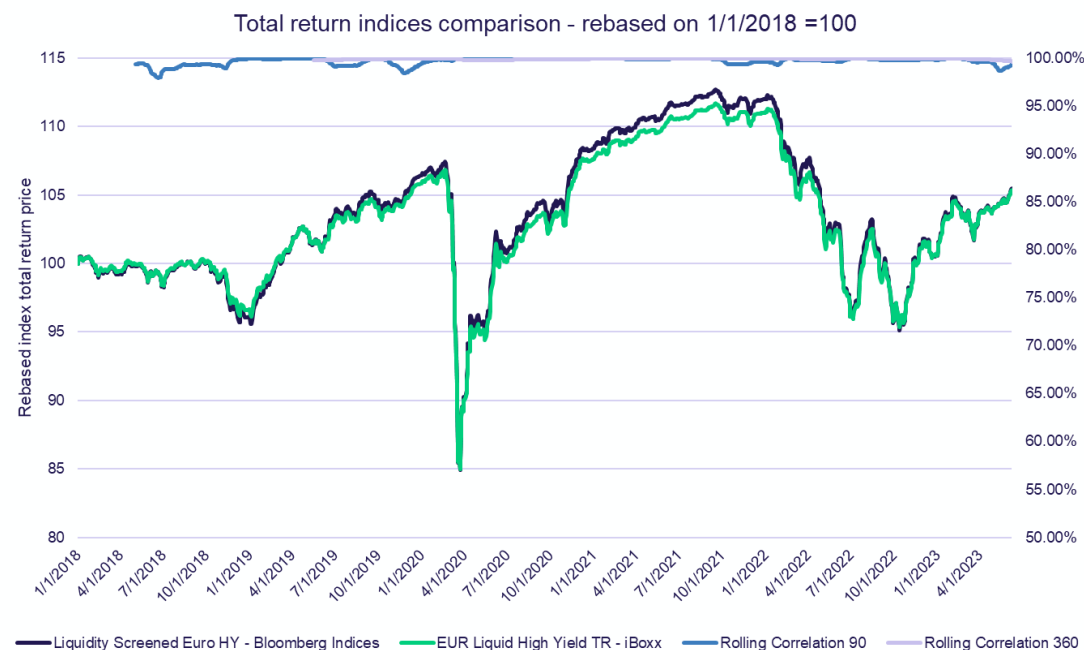
EUREX

Methodology	
Index	<ul style="list-style-type: none"> High Yield Euro-denominated corporate bond universe satisfying the below criteria: <ul style="list-style-type: none">  Between 1 year and 15 years until final maturity  EURO denominated  Below Investment grade (rating between BB+ and CCC-)  Minimum amount outstanding of Eur250MM  Fixed Coupon
	<p>Markit iBoxx EUR Liquid High Yield Index TRI differences with the Bloomberg benchmark</p> <ul style="list-style-type: none">  Maturity <ul style="list-style-type: none"> New bonds considered for inclusion have a maturity between 2 and 10.5 years. This lowers the average maturity of the iBoxx to 3.7 Y and the average duration to 3.26Y  Debt Seniority <ul style="list-style-type: none"> Subordinate bonds are included in the iBoxx and make up ca. 5% of the Index. These bonds have more equity-like characteristics, hence not included in the Bloomberg one.  Geography <ul style="list-style-type: none"> LATAM, Middle East and North-Africa company issuances are included in the the iBoxx. Bloomberg does not include these countries, but have larger exposures to North America, Europe and Asia.
Differences with iBoxx	

Total return comparison between the Bloomberg and iBoxx indices

Indices share very similar risk-return characteristics.

- The daily returns since 2015 show that the two indices are very well correlated even when looking at the short-term correlation rates (90-day window).
- The differences between the two index methodologies / inclusion criteria saw the Bloomberg index outperforming the Markit iBoxx index at an annualized rate of 4bps since 2018. The annualized tracking error between the 2 indices amounts at ca. 94bps.



Statistics of Total Returns – 2018/01 to 2023/06

Statistics	Bloomberg HY Index	iBoxx HY Index
Annualized Average Returns (%)	1.55%	1.50%
Annualized Average STD (%)	6.15%	5.76%
Average Sharpe Ratio Overall	0.22	0.22
Min Daily Return	-3.93%	-3.86%
Max Daily Return	2.13%	1.96%

Source: Bloomberg terminal

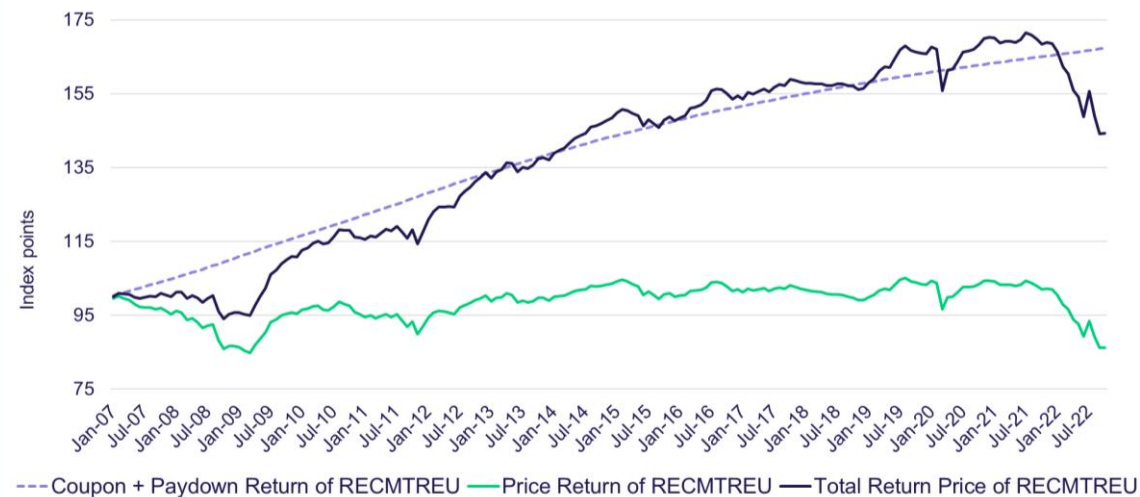
2 Understanding the risk and return characteristics of Credit Index Futures

1. Total Return Index prices – a practical example
2. Credit Index Futures price decomposition – how are these products priced

Total Return Indices Factor

In both, the “clean” performance of the bonds and the return from re-investing the coupons paid in the index composition.

Difference between total and price return index calculation



Total return index calculation

- Total return indices measure the performance of the underlying bonds basket.
- It tracks security price returns as well as coupon and paydown returns

Key Observations

- Between 2007 and 2022, the **price return** of the index is -13.5%, whereas the **total return increase by 44%**.
 - This significant difference is due to **coupon returns** being considered in **the total return calculation**.
- In a total return index, **the coupons** paid by the underlying bonds are **reinvested in the index composition**, hence they generate extra return
- The index is able to replicate the **returns of a corporate bond portfolio** that re-invests coupons in itself

Price return index calculation

- Price return indices measure only the rate of return of the underlying bonds basket, relying only on the aspect of capital appreciation or depreciation of the index’s components.
- Hence it neglects the income generated by the assets.

The formula for pricing the index future is broken down in its single transactions, showing the interactions between financing and lending

Pricing formula (Theoretical price)

LXYA Index Future price = RECMTREU index price
+ Cost of financing – lending/borrowing income

Keep in mind



Expected coupon payments are not explicitly included in the futures price formula. You get exposure to coupons by holding the future position, as coupon payments are reflected in the index spot price.

1 Borrow cash

Cash is borrowed to buy the underlying bond basket

3 Lend the bond basket

The U/L bond basket is **lent out** until maturity to get additional income

4 Receive back the bond basket

The bonds basket is given back with a **lending commission**

6 Return cash

The cash that was borrowed is paid back with an **interest**

Building position

2 Buy the underlying bond basket

The borrowed cash will be used to buy the bonds basket

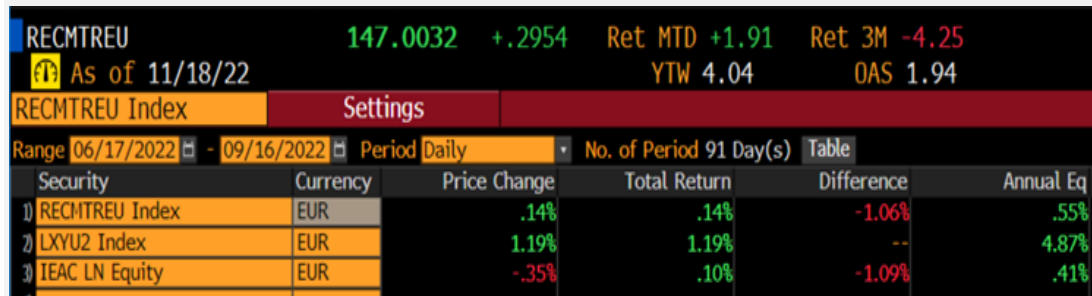
Closing position

5 Sell the bond basket

We receive **coupon** and **price performance** of the underlying index

A long position in LXYA Index allows investors to synthetically lend the underlying bond basket, and can outperform the underlying index

Example from the <COMP> function of Bloomberg



RECMTREU	147.0032	+.2954	Ret MTD +1.91	Ret 3M -4.25	
As of 11/18/22			YTW 4.04	OAS 1.94	
RECMTREU Index	Settings				
Range 06/17/2022 - 09/16/2022	Period Daily	No. of Period 91 Day(s)	Table		
Security	Currency	Price Change	Total Return	Difference	Annual Eq
1) RECMTREU Index	EUR	.14%	.14%	-1.06%	.55%
2) LXYU2 Index	EUR	1.19%	1.19%	--	4.87%
3) IEAC LN Equity	EUR	-.35%	-.10%	-1.09%	.41%

- **RECMTREU Index** = Bloomberg MSCI Euro Corporate SRI Index
- **LXYU2 Index** = Euro Corporate SRI Index Future expiring on 17th September 2022
- **IEAC LN Equity** = iShares Euro Corporate Aggregate ETF

Key Observations

- A long position in LXYA Index would have yielded a return of 1.19% in Q3 2022 despite the flat performance of the underlying index.
- The same position on a comparable ETF or on the underlying bonds basket would have resulted in a significantly lower payoff.

Conclusions

- The additional source of returns in LXYA Index is the **income generated by lending the U/L bonds basket**
- Earnings from lending the bonds basket were higher than the financing cost in Q3 2022
- This resulted in a **negative cost of carry** for the future price, which **yielded additional returns** when holding a long position.

3 Integrating Credit Index Futures in the credit ecosystem

1. What are the most common use cases for Eurex Credit Index Futures?
2. How can I trade Eurex Credit Index Futures?
3. What's the latest trading statistics in Euro Corporate SRI Index Futures?

Eurex credit product suite allows market participants to access the Euro credit derivatives market via a standardized, liquid and transparent solution

Key Contract Specifications

Euro IG futures	LXYA Index
Euro HY Futures	AHWA Index
Minimum block trade size	EUR 5mn in notional
Expiry cycle	Quarterly
Settlement type	Cash Settled

€ IG Key Index statistics

# Components / Issuers	3080 / 728
Market Value	EUR 2.026 tn
Average Duration	4.39 years

€ HY Key Index statistics

# Components / Issuers	507 / 302
Market Value	EUR 250.3 bn
Average Duration	3.15 years

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Competitive advantages vs. traditional credit



Liquidity: ample pool of liquidity on- and off-book, with wide range of supporting market makers



Efficient Risk Management: Futures have low initial margin charge (EUR 3.5mn for every EUR 100mn of notional)
Close replication of returns of the Euro corporate bond index benchmarks market



Additional Alpha: Ability to implement portfolio overlay as well as systematic trading strategies

Product use cases



Hedging purposes: get short exposure to Euro corporate bond market
Manage your beta vs. Euro corporate bonds



Cash & Liquidity management: Deploy available un-invested cash to get unfunded exposure to market returns



Portfolio overlay: synthetic replication of corporate bond benchmarks to get additional market exposure

How does it compare to ...

iTraxx Europe & Crossover

- iTraxx Indices have only **125 issuers for IG and 75 issuer for HY**
- The issuers are **equally weighted**
- iTraxx indices rebalance **every 6 months** – Eurex **Index futures monthly**
- iTraxx indices have higher initial margin charges

Total Return Swaps

- Total Return Swaps (TRS) have high margin charges
- TRS are **bilaterally cleared**
- LXYA and AHWA have a open and **transparent order-book**
- Thanks to variation margins, **Eurex index futures are marked-to-market** daily

Fixed Income ETFs

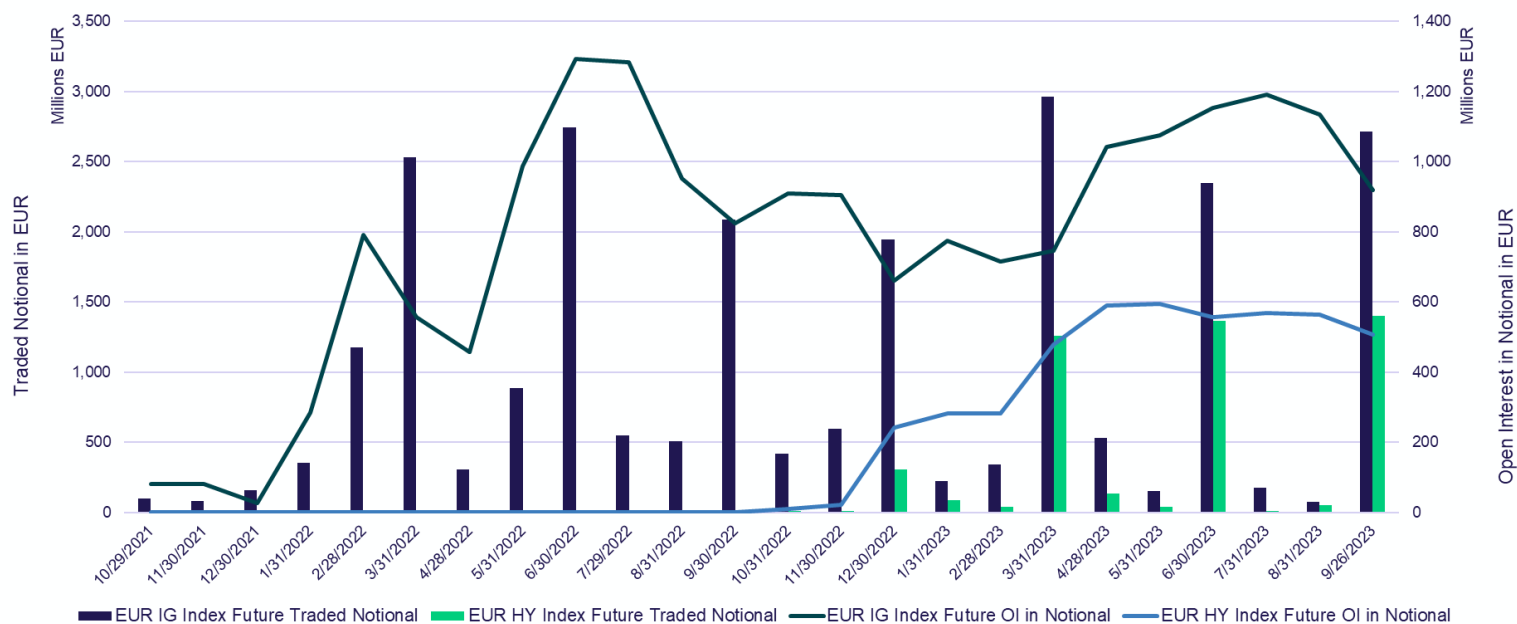
- ETFs are **fully funded**
- LXYA allows to get **leveraged exposure** to the total return of the index
- ETFs charge a **annual management fee**
- Most liquid ETFs pay **semi-annual dividends**
- LXYA and AHWA are futures on a **total return index** that reinvests the bonds' coupons

New Credit Index Futures continue to develop, with Euro IG trading over € 20bn in notional since 2022, and High Yield trading close to € 5bn since launch in October 2022

- Our end-customer consultations revealed the necessity to **use a portfolio of products** to express view on credit: ETF and index derivatives, Cash bonds (portfolio trades) and OTC (primarily TRSs)
- Ultimately, the choice of the preferred instrument **will be driven by costs**. ETDs are the prime candidate to succeed in the derivatives space, as they are the **most cost-effective solution**

€HY and €IG Index futures Volume and OI development

Credit index futures - volume development since launch in Notional traded



Planned Product Roadmap



Q3 2023

- Decision on the index underlying and project kick-off for GBP and \$EM
- Sell-side consultations and LPs acquisition



Q4 2023

- Product launch of \$EM index and GBP corporate Index futures



Q1 2024

- Consultation on **USD Investment Grade and High Yield** index futures
- Launch of the two products to complete the Global offering

Wholesale Offering

Eurex Credit Index Futures can also be traded outside the order book on a bilateral basis, and subsequently booked to Eurex Clearing through the use of our Eurex T7 Entry Service.

Block Trading

- Members are able to **enter bilaterally agreed off-book** transactions into the trading and clearing system. Registered off-book trades are then automatically cleared like regular exchange transactions.
- The Block Trade Entry facility is **fully electronic and integrated into members' processes** (the exchange defines a minimum number of contracts for a Block Trade – see below).

Basis Trading

- **Basis trading** can also be facilitated by the Exchange for Physicals - Index (EFP-I) functionality. An EFP-I **against an ETF or a basket of bonds** (the “Reference Instrument”) can be entered , subject to certain criteria regarding notional size and correlation.
- Furthermore, Eurex Credit index Futures can themselves be used as a “Reference Instrument” for an EFP-Fin trade **against a government bond futures** trade.

Trade at index Close (TAIC)

- **Trade at index Close (TAIC)** allow counterparties to **agree in advance the price** at which to trade a future by applying a basis **on the respective index close**.
- As TAIC trades are entered as the EFP-Index.

Minimum Entry Size for Block Trades

- Minimum block entry size: **30 contracts for LX YA Index / Euro Investment Grade Index Futures** and **100 contracts for AHWA Index / Euro High Yield Index Futures** (ca. 5,000,000 EUR in traded notional).

Liquidity Providers

Liquidity Providers On-Screen		
Company	Contact	Phone Number
FlowTraders	Jasper Jansen nlbon@nl.flowtraders.com	+3120 7998621
Société Générale	Aziz Tikouirt Arnaud Muller Remy Benchetrit Nicolas Lesceu list.par-mark-fic-trd-rat-etf@socgen.com	+33 142140365 +33 142149818
Susquehanna	Ronan Henderson SIS-Sales-ETF@sig.com	+353 1 802 8018

Liquidity Providers Off-Screen		
Company	Contact	Phone Number
Bank of America	Joel Stainton Joel.Stainton@bofa.com BofA_Futures_EMEA@bofa.com	+44 207 996 1885
FlowTraders	Jasper Jansen nlbon@nl.flowtraders.com	+3120 7998621
Goldman Sachs	Antony Harden Douglas Kerr Futures-Voice-EQ-EMEA@gs.com gs-futures@ny.email.gs.com	+33 14212 1566 +44-207 7741705
Jane Street	Europe Sales Team europesales@janestreet.com	+44 203 787 3333
JP Morgan	EMEA Futures & Options Sales Execution --- Only LXY Index // FECX --- FO_EMEA_Conti_Desk@jpmorgan.com	+33 140 154 938
Société Générale	Aziz Tikouirt Arnaud Muller Remy Benchetrit Nicolas Lesceu list.par-mark-fic-trd-rat-etf@socgen.com	+33 142140365 +33 142149818
Susquehanna	Ronan Henderson SIS-Sales-ETF@sig.com	+353 1 802 8018

Futures and Indices on Bloomberg – availability, embedded analytics and index composition transparency

LXYZ2 147.92 +.25 ✓ 147.45 / 148.03 25x25 Prev 147.67
 At 10:19d Vol 278 Op 147.90 Hi 148.00 Lo 147.88 OpenInt 6169

LXYZ2 Index

1) Contract Information 2) Linked Instruments
 LXYZ2 Index BB Euro Corp SRI Dec22 EUX-Eurex
 3) Notes
 Futures on Bloomberg MSCI Euro Corporate SRI Total Return Index Value Unhedged EUR
 Launch Date: 2021/09/27

- The index futures can be found on the terminal by **LXYA Index (AHWA Index for Euro High Yield)**
- **Price, volume and open interest** charts available via **<GP>**
- **Trade and quote recap** on the products available via **<QR>**
- See the **contract expiries** available via **<CT>**
- Access the **contract specs** of the product via **<DES>**

RECMTREU Index Display Alert Export

Bloomberg MSCI Euro Corporate SRI Total Return Index Value Unhedged EUR

Members Index Turnover

Group by None Returns Projected As of 11/21/2022

Add Column

ISIN	Description	Ccy	Price	YTW	OAD	Par Val	MV (USD)	Weight
1) XS0525602339	RABOBK 4 1/8 07/14/25	EUR	103.247	2.807	2.490	2,750,000	2,949,269	0.14377
2) XS1586555945	VW 1 7/8 03/30/27	EUR	92.165	3.827	4.080	2,500,000	2,390,707	0.11654
3) XS2461234622	JPM 1.963 03/23/30	EUR	88.402	4.036	5.816	2,500,000	2,296,796	0.11197

- Index Underlying can be found on the Terminal by **RECMTREU Index (BEHLTREU Index for Euro High Yield)**
- **Full range of analytics** at glance available on **<DES>**, including **Total Return breakdown** available on the tab “Returns”
- **Full list of index components** available via **<MEMB>**
- **Comparative total return analysis** vs. futures and ETFs via **<COMP>**
- **Index analytics** (OAS, OAD, Duration, etc.) available via **<FLDS>** and accessible on **historical and real-time basis** via excel API

PORT

1) View 2) Actions 3) Settings 4) Trade Simulation Portfolio

Characteristics Holdings Tracking Error/Volatility VaR Scenarios Performance Attribution Intraday

Main View Summary Cash Flows Liquidity Risk Key Rates

(RECMTREU) Bloomberg vs Default (None) by POINT:ISIN in EUR As of 11/21/22

Date Trend

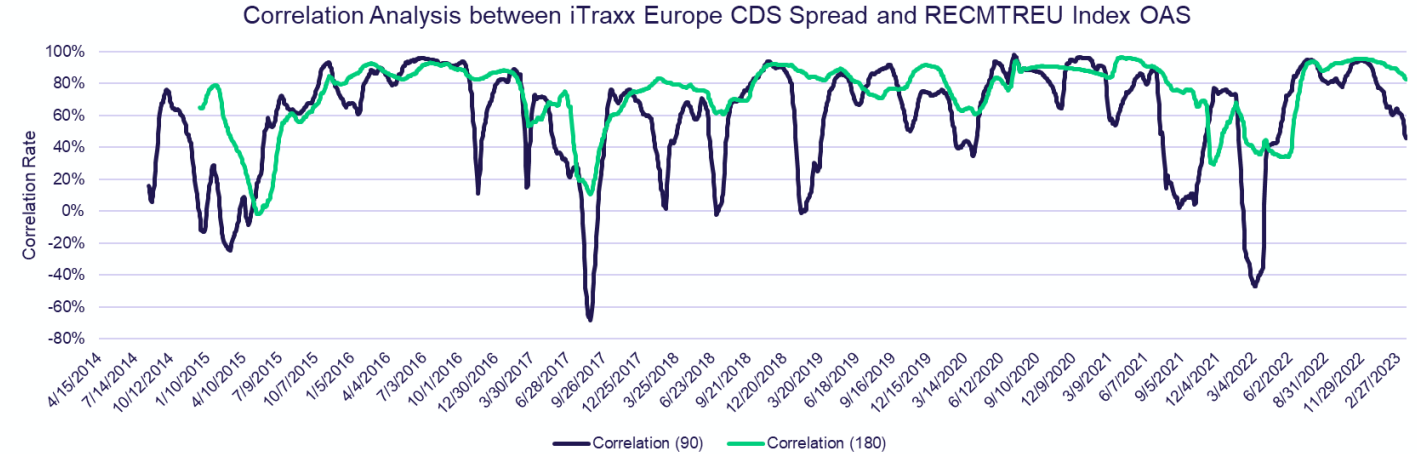
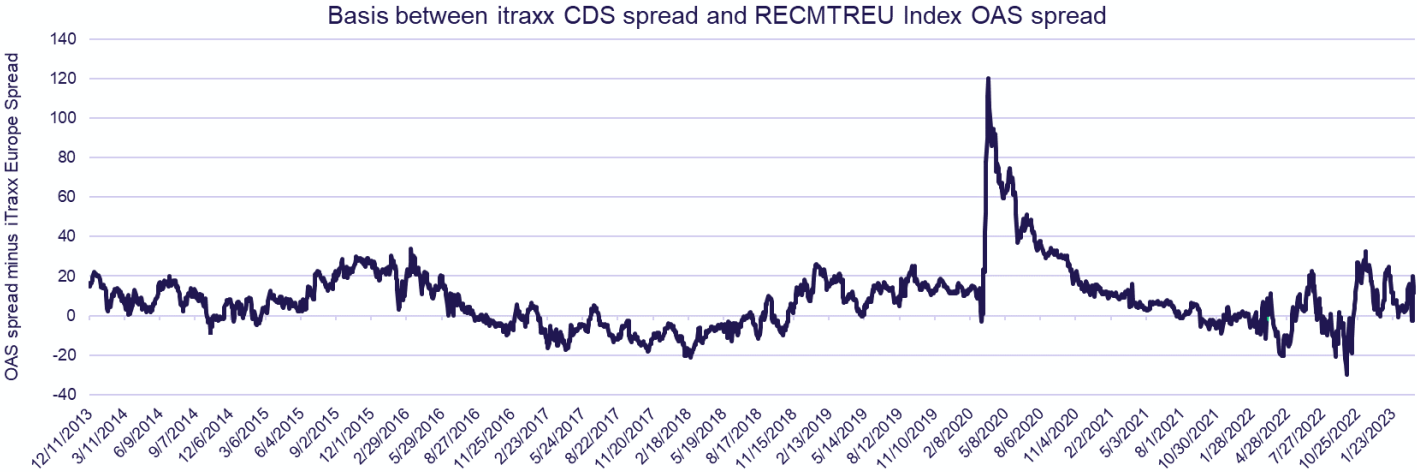
Name	Wgt	Mkt Val	Px Close	Pos	Yield to Mat	Yield to Worst	OAD	OAD [Ctr]	OAC	OAS
(RECMTREU) Bloomberg MSCI E...	100.00	2,001,297,781			3.96	3.96	4.58	4.5801	0.32	192.34
• AT0000A1D5E1	0.02	388,646			5.57	5.57	2.97	0.0006	0.11	363.81
• AT0000A2GH08	0.03	667,468			3.67	3.67	4.30	0.0014	0.21	172.07
• AT0000A2J645	0.02	431,350			6.07	6.07	3.65	0.0008	0.14	326.7

- Further analytics offering accessible when loading RECMTREU Index (BEHLTREU Index for Euro High Yield) on **<PORT>**
- Breakdown the index in its **key sector / maturities / ratings and up to single security level (ISIN)**
- **Analyse cash flows** on single index components historically from tab: **Cash Flows**
- Decompose the index in its **key rates risk** components

4 Comparison with iTraxx Credit Default Swap spreads

1. Comparing iTraxx Europe spread performance with Euro Corporate SRI Index OAS
2. Comparing iTraxx Crossover spread performance with Liquidity Screened Euro High Yield Index OAS

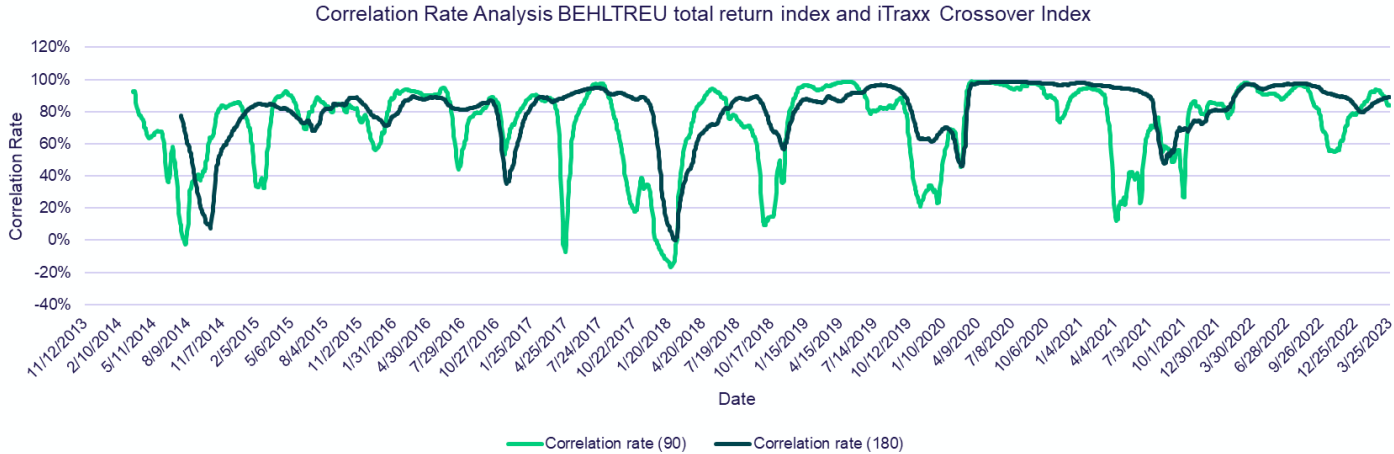
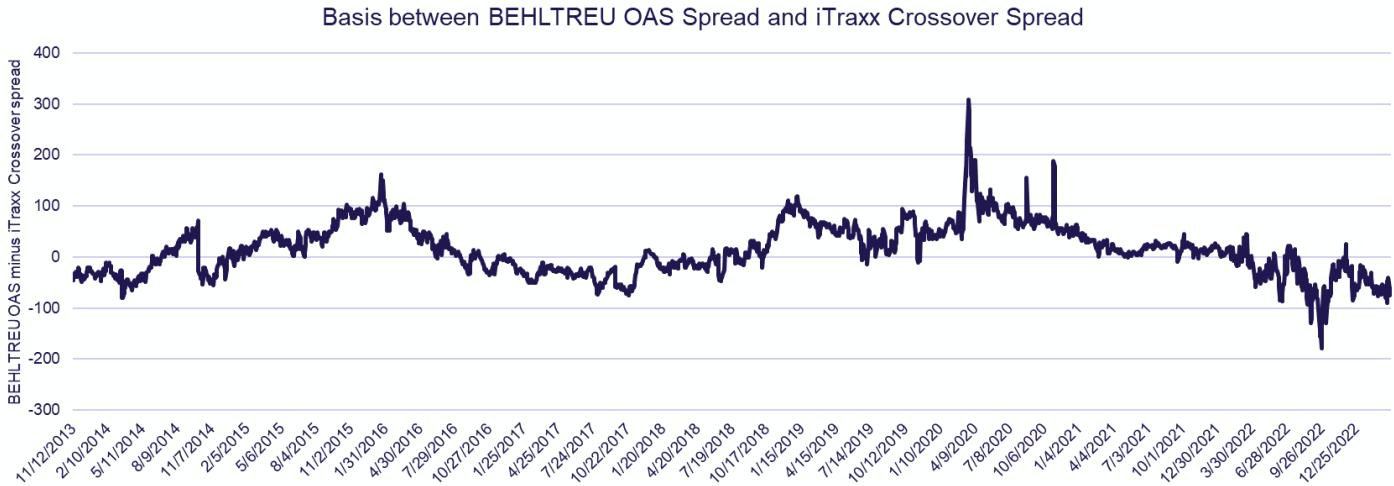
The basis between iTraxx Europe spread and Euro Corporate SRI Index OAS can be very volatile, resulting in a weak and unstable correlation rate



Comments

- The basis between **iTraxx CDS Spread** and **RECMTREU** moved significantly in 2021 and 2022.
- The average value over the past 10 years was 8.16bps
- The widest difference between **itraxx CDS Spread** and **RECMTREU** was at its peak at 120 which happened on March 25th 2020.
- The analysis shows that the correlation (180 days), between the two spreads remains above 60% most times.
- However, it remains subject to significant drop, most notably in times of higher volatility
- Using a shorter correlation window (90 days), we see the statistic becoming more unstable.
- The correlation rate often falls in the negative territory, and is subject to frequent oscillations

Similarly to €IG indices, the basis between BEHLTREU OAS and iTraxx Crossover spread is volatile while the correlation is weak and unstable



Comments

- The basis between **BEHLTREU index spread** and **iTraxx Crossover index spread** spiked during the start of the Covid19 pandemic.
- In 2022, the basis spiked again close to the peak of 2020
- The widest difference between **itraxx CDS Spread** and **BEHLTREU** was at its peak at 698 which happened on March 18th 2020.
- The analysis shows that the correlation (180 days), between the two spreads averaged at 80%
- However, it remains subject to significant drop, most notably in times of higher volatility
- Using a shorter correlation window (90 days), we see the statistic becoming more unstable.
- The correlation rate often falls in the negative territory, and is subject to frequent oscillations

5 Accessing excess return of the Euro investment grade market with futures

LXYA Index can be effectively used to access the excess return of the broad Euro Investment Grade market

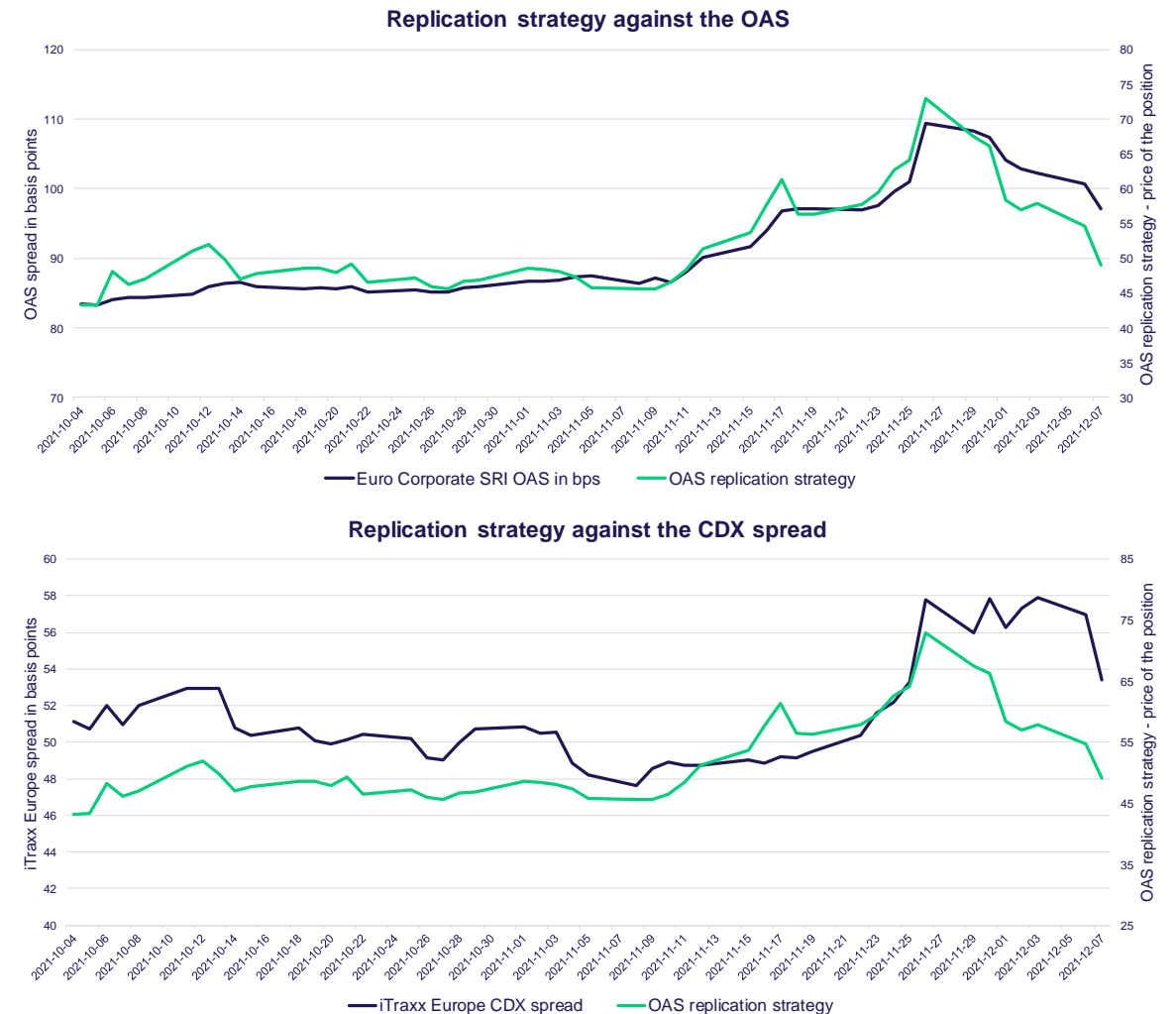
- Eurex launched Futures on **Bloomberg MSCI EURO Corporate SRI Index (FECX)**, which track the total return of European investment grade credit.
- Together with Eurex's German government bond futures suite this allows traders to isolate the credit risk of the index.
- The Option adjusted Spread (OAS) is the measurement of the risk premium of a corporate bond from the risk-free rate, net of the return of embedded options.
- The OAS spread of a bond is a reliable proxy for the credit risk. Historically, credit risk has been primarily traded via credit default swaps (CDS), which are aggregated into CDS Indices (CDX).
- **We show that by removing the interest rate risk from FECX with a portfolio of Bund, Bobl and Schatz Futures, we are able to replicate the Euro Corporate SRI Index OAS spread development**

OAS Spread replication via futures

- Step 1 – We calculate the number of contracts of Bund, Bobl and Schatz Futures necessary to match the duration of FECX. The ratio between Bund, Bobl and Schatz is approximately 1:5:4*.
- Step 2 – The second step consists of calculating the number of contracts of FECX necessary to match the notional amount of the Fixed Income Futures portfolio
- Step 3 – To implement the strategy, we take a short position in FECX and a long position in the Fixed Income Futures portfolio

Correlation of the replicating strategy	
OAS vs Replication strategy	92%
CDX vs Replication strategy	61%

EUREX



*Data from Bloomberg. The ratio was estimated with data from 4th October 2021

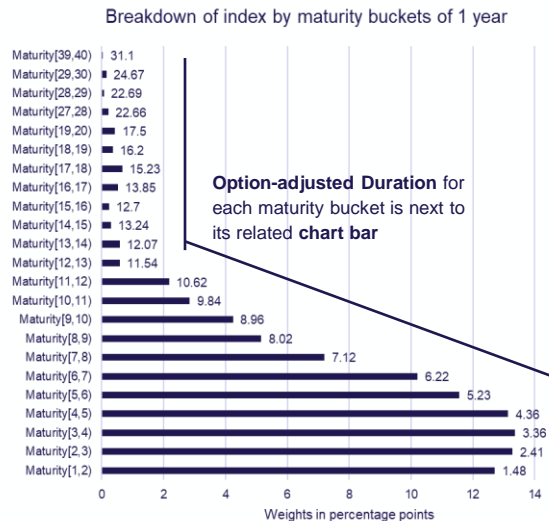
By decomposing LXYA in its key rates, it is possible to offset its duration risk with Eurex Bund, Bobl and Schatz Futures and access excess returns

1

Build the Fixed Income Futures portfolio to hedge duration

Products	Modified Duration (in years)	Settlement price
Euro Corporate SRI Index Futures	5.2	169.71
Schatz Futures	1.99	112.25
Bobl Futures	6.36	135.07
Bund Futures	14.81	170.11

To calculate the ratio of contracts needed to hedge the interest rates risk of FECX, we break down the index by maturity buckets



We hedge the duration of each maturity bucket with their closest Fixed Income Futures.

Example: hedging rates risk of the Maturity Bucket [3, 4] years.

- Duration of the bucket: **3.36 years**
- Duration of Schatz Futures: **1.99 years**
- Duration of Bobl Futures: **6.36 years**

$$Weight_{Bobl} = \frac{Duration_{index\ bucket} - Duration_{Schatz}}{Duration_{Bobl} - Duration_{Schatz}}$$

To hedge rates risk of **Maturity Bucket [3, 4] years** you need a portfolio of **Schatz (69%)** and **Bobl (31%)**

Repeating this exercise for all maturity buckets leads to a **Fixed Income Portfolio** made of **41% Schatz, 50% Bobl** and **9% Bund Futures** to hedge the rates risk of the Index

2

Match the notional exposure of the two legs of the strategy

We calculate the notional value of the *Fixed Income portfolio*. The notional value of a Fixed Income Future is €100,000 multiplied by its price (which is expressed in % points)

$$\text{Fixed Income portfolio Notional} = 2 \times \text{Bund} + 10 \times \text{Bobl} + 8 \times \text{Schatz} \rightarrow \text{€ 2,588,880}$$

The Notional value of Euro Corporate SRI Index Futures (FECX) is 1,000 x price. We now calculate the number of contracts of FECX to match the portfolio notional

$$\# \text{ contracts of FECX} = \frac{\text{Fixed Income portfolio notional}}{\text{FECX Notional value of 1 contract}} \rightarrow 15$$

3

Take opposite positions on the legs to implement the strategy

➡ Buy the Fixed Income Futures portfolio and sell the FECX to hedge the credit risk of the Euro investment grade market

➡ Sell the Fixed Income Futures portfolio and Buy the FECX to gain long exposure on the risk premium of the Euro investment grade market

Thank you!

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