

Eurex Credit Index Futures

Innovators in listed credit markets

September 2024

Agenda

- 1** Introduction to Eurex Credit Index Futures
- 2** Eurex Credit Index Futures at a glance
- 3** Understanding the risk and return characteristics of Credit index futures
- 4** Integrating Credit Index Futures in the credit ecosystem
- X** Appendix: Bloomberg Indices comparison with other FI Index Benchmarks

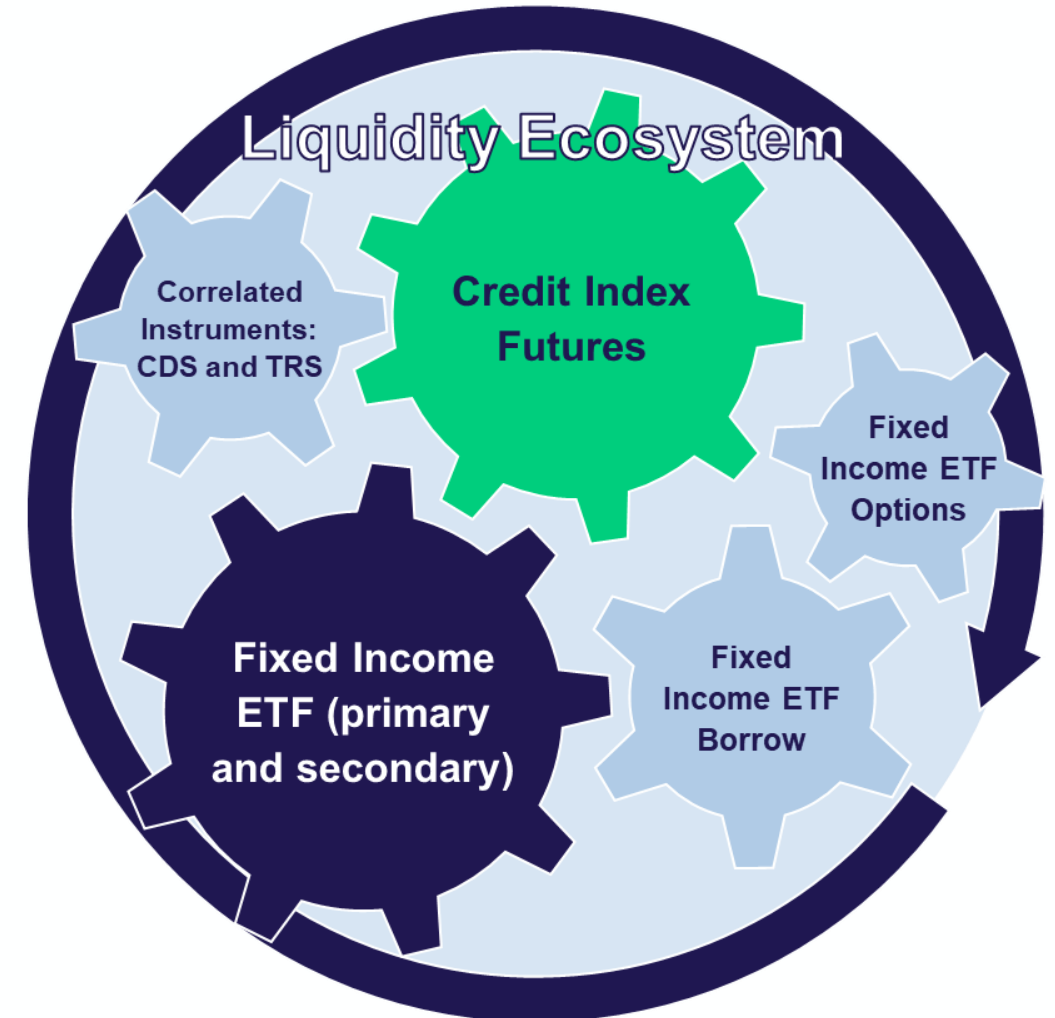
1 Introduction to Eurex Credit Index Futures

Introduction to Eurex Credit Index Futures

Timing is right for innovation in the global credit ecosystem

- The global corporate bond market has **grown three-fold** since 2008 with USD 34 trillion outstanding as of the end of 2023*
- Changes in market structure, electronification and trading behavior have created an opportunity to introduce a **new tool** that is additive to existing products and liquidity – **Eurex Credit Index Futures**
- The **benefits** of exchange-traded and CCP-cleared futures add value throughout the entire credit ecosystem for all client types:
 - Increased transparency
 - Standardized products
 - High levels of liquidity
 - Margin efficiency
 - Low tracking error

Source: OECD (2024), *Global Debt Report 2024: Bond Markets in a High-Debt Environment*, OECD Publishing, Paris, <https://doi.org/10.1787/91844ea2-en>



Vision: Utilizing a simple index derivatives structure, Eurex makes it as easy to trade credit derivatives as equity derivatives

Introduction to Eurex Credit Index Futures

Building a global suite of products with a broad range of applications and client appeal

- Eurex is the only exchange with a global Credit Index Futures offering

EUR IG	USD EM	USD IG
EUR HY	GBP CORP	USH HY

- Credit Index Futures have proven to be useful to a broad range of market participants

Asset Managers	Insurance companies
Pensions and endowments	Hedge Funds
Managed Futures / CTA's	PTG's

- There is a vast range of potential applications for Credit Index Futures with new innovations developing at a rapid pace

Liquidity management	Portfolio hedging
Cash management	Portfolio overlays
Relative value trading	Tactical positioning

- Eurex Credit Index Futures utilize the familiar Bloomberg family of fixed income indices that is well-established within the marketplace

Product Roadmap

Q3 2021

- Launch of EUR IG Index Futures as the initial entry point for Eurex in Credit Index Futures

Q4 2022

- Launch of EUR HY index futures to complete the Euro-denominated offering in Credit Index futures

Q1 2024

- Launch of USD EM Index and GBP Corporate Index Futures in the first expansion outside the EU

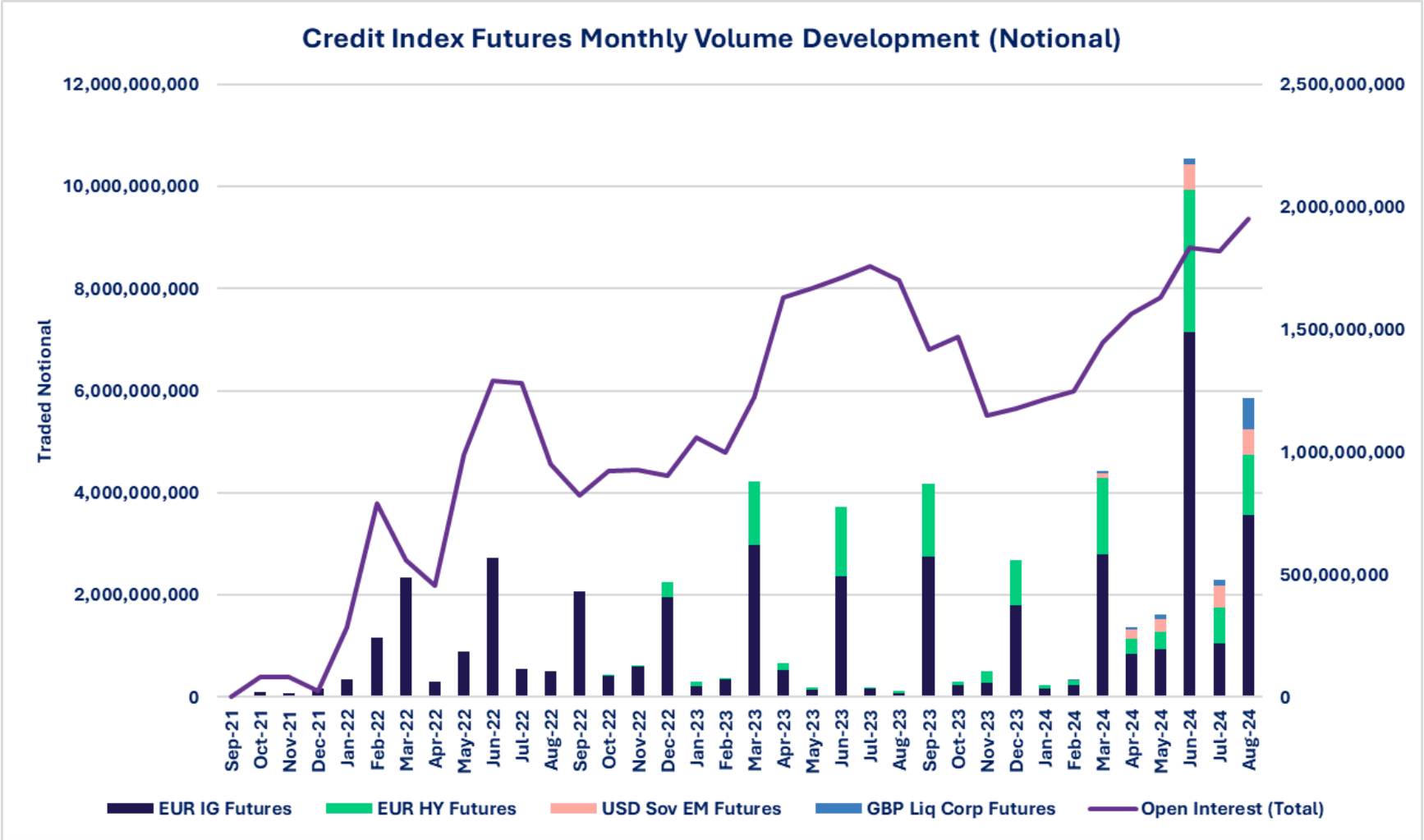
Q3 2024

- Launch of USD IG Index and USD HY Index Futures to complete the global offering



Introduction to Eurex Credit Index Futures

Volume and liquidity growth in 2024 from client adoption and sell side support



August 2024 Volume
 85,580 Contracts Traded
 €5.8bn Notional Traded

August 2024 Open Interest
 22,907 Contracts Open Interest
 €2.0bn Notional Open Interest

Unparalleled Liquidity
 10 Order Book LP's
 7 Off-screen LP's

Buy Side Participation
 ~40 End-users active since launch

U.S. Credit Index Futures
 launching on Sept 23
 USD IG | USD HY

2 Eurex Credit Index Futures at a glance

Eurex Credit Index Futures at a glance




Product use cases and credit product comparisons

Eurex Credit Index Futures give market participants standardized, liquid access to the global credit derivatives markets with considerable advantages and low tracking error compared to traditional credit products

Product use cases

-  **Portfolio hedging:** Temporarily reduce market exposure of a portfolio and protect it from market downturns
-  **Cash & liquidity management:** Take additional exposure to the global credit market utilizing the available cash
-  **Tactical & RV trading:** Express market views and arbitrage strategies across cash bonds, FI ETFs, CDS and TRS markets
-  **Portfolio overlays:** Adjust portfolio exposure relative to its actual funded amount

Competitive advantages vs. traditional credit products

-  **Liquidity:** Ample pool of liquidity with wide range of market makers
-  **Efficient risk management:** Low initial margins and close replication of index
-  **Alpha generation:** Ability to implement systematic trading strategies without making fundamental portfolio changes

How do Credit Index Futures compare to...

iTraxx Europe & Crossover / CDX NA, HY & EM

- iTraxx and CDX Indices include only a limited number of issuers
- The issuers are equally weighted
- iTraxx and CDX indices rebalance every 6 months – Eurex Credit 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
- All Eurex Credit Index Futures have an open and transparent order-book
- Variation margins ensure Eurex Credit Index Futures are marked-to-market on a daily basis

Fixed Income ETFs

- ETFs are fully funded, limiting flexibility and requiring financing
- Futures allow for leveraged exposure to the total return of the index
- ETFs charge an annual management fee
- Most liquid ETFs pay dividends, while Eurex Credit Index Futures are based a total return index that reinvests the bonds' coupons

Eurex Credit Index Futures at a glance

Contract specifications

	EUR IG	EUR HY	USD EM	GBP CORP	USD IG	USD HY
Eurex Product Code	FECX	FEHY	FUEM	FGBC	FUIG	FUHY
Currency	EUR	EUR	USD	GBP	USD	USD
Contract Multiplier	EUR 1,000	EUR 200	USD 200	GBP 200	USD 25	USD 100
Contract Size (est.)	~ EUR 150,000	~ EUR 55,000	~ USD 20,000	~ GBP 25,000	~ USD 75,000	~ USD 50,000
Tick Size / Tick Value	0.01 / EUR 10	0.02 / EUR 4	0.01 / USD 2	0.01 / GBP 2	0.1 / USD 2.5	0.01 / USD 1
Minimum Block Trade Size	30 Contracts	100 Contracts	100 Contracts	100 Contracts	60 Contracts	80 Contracts
MBTS in Notional	~ EUR 5 MM	~ EUR 5 MM	~ USD 2 MM	~ GBP 2.5 MM	~ USD 5 MM	~ USD 5 MM
Trading Hours	8:00 to 19:00 CET	8:00 to 19:00 CET	8:00 to 22:00 CET	8:00 to 19:00 CET	8:00 to 22:00 CET	8:00 to 22:00 CET
Expiry Cycle	Quarterly - 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 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 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 Type	Cash settlement, payable on the first exchange day after following the expiration day					
Bloomberg Code	LXYA Index	AHWA Index	XZSA Index	XZRA Index	BBEA Index	BBLA Index
Refinitiv Code	0#FECX:	0#FEHY:	0#FUEM:	0#FGBC:	0#FUIG:	0#FUHY:

Eurex Credit Index Futures at a glance

Bloomberg indices provide a reliable benchmark for tracking global fixed income markets

Index Methodology	EUR IG	EUR HY	USD EM	GBP CORP	USD IG	USD HY	
	Maturity Threshold	At least 1 year until final maturity	Between 1 year and 15 years until final maturity	At least 1 year until final maturity	At least 1 year until final maturity	At least 1 year until final maturity	Between 1 year and 15 years until final maturity
	Rating	Investment Grade	Below Investment Grade	Investment Grade and High Yield	Investment Grade	Investment Grade	High Yield
	Currency	EUR	EUR	USD	GBP	USD	USD
	Minimum Amount Outstanding	EUR 300 MM	EUR 250 MM	USD 1 BN	GBP 350 MM	USD 300 MM	USD 500 MM
	Caps			Country cap fixed at 5%	Issuer cap fixed at 4%		Issuer cap fixed at 2%

Key Index Stats	EUR IG	EUR HY	USD EM	GBP CORP	USD IG	USD HY	
	BBG Ticker	<u>RECMTREU</u>	<u>BEHLTREU</u>	<u>I38156US</u>	<u>I35357GB</u>	<u>LUACTRUU</u>	<u>LHVLTRUU</u>
	Components	3,153	458	611	593	7,938	1,091
	Issuers	734	286	108	269	871	585
	Market Value	EUR 2.2 tn	EUR 230 bn	USD 988 bn	GBP 293 bn	USD 6.6 tn	USD 894 bn
	Average YTW	3.88%	6.63%	7.98%	5.73%	5.14%	7.49%
	Average OAS	1.45%	3.80%	3.14%	1.18%	0.97%	3.11%
	Average Duration	4.28	2.90	6.79	5.78	6.94	3.24

Eurex Credit Index Futures at a glance

Eurex Credit Index futures offers savings on initial margins compared to CDS Indices

- **Bloomberg MSCI Euro Corporate SRI Index Futures (EURO IG)** has the **lowest initial margin** as a % of 100mn notional exposure at **1.63%** for protection on a long position compared to 2.63% for ITRAXX MAIN (EUR IG)
- **Bloomberg Liquidity Screened Euro High Yield Bond Index Futures (EURO HY)** offers **savings in both long and short initial margins** compared to ITRAXX CROSSOVER (EUR HY). Sell and Buy Protection for EURO HY index futures are as low as 3.67% and 2.34% compared to 8.27% and 4.56% for ITRAXX CROSSOVER
- **Bloomberg Emerging Market USD Sovereign & Sovereign Owned Index Futures (USD EM)** and **Sterling Liquid Corporate Bond Index Futures (GBP CORP)** comparatively offer **lower initial margins** to ITRAXX CROSSOVER (EUR HY)

Initial margin levels as % of 100 million notional exposure

Eurex Credit Index Futures	Long (Sell Protection)	Short (Buy Protection)
	EUR IG Futures	1.63%
EUR HY Futures	3.67%	2.34%
USD EM Futures	4.07%	3.08%
GBP Corp Futures	2.79%	2.65%

CDS	Long (Sell Protection)	Short (Buy Protection)
	ITRAXX MAIN (EUR IG) Series 38	2.63%
ITRAXX CROSSOVER (EUR HY) Series 38	8.27%	4.56%

Eurex Credit Index Futures at a glance

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

LXZY2 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
 LXZY2 Index
 1) Contract Information 2) Linked Instruments
 LXZY2 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 7/8 07/14/25	EUR	103.247	2.807	2.490	2,750,000	2,949,269	0.14377
12) XS1586555945	VW 1 7/8 03/30/27	EUR	92.165	3.827	4.080	2,500,000	2,390,707	0.11654
13) 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

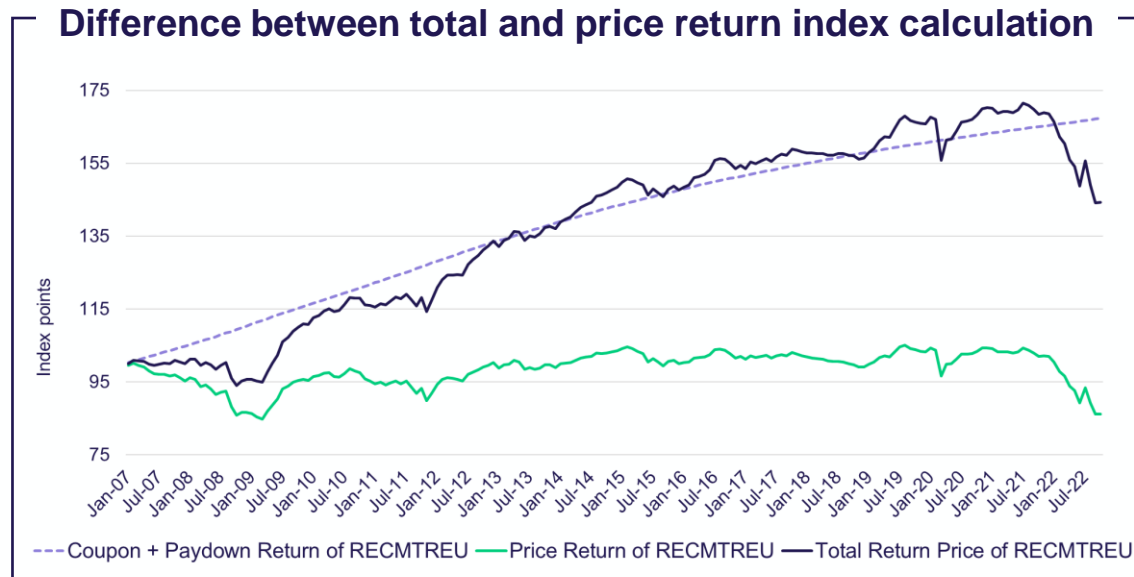
3 Understanding the risk and return characteristics of Credit Index Futures

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

Understanding the risk and return characteristics of Credit Index Futures

Total Return Index prices – a practical example

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



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.

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

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

Understanding the risk and return characteristics of Credit Index Futures

Credit Index Futures price decomposition – how are these products priced?

The formula for pricing Credit Index Futures 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.

4 Integrating Credit Index Futures in the credit ecosystem

1. Accessing Eurex Credit Index Futures
2. Eurex contact details

Integrating Credit Index Futures in the credit ecosystem

Accessing Eurex Credit Index Futures – trading models

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

Order Book

- The core element of the Eurex market model is the **central limit order book**, into which all orders and quotes are entered during the trading day
- Orders and quotes in the central order book are **anonymous**: A trader never knows the opposite side on a trade; participants only see the specific details of their own orders

Block Trading

- Members can 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**

Basis Trading

- **Basis trading** can 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 or correlation.
- Furthermore, Eurex Credit Index Futures can themselves be used as a “Reference Instrument” for an EFP-Fin **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**.
- TAIC trades are entered as the EFP-Index

Integrating Credit Index Futures in the credit ecosystem

Accessing Eurex Credit Index Futures – disclosed 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 Futures-Voice-EQ-EMEA@gs.com	+44 74-0880-7247
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

Integrating Credit Index Futures in the credit ecosystem

Eurex contact details – Northern Europe

Isabelle Blanche

Head of Sales Northern Europe
France

Deutsche Börse AG
Representative Office Paris
17, rue de Surène
75008 Paris
France
T: +44 207 862-75 52
isabelle.blanche@eurex.com

Christopher Anderson

Sales Northern Europe
Scandinavia, UK, Ireland

Deutsche Börse AG
UK Representative Office
11 Westferry Circus, Canary Wharf
London, E14 4HE
United Kingdom
T: +44 207 862-76 68
christopher.anderson@eurex.com

Henry Weindling

Sales Northern Europe
Netherlands

Deutsche Börse AG
UK Representative Office
11 Westferry Circus, Canary Wharf
London, E14 4HE
United Kingdom
T: +44 (0)20 78 62-76 86
henry.weindling@eurex.com

Adam Husted

Sales Northern Europe
Netherlands, UK, Ireland

Deutsche Börse AG
UK Representative Office
11 Westferry Circus, Canary Wharf
London, E14 4HE
United Kingdom
T: +44 207 862-72 49
adam.husted@eurex.com

Andrew Punter

Sales Northern Europe
UK, Ireland

Deutsche Börse AG
UK Representative Office
11 Westferry Circus, Canary Wharf
London, E14 4HE
United Kingdom
T: +44 207 862-76 63
andrew.punter@eurex.com

Catherine Zanatta

Sales Northern Europe
UK, Ireland, Israel

Deutsche Börse AG
UK Representative Office
11 Westferry Circus, Canary Wharf
London, E14 4HE
United Kingdom
T: +44(0) 20 78 62-72 56
catherine.zanatta@eurex.com

Khaled Aziz

Sales Northern Europe
Scandinavia

Deutsche Börse AG
UK Representative Office
11 Westferry Circus, Canary Wharf
London, E14 4HE
United Kingdom
T: +44(0) 20 78 62- 73
53 khaled.aziz@eurex.com

Integrating Credit Index Futures in the credit ecosystem

Eurex contact details – Continental Europe

Francesca Dell’Era

Head of Sales Central Europe
Switzerland, Italy, Malta, Greece,
Liechtenstein

Eurex Global Derivatives AG
Theilerstrasse 1a
6300 Zug
Switzerland
T: + 41 (0)43 430 71 23
francesca.dellera@eurex.com

David Carretero

Sales Central Europe
France, Belgium, Spain, Portugal,
Luxembourg

Eurex Frankfurt AG
Mergenthalerallee 61
65760 Eschborn
Germany
T: +49 69 2 11-1 82 33
david.carretero@eurex.com

Andreas Stadelmaier

Sales Central Europe
Germany, Austria

Eurex Frankfurt AG
Mergenthalerallee 61
65760 Eschborn
Germany
T: +49-69-211-1 38 59
andreas.stadelmaier@eurex.com

Matthias Kronenberger

Sales Central Europe
Germany, Austria

Eurex Frankfurt AG
Mergenthalerallee 61
65760 Eschborn
Germany
T: +49 (0)69211-187 19
matthias.kronenberger@eurex.com

Oliver Hauer

Sales Central Europe
Germany

Eurex Frankfurt AG
Mergenthalerallee 61
65760 Eschborn
Germany
T: +49 (0)69211-167 22
oliver.hauer@eurex.com

Samira Buzyarsest

Sales Central Europe
Eastern Europe

Eurex Frankfurt AG
Mergenthalerallee 61
65760 Eschborn
Germany
T: +49-69-211-1 27 88
samira.buzyarest@eurex.com

Integrating Credit Index Futures in the credit ecosystem

Eurex contact details – U.S. and Asia

Timothy Gits

Head of Sales
Americas

Eurex, Deutsche Boerse Systems Inc.
Representative Office Chicago
233 S Wacker Drive
Chicago, IL 60606
United States
T: +1 312 544-1494
tim.gits@eurex.com

Timothy Levandoski

Sales US
Central, West Coast US

Eurex, Deutsche Börse Systems, Inc.
Representative Office Chicago
233 S Wacker Drive
Chicago, IL 60606
United States
T: +1 312 544-1056
timothy.levandoski@eurex.com

Laurent Partouche

Sales US
East Coast US, Canada

Eurex, Deutsche Börse Systems, Inc.
NY Representative Office
1155 Avenue of the Americas, Floor 19
New York, NY 10036
United States
T: +1 212 309-9306
laurent.partouche@eurex.com

Iris Hui

Sales US
East Coast US, Canada

Eurex, Deutsche Börse Systems, Inc.
NY Representative Office
1155 Avenue of the Americas, Floor 19
New York, NY 10036
United States
T: +1 917 939-1624
iris.hui@eurex.com

Stefan Ullrich

Sales Asia
Singapore, Australia, Middle East,
India

Eurex Frankfurt AG
Singapore Representative Office
9 Raffles Place
#56-1 Republic Plaza
Singapore, 048619
Singapore
T: + 65 65 97-30 79
stefan.ullrich@eurex.com

Neil Salter

Sales Asia
Japan, China, Hong Kong, Taiwan,
South Korea

Eurex Frankfurt AG
Singapore Representative Office
9 Raffles Place
#56-1 Republic Plaza
Singapore, 048619
Singapore
neil.salter@eurex.com

Ryan Verma

Sales Asia
Japan, China, Honk Kong, Taiwan,
South Korea, ASEAN

Eurex Frankfurt AG
Singapore Representative Office
9 Raffles Place
#56-1 Republic Plaza
Singapore, 048619
Singapore
T: + 65 65 97-30 83
ryan.verma@eurex.com

Chris Dopp

Buy Side Sales US
Client Solutions – Credit Products

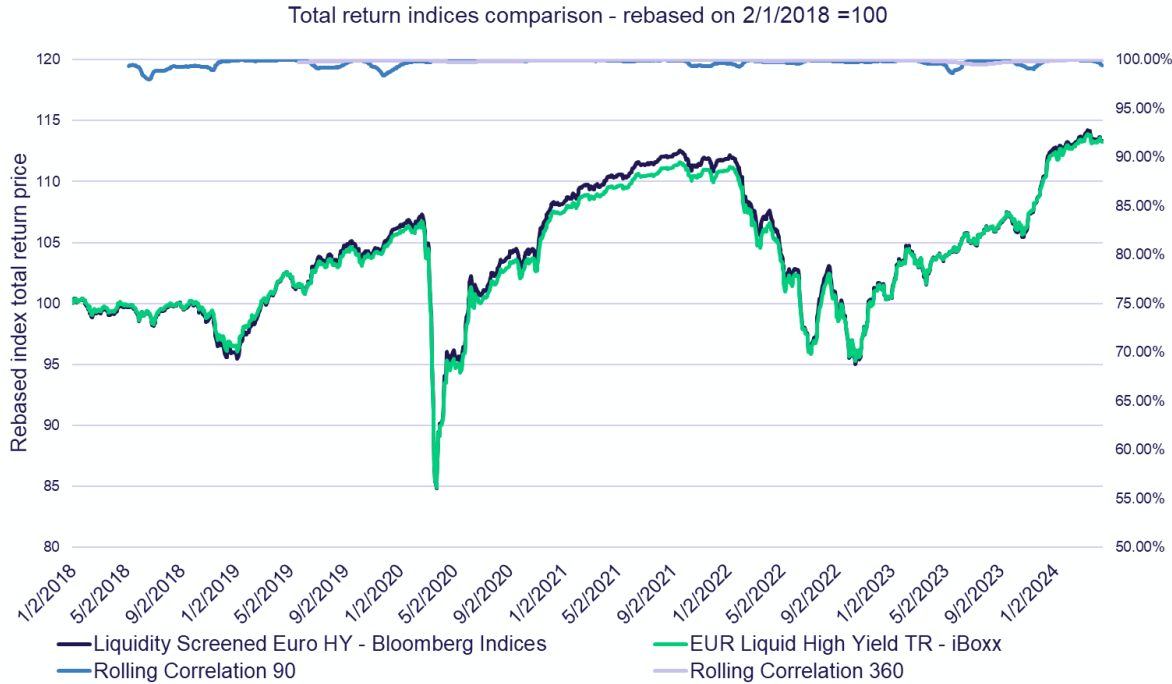
Eurex, Deutsche Börse Systems, Inc.
Representative Office Chicago
233 S Wacker Drive
Chicago, IL 60606
United States
T: +1 312 544-1011
chris.dopp@eurex.com

X Appendix: Comparison of Bloomberg Indices to other FI Index Benchmarks

Comparison of Bloomberg Indices to other FI Index Benchmarks

Total return comparison between BBG EUR HY and iBoxx EUR indices

- A total return comparison between Bloomberg and iBoxx indices shows that they share very similar risk-return characteristics
- The daily returns since 2015 show that the two indices are highly correlated even when looking at the short-term correlation rates (90-day window)
- The differences between the two index methodologies / inclusion criteria saw Bloomberg index outperform the Markit iBoxx index at an annualized rate of 4bps since 2018. The annualized tracking error between the two indices amounts at ca. 92bps.



Total Return Statistics	Jan 2018 to Jul 2024	Bloomberg Euro High Yield Index	iBoxx Euro High Yield Index
	Annualized Average Returns (%)		2.24%
Annualized Average STD (%)		5.72%	5.33%
Average Sharpe Ratio Overall		0.24	0.26
Min Daily Return		-3.93%	-3.86%
Max Daily Return		2.13%	1.96%

Source: Bloomberg terminal

Comparison of Bloomberg Indices to other FI Index Benchmarks

Total return comparison between BBG USD EM Sov and JPM EMBIG Core Indices

- Bloomberg USD EM Sovereign debt index and JP Morgan EMBIG Core Index **correlate strongly, including in market distressed scenarios**
- The daily returns since 2020 show that the two indices have a correlation rate close to 100% throughout the major distress times experienced over the past 3 years
- **The Annual Average Return difference between the two indices is roughly -5bps**



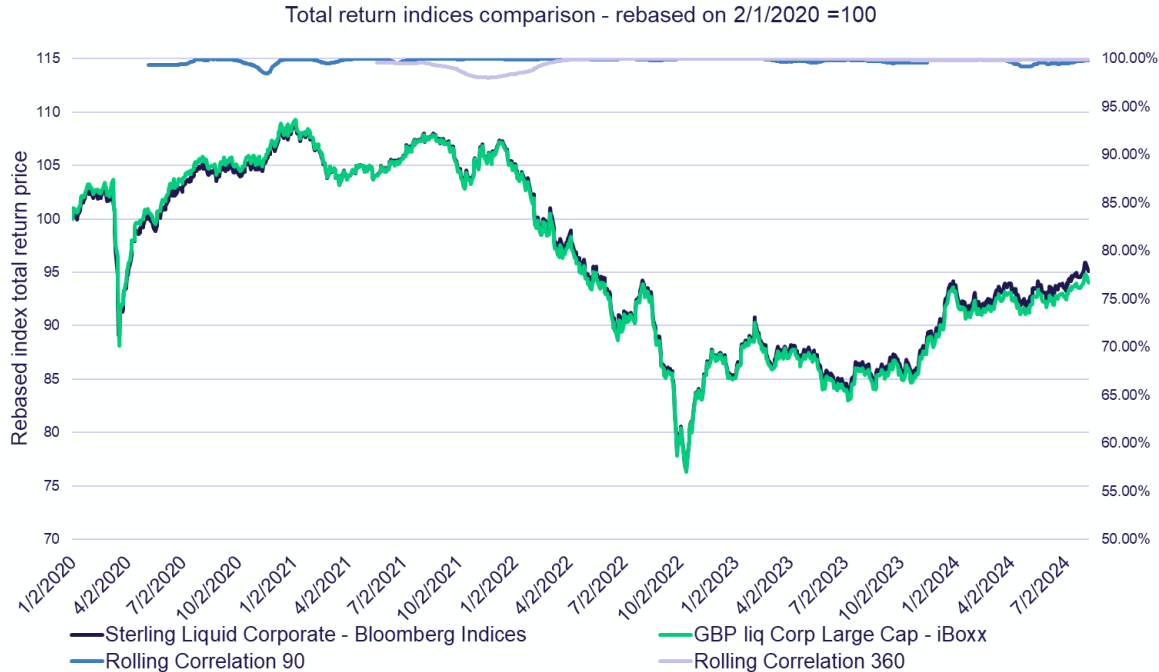
Jan 2020 to Jul 2024		Bloomberg USD EM Index	JPM JPEICORE Index
Total Return Statistics	Annualized Average Returns (%)	-0.59%	-0.57%
	Annualized Average STD (%)	9.72%	10.44%
	Average Sharpe Ratio Overall	-0.20	-0.18
	Min Daily Return	-4.79%	-5.45%
	Max Daily Return	3.19%	4.05%

Source: Bloomberg terminal

Comparison of Bloomberg Indices to other FI Index Benchmarks

Total return comparison between BBG GBP Corporate and IBXXGLAT Indices

- Bloomberg GBP Corporate debt index and IBXXGLAT Index correlates strongly, **including in market distressed scenarios**
- The daily returns since 2020 show that the two indices have a **correlation rate close to 100%** throughout the major distress times experienced over the past 3 years



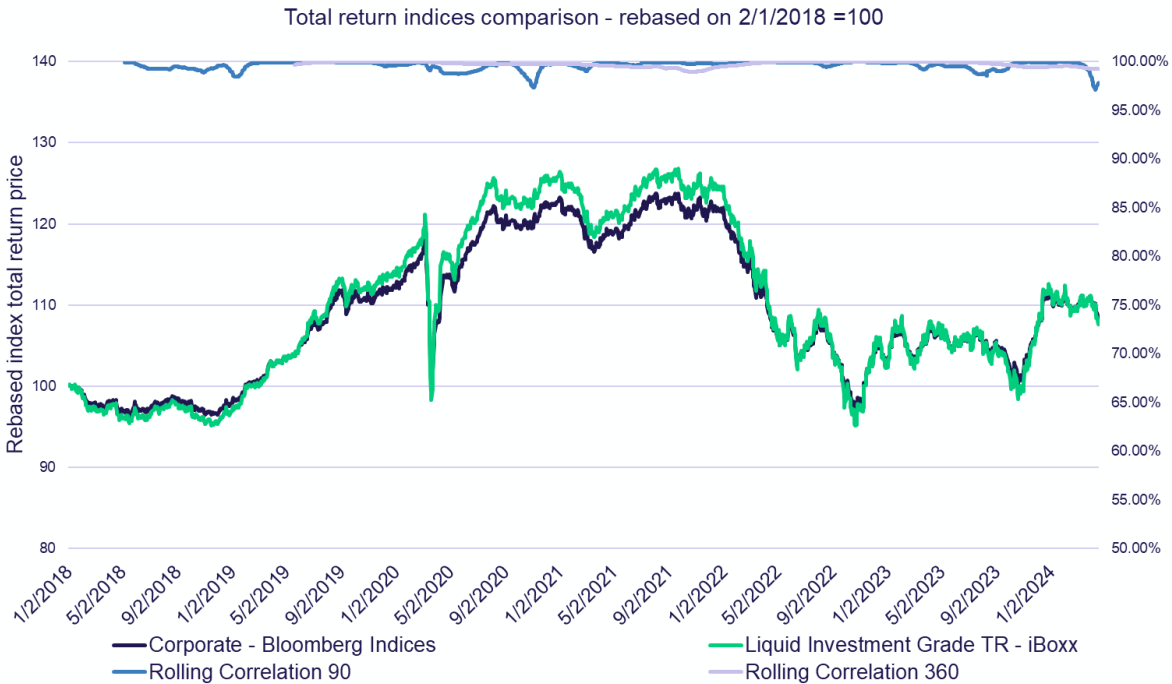
Total Return Statistics	Jan 2020 to Jul 2024	Bloomberg GBP Corp Index	IBXXGLAT Index
	Annualized Average Returns (%)		-1.08%
Annualized Average STD (%)		9.11%	9.10%
Average Sharpe Ratio Overall		-0.27	-0.29
Min Daily Return		-3.71%	-3.05%
Max Daily Return		2.81%	3.90%

Source: Bloomberg terminal

Comparison of Bloomberg Indices to other FI Index Benchmarks

Total return comparison between BBG USD IG and IBOXIG Indices

- Bloomberg USD IG debt index and IBOXIG Index **correlates strongly** even in **times of great losses**
- Running correlations are usually upwards of **99%**, staying stable during times of great stress, such as the 2020 crash



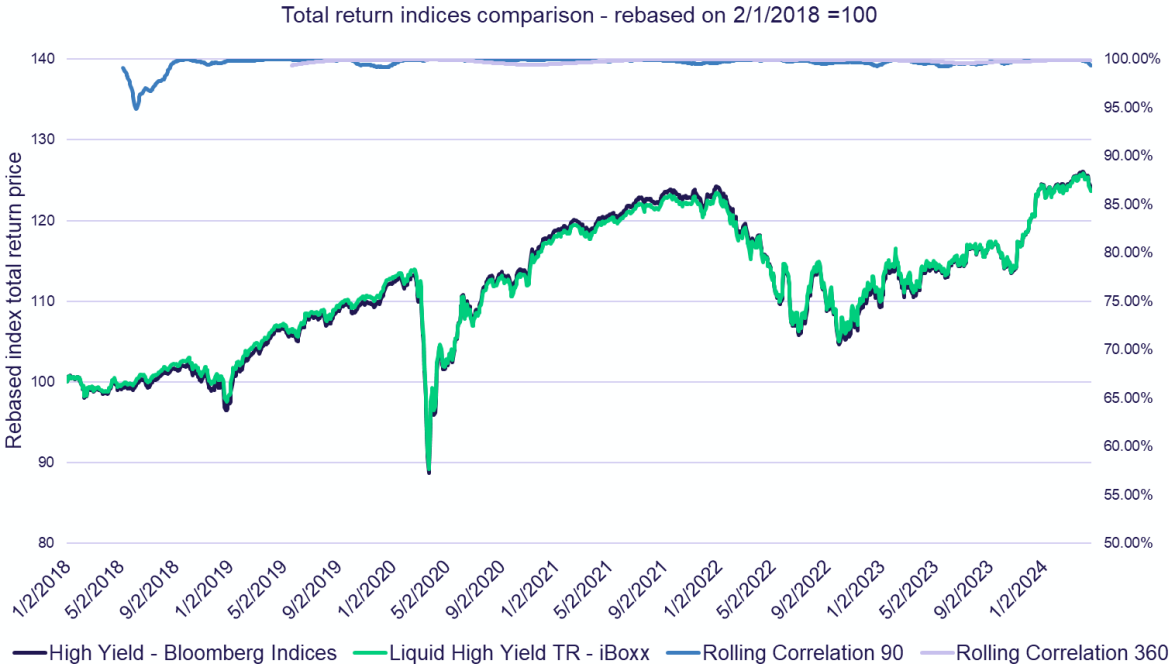
Jan 2018 to Jul 2024		Bloomberg USD IG Index	IBOXIG Index
Total Return Statistics	Annualized Average Returns (%)	1.98%	1.95%
	Annualized Average STD (%)	7.75%	9.65%
	Average Sharpe Ratio Overall	0.15	0.11
	Min Daily Return	-3.85%	-5.03%
	Max Daily Return	2.22%	3.30%

Source: Bloomberg terminal

Comparison of Bloomberg Indices to other FI Index Benchmarks

Total return comparison between BBG USD HY and IBOXHY Indices

- Total return comparison between the USD HY and IBOXHY indices shows that they **correlate well** even in **times of great stress**
- Running correlations are usually upwards of **98%**, staying stable during times of great stress, like the 2020 crash.



Total Return Statistics	Jan 2018 to Jul 2024	Bloomberg USD HY Index	IBXXHY Index
	Annualized Average Returns (%)		4.00%
Annualized Average STD (%)		7.59%	9.05%
Average Sharpe Ratio Overall		0.42	0.39
Min Daily Return		-3.39%	-4.00%
Max Daily Return		3.36%	3.91%

Source: Bloomberg terminal

Disclaimer

© Eurex 2024

Deutsche Börse AG ("DBAG"), Clearstream Banking AG ("Clearstream"), Eurex Frankfurt AG ("Eurex"), Eurex Clearing AG ("Eurex Clearing"), Eurex Repo GmbH ("Eurex Repo") are corporate entities and are registered under German law. Eurex Global Derivatives AG is a corporate entity and is registered under Swiss law. Clearstream Banking S.A. is a corporate entity and is registered under Luxembourg law. Eurex Frankfurt AG is the administrating and operating institution of Eurex Deutschland. Eurex Deutschland is in the following also referred to as the "Eurex Exchange".

All intellectual property, proprietary and other rights and interests in this publication and the subject matter hereof (other than certain trademarks and service marks listed below) are owned by DBAG or its affiliates and subsidiaries or used under authorization by their respective owners, including, without limitation, all patent, registered design, copyright, trademark and service mark rights. While reasonable care has been taken in the preparation of this publication to provide details that are accurate and not misleading at the time of publication DBAG, Clearstream, Eurex, Eurex Clearing, Eurex Repo as well as the Eurex Exchange and their respective subsidiaries, servants and agents (a) do not make any representations or warranties regarding the information contained herein, whether express or implied, including without limitation any implied warranty of merchantability or fitness for a particular purpose or any warranty with respect to the accuracy, correctness, quality, completeness or timeliness of such information, and (b) shall not be responsible or liable for any third party's use of any information contained herein under any circumstances, including, without limitation, in connection with actual trading or otherwise or for any errors or omissions contained in this publication.

This publication is published for information purposes only and shall not constitute investment advice respectively does not constitute an offer, solicitation or recommendation to acquire or dispose of any investment or to engage in any other transaction. This publication is not intended for solicitation purposes but only for use as general information. All descriptions, examples and calculations contained in this publication are for illustrative purposes only.

Eurex and Eurex Clearing offer services directly to members of the Eurex Exchange respectively to clearing members of Eurex Clearing. Those who desire to trade any products available on the Eurex market or who desire to offer and sell any such products to others or who desire to possess a clearing license of Eurex Clearing in order to participate in the clearing process provided by Eurex Clearing, should consider legal and regulatory requirements of those jurisdictions relevant to them, as well as the risks associated with such products, before doing so.

Only Eurex derivatives that are CFTC-approved may be traded via direct access in the United States or by United States persons. A complete, up-to-date list of Eurex derivatives that are CFTC-approved is available at: <https://www.eurex.com/ex-en/rules-regs/eurex-derivatives-us/direct-market-access-from-the-us>. In addition, Eurex representatives and participants may familiarize U.S. Qualified Institutional Buyers (QIBs) and broker-dealers with certain eligible Eurex equity options and equity index options pursuant to the terms of the SEC's July 1, 2013 Class No-Action Relief. A complete, up-to-date list of Eurex options that are eligible under the SEC Class No-Action Relief is available at: <https://www.eurex.com/ex-en/rules-regs/eurex-derivatives-us/eurex-options-in-the-us-for-eligible-customers>. Lastly, U.S. QIBs and broker-dealers trading on behalf of QIBs may trade certain.

single-security futures and narrow-based security index futures subject to terms and conditions of the SEC's Exchange Act Release No. 60,194 (June 30, 2009), 74 Fed. Reg. 32,200 (July 7, 2009) and the CFTC's Division of Clearing and Intermediary Oversight Advisory Concerning the Offer and Sale of Foreign Security Futures Products to Customers Located in the United States (June 8, 2010).

Trademarks and Service Marks

Buxl®, DAX®, DivDAX®, eb.rexx®, Eurex®, Eurex Repo®, Strategy Wizard®, Euro GC®, FDAX®, FTSE 100, FWB®, GC Pooling®, GCPI®, MDAX®, ODAX®, SDAX®, TecDAX®, USD GC Pooling®, VDAX®, VDAX-NEW® and Xetra® are registered trademarks of DBAG or its affiliates and subsidiaries. MSCI®, EAFE®, ACWI® and all MSCI indexes (the "Indexes"), the data included therein, and service marks included therein are the intellectual property of MSCI Inc., its affiliates and/or their licensors (together, the "MSCI Parties"). The Indexes are provided "as is" and the user assumes the entire risk of any use it may make or permit to be made of the Indexes. No MSCI Party warrants or guarantees the originality, accuracy and/or completeness of the Indexes and each expressly disclaims all express or implied warranties. No MSCI Party shall have any liability for any errors or omissions in connection with any of the Indexes, or any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages. For full disclaimer see [msci.com/disclaimer](https://www.msci.com/disclaimer).

ATX®, ATX® five, CECE® and RDX® are registered trademarks of Vienna Stock Exchange AG. IPD® UK Quarterly Indexes are registered trademarks of Investment Property Databank Ltd. IPD and have been licensed for the use by Eurex for derivatives. SLI®, SMI® and SMIM® are registered trademarks of SIX Swiss Exchange AG. The STOXX® indexes, the data included therein and the trademarks used in the index names are the intellectual property of STOXX Limited and/or its licensors. Eurex derivatives based on the STOXX® indexes are in no way sponsored, endorsed, sold or promoted by ISS STOXX and its licensors and neither ISS STOXX nor its licensors shall have any liability with respect thereto. PCS® and Property Claim Services® are registered trademarks of ISO Services, Inc. Korea Exchange, KRX, KOSPI and KOSPI 200 are registered trademarks of Korea Exchange Inc. The names of other companies and third-party products may be trademarks or service marks of their respective owners.

FTSE® is a trade mark of the London Stock Exchange Group companies and is used by FTSE International Limited ("FTSE") under license. All rights in the FTSE®100 Index (the "Index") vest in FTSE or its licensors. Neither FTSE nor any of their affiliates or licensors (a) assumes any liability, losses, damages, expenses or obligations in connection with any derivative product based on the Index; or (b) accepts any liability for any errors or omissions, fitness for a particular purpose or the results to be obtained from the use of the Index or related data. No party may rely on the Index or related data contained in this communication which Index and data is owned by FTSE or their affiliates. No use or distribution of the Index is permitted without FTSE's express written consent. FTSE does not promote, sponsor or endorse the content of this communication nor any financial or derivative product that it relates to.

PRIIPs: Eurex Deutschland qualifies as manufacturer of packaged retail and insurance-based investment products (PRIIPs) under Regulation (EU) No 1286/2014 on key information documents for packaged retail and insurance-based investment products (PRIIPs Regulation), and provides key information documents (KIDs) covering PRIIPs traded on Eurex Deutschland on its website under the following link: <https://www.eurex.com/ex-en/rules-regs/priips-kids>.

In addition, according to Art. 14(1) PRIIPs Regulation the person advising on, or selling, a PRIIP shall provide the KID to retail investors free of charge.

Disclaimer (cont.)

© BLOOMBERG 2024

“BLOOMBERG®” and the Bloomberg indices listed herein (the “Indices”) are service marks of Bloomberg Finance L.P. and its affiliates, including Bloomberg Index Services Limited (“BISL”), the administrator of the Indices (collectively, “Bloomberg”) and have been licensed for use for certain purposes by the distributor hereof (the “Licensee”). Bloomberg is not affiliated with Licensee, and Bloomberg does not approve, endorse, review, or recommend the financial products named herein (the “Products”). Bloomberg does not guarantee the timeliness, accuracy, or completeness of any data or information relating to the Products.

© BLOOMBERG 2024

“BLOOMBERG® is a trademark and service mark of Bloomberg Finance L.P. MSCI is a trademark and service mark of MSCI Inc. (collectively with its affiliates, “MSCI”), used under license. Bloomberg Finance L.P. and its affiliates (collectively, “Bloomberg”), including Bloomberg Index Services Limited, the index administrator (“BISL”), or Bloomberg’s licensors, including MSCI, own all proprietary rights in the Bloomberg MSCI Environmental, Social & Governance (ESG) fixed income indices (the “ESG Indices”). Neither Bloomberg nor MSCI is affiliated with the distributor hereof (the “Licensee”), and neither approves, endorses, reviews or recommends financial products listed herein (the “Products”). Neither Bloomberg nor MSCI guarantees the timeliness, accurateness or completeness of any data or information relating to ESG Indices, and neither shall be liable in any way to the Licensee, investors in the Products or other third parties with respect to the use or accuracy of the ESG Indices or any data included therein.”