

FTSE Eurozone Inflation-Linked Bond Index Series

v2.9



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Section 1

Introduction

1. Introduction

1.1 FTSE Eurozone Index structure

1.1.1 FTSE Eurozone Indices¹ are a set of benchmarks for the European sovereign bond market. The indices are calculated and distributed by FTSE Russell, using pricing data from the Refinitiv Evaluated Pricing Service (REPS)².

1.2 The FTSE Eurozone Inflation-Linked Bond Index Series does not take account of ESG factors in its index design.

1.3 IOSCO

1.3.1 FTSE International Limited (FTSE) considers that the FTSE Eurozone Inflation-Linked Bond Index Series (the Index Series) meets the IOSCO Principles for Financial Benchmarks as published in July 2013.

Full details can be accessed at www.iosco.org.

Details of FTSE Russell's Statement of Compliance with respect to the IOSCO Principles can be accessed through the following link:

[IOSCO Statement of Compliance](#)

1.4 FTSE Russell hereby notifies users of the index that it is possible that circumstances, including external events beyond the control of FTSE Russell, may necessitate changes to, or the cessation of, the index and therefore, any financial contracts or other financial instruments that reference the index or investment funds which use the index to measure their performance should be able to withstand, or otherwise address the possibility of changes to, or cessation of, the index.

1.5 Index users who choose to follow this index or to buy products that claim to follow this index should assess the merits of the index's rules-based methodology and take independent investment advice before investing their own or client funds. No liability whether as a result of negligence or otherwise is accepted by FTSE Russell nor its group companies (or any person concerned with the preparation or publication of these Ground Rules) for any losses, damages, claims and expenses suffered by any person as a result of:

- any reliance on these Ground Rules, and/or
- any inaccuracies in these Ground Rules, and/or
- any non-application or misapplication of the policies or procedures described in these Ground Rules,
- and/or any inaccuracies in the compilation of the Index or any constituent data.

1.6 These Ground Rules

1.6.1 This document sets out the Ground Rules for the construction and management of the FTSE Eurozone Inflation-Linked Bond Index Series.

¹ With effect from 1 April 2022 rebranded from FTSE MTS Indices.

² With effect from 10 October 2022, REPS replaced prices from MTS platform.

1.7 FTSE Russell

1.7.1 FTSE Russell is a trading name of FTSE International Limited, Frank Russell Company, FTSE Global Debt Capital Markets Limited (and its subsidiaries FTSE Global Debt Capital Markets Inc. and FTSE Fixed Income Europe Limited), FTSE Fixed Income LLC, FTSE (Beijing) Consulting Limited, Refinitiv Benchmark Services (UK) Limited, Refinitiv Limited and Beyond Ratings.

1.8 Index series objectives

1.8.1 The FTSE Eurozone Inflation-Linked Bond Indices are designed to be a measure of the Eurozone Inflation-Linked Bond market. They are transparent indices and are designed to be replicable with individual security holdings and prices disclosed electronically each day.

1.9 Publication of index and underlying data

FTSE Eurozone Indices are published on end of day basis following market close at 17:15 CET.

1.10 The base currency of the benchmark is EUR.

1.11 FTSE Eurozone Inflation-Linked Bond Indices

The FTSE Eurozone Inflation-Linked Bond Index Series is a family of indices comprised of inflation-linked bonds issued by Eurozone sovereign governments. The all-maturity FTSE Eurozone Inflation-Linked Bond Index is comprised of all Eurozone sovereign inflation-linked bonds, was launched on 3 June 2004 and has been published in real time since October 2004.

The indices have historic index values and analytics back to the introduction of their respective underlying bonds (earliest history dates from 31 Dec 1998).

The all-maturity FTSE Eurozone Inflation-Linked Bond Index is published together with a 'break-even' index. The break-even index comprises of a portfolio of nominal bonds chosen to match the maturity and issuer of each inflation-linked bond. This allows a direct comparison between the inflation-linked and nominal bond markets.

The FTSE Eurozone Inflation-Linked Bond Index series is organised by classifying the universe of Eurozone sovereign inflation-linked bonds according to (a) underlying inflation reference, (b) maturity range and (c) issuer.

In March 2011, the FTSE Eurozone Inflation-Linked Bond IG Index was added to the index range. The selection criteria for this index mirrors that of the FTSE Eurozone Inflation-Linked Bond Index, with the exception that only bonds from Eurozone issuers must have at least two investment grade ratings from the three main ratings agencies will be eligible.

1.12 Price and total return indices

1.12.1 Price and total return indices are calculated.

1.12.2 Total return index: coupons paid out on any bond in an index portfolio are reinvested overnight in the index itself. No deduction is made to a coupon before it is reinvested in the index i.e. no withholding tax is applied.

1.13 Index analytics

1.13.1 In addition to the Capital Index and total return index, the following index analytics are also calculated:

- Average coupon
- Average yield to maturity
- Average time to maturity
- Average Macaulay duration
- Average Modified duration
- Average convexity

1.14 Index calculation

- 1.14.1 The indices are calculated on every day that is a TARGET Business. The index calculation will use the T+2 settlement convention for the valuation of index constituents and the calculation of index analytics.

Section 2

Management responsibilities

2. Management responsibilities

2.1 FTSE International Limited (FTSE)

2.1.1 FTSE is the benchmark administrator of the index series³.

2.1.2 FTSE Russell is responsible for the daily calculation, production and operation of the FTSE Eurozone Inflation-Linked Bond Index and will:

- maintain records of all the constituents;
- be responsible for the addition and deletion of bonds and changes of nominal amounts, in accordance with the Ground Rules.

2.2 FTSE EMEA Fixed Income Advisory Committee

2.2.1 The FTSE EMEA Fixed Income Advisory Committee has been established by FTSE Russell. The Committee may recommend changes to the Ground Rules for approval by the FTSE Russell Index Governance Board.

2.2.2 The Terms of Reference of the FTSE EMEA Fixed Income Advisory Committee are set out on the FTSE Russell website and can be accessed through the following link:

[FTSE EMEA Fixed Income Advisory Committee.pdf](#)

2.3 Amendments to these Ground Rules

2.3.1 These Ground Rules shall be subject to regular review (at least once a year) by FTSE Russell to ensure that they continue to best reflect the aims of the index series. Any proposals for significant amendments to these Ground Rules will be subject to consultation with the FTSE EMEA Fixed Income Advisory Committee and other stakeholders if appropriate. The feedback from these consultations will be considered by the FTSE Russell Index Governance Board before approval is granted.

2.3.2 As provided for in the Statement of Principles for FTSE Fixed Income Indices, where FTSE Russell determines that the Ground Rules are silent or do not specifically and unambiguously apply to the subject matter of any decision, any decision shall be based as far as practical on the Statement of Principles. After making any such determination, FTSE Russell shall advise the market of its decision at the earliest opportunity. Any such treatment will not be considered as an exception or change to the Ground Rules, or to set a precedent for future action, but FTSE Russell will consider whether the Rules should subsequently be updated to provide greater clarity.

2.4 Market disruption

2.4.1 If the value of one or more constituents is not published due to a suspension or a market disruption event, the index will be calculated taking the previous end of day value.

³ The term administrator is used in this document in the same sense as it is defined in [Regulation \(EU\) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds](#) (the European Benchmark Regulation) and [The Benchmarks \(Amendment and Transitional Provision\) \(EU Exit\) Regulations 2019](#) (the UK Benchmark Regulation).

Section 3

FTSE Russell index policies

3. FTSE Russell index policies

These Ground Rules should be read in conjunction with the following policy documents which can be accessed using the links below:

3.1 Queries and Complaints

FTSE Russell's complaints procedure can be accessed through the following link:

[Benchmark Determination Complaints Handling Policy.pdf](#)

3.2 Statement of Principles for FTSE Fixed Income Indices (the Statement of Principles)

Indices need to keep abreast of changing markets and the Ground Rules cannot anticipate every eventuality. Where the Ground Rules do not fully cover a specific event or development, FTSE Russell will determine the appropriate treatment by reference to the Statement of Principles for FTSE Fixed Income Indices which summarises the ethos underlying FTSE Russell's approach to index construction. The Statement of Principles is reviewed annually and any changes proposed by FTSE Russell are presented to the FTSE Russell Policy Advisory Board for discussion before approval by the FTSE Russell Index Governance Board.

The Statement of Principles for Fixed Income Indices can be accessed through the following link:

[Statement of Principles Fixed Income Indices.pdf](#)

3.3 Recalculation Policy and Guidelines

The Recalculation Policy and Guidelines for Fixed Income Indices document is available from the FTSE Russell website using the link below or by contacting info@ftserussell.com.

[Fixed Income Recalculation Policy and Guidelines.pdf](#)

3.4 Index Policy in the Event Clients are Unable to Trade a Market or a Security

3.4.1 Details of FTSE Russell's treatment can be accessed through the following link:

[Index Policy in the Event Clients are Unable to Trade a Market or a Security.pdf](#)

3.5 Policy for Benchmark Methodology Changes

3.5.1 Details of FTSE Russell's policy for making benchmark methodology changes can be accessed through the following link:

[Policy for Benchmark Methodology Changes.pdf](#)

3.6 FTSE Russell Governance Framework

3.6.1 To oversee its indices, FTSE Russell employs a governance framework that encompasses product, service and technology governance. The framework incorporates the London Stock Exchange Group's three lines of defence risk management framework and is designed to meet the requirements of the IOSCO Principles for Financial Benchmarks⁴, the European benchmark regulation⁵ and the UK benchmark regulation⁶. The FTSE Russell Governance Framework can be accessed through the following link:

[FTSE_Russell_Governance_Framework.pdf](#)

3.7 Real Time Status Definitions

3.7.1 Please refer to the following guide for details of real time status definitions for indices that are calculated in real time.

[Real Time Status Definitions.pdf](#)

⁴ IOSCO Principles for Financial Benchmarks Final Report, FR07/13 July 2013.

⁵ Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds.

⁶ The Benchmarks (Amendment and Transitional Provision) (EU Exit) Regulations 2019.

Section 4

Eligibility criteria

4. Eligibility criteria

4.1 Eligible bonds

To be eligible for the index, bonds must meet the following eligibility criteria:

- Inflation-linked bonds issued by a sovereign government belonging to the Eurozone (for the Investment Grade Index, such issuers must have at least two investment grade ratings from the three main ratings agencies);
- At least €2 billion in size;
- Quoted on the Refinitiv Evaluated Pricing Service (REPS);
- The principal and coupon payments are linked to either the EMU HICP or Domestic CPI inflation rates.

4.2 Selection criteria

All eligible bonds automatically become Selected Bonds.

Section 5

Price sources

5. Price sources

5.1 FTSE Eurozone Indices are priced using the Refinitiv Evaluated Pricing Service (REPS).

Index updates are calculated using best bid prices. New bonds entering the index for the first time use the best offer price, replicating the bid-offer spread experienced by a fund tracking the index. This applies to both the all-maturity and the individual maturity sub-indices.

Selected indices of each series are also available in mid-priced versions, where existing constituents are valued using mid prices. In order to replicate the bid-offer spread incurred when tracking the mid-index, new constituents enter the mid-priced index using their respective offer prices and leave the index using their respective bid prices. The mid-price is calculated as the arithmetic average of the respective bid and offer price pair.

5.2 Prior to being used in the index calculation, the prices are subject to a multi-step verification process which aims to remove stale or off-market prices. The verification procedure includes:

- Comparing the bid and offer spreads against country thresholds;
- Comparing price movements in individual bonds against pre-defined thresholds.

Any price that successfully completes the verification process is referred to as the Last Good Price (LGP) and is subsequently used in the index calculation. In the event that the verification process disqualifies all prices for a particular bond, the LGP is used until a new price is available.

5.3 Verification and price challenges

5.3.1 Statistical techniques are used to identify pricing anomalies based on bid-ask spreads, day-over-day changes and comparisons across peer groups by maturity, asset type, etc.

5.3.2 Any price challenges from index users and possible outliers from the verification process are reviewed with our pricing provider.

In the event that an issue is not able to be resolved in a timely manner, FTSE Russell may exercise expert judgement and roll prices from the previous day. Any exercise of expert judgement is recorded.

Section 6

Index rebalancing

6. Index rebalancing

6.1 Monthly rebalancing

6.1.1 FTSE Eurozone Indices are rebalanced every calendar month. New selections for the index portfolios and their amounts are established using market data at 17:15 CET on the first day that is a TARGET business day following the 15th day of the month prior to the effective date of the new selections (such business day being the “Selection Day”). The first settlement day of a bond following issuance must be on or before Selection Day in order for it to be eligible for the new monthly selections.

6.1.2 The monthly rebalance is applied post close on the last business day of the month with prices from 17:15 CET, i.e. with effect from open on the first business day of the following month.

6.1.3 In the event that there are no Eligible Bonds available to be selected for a new monthly index portfolio, the current (populated) index portfolio is held constant until a new bond(s) becomes eligible.

6.2 Amounts

6.2.1 The amount of each Selected Bond i is determined using data from 11:00 CET on the first business day following the 15th day of the month immediately preceding the effective month 1. This time is denoted t_0 . All weights are published to 3 decimal places. Bond eligibility and selections are established by applying the relevant criteria for each index at the same time t_0 .

Appendix A

Calculations

Index level calculations

Total return index

$$TR(t) = \frac{\sum_{i=1}^n ((P_i(t) + AI_i(t)) \times N_i(r)) \times WF_i(r) \times E_i(t) \times IR_i(t) + Cash(t)}{TRIDivisor(t)}$$

Price index

$$PR(t) = \frac{\sum_{i=1}^n P_i(t) \times N_i(r) \times WF_i(r) \times E_i(t) \times IR_i(t)}{Divisor(t)}$$

Index yield

$$IndexYield(t) = \frac{\sum_i^n Y_i(t) \times MV_i(t) \times MD_i(t) \times WF_i(r) \times E_i(t) \times IR_i(t)}{\sum_i^n MV_i(t) \times MD_i(t) \times E_i(t) \times IR_i(t)}$$

Market value

$$MarketValue(t) = \sum_{i=1}^n (P_i(t) + AI_i(t)) \times N_i(r) \times WF_i(r) \times E_i(t) \times IR_i(t)$$

TRI divisor

$$TRIDivisor(t+1) = \begin{cases} \frac{\sum_{i=1}^n (P_i(t) + AI_i(t)) \times N_i(r) \times WF_i(r) \times E_i(t) \times IR_i(t)}{TR(t)}, & t \text{ <> day before rebalance effective day} \\ \frac{\sum_{i=1}^n (P_i(t) + AI_i(t)) \times N_i(r+1) \times WF_i(r) \times E_i(t) \times IR_i(t)}{TR(t)}, & t = \text{day before rebalance effective day} \end{cases}$$

Divisor

$$Divisor(t+1) = \frac{\sum_{i=1}^n P_i(t) \times N_i(r+1) \times WF_i(r) \times E_i(t) \times IR_i(t)}{PR(t)}$$

Macaulay duration

$$Duration(t) = \frac{\sum_i^n MV_i(t) \times D_i(t) \times WF_i(r) \times E_i(t) \times IR_i(t)}{\sum_i^n MV_i(t) \times WF_i(r) \times E_i(t) \times IR_i(t)}$$

Modified duration

$$ModDuration(t) = \frac{\sum_i^n MV_i(t) \times MD_i(t) \times WF_i(r) \times E_i(t) \times IR_i(t)}{\sum_i^n MV_i(t) \times WF_i(r) \times E_i(t) \times IR_i(t)}$$

Convexity

$$Convexity(t) = \frac{\sum_i^n MV_i(t) \times Cvx_i(t) \times WF_i(r) \times E_i(t) \times IR_i(t)}{\sum_i^n MV_i(t) \times WF_i(r) \times E_i(t) \times IR_i(t)}$$

Average coupon

$$Coupon(t) = \frac{\sum_i^n N_i(t) \times C_i(t) \times WF_i(r) \times E_i(t)}{\sum_i^n N_i(r) \times WF_i(r) \times E_i(t)}$$

Average time to maturity

$$TimeToMaturity(t) = \frac{\sum_i^n N_i(t) \times TTM_i(t) \times WF_i(r) \times E_i(t) \times IR_i(t)}{\sum_i^n N_i(r) \times WF_i(r) \times E_i(t)}$$

Index notional

$$IndexNotional(t) = \sum_i^n N_i(r) \times WF_i(r) \times E_i(t)$$

Index cash

$$Cash(t) = \sum_i^n C_i(t) \times N_i(r) \times X_i(t) \times WF_i(r) \times E_i(t) \times IR_i(t)$$

Bond level calculations

Accrued interest

$$AI_i(t) = \frac{D_i(sd, pcd_i)}{D_i(cp_i)} \times \frac{C_i(t)}{f_i}$$

Gross price

$$DP_i(t) = P_i(t) + AI_i(t)$$

Market value

$$MV_i(t) = DP_i(t) \times N_i(r)$$

Yield to maturity

$$DP_i(t) = \sum_{k_i=tc_i}^{n_i} \frac{CF_i}{\left(1 + \frac{Y_i(t)}{f_i}\right)^{k_i}}$$

Simple yield

$$SY_i(t) = \frac{\left(\frac{FV_i}{DP_i(t)} - 1\right)}{TTM_i(t)}$$

Macaulay duration

$$D_i(t) = \frac{\sum_{k_i=tc_i}^{n_i} \frac{CF_i \times k_i}{\left(1 + \frac{Y_i(t)}{f_i}\right)^{k_i}}}{DP_i(t)}$$

Modified duration

$$MD_i(t) = \frac{D_i(t)}{\left(1 + \frac{Y_i(t)}{f_i}\right)}$$

Convexity

$$Cnvxt_i(t) = \frac{1}{4 \times DP_i(t)} \times \sum_{k_i=tc_i}^{n_i} \frac{(k_i^2 + k_i) \times CF_i}{\left(1 + \frac{Y_i(t)}{f_i}\right)^{k_i+2}}$$

Key to terms

Key	Description
TR	Total return index
PR	Price Index
IndexYield	Average yield to maturity of the index
MarketValue	Total market value of the index
TRIDivisor	Total return index divisor for the total return index
Divisor	Price index divisor for the price index
Duration	Average Macaulay duration of the index
ModDuration	Average modified duration of the index
Convexity	Average convexity of the index
Coupon	Average coupon of the index
TimeToMaturity	Average time to maturity of the index
IndexNotional	Total amount outstanding of the index
Cash	Total cash held in the index as a result of coupon payments
P_i	Clean price of the bond <i>i</i> used for index calculation
AI_i	Accrued interest if the bond <i>i</i>
N_i	Amount outstanding of the bond <i>i</i> used for index calculation
WF_i	Weight adjustment factor of the bond <i>i</i>
E_i	The exchange rate required to convert the security's currency into the index's base currency
IR_i(t)	Inflation ratio of the bond <i>i</i>
Y_i	Annualised yield to maturity of the bond <i>i</i>
MV_i	Total market value of the bond <i>i</i>
MD_i	Modified duration of the bond <i>i</i>
D_i	Macaulay duration of bond <i>i</i>
D_i(sd, pcd_i)	Calendar days between the index settlement date and the previous coupon date of the bond <i>i</i> , based on day count basis
D_i(cp_i)	Number of days in the coupon period of the bond <i>i</i> , based on day count basis
Cvxt_i	Convexity of bond <i>i</i>
C_i	Coupon rate of bond <i>i</i>

Key	Description
TTM_i	Time to maturity of bond i
X_i	Coupon payment marker of bond i , will be 1 if coupon payment date else 0
D_i	Days applicable to bond i
DP_i	Dirty price of bond i
f_i	Coupon payment frequency of bond i
CF_i	Cash flow amount of bond i
SY_i	Annualised yield to maturity of the bond i , simple interest basis. Calculated only when the bond is in its final coupon period
FV_i	Face value of bond i
n_i	Total number of remaining cash flows of bond i
k_i	Time to each cash flow of bond i
t	Calculation date
$t - 1$	Previous calculation date
$t + 1$	Next calculation date
r	Index rebalance-effective date
$r + 1$	Next index rebalance-effective date

Appendix B

Further information

A glossary of terms used in FTSE Russell's Ground Rule documents can be found through the following link:

[Fixed Income Glossary of Terms.pdf](#)

For further information on the FTSE Eurozone Inflation-Linked Bond Index Ground Rules please visit www.lseg.com/en/ftse-russell/ or e-mail info@ftserussell.com.

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