

Breakeven Inflation Swap Family Methodology

Date March 2024

1	Introduction	1
1.1	Overview	1
2	Part One -Governance.....	1
2.1	Overview.....	1
2.2	Oversight Committee.....	2
2.3	Business Forums.....	2
3	Errors.....	2
3.1	Errors or Omissions.....	2
4	Methodology.....	3
4.1	Overview.....	3
5	Consultation Process.....	3
5.1	Where Parameta Solutions determines a consultation is needed:	3
6	Market Disruption.....	3
6.1	Unavailability of a pricing source.....	3
7	Complaints.....	4
7.1	Complaints Policy	4
8	Part two – Overview of the Indices.....	5
8.1	Methodology Overview	5
9	Indices.....	6
10	Input Data.....	7
10.1	Input Data Overview	7
11	Index Calculation & Determinations.....	8
11.1	Calculations Overview	8
12	ESG Disclosures	9
12.1	Explanation of How ESG Factors are reflected in the methodology	9
13	Part three - Disclaimer	10
14	Contact Us.....	10

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Version	Approved by	Date	Summary of changes
1.0	PS CMF	15 th Mar 2024	Initial Draft



1 Introduction

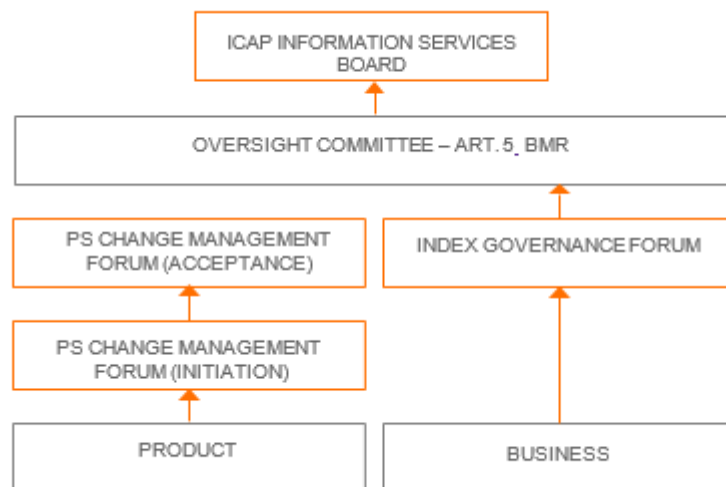
1.1 Overview

- 1.1.1 ICAP Information Services Limited trading as Parameta Solutions ("Parameta Solutions") develops, calculates and publishes indices.
- 1.1.2 This methodology is split into three parts
 - 1) the governance section which is an overall framework for all benchmarks;
 - 2) the specific details relating to the particulars for a benchmark and
 - 3) disclosures and disclaimers.
- 1.1.3 The indices are calculated and published by Parameta Solutions ("Index Calculation Agent"). The Index Calculation Agent is responsible for compiling and calculating the benchmark pursuant to and on the basis of this methodology.
- 1.1.4 Indices are published via various data vendors under licence from Parameta Solutions. Each vendor determines whether they will distribute/display the index via their respective information systems.
- 1.1.5 These indices cannot be used as a benchmark as defined under UK or EU BMR, neither under IOSCO principles without a signed licence or agreement with Parameta Solutions.
- 1.1.6 For further information regarding the indices including licensing and distribution, please contact findoutmore@parametasolutions.com

2 Part One -Governance

2.1 Overview

- 2.1.1 Parameta Solutions has in place a "Three Lines of Defence" model, enabling close cross- monitoring of the governance process - this being business, compliance/risk and audit who all have a key role in ensuring that Parameta Solutions meets its regulatory requirements where it has either (a) indices capable of being benchmarks under the relevant Benchmark Regulation or (b) benchmarks as defined under the relevant Benchmark Regulation. The over-arching governance is complimented by the Oversight Committee which applies to indices capable of being benchmarks under the relevant Benchmark Regulation or (b) are benchmarks as defined under the relevant Benchmark Regulation. The Oversight Committee can escalate to the Parameta Solutions Board if required.





2.2 Oversight Committee

- 2.2.1 The Oversight Committee is appointed by the Parameta Solutions to review the integrity of the indices, in accordance with the Oversight Committee Terms of Reference.
- 2.2.2 Parameta Solutions is responsible for appointing the chairman and secretary of the Oversight Committee.
- 2.2.3 The Oversight Committee provides independent oversight of, and challenge to Parameta Solutions on all aspects of the index determination process. Its responsibilities include:
- reviewing the index definition and methodology at least annually
 - determining and keeping under review the Terms of Reference for the Oversight Committee
 - reviewing and approving the agenda and minutes of the Oversight Committee
 - considering internal or external audits commissioned by the Oversight Committee and monitoring the implementation of any identified remedial actions
 - overseeing any changes to this methodology and being able to request Parameta Solutions to consult on such changes
 - reviewing and approving procedures for cessation of the indices, including any consultation about a cessation
 - overseeing any third party involved in the provision of the index, including calculation or dissemination agents.

2.3 Business Forums

- 2.3.1 The Parameta Solutions Change Management Forum ("PSCMF") is responsible for the approval to initiate new products and the approval of new products.
- 2.3.2 Index Governance Forum ("IGF") is responsible for (a) overseeing the provision of the index operationally and with respect to the methodologies; and (b) supporting the Oversight Committee.

3 Errors

3.1 Errors or Omissions

- 3.1.1 Whilst the indices are governed by a set of rules that are set out in this methodology and are intended to be comprehensive, it is possible that errors, ambiguities or omissions to occur.
- 3.1.2 In such circumstances, Parameta Solutions shall:
- 3.1.3 follow the process outlined in its Errors Policy
- 3.1.4 endeavour to resolve such ambiguity, error or omission using expert judgment and may, in consultation with the IGF, propose amendments to this methodology to reflect the resolution of such ambiguity, error or omission
- 3.1.5 assess the potential impact such change may have on stakeholders in accordance with its Cessation and Transition Policy. Any such decision to consult with stakeholders shall be considered by the IGF and Oversight Committee
- 3.1.6 detail in the Benchmark Statement a summary of the specific procedures for dealing with errors in input data or in the determination of the index, including when a re-determination of the index is required.



4 Methodology

4.1 Overview

- 4.1.1 Parameta Solutions may at any time undertake a periodic (and in any event annual) review of the indices in circumstances where, for example, the index is no longer representative of the economic reality or the relevant market. The IGF shall consider the findings following any such periodic review of an index or index family (as the case may be). In the event a change to an index is needed, this shall be handled in accordance with the Cessation and Transition Policy.
- 4.1.2 Each index is subject to an initial approval and periodic review. Approval of this methodology is determined by the Benchmark Design Policy and the PS CMF Terms of Reference (for new methodologies) and the Cessation & Transition Policy and IGF (for reviews). Each Terms of Reference set out the process for nominating and removing persons involved in reviewing and approving the methodology guides.
- 4.1.3 In the event material changes are needed to this methodology, Parameta Solutions will assess the potential impact of such changes on stakeholders and (if it believes necessary) consult with stakeholders as set out below. The Oversight Committee may direct Parameta Solutions to consult on changes to this methodology with stakeholders or the wider market. The IGF will then approve any material amendments to this methodology before publication. Following approval, Parameta Solutions shall notify stakeholders of its determination to amend any methodology. Such notification shall where reasonable detail the proposed changes in the control sheet of this methodology.
- 4.1.4 In the event Parameta Solutions has determined a possible cessation of an index is necessary, it shall prepare documentation to the IGF and Oversight Committee which will include but is not limited to (a) why cessation is deemed appropriate; (b) if a consultation is required and © if there is a suitable alternative identified by Parameta Solutions.

5 Consultation Process

5.1 Where Parameta Solutions determines a consultation is needed:

- 5.1.1 The IGF and the Oversight Committee will approve the contents of the consultation and the set of users and other stakeholders to which it should be distributed. The consultation will include as a minimum the key elements of the methodology Parameta Solutions believe will be affected by the proposed material change. The consultation will be available on the Parameta Solutions website.
- 5.1.2 Consultations will usually run for no less than 4 weeks, however, Parameta Solutions reserves the right to determine the most appropriate consultation period (including a shorter window for feedback) taking into consideration factors such as the complexity of the matters within the consultation.
- 5.1.3 Once the consultation period has closed, the results of the consultation and recommendations from the analysis are presented to the IGF and the Oversight Committee.
- 5.1.4 The final approval of a cessation, transition or the methodology change is made by the IGF. Following approval, Parameta Solutions shall notify stakeholders of its determination to terminate or amend this methodology. Such notification shall detail (where reasonable) the proposed changes.

6 Market Disruption

6.1 Unavailability of a pricing source

- 6.1.1 Potential illiquidity, market disruption, unavailability of a pricing source may impact the ability to publish an index and delay and/or suspension or discontinuance of an index may result. In the case of extraordinary events or periods of market disruption, information about the event and the impact on the indices will where reasonably practicable and proportionate be posted on the Parameta Solutions website and disseminated through client channels.



7 Complaints

7.1 Complaints Policy

- 7.1.1 Parameta Solutions has a publicly available Complaints Policy. All complaints are investigated by a person not directly involved with the index calculation and dissemination. Information related to complaints will be stored in a restricted access area and kept for a period of up to 5 (five) years following the date when the complaint was first lodged. Complaints can be submitted at benchmarkqueries@parametasolutions.com

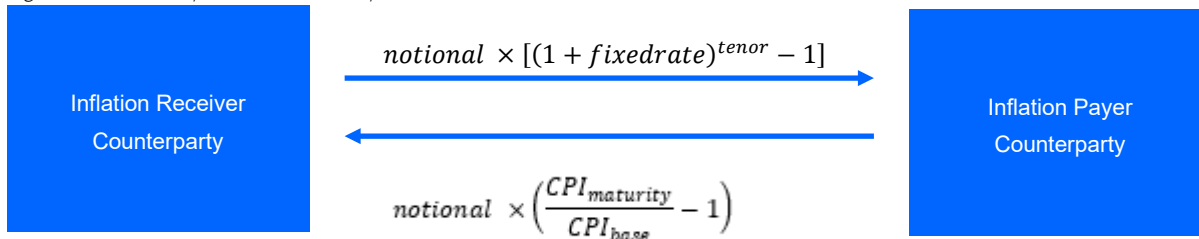


8 Part two – Overview of the Indices

8.1 Methodology Overview

- 8.1.1 This section provides an overview of the methodology for the Parameta Solutions Breakeven Inflation Swap Index family (the "BISI") set out in section 9 below.
- 8.1.2 The BISI provides an indicative measure of the returns of investing in an unfunded monthly rolling zero coupon breakeven inflation swap. The way in which a zero-coupon inflation swap is structured is set out below. BISI is available at various tenors referencing the following inflation markets covered by the ICAP Inflation Desk ("Markets"):
- UK RPI (UKRPI);
 - Euro HICP ex-tobacco (Euro HICPx); and
 - French CPI ex-tobacco (FRCPIx)
- 8.1.3 The indices are calculated and published for days that where the relevant ICAP Inflation desk publish prices (in the respective market¹ and banks are open for business. Further details of the Input Data (as defined below) are set out in Section 10.
- 8.1.4 The BISI is rebalanced at close on the last index business day of the month whereby a) the current swap is unwound and b) a new swap is entered into at the prevailing market rate for the swap tenor settling in the following month.
- 8.1.5 Each index is calculated using the net present value of the constituent swap instrument using the following inputs (together "Input Data"):
- Zero coupon breakeven inflation swap rates;
 - Discount factors derived from OIS rates;
 - and on rebalancing days, monthly projected inflation index levels (see section 10.1)
- 8.1.6 Zero-coupon breakeven inflation swaps are instruments that allows two parties to exchange a notional adjusted for the inflation that has accrued over a specified period of time against the notional capitalized with a fixed rate. The fixed rate (quoted as an annualised rate) is agreed at the inception of the swap and reflects the expected future inflation over the period of the swap. The inflation leg varies on the basis of the base inflation reference value (which is known at inception) and the final inflation reference value at the end of the swap period. These cash flows only occur at the maturity of the swap.

Figure 1: Zero-coupon inflation swap structure.



- 8.1.7 With respect to the zero-coupon inflation swaps referred to above, the table below contains standard market conventions for in the Markets:

Market	Currency	Lag	Spot Release Date	Calendar
UK RPI	GBP	2 month	15 th of trading month	London
Euro HICP ex-tobacco	EUR	3 months	15 th of trading month	TARGET ²
France CPI ex-tobacco	EUR	3 months	15 th of trading month	TARGET ³

¹ The ICAP Inflation Desk is located in Paris and UK and operate on their respective market hours

² TARGET2 was launched on 19 November 2007 and fully replaced the first-generation TARGET by May 2008.

³ See Footnote 2



8.1.8 A detailed list of the index names and the economic reality they represent, is provided below in section 9.

9 Indices

Index Name	Currency	Tenors	Economic Reality	Calculation Times
Parameta n-yr. UKRPI Zero-Coupon Breakeven Inflation Swap Index	GBP	1yr, 2yr, 3yr, 4yr, 5yr, 6yr, 7yr, 8yr, 9yr, 10yr, 12yr, 15yr, 20yr, 25yr, 30yr, 35yr, 40yr, 45yr, 50yr, 55yr, 60yr	The return of a monthly rolling strategy that invests in an n-yr. inflation payer UK RPI zero-coupon breakeven inflation swap in the relevant Markets and unwinds the swap at the end of the month to initiate a new n-yr. swap.	5pm UK Time
Parameta n-yr. EU HICP ex-tobacco Zero-Coupon Breakeven Inflation Swap Index	EUR	1yr, 2yr, 3yr, 4yr, 5yr, 6yr, 7yr, 8yr, 9yr, 10yr, 12yr, 15yr, 20yr, 25yr, 30yr, 40yr, 50yr	The return of a monthly rolling strategy that invests in an n-yr. inflation payer EU HICP ex-tobacco zero-coupon breakeven inflation swap in the relevant Markets and unwinds the swap at the end of the month to initiate a new n-yr. swap.	5pm UK Time
Parameta n-yr. FR CPI ex-tobacco Zero-Coupon Breakeven Inflation Swap Index	EUR	1yr, 2yr, 3yr, 4yr, 5yr, 6yr, 7yr, 8yr, 9yr, 10yr, 12yr, 15yr, 20yr, 25yr, 30yr	The return of a monthly rolling strategy that invests in an n-yr. inflation payer FR CPI ex-tobacco zero-coupon breakeven inflation swap in the relevant Markets and unwinds the swap at the end of the month to initiate a new n-yr. swap.	5pm UK Time



10 Input Data

10.1 Input Data Overview

10.1.1 The Input Data is obtained as follows:

10.1.2 close price (e.g. 5pm for the UK) of the indicative mid-market levels of zero coupon breakeven inflation swaps from the Markets,

10.1.3 on rebalancing days, projected monthly fixings (an initial Index level published for each respective index).⁴ from the Markets, and

10.1.4 discount factors derived from Overnight Indexed Swap rates published by relevant desks referencing either SONIA, ESTR or EONIA ("OIS Rates") for the following tenors are used in the BISI:

Currency	Index	Tenors
GBP	SONIA	Tenors out to 60yr
EUR	ESTR/EONIA ⁵	Tenors out to 50yr

10.1.5 The ICAP Inflation Desk priorities indicative mid-market levels of zero coupon breakeven inflation swaps from the ICAP Inflation Desk as follows:

- outright trading interest
- Spread interest
- Butterflies
- If one trading interest is contradictory to another then adjustments to mid's will prioritise bids and offers shown in outright markets.

10.1.6 The Input Data meets minimum market sizes, denominated in notional amounts

10.1.7 The Input Data is available through Fusion, Bloomberg page ICAP and Refinitiv

10.1.8 The Input Data is subject to a number of validation and tolerance checks by Parameta Solutions, as well as checks to flag spurious data where possible. Input Data is also corroborated systematically against other data sources.

⁴ The projected monthly fixings are also known as seasonality factors. With respect to the BISI EUR indices, this includes input data that has flash indicators that are published (for example both HICPxT and FrCPIxT have a flash inflation number at the start of each month)

⁵ ESTR rates used from 27th July 2020, EONIA rates used prior to that.



11 Index Calculation & Determinations

11.1 Calculations Overview

- 11.1.1 Parameta Solutions will perform all calculations, determinations and adjustments (“Calculations”) in relation to the BISI. Parameta Solutions will not have any responsibility for errors made in good faith or omissions in Calculations or other actions provided in this methodology. Parameta will not exercise discretion in its calculation of the indices.
- 11.1.2 The Calculation of the BISI shall be in accordance for GBP on days that the ICAP Inflation Desk ⁶publish zero coupon inflation swap prices and banks are open for business in the respective market.
- 11.1.3 For a given tenor and market the index ***BISI(t, tenor)*** on day t is calculated as:

$$BISI(t, tenor) = BISI(r, tenor) \cdot \left(1 + \frac{NPV(t, tenor)}{notional} \right)$$

where:

$$NPV(t, tenor) = notional \times DF_{maturity} \times \left(\left(\frac{CPI_{maturity}}{CPI_{base}} - 1 \right) - ((1 + fixedrate)^{tenor} - 1) \right)$$

and:

<i>t</i>	is the index calculation day
<i>BISI(t)</i>	is the index level on day t
<i>r</i>	is the last rebalancing day
<i>notional</i>	is the notional of the swap
<i>DF_{maturity}</i>	is the discount factor on day t for the maturity of the swap
<i>CPI_{maturity}</i>	is the reference inflation index at the maturity of the swap
<i>CPI_{base}</i>	is the base reference inflation index known at inception
<i>tenor</i>	is the tenor of the swap in years
<i>fixedrate</i>	is the fixed rate of the swap agreed at inception

Note, until the official *CPI_{maturity}* is published by the relevant authority the level is from the prevailing mid-market zero coupon inflation swap rate for the swap maturity and the *CPI_{base}*.

- 11.1.4 Each index is rebalanced at close on the last index business day of the month at which point the current swap is unwound, and a new swap is entered at the prevailing market rate for the swap tenor setting in the following month.
- 11.1.5 The fixed rate for the new swap is derived from the prevailing zero coupon swap rates.
- 11.1.6 At inception the new swap has a PV of zero so the NPV of the index on a rebalancing is determined solely by reference to the current swap.
- 11.1.7 Each index has a base date of the last business day of 30th November 2023 on which date they have an index level of 100. The indices have history back to the beginning of 2015. Additional history prior to 2015 may be made available in the future.
- 11.1.8 The BISI are unfunded, in that they reflect the performance of the swap only.

⁶ The ICAP Inflation desk is located in Paris and UK and operate on their respective market hours



12 ESG Disclosures

12.1 Explanation of How ESG Factors are reflected in the methodology

ITEM 1. Name of the benchmark administrator.	ICAP Information Services Limited
ITEM 2. Type of benchmark or family of benchmarks. <i>Choose the relevant underlying asset from the list provided in Annex II to Commission Delegated Regulation (EU) 2020/1816.</i>	
ITEM 3. Name of the benchmark or family of benchmarks.	Breakeven -Inflation Swap Index Family (BISI)
ITEM 4. Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<p>ITEM 5. Where the response to Item 4 is positive, please list below, for each family of benchmarks, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816. Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets. The ESG factors shall be disclosed at an aggregated weighted average value at the level of the family of benchmarks.</p>	
(a) List of environmental factors considered:	Selection, weighting or exclusion:
(b) List of social factors considered:	Selection, weighting or exclusion:
(c) List of governance factors considered:	Selection, weighting or exclusion:
<p>ITEM 6. Where the response to Item 4 is positive, please list below, for each benchmark, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816, depending on the relevant underlying asset concerned. Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets. The ESG factors shall not be disclosed for each constituent of the benchmark, but shall be disclosed at an aggregated weighted average value of the benchmark. Alternatively, all of this information may be provided in the form of a hyperlink to a website of the benchmark administrator included in this explanation. The information on the website shall be easily available and accessible. Benchmark administrators shall ensure that information published on their website remains available for five years.</p>	
(a) List of environmental factors considered:	Selection, weighting or exclusion:
(b) List of social factors considered:	Selection, weighting or exclusion:
(c) List of governance factors considered:	Selection, weighting or exclusion:
Hyperlink to the information on ESG factors for each benchmark:	
ITEM 7. Data and standards used	
(a) Data input (i) Describe whether the data reported, modelled or sourced internally or externally (ii) Where the data are reported, modelled or sourced externally, please name third party data provider.	
(b) Verification and quality of data. Describe how data are verified and how the quality of those data is ensured.	
(c) Reference standards Describe the international standards used in the benchmark methodology.	
Date on which information has been last updated and reason for the update:	



13 Part three - Disclaimer

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14 Contact Us

For further information please email: benchmarkqueries@parametasolutions.com

EMEA: +44 (0)207 200 7600
Americas: +1 877 639 7300
APAC: +65 6922 1129
Sales: findoutmore@parametasolutions.com
Support: operations@parametasolutions.com