

CALCULATION METHODOLOGY

Overview

The ICE Swap Rate® (formerly known as ISDAFIX) benchmark represents the mid-price for interest rate swaps (the fixed leg) and swap spreads (the applicable mid-price minus a corresponding specified government bond yield), in various specified currencies and tenors and at particular specified times of the day.¹

Each published ICE Swap Rate benchmark rate (each an “ISR Rate”) is calculated using eligible prices and volumes for specified interest rate derivative products, provided by trading venues in accordance with a “Waterfall” Methodology. The first level of the Waterfall (“Level 1”) uses eligible, executable prices and volumes provided by regulated, electronic, trading venues. If these trading venues do not provide sufficient eligible input data to calculate an ISR Rate in accordance with Level 1 of the Methodology, then the second level of the Waterfall (“Level 2”) uses eligible dealer to client prices and volumes displayed electronically by trading venues. If there is insufficient eligible input data to calculate an ISR Rate in accordance with Level 2 of the Methodology, then the third level of the Waterfall (“Level 3”) uses movement interpolation, where possible for applicable tenors, to calculate an ISR Rate. Where it is not possible to calculate an ISR Rate at Level 1, Level 2 or Level 3 of the Waterfall, then the Insufficient Data Policy applies for that ISR Rate.

IBA determines and publishes GBP SONIA Spread-Adjusted ICE Swap Rate settings in line with the methodology proposed by the Non-Linear Task Force of the Working Group on Sterling Risk-Free Reference Rates in its paper [“Transition in Sterling Non-Linear Derivatives referencing GBP LIBOR ICE Swap Rate \(ISR\)”](#).

IBA determines and publishes USD SOFR Spread-Adjusted ICE Swap Rate settings in line with the methodology proposed by the Alternative Reference Rates Committee in its white paper [“Suggested Fallback Formula for the USD LIBOR ICE Swap Rate”](#).

This document describes the “Methodology” used to calculate and determine the published values for the ICE Swap Rate. This Methodology is reviewed at least annually by the ICE Swap Rate & Term Reference Rates Oversight Committee, as documented in its Terms of Reference.

ICE Swap Rate is administered by ICE Benchmark Administration Limited (“IBA”), which is authorised and regulated by the Financial Conduct Authority for the regulated activity of administering a benchmark and is authorised as a benchmark administrator under the UK Benchmarks Regulation.

Input Data Specifications and Criteria

The specifications and eligibility criteria for the applicable interest rate derivative products and for the prices and volumes provided in respect of these as input data for each ISR Rate are available at <https://www.theice.com/iba/ice-swap-rate>.

¹ The various currencies, tenors and times are specified at <https://www.theice.com/iba/ice-swap-rate>.

Calculation steps

The calculation of each ISR Rate involves the following steps:

Waterfall Level 1

1. IBA collects tradeable bid and offer prices and volumes available on the central limit order books of regulated, electronic trading venues in respect of a two-minute window before the relevant ISR Rate calculation (e.g. 10:58 to 11:00).
2. The two-minute window is divided into 24 blocks of five seconds each and a random snapshot time is selected for each of these five-second blocks (i.e. 24 snapshots).
3. A synthetic order book is created at each snapshot time by combining and ranking (by price) the eligible bids and offers from each trading venue. These prices (and the associated volumes) are used to calculate the volume weighted bid (“VWB”) and the volume weighted offer (“VWO”) of the prices that would result from filling a hypothetical trade of Standard Market Size (“SMS”)² on each side of the market. A volume weighted average mid-price (“VWAMP”) is then calculated from the VWB and the VWO.
4. Snapshots with insufficient tradable volume to fill the SMS, or that contain crossed or zero-spread bid and offer prices, are not included in the calculation. In order to calculate a level 1 rate, a minimum of 6 snapshots is required. The snapshots are then ranked in order of their VWAMPs and the snapshots with a VWAMP above the 75th percentile or below the 25th percentile are discarded.
5. The VWAMPs from the remaining snapshots are quality-weighted based on the difference between the VWB and the VWO and averaged, in order to determine the applicable ISR Rate.

Waterfall Level 2

6. If fewer than six snapshots remain after Level 1, IBA will use dealer to client bid and offer prices and volumes displayed electronically by trading venues in respect of the same two-minute window to calculate the applicable ISR Rate.
7. The two-minute window is again divided into 24 blocks of five seconds each and a random snapshot time is selected for each block.
8. Where a trading venue provides prices from dealers for multiple categories of clients within a snapshot, IBA will select the prices from a single client category per dealer, based on the tightest spread and largest volume for each client category within the snapshot.
9. The selected, eligible bids and offers from each dealer from each trading venue are combined and ranked (by price) to create a synthetic order book at each snapshot time and any crossed bid and offer volume within the orderbook is discarded. The remaining prices and associated volumes are used to calculate the VWB and the VWO of the prices that would result from filling a hypothetical trade of SMS in the same manner as for Level 1, with the VWAMP also calculated in the same way.

² The standard market size for each ISR Rate for Level 1 and Level 2 is specified at <https://www.theice.com/iba/ice-swap-rate>.

10. Illiquid snapshots are excluded in the same manner as for Level 1 and again at least 6 snapshots are required for a level 2 rate. The snapshots are ranked in order of their VWAMPs and the snapshots with a VWAMP above the 75th percentile or below the 25th percentile are discarded.
11. The applicable ISR Rate is determined as the quality weighted average of the remaining VWAMPs in the same manner as for Level 1.

Waterfall Level 3

12. If fewer than six snapshots remain after Level 2, IBA will apply movement interpolation (linear interpolation of the daily rate movement between adjacent tenors) to calculate the applicable ISR Rate, provided that such ISR Rate:
 - a) was calculated at Level 1 or Level 2 of the Waterfall (i.e. was not interpolated) on the previous publication day; and
 - b) has adjacent tenors that are one year shorter and one year longer than the tenor of such ISR Rate (thus movement interpolation can only apply to a limited number of ISR Rate tenors), each of which was not interpolated on both the previous and the current publication day.

Insufficient Data Policy

13. If Level 3 does not generate the applicable ISR Rate, then the published Insufficient Data Policy³ applies.

Publication Days and Holiday Schedules

The days on which each ISR Rate is scheduled to be published, and the applicable publication time, are specified at <https://www.theice.com/iba/ice-swap-rate>.

Errors and Republication

IBA has published a Republication Policy⁴ which addresses situations where an error in Input Data or in the determination of an ICE Swap Rate is identified after the publication of the relevant price. For transparency, IBA publishes the number of times that each level of the Waterfall was used for each quarter on its website.

October 2023

³ Available at <https://www.theice.com/iba/ice-swap-rate>.

⁴ https://www.theice.com/publicdocs/ICE_Swap_Rate_Republication_Policy.pdf

ANNEX

EXPLANATION OF HOW ESG FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY	
Item 1. Name of the benchmark administrator.	ICE Benchmark Administration Ltd
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>	Fixed Income Corporate Benchmark
Item 3. Name of the benchmark or family of benchmarks.	ICE Swap Rate®
Item 4. Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<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.</p> <p>Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets.</p> <p>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.</p> <p>Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets.</p> <p>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.</p> <p>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:	Not applicable
Item 7. Data and standards used	
(a) Data input. <i>(i) Describe whether the data are reported, modelled or sourced internally or externally.</i> <i>(ii) Where the data are reported, modelled or sourced externally, please name the third-party data provider.</i>	Not applicable
(b) Verification and quality of data. <i>Describe how data are verified and how the quality of those data is ensured.</i>	Not applicable
(c) Reference standards <i>Describe the international standards used in the benchmark methodology.</i>	Not applicable
Date on which information has been last updated and reason for the update:	16 February 2022 Date of first publication

BENCHMARK AND OTHER INFORMATION NOTICE AND DISCLAIMER

PLEASE ENSURE YOU READ THE BELOW INFORMATION AND DISCLAIMER CAREFULLY. PLEASE ENSURE YOU TAKE SPECIFIC AND PROFESSIONAL LEGAL, TAX, REGULATORY AND FINANCIAL ADVICE AS APPROPRIATE BEFORE USING, OR INVESTING IN ANY FINANCIAL INSTRUMENT OR ENTERING INTO ANY CONTRACT LINKED TO, ICE BENCHMARK ADMINISTRATION LIMITED'S BENCHMARK OR OTHER INFORMATION.

ICE Benchmark Administration Limited (IBA) is authorised and regulated by the UK Financial Conduct Authority (FCA) for the regulated activity of administering a benchmark under the UK Benchmarks Regulation.

IBA licenses benchmark and other information to users for purposes which may include: valuation and pricing activities, use as a reference rate in transactions and for the creation of financial products; redistribution to third parties; trading and clearing activities; historical access; and the issuance of exchange traded products. IBA reserves all rights in this benchmark and other information and in the methodologies and other information disclosed in this document and on IBA's website, and in the copyright in this document and those on IBA's website. None of IBA's benchmark and other information may be used without a written licence from IBA and such benchmark and other information is provided solely for the purposes specified in the relevant licence.

ICE, LIBOR, ICE Swap Rate and ICE Benchmark Administration are trademarks of IBA and/or its affiliates. All rights in these trademarks are reserved and none of these rights may be used without a written licence from IBA and/or its affiliates, as applicable.

IBA is not a manufacturer or distributor of any investment or product, whether based on its benchmark or other information or otherwise, for purposes of the UK Markets in Financial Instruments Directive II or the UK Packaged Retail Investment and Insurance-based Investment Products Regulation.

IBA does not provide legal, financial, tax or investment advice, or recommendations regarding securities and no publication of benchmark and other information should be taken as constituting legal, financial, tax or investment advice or a recommendation of securities, an invitation or inducement to engage in any investment activity, including any securities transaction, or a financial promotion.

As a result, IBA is not responsible for carrying out any target market assessment or supplying any key information document in relation to its benchmark or other information or otherwise. The material and information located in this document and on IBA's website is provided for informational purposes only. IBA is not responsible for and makes no representation regarding the appropriateness or suitability of using, or investing in any financial instrument or entering into any contract linked to, IBA's benchmark or other information and any decision to engage in such use or to invest in any such instrument or enter into any such contract should not be made in reliance on IBA's benchmark or other information. You should consult relevant disclosures by your counterparties or seek advice from professional advisors in relation to any intended use of, or investing in any financial instrument or entering into any contract linked to, IBA's benchmark or other information.

Any of: (i) the basis or methodology for calculation or determination, (ii) the input data used for calculation or determination, (iii) the underlying economic reality or market represented or measured, (iv) the name, or (v) the administrator, in respect of any benchmark or other information may change, including, without limitation, pursuant to applicable law, an order of a regulatory or other competent authority or procedures undertaken in accordance with applicable laws, which may result in short-term or long-term changes to such benchmark or other information or to their characteristics, including their representativeness. The application of laws and regulations to benchmark or other information may be subject to modifications pursuant to applicable law and/or an order of a regulatory or other competent authority. The input data required to generate a benchmark or other information may become less available or may cease to be available altogether, which could impact the determination of the benchmark or other information (such as involving the use of a lower level of a benchmark methodology) and could result in an administrator being unable to calculate and publish the benchmark or other

information in accordance with the relevant benchmark methodology. Benchmark or other information may be expanded (for example to cover more currencies or tenors), reduced, changed, discontinued or terminated at any time, including, without limitation, pursuant to applicable law, an order of a regulatory or other competent authority or procedures undertaken in accordance with applicable law, or because of factors beyond IBA's control. Benchmark or other information may cease to be representative of the economic reality or underlying market that they are or were intended to measure or represent, but that may not be grounds for IBA invoking a contingency procedure and, in the case of a benchmark listed as a critical benchmark, IBA may be required, pursuant to applicable laws or an order of a regulatory or other competent authority, to make changes and/or continue to publish the affected benchmark or other information. Use of a benchmark or other information may also be prohibited or restricted under applicable laws and regulation.

Users of IBA's benchmark or other information should produce and maintain robust written fallback provisions and plans setting out the actions that would be taken in the event of material changes to or cessation of the relevant benchmark or other information. These should include, where feasible and appropriate, specifying alternative benchmarks that could be referenced as a substitute with reasons as to why they are suitable alternatives. Various factors, including those beyond IBA's control, might necessitate material changes to or cessation of a benchmark or other information, including changes resulting in a benchmark becoming unrepresentative. Please ensure that any financial instrument or contract that you invest in or are a party to linked to IBA's benchmark or other information contains such provisions and plans and that you consider the potential impact on any relevant financial instrument or contract of a material change, unrepresentativeness or cessation of the relevant benchmark or other information.

Historical benchmark and other information may not be indicative of future information or performance. None of IBA, Intercontinental Exchange, Inc. (ICE), or any third party that provides data used to administer or determine any benchmark and other information (a Data Provider), or any of its or their affiliates, makes any claim, prediction, warranty or representation whatsoever, expressly or impliedly, as to the timeliness, accuracy or completeness of its benchmark or other information, the results to be obtained from the use of its benchmark or other information, or as to the appropriateness or suitability of any such benchmark or other information for any particular purpose to which it might be put.

To the fullest extent permitted by applicable law, none of IBA, ICE or any Data Provider, or any of its or their affiliates will be liable in contract or tort (including negligence), for breach of statutory duty or nuisance or under antitrust laws, misrepresentation or otherwise, in respect of any inaccuracies, errors, omissions, delays, failures, cessations or changes (material or otherwise) in IBA's benchmark and other information, or for any damage, expense or other loss (whether direct or indirect) you may suffer arising out of or in connection with IBA's benchmark and other information or any reliance you may place upon it. All implied terms, conditions and warranties, including without limitation as to quality, merchantability, fitness for purpose, title or non-infringement, in relation to IBA's benchmark and other information are hereby excluded to the fullest extent permitted by applicable law.

The "SONIA" mark is used under licence from the Bank of England (the benchmark administrator of SONIA), and the use of such mark does not imply or express any approval or endorsement by the Bank of England. "Bank of England" and "SONIA" are registered trademarks of the Bank of England.

IBA is not affiliated with the New York Fed. The New York Fed does not sanction, endorse, or recommend any products or services offered by IBA.