

WLHL RONIA Methodology**Repurchase Overnight Index Average ("RONIA")**

WMBA & LEBA (Holdings) Limited ("WLHL") as administrator of RONIA, has developed this RONIA Methodology to provide transparency to users in order to understand how the index is provided against the objectives of the index and the underlying market it intends to measure as per the 'WLHL RONIA Index Statement'.

Contents

RONIA METHODOLOGY.....	2
CONTINGENT METHODOLOGY IN THE EVENT THERE ARE NO ELIGIBLE TRANSACTIONS	2
KEY FEATURES.....	3
PUBLICATION TIME.....	3
SOURCE OF INPUT DATA	3
PRIORITISATION OF INPUT DATA.....	3
SUFFICIENCY OF INPUT DATA; MINIMUM INPUT DATA NEEDED TO DETERMINE A PUBLICATION...	3
VALIDATION OF INPUT DATA & INDEX DETERMINATION	3
USE OF EXPERT JUDGEMENT OR DISCRETION	4
NOTIFICATION OF CHANGES.....	4
RONIA RECALCULATION POLICY	4
CHOSEN METHODOLOGY	4
LIMITATIONS OF THE INDEX METHODOLOGY	5
PERIODIC REVIEWS AND CHANGES TO THE INDEX METHODOLOGY.....	6
CESSATION OF PUBLICATIONS.....	6
IMPACT OF CHANGES OR CESSATION OF THE PUBLICATIONS	7
SUCCESSOR SOURCE	7

WLHL RONIA Methodology

RONIA Methodology

On each Publication Day, RONIA is measured as the volume weighted average price (“VWAP”), rounded to four decimal places, of interest rates paid on Eligible transactions.

Eligible transactions are: -

- sterling denominated;
- secured on eligible collateral;
- one business day maturity (“Overnight Repo”);
- arranged by Eligible intermediaries;
- executed between 00:00 hours and 17:00 hours UK time;

Eligible collateral

Eligible collateral is UK government stock settling in an authorised Central Securities Depository (“CSD”) which is neither special nor specific.

Eligible intermediaries

Eligible intermediaries are defined as the services and platforms operated by member firms of the European Venues and Intermediaries Association (“EVIA”)¹ and other approved entities which constitute authorised multilateral trading venues.

Publication Day

RONIA is published on UK business days.

Calculation Method

The RONIA Index is calculated using the following formula:

$$VWAP = \frac{\sum(V \times P)}{\sum V}$$

where:

- “V” is the volume of each eligible transaction
- “P” is the price of each eligible transaction

Contingent Methodology in the event there are no Eligible transactions

Where no eligible transactions exist during a Publication Day, a straight average will be taken of the previous three business day RONIA publications.

Where this contingent methodology is applied, a notation will be made to that effect.

¹ Formerly Wholesale Markets Brokers’ Association (“WMBA”) prior to 2018

WLHL RONIA Methodology

Key Features

Publication Time

The administrator will endeavour to publish RONIA by 17:30 hrs UK time but does not guarantee this in cases where events are beyond the administrator's direct control.

Source of Input Data

See ARTICLE 2 of the 'WLHL RONIA Index Statement'.

Prioritisation of Input Data

RONIA is determined by the application of the formula as stated within the RONIA Methodology and based entirely on transaction input data. There is no prioritisation of different types of input data required for the determination of the publication.

Sufficiency of Input Data; Minimum Input Data Needed to Determine an Index

There is no minimum number of eligible transactions either by quantity or volume required for the determination of the index. Where only one eligible transaction exists on any Publication Day, the volume and rate of that eligible transaction will form the output for publication.

Because RONIA is used as a compounded figure, any single day value will only form part (i.e. 1/90th to 1/365th) of a determination and therefore sufficiency needs to be viewed in the context of contiguity.

The procedures which govern the determination of the index in periods of stress or periods where transaction data sources may be insufficient, inaccurate, or unreliable are set out in the contingent methodologies and subsequently under the fall-backs.

Validation of Input Data & Index Determination

The administrator has documented controls and procedures over the collection and monitoring of input data used for the determination of the index. All input data is subject to a number of pre-defined tolerance checks to identify any potential erroneous input data prior to the calculation and dissemination of the publication.

Due to the simplicity of the RONIA methodology, it would only be on a rare occasion that the pre-publication checking of the index will highlight any adverse results that have not already been identified during the validation of the input data. However, prior to publication, the calculation is verified using several simple statistical checks (i.e. comparison against previous published price +/- variance).

WLHL RONIA Methodology

Use of Expert Judgement or Discretion

No persons involved in the provision of the index shall exercise use of discretion or expert judgement in the determination of the index which is calculated by including all eligible transactions as defined by the RONIA Methodology.

Notification of Changes

The administrator reserves the right to revise or amend the publication at any time in line with the 'WLHL RONIA Recalculation Policy'.

Any amendments to publications will be notified to all subscribers via recalculation emails and new publication files made available. All recalculation notifications will be placed on the relevant website and notice of the amendments to the index will be posted to all and any authorised redistributors of the data.

RONIA Recalculation Policy

The administrator shall make every effort to ensure the accuracy and timeliness of the publication. However, where the administrator becomes aware that post publication events affect the integrity or independence of the index, the administrator reserves the right to revise or amend the index by means of publishing a recalculation in line with the below:

- Recalculations will only occur where an error has been identified two hours prior to the subsequent publication on the following UK business day.
- Recalculations will only be published if the volume weighted average price (VWAP) has changed from the original publication by one basis point or more. I.e. meaning the VWAP has increased or decreased by a minimum 0.01% (e.g. from 0.455% to 0.465%).
- No recalculations will be published for changes to the Volume; unless the recalculated VWAP has also changed by one basis point or more during the same recalculation.
- Recalculations will be published as soon as possible but no later than one hour prior to the subsequent publication on the following UK business day.

Any amendments to published data will be notified to subscribers via recalculation emails and new SFTP files made available on the administrator's data servers. All recalculation notifications will be placed on the administrator's website and notice of the amendments will be posted on the systems of authorised redistributors of the data where available.

Chosen Methodology

The administrator has chosen RONIA to be calculated as a volume weighted average price ("VWAP") due to it being simple to calculate and understand. The VWAP identifies the true average interest rate paid on eligible transactions by factoring the volume of those transactions at a specific rate and not simply based on the price of each eligible transaction itself.

WLHL RONIA Methodology

The confluence of an all-day traded VWAP, trade aggregation across all Eligible intermediaries, and a usage based on compounded averages combine to create the single most resilient index or benchmark methodology as recognised by the FSB in its published hierarchy. In this way, the output resembles a market wide consolidated tape and would require a similarly scaled attempt to manipulate spread across both space and time. With all outputs clearly transparent to all market participants on a daily basis, such a vulnerability is less likely than with other methodologies. Consequently, RONIA is a clean and pure measure.

In measuring all Eligible transactions and selecting the all-day VWAP, the measure takes due account of the size and skew of the transaction distribution tails yet is robust enough not to require the removal of these quartiles as in many other statistical indices or benchmarks. In setting eligible transactions as those struck in authorised multilateral trading venues, both transparent market scrutiny, as well as sufficient standardisation informs the trade population and removes any requirement for transaction selection or further criteria.

Eligible collateral will usually be Delivery by Value (“DBV”) but may also include Trilateral Repo or certain other settlement mechanisms where the transactions measure purely the RONIA objective interest rate as set out by the statement and methodology.

Since RONIA is a regulated-data based index and is determined based on real verifiable transaction data, with a simple and transparent methodology, RONIA can be taken as robust and reliable in measuring that objectively defined actuality which it is intended to measure.

Limitations of the Index Methodology

The administrator notes the following limitations of the methodology:

- i. The current definition of Eligible transactions is restricted to ‘transactions arranged by Eligible intermediaries’. Should transactions be arranged by other intermediaries, they would not be eligible for inclusion in the index.
- ii. Eligible transactions may be excluded where the administrator could not have been reasonably aware that the transactions occurred. For example, a transaction not booked by an intermediary in a timely manner.
- iii. Dependency upon Eligible transactions occurring in sufficient volumes, which in turn depends upon the sufficient availability of eligible collateral.
- iv. Preference for multiple and competing trading venues.
- v. Dependency upon rulebooks and adherence to compliance of the sources of input data such that all Eligible transactions are reported to the administrator, and that all reported trades did actually occur.
- vi. Eligible transactions may be excluded from the calculation where the administrator cannot be certain that the collateral is neither special nor specific. In certain circumstances, it may only be possible to clearly identify the status of the collateral at the point of arranging the transaction.

The administrator notes that in addition to the regulatory perimeter governing the sources of input data, the administrator also enforces its “Data Quality Code” (“DQC”), transactions are open to public scrutiny and all sources of input data adhere to the BOE Money Market Code of Conduct².

² <http://www.bankofengland.co.uk/markets/Documents/money/code/ukmoneymarketscode.pdf>

WLHL RONIA Methodology

Periodic Reviews and Changes to the Index methodology

To ensure the integrity of the derived calculations and that the index continues to reflect the market or economic reality that it is intended to measure, the administrator, through its own Board and its independent oversight function shall undertake, on at least an annual basis, an internal review of the methodology and supporting policies and procedures used in the day-to-day determination.

If the review necessitates a material change* to the 'WLHL RONIA Methodology', the administrator's through guidance from the oversight function and after any required notification to the relevant regulator, may in its sole discretion choose to consult with key stakeholders. Should the administrator opt for a public consultation, the following process will be followed:

- (a) Consult with sources of input data, subscribers and market participants to outline the proposed changes to the data scope/methodology. The consultation will provide the relevant details on the following:
 - The circumstances giving rise to the changes
 - The rational for changes
 - The proposed changes (including clear timeframes)
 - Possible effects of changes on the index or underlying market
- (b) Once the consultation process is complete, the responses will be presented by the administrator with a recommendation to the oversight function for discussion. Where confidentiality has not been requested, responses to the consultation will also be published.
- (c) Approval shall be determined by the administrator or a nominated approvals committee and notified to the Board;
- (d) The administrator will publish an outcome of the consultation and notify subscribers (users and technical staff) of the changes and depending on the severity of the changes involved and the anticipated technical impact on subscribers, will give reasonable notice to implement changes; and
- (e) The administrator will publish details of implemented changes and, if appropriate, update the RONIA methodology and relevant statements

* 'material change' is defined as one which would require a change to the published index methodology, and which would impact the VWAP by an average of 2 basis points³ over a 90-day period.

Index Cessation

The administrator has in place an 'Index and Benchmark Cessation Plan'. This plan has been put in place to enable it to, where deemed appropriate, cease the activity of administering the RONIA publication.

Prior to opting for any such cessation, the administrator will first consider whether changes to the methodology and/or governance arrangements of the index would be appropriate to allow for its continuation. Depending on the trigger for considering its cessation this may not always be possible and therefore the administrator may have no choice but to recommend the cessation of RONIA. If the administrator believes cessation is necessary and on notification to all relevant stakeholders, the administrator will follow the procedures as identified in the 'Index and Benchmark Cessation Plan'.

³ The quantum of 2 basis points was chosen to align with Bank of England SONIA.

WLHL RONIA Methodology

In unforeseen or unexpected circumstances, it may not be possible for the administrator to exercise the pre-planned cessation process. In this scenario the administrator would activate the 'Emergency Index and Benchmark Cessation Process' identified within the plan.

Impact of Changes or Cessation of the Index

The administrator reminds users and stakeholders of its publications that there may be factors, including external factors beyond its control, that may necessitate changes to, or the cessation of the index publication. Such changes may impact upon any contracts, portfolio's, derived-data, products and/or financial instruments that reference the index, its compounding calculation, or the measurement of the performance of investment funds.

The administrator encourages users of its published data and indices to have fall-back provisions in place, including access to alternative sources, to prepare for any scenario where the data is no longer available.

Successor Source

WMBA "Successor Source" statement for RONIA under the 2021 ISDA Definitions

The now online and digitalised 2021 ISDA Definitions contain RONIA and state that "*Successor Source*" means, in relation to any display page, other published source, information vendor or provider specified in subsection (a) above: (i) the successor display page, other published source, information vendor or provider that has been officially designated by the sponsor of the original page or source.

In reference to the definition of "GBP-WMBA-RONIA-COMPOUND" under the 2021 ISDA Definitions (detailed [here](#)⁴), the definition of "RONIA" references the WMBA website (www.wmbaltd.com) under the heading "RONIA".

The administrator, as administrator of the RONIA rate, designates each of the following other published sources as "Successor Sources" in accordance with the 2021 ISDA Definitions, in the event that the RONIA rate fails to be published on the administrator's website:

- i. Bloomberg; page "WMBA".

Ends.

⁴ <https://www.isda.org/2021/05/01/2021-isda-interest-rate-derivatives-definitions/>