



Koinju Reference Rates

Benchmark Statement

V. 1.2 — April 2022

Archives

“Koinju Reference Rates Benchmark Statement” updates and reference history

Version	Update Description	Date
1	N/A	February 8, 2021
1.0.1	*Update of the “Koinju Reference Rates” Family content. *“KLUR” becomes “KLTUR” for symbol format standardization purpose.	Oct. 4, 2021
1.2	*Detailed description of Input Data (point 3-1). *Point 3-3 related to Correction Procedure is detailed in a specific policy. *Former point 4 related to “Complaints-Handling” is now part of an eponymous and specific policy. *Integration of points 5-3 “Oversight” and 6 “ESG Factors”. *Former point 7 related to “Definitions” is now an eponymous and specific policy.	April 4, 2022

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Summary

As a Benchmark Administrator registered under n° BMR2021000001 in accordance with art. 34 of the (EU) 2016/1011 European Parliament and Council Regulation of June 8th 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds, amending the 2008/48/EC and 2014/17/EU Directives and (EU) n°596/2014 Regulation (hereinafter referred to as “BMR’ Regulation”) and authorized and regulated by the French Financial Markets Authority, Maarkt (hereinafter referred to as “the Administrator”) is required to publish a Benchmark Statement in accordance with art. 27 of the above-mentioned Regulation and art. 1 of the (EU) 2018/1643 Delegated Regulation of July 13th 2018. The content of this Statement meets the requirements of the above-mentioned regulations and directives. Maarkt provides services as a Calculation Agent, Benchmarks Administrator, and more generally as a data provider under the registered trademark “Koinju”.

This document is intended for Users of Benchmarks responding to the “Koinju Reference Rates” Family of Benchmarks (“Reference Rate(s)”, all falling into the definition of “Benchmark(s)”). Its scope covers all the Reference Rates of this Family produced and administrated by the Administrator, as well as the Input Data that received from the selected Exchanges Platforms. As a reminder, the Administrator shall not be held responsible for the data made available in such way.

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1 General information

Benchmark Statement date of creation: February 8th, 2021.

Benchmark Statement date of last update: April. 4th, 2022.

Benchmark Statement's scope: Family of Benchmarks hereinafter referred to as "Koinju Reference Rates".

This Benchmark Statement targets "Non-Significant Benchmarks" in the sense of art. 3.1 pt 27) of the "BMR" Regulation, framed in art. 26 of said Regulation.

The Input Data used to calculate this Family's Reference Rates is made available through Exchanges Platforms that are not "Contributors" (in accordance with art. 3.1 pts 8) and 9) of the "BMR" Regulation.

2 Observed Market Information

2-1 Description and Use of Reference Rates

2-1-1 Economic Representativeness of Koinju Reference Rates

Like FOREX, Crypto-assets are not traded (or quoted) on a single exchange, but on a plurality of them. In fact, the measure of the "economic reality" (in the meaning of recitals 23 to 27 of the "BMR" Regulation and art. 11 (among others) of said Regulation) of this set of observed markets (the Crypto-assets ones) is obtained through the aggregation of data made available by the Technical Interfaces of Exchange Platforms that are selected by the Administrator (in accordance with both quantitative and qualitative criteria).

Each Reference Rate of the "Koinju Reference Rate" Family aims to reflect the economic reality and price fluctuation of a particular Crypto-asset traded for a Quotation currency which is legal tender on a plurality of selected Exchange Platforms.

2-1-2 Use of "Koinju Reference Rates"

Koinju Reference Rates can be used to calculate the amount payable under a financial instrument or a financial contract, or the value of a financial instrument, or can be used to



measure the performance of an investment fund with the purpose of tracking the return of such index or of defining the asset allocation of a portfolio or of computing the performance fees.

2-1-3 “Koinju Reference Rates” Family content

Symbol	Product	Currency	Type	Index Long Name
KBTUR	Bitcoin	USD	Reference Rate	Koinju Bitcoin-USD Reference Rate
KBTGR	Bitcoin	GBP	Reference Rate	Koinju Bitcoin-GBP Reference Rate Koinju
KBTER	Bitcoin	EUR	Reference Rate	Koinju Bitcoin-EUR Reference Rate
KETUR	Ethereum	USD	Reference Rate	Koinju Ethereum-USD Reference Rate
KETGR	Ethereum	GBP	Reference Rate	Koinju Ethereum-GBP Reference Rate
KETER	Ethereum	EUR	Reference Rate	Koinju Ethereum-EUR Reference Rate
KLTUR	Litecoin	USD	Reference Rate	Koinju Litecoin-USD Reference Rate
KXTUR	Tezos	USD	Reference Rate	Koinju Tezos-USD Reference Rate
KEOUR	Eos	USD	Reference Rate	Koinju Eos-USD Reference Rate
KDAUR	Dai	USD	Reference Rate	Koinju Dai-USD Reference Rate
KATUR	Atom	USD	Reference Rate	Koinju Atom-USD Reference Rate
KBCUR	Bitcoin Cash	USD	Reference Rate	Koinju BitcoinCash-USD Reference Rate
KBCER	Bitcoin Cash	EUR	Reference Rate	Koinju BitcoinCash-EUR Reference Rate
KCOUR	Compound	USD	Reference Rate	Koinju Compound-USD Reference Rate
KLIUR	Chainlink	USD	Reference Rate	Koinju Chainlink-USD Reference Rate
KUNUR	Uniswap	USD	Reference Rate	Koinju Uniswap-USD Reference Rate
KALUR	Algorand	USD	Reference Rate	Koinju Algorand-USD Reference Rate
KXRUR	Xrp	USD	Reference Rate	Koinju Xrp-USD Reference Rate
KXRER	Xrp	EUR	Reference Rate	Koinju Xrp-EUR Reference Rate
KXLUR	Stellar	USD	Reference Rate	Koinju Stellar-USD Reference Rate
KXLER	Stellar	EUR	Reference Rate	Koinju Stellar-EUR Reference Rate

2-1-4 Geographical boundaries

The observed market has no particular geographical boundaries.

2-2 Calculation methodology

Reference Rates calculation is based on the relevant Trades of matching Markets (in terms of Quotation Currency) of selected Exchanges Platforms.

Calculation steps:

1-During a given Observation Period, the relevant Trades received are aggregated into a common list containing the respective Price, Volume and Timestamp, and are sorted in chronological order. All Timestamps are published by the selected Exchanges Platforms for each Trade in accordance with the expected general time repository (UTC hours expressed in milliseconds or microseconds).

2-The list is partitioned into a number of (Σ) Time Interval of equal duration. Each Time Interval corresponds to an Observation Period of (N) second(s) with a precision defined at millisecond. The first Interval starts (ΣN) seconds before the fixing time, and the last Interval starts (N) second(s) before the fixing time. In total, the calculation period extends over an Observation Period of (ΣN) second(s) comprising (Σ) Intervals of (N) second(s).

3-For each partition, we calculate the median of the relevant Trades' Prices weighted by their respective Volumes. The median weighted by the Volumes is calculated by ordering the Trades from the lowest to the highest Price over the period, and then selecting the Price corresponding to the Trade of the 50th percentile of the cumulative sum of the Volumes of these Trades.

4-The Reference Rate of a Crypto-asset is then given by the average of all partition medians. In other words, the sum of weighted medians previously considered adjusted by the number of partitions:

$$\frac{1}{K} \sum_{i=1}^K VW M_{i_k}$$

Legend:

- *K*: Number of partitions
- *i*: i^{th} partition
- *VWM_i*: Volume Weighted Median of the i^{th} Interval considered

The resulting number is the Reference Rate.

This methodology meets the following criteria for robustness evaluation:

- Relevance: The Reference Rate shall reflect the actual market value of the Crypto-asset as accurately as possible;

- Periodicity: The Reference Rate shall refer to a Time Interval as accurate as possible and shall be delivered as soon as possible at the end of the Observation Period;
- Resistance to manipulation: it shall be as complex (or costly) as possible to deflect the Reference Rate from the actual value of the observed market;
- Verifiability: The Reference Rate calculation methodology shall be transparent so that the results of the calculations can be independently audited;
- Reproducibility: the investors shall be able to reproduce the Reference Rate with a minimum of replication error (standard deviation between rate and portfolio or financial instruments or share of funds);
- Stability: The Reference Rate shall not present price fluctuations other than those caused by actual variations and should not be sensitive to outliers and data quality issues;
- Parsimony: The Reference Rate methodology uses as few arbitrary parameters as possible.

2-3 Approval and Restatement of Reference Rates

The relevance of the Reference Rates and the pertaining calculation methodology are approved by the Oversight Function together with the Administrator in light of the market or economic reality they are supposed to represent. They are subject to an annual minimum review, or every time an event can reasonably influence the economic and financial representativeness of these Benchmarks or each time there is a material change in the Calculation Methodology.

2-4 Modification and Cessation of a Reference Rate

2-4-1 Modification

In accordance with art. 28 of “BMR” Regulation, where the representativeness of a Reference Rate or the Reference Rates Family is not or no longer fulfilled due to economic and market factors, where a significant pool of Users demonstrates that the adaptation of a Reference Rate is necessary in the face of market evolutions, or where the calculation methodology used not allows anymore to calculate a representative Benchmark because of a selected Exchange Platform or constituent Market permanent suspension, the Administrator may proceed to a modification procedure. Oversight Function ensures that the procedure is carried out correctly.

Disclaimer: such a modification may affect the fund's performance calculation, the amount payable under a financial instrument or a financial contract calculation, the financial instrument valuation, the measure of the performance of an investment fund with the purpose of tracking the return of such index, or the definition of the asset allocation of a portfolio or the performance fees whose determination is based on the use of the Reference Rate(s) at issue.

2-4-2 Cessation

In accordance with art. 28 of “BMR” Regulation, where, for the above reasons, a modification is not sufficient, the Administrator may proceed to a cessation procedure in order to terminate the provision of the relevant Reference Rate(s). Oversight Function ensures that the procedure is carried out correctly.

Disclaimer: such a cessation may affect the fund’s performance calculation, the amount payable under a financial instrument or a financial contract calculation, the financial instrument valuation, the measure of the performance of an investment fund with the purpose of tracking the return of such index, or the definition of the asset allocation of a portfolio or the performance fees whose determination is based on the use of the Benchmark(s) at issue.

2-4-3 Public consultation

In accordance with art. 13. of the “BMR” Regulation, modification and/or cessation procedures are subject to a public consultation procedure in case of a material change. The terms of this procedure are communicated publicly and directly to stakeholders within a reasonable time, which can vary according to various circumstantial factors.

2-5 Expert Judgment

No Expert Judgment (as defined in the provisions of art. 3.1 pt 13 of the “BMR” Regulation) is utilized either in the use of the Input Data or in the continuous Reference Rates calculation, except in exceptional circumstances which will then be the subject of a transferable report to the Users (which is a matter of trade secret).

2-6 Publication timing

The Administrator makes every effort to publish Koinju Reference Rates on an ongoing basis. Continuous publication is an obligation of means for the Administrator.

3 Input Data Information

3-1 Description and requirements

The Input Data used to calculate the Reference Rates are those derived from the Technical Interfaces of the selected Exchange Platforms. There are two types of Input Data:

- “Transaction” data: the data we collect from the technical interfaces of the selected Exchange Platforms are Trades. These data represent observable transactions on observable Markets where Crypto-assets are traded, and correspond to data delivered continuously by the selected Exchange Platforms. Trades include:
 - A Millisecond Timestamp in accordance with UTC;
 - A Price expressed in Quotation Currency;
 - A volume expressed in Quotation Currency.
- “Metadata”: the Metadata are the data associated with the Transaction data. It consists of:
 - The name of the Markets observable on the technical interfaces of the selected Exchange Platforms;
 - The underlying Currency or Crypto-asset of reference (base of the market pair), expressed in Quotation Currency (quote of the market pair).

NB: there is no priority hierarchy between these two types of Input Data.

Eligible sources of Input Data are the same for each Reference Rate that forms the same Family. In this case: the data from the selected Exchange Platforms. The selection scheme of the sources for which the Input Data is used is the subject of a specific documentation called “Selected Exchange Platforms”.

Each Reference Rate is calculated from the Input Data made available solely by the Exchanges Platforms offering a Market quoting a specific Crypto-asset into a desired Quotation Currency.

Finally, Input Data meets the following requirements under article 11 of the “BMR” regulation:

- “Sufficiency”: the Input Data we collect comes from the technical interfaces of the selected Exchange Platforms that hold some of the largest market shares in terms of end customers, traffic, liquidity and transaction volumes. In doing so, the panel of selected Exchange Platforms to date provides a sufficiently representative view of the calculated value of Crypto-assets.
- “Appropriateness”: as said in point 2-1-1 of the Benchmark Statement, the Input Data used represent the economic reality or market that our data tends to measure, since the value of the Crypto-asset depends on supply and demand on these Exchange Platforms, and not on other factors. Furthermore, the Quotation Currency used to express the Price of the underlying Crypto-asset of a Reference Rate is necessarily a Quotation in legal tender (or “fiat”). Indeed, only a market pair in the accounting sense of the term can be considered as “active” if and only if it is expressed in fiat.

3-2 Hypothesis of Non-Satisfaction of Input Data

In some hypothesis, the Input Data collected through one or more Technical Interface(s) of selected Exchange Platforms may no longer meet, on a temporary (short-term) or prolonged basis (long and persistent duration), the requirements of sufficiency and appropriateness under art 11 of the “BMR” Regulation, which are necessary a satisfactory Reference Rates calculation. Thus, the market or economic reality measured by the reference value may no longer be represented in a sufficiently reliable manner.

These assumptions are (but not limited to):

- Missing or late data, caused by various unintentional events (such as Extraordinary Event, or any event outside the Administrator’s control) or intentional (such as the voluntary cut-off of a selected Exchanges Platform from any access to its Technical Interface);
- Incorrect data, as a non-relevant Trade type (not corresponding to the expected data format), or that results from an unpredictable economic and/or technical event, such as Extraordinary Event (but not only).

3-3 Correction and Disruption Procedures

The Administrator make reasonable means to ensure the continuity of the provision of the Benchmarks. In the event of the occurrence of one or more of the above assumptions, and when the assumption(s) is/are detected within a reasonable time, the Administrator shall follow the provision of the relevant policy.

3-4 Liability of the Administrator

Reference Rates calculation and administration depend upstream on Input Data, observed “as is” on the Technical Interface of several Exchange Platforms. In doing so, the Administrator cannot be held liable for contentious and/or erroneous data that is openly accessed by these Exchanges Platforms. The Administrator cannot replace the data made available through the Technical Interface of these Exchange Platforms. Thus, as part of its obligation of means, the Administrator continues its mission limited to the data collected. The Administrator uses all reasonable and necessary means to assess the relevance of the Input Data.

4 General Statements

4-1 Policies and Procedures

Under the “BMR” Regulation, the Administrator has put in place the following policies and procedures:

BMR art.	Policy/procedure
4	Conflict of Interest policy
5	Oversight Function policy
6	Control framework
7	Accountability framework
8	Record-keeping policy
9	Complaints-handling policy
11	Input Data policy
14.3	Reporting of infringements
26	Compliance statement
28	Correction and Disruption policy

4-2 Benchmark Statement Updates

The Administrator reviews and, if necessary, updates the Benchmark Statement for each Rate or Family of Benchmarks in case of a change in the information to be provided under the art. 27 of the “BMR” Regulation, and at least every two years.

4-3 Oversight

Although the Administrator applies a highly rules-based methodology that is intended to be comprehensive, it cannot be excluded that ambiguities, errors, omissions or extraordinary and unforeseeable events could occur that may have an impact on the provision of the Reference Rates. The Administrator will seek to resolve any such situation by means of the supervision authorities. Oversight Function will oversee, inter alia, all the decisions regarding any amendments to the methodology of the Reference Rates, the treatment of any unforeseeable errors, and the correction as well as the cessation of a Benchmark.

5 ESG Factors

In accordance with the provisions of the Regulation (EU) 2016/1011 as regards the explanation in the Benchmark Statement of how environmental, social and governance factors are reflected in each Reference Rate provided and published, the Administrator specifies that the



environmental, social and governance (ESG) factors are currently not taken into account in the development of its methodology for determination of Reference Rates.



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If you have any questions, please contact us:

KOINJU

Address:

Maarkt
3 rue Alaric II
31000 Toulouse
France

Contact:

benchmark@koinju.io
<https://koinju.io/contact>