Kaiko Indices

Kaiko Bitwise Staked Celestia Index

Rulebook

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About Kaiko Indices

Kaiko is one of the longest-standing companies in crypto data. Since 2014, we've built benchmarks and indices for financial institutions' digital asset products. We are registered with the French AMF as a benchmark administrator.

A decade in crypto markets taught us what these assets require - from handling extreme volatility to processing fragmented exchange data. Our indices power ETPs, structured products, and risk models globally.

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Version History

Version	Publication Date	Comments
1.0.0	07/08/2025	Created

1. Introduction

This document describes the methodology of the Kaiko Bitwise Staked Celestia Index (KBSTIA).

The Kaiko Bitwise Staked Celestia Index is a passive index designed to track the performance of staked TIA, the native token of Celestia, a modular blockchain focused on data availability. The index provides targeted exposure to TIA while incorporating staking rewards as part of its total return. It is rebalanced quarterly to realign token quantities with the target staking utilization rate, ensuring the index accurately reflects network dynamics and staking conditions.

2. Review Calendar

Rebalancing is a scheduled, regular process designed to ensure that the Kaiko Bitwise Staked Celestia Index is including all the collected staking rewards into the staked quantities. The rebalancing is executed monthly after the publication of the last business day of the month. During rebalancing the staked quantities set to be the total TIA quantity multiplied by the utilization rate.

2.1. Extraordinary Review

On the basis of its qualified and expert judgement, Kaiko Indices, in consultation with Bitwise and other relevant stakeholders, reserves the right to exclude or replace an exchange selected during the Scheduled Review, or to suggest and consult on any methodology change that Kaiko considers necessary to ensure the Kaiko Bitwise Staked Celestia Index continue to reflect the target underlying economic reality. Such a consultation could happen if, for example, a constituent exchange has been found to experience an exclusion action including but not limited to:

- Fraud
- Market manipulation
- Significant loss of volume or liquidity

In such cases, the Kaiko Index Steering Committee will publish a consultation document, explaining its findings and any suggested methodology change. A clear timetable for the consultation will be outlined, including the proposed notice period that will be provided before the implementation of any change.

3. Index Methodology

3.1. Kaiko Bitwise Staked Celestia Index

The Kaiko Bitwise Staked Celestia Index is published daily at 4PM London time. The pricing data is the Kaiko TIA Reference rate, based on a Volume-Weighted Median (VWM) plus a Time-Weighted Average Price (TWAP) methodology.
The staking APR data is computed daily as as median APR of a selection of staking providers.

3.1.1. Construction:

- **Price data:** Kaiko TIA Reference Rate, computed daily at 4 PM London time (KK_RFR_TIAUSD_LDNLF).
- **Staking APR data:** Kaiko TIA staking rate, computed daily as median APR of a selection of staking providers.
- **Currency**: USD
- **Utilization rate**: 90%
- **Unstaking period:** no unstaking
- **Rebalancing**: Monthly on the last business day of the month.
- **Base value:** Value of TIA at base date, multiplied by M.
- **Multiplier M:** 1000
- **Decimal digits:** 4

3.1.2. Dissemination:

- **Calculation:** Daily at 4 PM London time
- **Publication:** Daily at 4:15 PM London time
- **Base date:** 2025-08-01
- **Launch date:** 2025-08-27

3.1.3. Identifiers:

- **Full name:** Kaiko Bitwise Staked Celestia Index
- **Ticker:** KBSTIA
- **ISIN:** FR0014012GJ7
- **Bloomberg:** KBSTIA
- **API identifier:** kb-stia-1-d

3. Index Methodology

3.2. Kaiko Staking Indices Methodology

3.2.1. Methodology Overview

Each Kaiko Staking Index tracks two key components:

- **Price Return:** The change in market value of the underlying digital asset as measured by Kaiko's Reference Rates or Benchmark Reference Rates.
- **Staking Rewards:** The additional yield generated through staking activities on the respective blockchain networks, with rewards calculated based on network-specific parameters and settlement periods.

The indices use a quantity-adjusted methodology where the asset quantity held in the index increases over time to reflect accrued staking rewards. This approach provides a realistic representation of an investment strategy that stakes digital assets and periodically reinvests the rewards on the rebalancing dates.

3.2.2. Utilization Rate & Unstaking Period

Total return products include two additional parameters that can be used in the calculations.

- **Utilization Rate:** The utilization rate represents the proportion of each asset that is staked relative to the total amount. For an index provider, this metric ensures an accurate representation of the quantity of assets effectively staked within the product.
- **Unstaking Period:** The unstaking period represents the mandatory time period to unstake assets from the network. In the context of a multi-asset index product, the unstaking period is used to temporarily set the utilization rate to 0 ahead of rebalancing. Once the rebalancing process is complete, the utilization rate is re-adjusted to its initial value.

3. Index Methodology

3.3. Index Calculation

3.3.1. Index Initialization

- **Base Date and Value:** The index is assigned a base date and initialized with a predefined base value.
- **Initial Quantity:** The initial asset quantity is determined based on the index's initial value and asset prices at the base date.
- **Initial Multiplier:** The starting multiplier is set to ensure the index begins at the designated base value.

3.3.2. Index Calculation

- **Asset Price:** Reference prices are collected at the calculation time, with validations applied to ensure data integrity.
- **Daily Staking Yield:** The daily staking yield is determined by computing the median of collected yields from selected staking providers, expressed as a daily rate.
- **Utilization Rate:** The utilization rate is applied based on the staking period, whether during standard publication, pre-rebalancing, or post-rebalancing phases.
- **Asset Quantity:** Asset quantities are updated to reflect accrued staking rewards based on the most recent rebalance quantity.
- **Index Value:** The index value is computed using the updated asset quantities and reference prices.

3.3.3. Index Rebalancing

- **Pre-Rebalancing Preparation:** Ahead of rebalancing, the unstaking process is initiated by progressively reducing the utilization rate, while staking rewards continue accruing on the decreasing staked portion.
- **Rebalancing Execution:** On the effective rebalancing date, new asset quantities are calculated based on current prices.
- **Post-Rebalancing Implementation:** The staking process is resumed, increasing the utilization rate to the target level. Staking rewards begin accumulating on the growing staked portion, and the reference rebalance quantity is reset.

3. Index Methodology

3.4. Index Formula

3.4.1. Inputs

Symbol	Name	Description
t	**Events**	The timestamp at which the index is calculated
Ref^i_t	**Reference Price**	Reference Price for asset *i* at time *t*
Y^i_t	**Staking Yield**	Daily staking yield for asset *i* at time *t*
U^i_t	**Utilization Rate**	Proportion of holdings of asset *i* that is staked at time *t*
Q^i_t	**Asset Quantity**	Quantity of asset *i* held in the index at time *t*
Q^i_R	**Rebalancing Quantity**	Quantity of asset *i* at the most recent rebalancing date *R*
M	**Multiplier**	Multiplier of the index applied at the base date.
$Index_t$	**Index Price**	Index Price at time *t*

3.4.2. Daily Quantity Update

Between two consecutive calculation days *t-1* and *t*, the quantity of each asset *i* evolves according to the staking rewards accrued:

$$Q^i_t = Q^i_{t-1} + Y^i_t . Q^i_R . U^i_t$$

3.4.3. Index Value Calculation

The total Return Staking Index value on day *t*, is calculated as:

$$Index_t = M \sum_i (Q^i_t \cdot Ref^i_t)$$

On rebalancing dates, the quantity are adjusted according to the rebalancing weights and to the last index values, ensuring index continuity.

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