Kaiko Indices

Vinter Wavebridge Crypto Indexes

Index Methodology

www.kaiko.com

About Kaiko Indices

Kaiko Indices offers institutional-grade benchmarks and indices, setting the standard for reliability and transparency in the digital asset market. As a regulated Benchmark Administrator under the EU BMR framework and compliant with IOSCO principles, we empower exchanges, asset managers, and financial institutions with trusted data solutions that support robust settlement and risk management practices.

Introduction

The Vinter Wavebridge Crypto Indexes are a family of benchmarks. The indexes are developed to provide a rule-based and transparent way to track the value of a portfolio. Each index measures the value of an investment strategy.

This methodology clearly determines what constitutes an active market for the purposes of each index, and establishes the priority given to different types of input data. The methodology considers factors like the size and liquidity of the market, the transparency of trading, the positions of market participants, market concentration, and the adequacy of any sample to represent the market or economic reality that the benchmark is intended to measure.

Wavebridge is the all-in-one platform for digital asset investment. The firm has developed a quant-based platform that digitally streamlines all asset management and operational tasks. Wavebridge provides tools that help investors to do research, simulation, risk management, monitoring, execution, and reporting. Read more at wavebridge.com.

Invierno AB ("Vinter") is a pioneering index provider specialized in crypto assets, playing a key role in the emerging crypto ETF industry. The firm collects digital asset data from hundreds of sources, transforming proprietary strategies into investable products.

Learn more at vinter.co.

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The Vinter Wavebridge Bitcoin Covered Call Index ("BTCC") tracks the performance of a covered call strategy applied to Bitcoin ("BTC"): go long BTC and sell an out-of-the-money call option, both held in an equal notional amount. The call option is held until maturity i.e. for one month. The index is rebalanced monthly; the rollover date is the last Friday of each month, which is the expiry date of the call options. It is assumed that option premiums from selling call options are fully reinvested. The index is calculated and disseminated on a daily basis.

Construction

Asset Universe:
Bitcoin and Bitcoin Call Options.

Asset Selection:
Bitcoin and Bitcoin Call Options (see Asset Selection below).

Rebalancing Weights:
Monthly rollover on the last Friday day of the month.

Rationale:
Gain exposure to BTC while generating steady income when the market is flat. Selling call options helps offset some of BTC's volatility and provides a stable source of income.

Target Yield:
2% per month.

Details

Currency:
USD

Type:
Price Return

Base Date:
2018-04-26

Base Value:
1000.00

Calculation:
Daily at 4.00PM London time

Publication:
Daily after 4.10PM London time

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Identifiers

Full Name:
Vinter Wavebridge Bitcoin Covered Call Index

Ticker:
BTCC

ISIN:
SE0016787121

FIGI:
BBG012CPMWS0

Bloomberg:
BTCC

Refinitiv:
..BTCC

Vinter API:
vnwb-btcc-2-d

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Index Construction

Asset Selection:

The index is constructed as a combination of a long position of BTC and a short position of a BTC call option.

After the short call position is created, it is required to be held to maturity so that it would be cash-settled against the settlement value. In a derivatives exchange, each option is exercised automatically without action and the settlement value is calculated as a TWAP of the BTC-USD mid-price over the last 30 minutes before the expiry. Following the settlement of the call option, the strike price of the new option is determined and a short position of a call option expiring in the next month starts to be created. This transaction is commonly referred to as a "rollover". The strike price of the new call option will be determined by targeting premium yield. In this step, the size of the long position will be equal to that of the short position in notional amounts. To reflect the process in reality the rollover is assumed to take 2 hours to be completed and the price of an option is given as the TWAP.

On each expiration date, the strike price for the new option is determined as follows: we choose an at-the-money or out-of-the-money call option with the maximum strike price whose option premium is greater than the target yield.

Calculation:

The index value on day t - denoted I(t) - is given by

$$I(t)=I(t0)\cdot(1+R(t))$$

Where t0 is the most recent rebalancing date and R(t) is the month-to-date return of the covered call strategy. For a non-rollover date, the month-to-date return R(t)is given by

$$1+R(t)=\frac{U_e(t)-C_e(t)}{U_e(t_0)-C_e(t_0)}$$

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Where:

- Ua(t) is the average value of the underlying (including option premium) calculated once per month on the rebalancing date as a TWAP of the Bitcoin price in 8:00-10:00 UTC.
- Ca(t) is the average value of the call, calculated once per month on the rebalancing date as a TWAP of the call option price in 8:00-10:00 UTC. For a 2% yield strategy $Ca(t) \approx 2\% \cdot Ua(t)$ dollars - since the actual option price in BTC differs slightly from the target yield.
- Ue(t) is the end of day value of the underlying asset (including option premium) at 4 pm London Time. It is calculated daily as a TWAP of the BTC price in 3-4 pm London Time. The BTC price is obtained by

1. obtaining the mid price on selected exchanges,
2. removing exchanges with delayed data,
3. calculating the median price,
4. truncating the values that is +/-0.5% away from the median to that limit threshold, and
5. taking the average.

- Ce(t) is the end of day value of the shorted call option at 4 pm London Time. It is calculated daily as a TWAP of the call option price in 3-4 pm London Time. The call option price is the mid price, which is the average of the best bid and ask price if both values exist. If not, the option price is set to the intrinsic value of the option.

The return calculation on a rollover date is described next.

Rebalancing:

Define Us(t) as the settlement value of the underlying at the expiration time, calculated as a TWAP of the BTC price from 7:30 to 8:00 on the rebalancing date.

On the monthly rebalancing, the sold call is rolled over. On the rollover, there are three stages.

1. First, the value of the underlying at settlement is Us(t)dollars and the expiring option will be settled for $\max[0, Us(t) - K]$dollars. This dollar value is compared to the dollar value after the previous month's rebalancing date t'.
2. Second, there is a return created from the exposure of the underlying asset until the next option is completely sold, given by $Ua(t)/Us(t)$.
3. Third, once this process is done, the underlying is entirely covered by the short position of a call option and we calculate the return of the position between 10:00 UTC and 4 pm London time.

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Thus, for a rollover date, the return is computed as a combination of these three returns

$$(1 + R_1) \cdot (1 + R_2) \cdot (1 + R_3)$$

which are given by

$$1 + R_1 = \frac{U_s(t) - max[0, U_s(t) - K]}{U_e(t') - C_e(t')}$$

$$1 + R_2 = \frac{U_a(t)}{U_s(t)}$$

$$1 + R_3 = \frac{U_e(t) - C_e(t)}{U_a(t) - C_a(t)}.$$

Here, t′ refers to the previous rebalancing date and t refers to the current rebalancing date.

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General Construction Parameters

This section defines the general construction parameters used in designing the index such as the asset universe, the asset selection and the rebalancing weights. This section contains the details needed to calculate each index.

Universe:

The asset universe is a list of all possible index constituents. The default asset universe consists of all eligible constituents. It is possible to restrict the universe to assets that only contain a certain label e.g. Metaverse or Web3.

Selection:

The index constituents are selected from the asset universe. One example is to select the ten largest assets based on the current market capitalization. In general, the selection process can be based on a number of factors such as market capitalization, trading volume, returns, volatility, or a combination thereof.

Assets are selected on the review date, which is four business days prior to the rebalancing date. Note that Review Date is not the same as the Yearly Review.

If it is not possible to reach the intended number of constituents, the Index Committee can decide to either include non-eligible constituents or allow the index to have fewer constituents than intended. The decision shall be made publicly available.

Weighting:

Rebalance weights are calculated on the review date.

The current weights per asset display the current asset allocation, and is relevant for an ETF creation/redemption. The current weights change every day, based on price movements, whereas the rebalance weights are unchanged between rebalances. The rebalance weights are updated only when the index is rebalanced.

The weight for each asset is always between 0 and 1. The sum of all constituent weights is equal to 100%.

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Rebalancing:

All indexes are rebalanced periodically, following the rebalancing calendar.

Rebalancing involves the selection of constituents and the calculation of their rebalancing weights. Calculations are done using the closing prices on the rebalancing date. The new weights per asset are used on the opening of the day after rebalancing.

After the rebalance, the portfolio is updated so that its current weights per asset equal the rebalancing weights per asset. The bigger the difference between the current weight and the rebalancing weight, the larger the portfolio turnover.

Eligible Assets:

Assets are eligible as index constituents if they meet the eligibility criteria listed in Vinter's benchmark statement.

Calculation:

The index value is given by the weighted sum over all constituents of quantity times price divided by a divisor.

The price per asset is calculated by Vinter, as detailed in the constituent pricing section.

The quantity per asset is set to the Rebalancing Weight per asset after rebalancing. In a price return index, the quantity per asset is unchanged between rebalances.

The divisor enforces index continuity on rebalancing. The divisor is defined so that the index starts at a certain start value, which ensures each index tracks the value of a certain amount of capital invested on the start date.

Constituent Pricing:

The Vinter reference rates are used to price assets and can vary from one index to another. The algorithms are described in Vinter's single asset reference rates. The Benchmark Statement defines the eligibility criteria for input data.

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Market Capitalization:

The market capitalization is given by price times circulating supply. Using circulating supply is similar to using public float for an equity index. The market capitalization is calculated at midnight UTC.

Index Provider:

Invierno AB, Reg. No. 559207-4172, Box 5193, 10244 Stockholm, Sweden (“Vinter”)

Benchmark Administrator:

Vinter is the benchmark administrator and the central recipient of input data with the ability to evaluate the integrity and accuracy of input data on a consistent basis. Vinter is responsible for the development of the index and controls all aspects of the provision of the benchmark. Vinter has established a permanent and effective oversight function, governance processes subject to periodic reviews and audits, policies regarding complaints, ethics, conflicts of interest, and contingency, and has established a clear internal organizational structure with consistent roles and responsibilities to identify, prevent, disclose, mitigate, and manage conflicts of interest.

Calculation Agent:

Vinter is the calculation agent and is responsible for determining the value of the index described in the index methodology. Vinter calculates the index values in accordance with the index methodology. Upon the request of the benchmark administrator, the calculation agent shall provide all information available on the composition and details of the calculation of the requested index.

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Document Versions

Version	Date of update	Change
1.0.	2021-09-01	Initial version
2.0.	2023-08-10	

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