CCI30 CRYPTOCURRENCY INDEX

METHODOLOGY MANUAL

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INTRODUCTION

INDEX OBJECTIVES

The CCi30 is a rules-based index designed to objectively measure the overall growth, daily and long-term movement of the blockchain sector. It does so by tracking the 30 largest cryptocurrencies by market capitalization. It serves as a tool for passive investors to participate in this asset class, and as an industry benchmark for investment managers.

MAIN CHARACTERISTICS

For achieving its objectives, the CCi30 has been designed with 5 main characteristics:

1. diversified
2. replicable
3. transparent
4. provides in-depth coverage of the entire sector
5. presents the best risk-adjusted performance profile possible

The CCi30 was launched on Jan 1st, 2017. Its starting value is arbitrarily set at 100 on Jan 1st, 2015.

The Index is issued and administered by CS&P (www.cs-p.com).
INDEX CONSTRUCTION

CONSTITUENT SELECTION

ELIGIBILITY CRITERIA:
- Must be a cryptocurrency or a crypto token
- Must be traded on a public exchange that reports the last traded price and the last 24 hours trading volume
- Must have a non-zero trading volume on at least one supported exchange so a price can be determined
- For market cap ranking, an accurate circulating supply figure is required

In order to be holistically representative of the blockchain market, minimum restrictions and limitations are placed upon the constituents to be considered for the CCi30. All actively traded cryptocurrencies are eligible for consideration for the CCi30. As defined, a cryptocurrency is a value-expressing instrument which may be digitally traded. A cryptocurrency must serve as a means of exchange, a unit of account, and a means to hold value. The Index Committee is responsible for determining the eligibility of coins for this index, including the legitimacy of Hard Forks.

MARKET CAPITALIZATION

In its most basic definition, Market Capitalization is calculated by multiplying the Price by the Circulating Supply.

The price we use in our calculations is outlined in further detail in the constituent index pricing section of this methodology manual.

We use an exponentially weighted average of the Market Capitalization. The high volatility of the crypto market makes single day measurements of market capitalization less accurate than is optimal. The weighted average Market Capitalization helps smooth the volatility to give the most accurate portrait of Market Capitalization at any given point. Refer to the index calculations section for in-depth calculation detail.

For tracking purposes, the CCi30 uses circulating supply. It does not consider coins that are locked, reserved, or unable to be sold on the public market as part of the calculated supply. They are coins that cannot affect the price and thus should not be allowed to determine market capitalization as they would cause distortion in the estimate of the true value. The circulating supply method is analogous to the method of using public float for determining the market capitalization of companies in traditional investing.

CONSTITUENT NUMBER

The top 30 cryptocurrencies by adjusted market capitalization are selected and included in the index.

The number of constituents was set at 30 because it is the minimum number necessary to be statistically significant. The use of more constituents would generate higher fees with no significant improvement to performance and any less than thirty would risk reduced performance, insufficient diversification, compromised statistical significance, and missed opportunities to pick the next rising star.
By taking the top 30 cryptocurrencies, the CCi30, as of today, captures roughly 90% of the cryptocurrency market capitalization. With this scope, the index statistically represents the entire cryptocurrency market with a confidence level of 99% and a confidence interval of 1.11. In other words, the margin of error of the index value as an indicator of the market is just 1.11%.

CONSTITUENT WEIGHTINGS

Each constituting cryptocurrency is weighted according to the square root of its respective adjusted market capitalization. The square root function was chosen as a hybrid that most accurately weights the constituents based on the current conditions of the cryptocurrency market.

A simple market capitalization weighted index would be dominated by the top two cryptocurrencies, while a more slowly decaying weighting, or in the extreme case, equal weighing, would give too much weight to the tiny, illiquid cryptocurrencies at the bottom of the range.

In order to accurately capture the movements of the market, no caps or floors are implemented upon the weights of the cryptocurrencies
INDEX CALCULATIONS

INDEX VALUE CALCULATION (REBALANCING AND RECONSTITUTION):
For rebalancing and reconstitution, the index is computed using as follows: suppose that there are N cryptocurrencies in the index. If the weights of the cryptocurrencies at (rebalancing) time \( T_0 \) are \( w_1, \ldots, w_N \), the value of the index at time \( t \) is given by:

\[
I(t) = \sum_{i=1}^{N} \frac{w_i}{P(T_0)} P(t),
\]

where \( P(t) \) is the price of coin \( i \) at time \( t \).

ADJUSTED MARKET CAPITALIZATION CALCULATION
To calculate the weights for each cryptocurrency, the adjusted market capitalization must first be calculated. Market capitalization is not computed as some instantaneous number - the volatility in the cryptocurrency market is such that this would destabilize the index composition too much. Instead, the CCi30 uses an exponentially weighted moving average of the market capitalization. The formula used to derive market capitalization is:

\[
M^*(t) = \frac{\sum_{i=0}^{\infty} M(T - i) e^{-\alpha i}}{\sum_{i=0}^{\infty} e^{-\alpha i}},
\]

where \( M(t) \) is the actual market cap at time \( t \), \( M^* \) is our adjusted market cap, and \( \alpha \) is reasonable.

WEIGHT CALCULATION
The weight of each cryptocurrency is measured by the square root of its adjusted market capitalization, so at time \( t \), the weight of the cryptocurrency \( 0 \) will be:

\[
w_0(t) = \frac{\sqrt{M^*_0(t)}}{\sum_{i=0}^{N} \sqrt{M^*_i(t)}},
\]

where \( M^*_i \) is the adjusted market capitalization of a specified cryptocurrency at time \( t \).

ROUNDING OF INPUT DATA
The following rounding protocols are used for the Index calculation:

- The market capitalization is rounded to 3 decimal places
- The weighting factor is rounded to 4 decimal places
INDEX MAINTENANCE

INDEX MAINTENANCE OVERVIEW

The Index and its constituents are reviewed on a regular basis for compliance to this methodology by the Index Committee. Any material deviations or changes from established procedures must be approved by the Index Committee. Any changes that are implemented will be immediately announced to the public.

RECONSTITUTION

The index is reconstituted (reevaluation and change of constituents) on the first calendar day of each quarter.

Additions and deletions to the Index are calculated, announced and implemented at 00.00 GMT on the first Index Business Day of the next quarter (Reconstitution Implementation Day).

Changes are made quarterly and no constituents will be added or removed from the Index inter-monthly (see “Stress Events” section for exceptions).

REBALANCING

The index is rebalanced (change of constituent weight) on the first calendar day of each month.

Index weights are calculated, announced and implemented at 00.00 GMT on the first Index Business Day of the next month (“Rebalance Implementation Day”).

DIVISOR ADJUSTMENTS

When the index is rebalanced, the divisor is adjusted by a normalization factor computed in such a way that the value of the index on rebalance day is the same when computed with the old or the new weights (and components).

DISCRETIONARY ADJUSTMENTS

The index has been constructed to be fully automated. Discretionary adjustments will only be made with the professional oversight of the board in the case of extraordinary events. Refer to the Expert Judgement section herein for detail on special circumstances that might warrant adjustment.
INDEX DISSEMINATION

TICKERS

- ISIN: CH0428867698

INDEX PUBLICATION INTERVAL

The index is available at all hours of the day, 7 days a week. Real-time index values are published continually at 10 seconds intervals and can be obtained via API connection from cci30 servers which can be found at https://cci30.com

The Closing Index level is published immediately following review and quality checks. After reviewing the intraday data, we filter any subpar information that might have been disseminated by the exchanges and provide users with the final index level.
INDEX DATA

DATA PROVIDERS AND DATA EXTRAPOLATION

The price of each constituent is calculated every 10 seconds by averaging multiple market prices across over 10,000 exchanges. They are weighted by volume traded in the last 24 hours.

The constituents market capitalization and volumes are calculated every 5 minutes from the same sources.

CONSTITUENT PRICING

Constituent price is calculated in USD by crossing indirect symbols using central banks’ foreign exchange reference rates. (For example, to calculate the exchange rates of BTC/USD, we also incorporate BTC/CNY, BTC/JPY, BTC/GBP, BTC/EUR.)

INTRADAY INDEX LEVELS

The index is calculated every 10 seconds using the latest available constituent data.

END-OF-DAY INDEX LEVELS

All values refer to the close of the previous day, considered to be at 00:00 GMT. The official daily OHLC index values are calculated at 03:15 GMT by filtering the data collected in real-time during the day, and rounding collected data to 2 decimal places.
STRESS EVENTS
If coin prices are unavailable due to unforeseen events, the Index will be calculated using the most recently updated prices. If a currency price is unavailable for more than three consecutive Index Business Days, CS&P reserves the right to remove the Constituent from the Index and perform an extraordinary reconstitution.

LIMITATIONS OF THE INDEX
The Circulating Supply of cryptocurrency may be subject to unpredictable changes which cause the individual currency weightings in the index to change.

The bid/ask spread of the constituents affect the actual replicability of the index. The index is valid with an approximation equal to the average spread of all constituents. The average spread is calculated every 5 minutes and published on https://cci30.com.

INDEX AND DATA REVIEWS
CS&P reviews the index annually to ensure that its theoretical underpinnings remain valid and applicable to the current market conditions. Any annual changes or updates are immediately disclosed to the public.

EXPERT JUDGEMENT
In the case of the following occurrences, CS&P may elect to use expert judgment to manage the index during and immediately after the event.

1. Extreme or unusual market emergencies
2. Interruptions in pricing or other data collection and measurement technology
3. When there are Index Restatements
4. When there are closures

When the use of expert judgement is required, CS&P ensures consistency in its application. We have detailed procedures in place that outline decision making steps and the order of data use. The procedures followed during the process are outlined in this policy as well as in those of established internal procedural manuals. When a decision is reached, it is reviewed and approved by directors of the committee before implication. CS&P’s code of ethics and behavioral norms ensures that there are no internal conflicts of interest that would cause misuse of the index. The CCi30 and its creation, maintenance and use are unbiased and expert judgment is reserved for cases in which impartial expertise is needed to insure the production and operation continues linearly.

RESTATEMENT POLICY
CS&P is fully committed to ensuring that its indices are calculated with complete accuracy. However, if a material error occurring in Index values is discovered subsequent to publication and distribution, CS&P will issue a notification to all Index clients. This notification will document the error and if a revised publication is deemed justified, the expected date of the newly corrected publication. CS&P will take into consideration a number of factors on a case-by-case basis in deciding whether or not any restatement will take place, and these factors will be weighted in importance according to the circumstances of the error in question. The following factors will constitute this process:
1. The relative importance of the data field affected
2. The date and time the error occurred
3. When the error was discovered
4. The magnitude of the error
5. The burden of restatement on client re-processing relative to its impact
6. The affect the restatement might have on analytical tools

RISKS

Due to the field being in its infancy, there are certain risks associated with all cryptocurrency indexes. These include, but are not limited to:

- Distributed Denial of Service (DDoS) attacks;
- trading interruptions;
- hacking and unauthorized entering of accounts;
- changes in the naming convention of symbols;
- impacts caused by unstable technological environments of a particular technology;
- varying cross-national legal environments (leading to possible changes in fee structure, blocking of funds withdrawal, and other undesirable incidents).

It should also be noted that any form of cessation or interruption in the trading of cryptocurrencies on the open market may have a negative impact on the value of the Index.

INTELLECTUAL PROPERTY RIGHTS

CCI30 is a registered trademark. Unless otherwise indicated, CS&P retains all intellectual property rights in relation to CCI30.

This includes, but is not limited to software, passwords, codes and data, whether used or supplied in connection with its operation. All works contained herein are protected by existing Federal and State Copyright Laws and all International regulations regarding cross border enforcement. All rights, including resale rights, are reserved.

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DISCLAIMER

Clients should be informed that the trading of cryptocurrencies is inherently risky. The high level of risk involved means that it may not be suitable for all persons. It is important to note that past
The performance of products gives no indication of future outcomes. The elevated levels of volatility involved in the cryptocurrency markets means that any investment has the potential for great returns but also has the potential for significant negative returns.

It is recommended that before you commence any investment in cryptocurrencies you carefully consider your personal investment objectives, level of experience, and the level of risk to which you are willing to be exposed. You should be informed that a financial loss is possible, and you should therefore only invest funds that you can afford to lose.

Before trading in the cryptocurrency niche, CS&P recommends familiarizing yourself with all aspects of the cryptocurrency market, trading cryptocurrencies, and related topics. If you have any doubts about the matter, you should seek the assistance of a qualified financial advisor. Any information contained here does not represent financial advice, nor is it a solicitation to purchase cryptocurrencies in any form.

CS&P accepts no liability for any loss or damage, including without limitation any loss of profit which may arise from utilizing the CCi30, or from the direct or indirect usage of any information contained herein, or the reliance on information produced here. This is applicable to the maximum legal extent allowed by law, warranties and representations, whether explicit, implied, statutory or otherwise.

**LIMITS OF LIABILITY**

CS&P, its agents, and related third parties, will not be held directly liable for any technical problems, system failures and malfunctions, communication line failures, equipment or software failures and malfunctions, nor any loss, cost, injury or damages incurred as a result of utilizing CCi30 or related systems.

In no event shall CS&P its agents and related third parties, be held liable for any indirect, consequential, exemplary, incidental, or punitive damages. This includes, without limitation, damages for any loss of profits or revenue, arising out of, or in connection with, any aspect of this agreement or subject matter, regardless of whether any such party is aware of the possibility of such damages.

CS&P will also not be liable to users of CCi30 for any indirect, special, consequential or punitive damages arising from, or in connection with the system and cryptocurrency trading, regardless of whether any parties know, or should have known, of the possibility of such damages.

**INFORMED DISCRETION**

CS&P reserves its right to use its informed discretion in relation to any of the following areas:

1. Index restatements
2. Any circumstances that may arise as the result of a market emergency
3. Any issue related to pricing, data interruptions, issues, and closures

On any occasions which require informed discretion, CS&P hereby resolves to be absolutely consistent in applying its expert judgment, with particular attention being paid to written procedures, which are documented in writing both in this methodology and internal procedures manuals.

Procedures outlined in these sources represent the approach to decision-making and the hierarchy of data that will be put into practice in real-world application. Any material decision made as part of
CS&P’s informed discretion will also be directly reviewed by senior members of the committee and compliance teams in order to ensure that it is in compliance with stated norms and regulations.

CS&P will also operate in accordance with its internal code of ethics, which eliminate perceived and actual conflict of interests, and to prevent any conflicts from impacting Index construction, production, and distribution, including the implementation of expert judgment.