CoinDesk DeFi Index Methodology

April 2022
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Introduction

Index Objective

The CoinDesk DeFi Index is designed to measure the market capitalization weighted performance of some of the largest and most liquid digital assets classified in the Decentralized Finance ("DeFi") sector that meet certain trading and custody requirements.

Additional Details

The CoinDesk DeFi Index (the “Index”) is based on the Digital Asset Classification Standard (DACS). Constituents of the Index must be included in DACS and assigned to the DeFi sector. For more information on DACS including Sector definitions, please refer to the DACS Glossary.

This methodology was created by CoinDesk Indices (“CDI”) to achieve the Index Objective stated above—There may be circumstances or market events which require CDI, in its sole discretion, to deviate from these rules to ensure the Index continues to meet its Index Objective.

This document should be read in conjunction with the CoinDesk Digital Asset Indices Policy Methodology.

Table 1: Index Details

<table>
<thead>
<tr>
<th>Index Name</th>
<th>Symbol</th>
<th>Launch Date</th>
<th>Base Date</th>
<th>Base Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CoinDesk DeFi Index</td>
<td>DFX</td>
<td>7/19/2021</td>
<td>5/10/2021</td>
<td>1000.00</td>
</tr>
</tbody>
</table>

Eligibility Criteria

Universe Eligibility

To be included in the Universe, a digital asset must be included in the most recently published Digital Assets Classification Standard (DACS) report and meet the following additional criteria:

1. One of the largest 200 digital assets based on 90-day median market capitalization within DACS
2. Assigned to the Decentralized Finance (DeFi) sector within DACS
3. Must be an ERC-20 token issued on the Ethereum network
Cohort Eligibility

To ensure availability of complete data for all potential index constituents, a Cohort is established for the Index.

To be included in the Cohort, a digital asset must meet the Universe Eligibility Criteria as in the Reconstitution Reference Date and listed on an eligible exchange during the Review Period, as defined in Index Maintenance.

Index Eligibility

At the time of Reconstitution, each digital asset in the Cohort is evaluated relative to the entire Cohort to determine index eligibility based on the following criteria:

Criteria 1: The median market capitalization of the digital asset must be greater than or equal to the minimum median market capitalization for the Cohort.

The median market capitalization of each digital asset is the median of its daily closing market capitalization during the Review Period.

The minimum median market capitalization for the Cohort is the median market capitalization of all digital assets (as defined above) in the Cohort multiplied by a period market capitalization constant defined in Table 3.

Criteria 2: The closing market capitalization of the digital asset must be greater than or equal to the minimum average market capitalization for the Cohort.

The closing market capitalization of each digital asset is its market capitalization on the Reconstitution Reference Date.

The minimum average market capitalization for the Cohort is the average closing market capitalization of all digital assets (as defined above) in the Cohort multiplied by a closing market capitalization constant defined in Table 3.

Criteria 3: The liquidity ratio of the digital asset must be greater than or equal to the minimum liquidity ratio for the Cohort.

The liquidity ratio of each digital asset is the ratio of its total dollar volume across eligible exchanges to the total dollar volume of the Cohort during the Review Period.

The minimum liquidity ratio for the Cohort is the average liquidity ratio of all digital assets (as defined above) multiplied by a liquidity constant as defined in Table 3.

Criteria 4: Custodian services for the digital asset must be available from Coinbase Custody, a division of Coinbase Global Inc.

Criteria 5: The digital asset must be trading and quoted in USD on at least three eligible exchanges as of the Reconstitution Reference Date.
Table 3: Summary of Index Eligibility Criteria

<table>
<thead>
<tr>
<th>Criteria Tested for each Digital Asset</th>
<th>Measurement Period</th>
<th>Inclusion Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria 1: Median Market Cap</td>
<td>Full Review Period</td>
<td>&gt;= Median Market Cap of Cohort * 0.33</td>
</tr>
<tr>
<td>Criteria 2: Closing Market Cap</td>
<td>Last Day of Review Period</td>
<td>&gt;= Mean Closing Market Cap of Cohort * 0.40</td>
</tr>
<tr>
<td>Criteria 3: Liquidity Ratio</td>
<td>Full Review Period</td>
<td>&gt;= Mean Liquidity Ratio of Cohort * 0.33</td>
</tr>
<tr>
<td>Criteria 4: Custody</td>
<td>Last Day of Review Period</td>
<td>Must Pass</td>
</tr>
<tr>
<td>Criteria 5: Markets</td>
<td>Last Day of Review Period</td>
<td>&gt;= 3 exchanges</td>
</tr>
</tbody>
</table>

CDI believes unnecessary turnover should be avoided; therefore, it provides a seasoning period for potential additions and deletions. Non-constituents must pass the Inclusion Requirements for two consecutive quarters before being eligible for addition and current constituents must fail the Inclusion Requirements for two consecutive quarters before being removed.

The Selection Universe is defined as digital assets included in the Cohort that meet one of the following criteria based on Table 3:

- Index constituents that pass all the Inclusion Requirements
- Index constituents that failed to pass all the Inclusion Requirements this period but passed all the Inclusion Requirements in the prior reconstitution. (Note that any current constituent that drops out of the Cohort will not be eligible for the seasoning period and will be removed at the reconstitution)
- Non-constituents that pass all the Inclusion Requirements for two consecutive quarters
Index Construction

Constituent Selection

The final constituents are determined based on the following steps:

Step 1: Each digital asset in the Selection Universe is ranked by its closing market capitalization (as determined in the above Criteria 2) in descending order.

Step 2: All current constituents are selected for index inclusion.

Step 3: If Step 2 results in fewer than 10 digital assets selected, the highest ranked non-constituents are included until a maximum of 10 digital assets are selected for index inclusion.

Step 4: If Step 3 results in fewer than 5 digital assets selected, the Index Committee will determine the appropriate action and may temporarily relax market capitalization and/or liquidity requirements until 5 digital assets are selected.

Circulating Supply

At 4PM New York local time, the circulating supply is updated based on data from network nodes operated by TradeBlock.

Constituent Weighting

Constituents are market capitalization weighted.

Index Calculation

The indices are calculated in real-time using reference rates for each underlying constituent as described below.

Constituent Pricing

Real-time “spot” reference rates for constituent digital assets are calculated approximately every 5 seconds by CDI, using a volume weighted average price (VWAP) across three contributing exchanges over the prior 60 minutes. Price and volume inputs are sourced and normalized from the contributing exchanges. Additional validations on the data inputs, such as outliers, are not performed.

Contributing exchanges for each constituent digital asset are determined each quarter based on the following process:
1. Determine the 90-day notional volume in the USD quoted market on each Eligible Exchange
2. Rank the results of Step 1 in descending order
3. The top two exchanges from Step 2 are automatically selected as contributing exchanges
4. The third contributing exchange will be selected from the remaining exchanges based on the following buffer rules:
   a. The highest ranked current non-contributing exchange will be selected if its volume determined in Step 1 is 1.20 times the volume of the highest ranked current contributing exchange not selected in Step 3
   b. Otherwise, the highest ranked remaining current contributing exchange is selected

The process above is repeated for each digital asset.

Calculation Formula

The weight of each constituent digital asset will be calculated each day at 4PM New York local time based on the latest available circulating supply and the latest 24-hour VWAP of the applicable reference rate. Once calculated, this weight will be used for the following 24-hour calculation period.

\[
W_i = \frac{(VWAP_{i,4PM} \cdot Supply_{PR})}{\sum_{i=1}^{N}(VWAP_{i,4PM} \cdot Supply_{PR})}
\]

where:
- \( W_i \) = Weight of constituent \( i \)
- \( VWAP_{i,4PM} \) = Latest 24-hour VWAP of constituent \( i \) at 4PM
- \( Supply_{PR} \) = Latest Circulating Supply from network nodes at 4PM
- \( N \) = Number of constituents

The index will be calculated based on the following formula:

\[
Index_t = Index_{t-1} \times \left(1 + \sum_{i=1}^{N}(W_i,4PM \cdot \frac{Constituent Price_{i,t}}{Constituent Price_{i,t-1}} - 1)\right)
\]

where:
- \( Index_{t} \) = Index Value at time \( t \)
Index Maintenance

Index Reconstitution

Each index is reviewed on a quarterly basis based on the rules described above. Any index changes resulting from the quarterly review are announced two weeks prior to the effective date and implemented on the first business day of each quarter. Please see below for the reconstitution timeline, including an example.

<table>
<thead>
<tr>
<th>Activity Description</th>
<th>Timing</th>
<th>Example Reconstitution Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Day of Review Period</td>
<td>End of Review Period minus 90 days</td>
<td>09/16/2021</td>
</tr>
<tr>
<td>Last Day of Review Period (Reconstitution Reference Date)</td>
<td>Announcement Date minus 2 business days</td>
<td>12/16/2021</td>
</tr>
<tr>
<td>Announcement Date</td>
<td>Effective Date minus 14 calendar days</td>
<td>12/20/2021</td>
</tr>
<tr>
<td>Effective Date</td>
<td>4PM on the first business day of the start of each quarter</td>
<td>1/03/2022</td>
</tr>
</tbody>
</table>

In addition to the quarterly process, constituents are monitored for potential anomalies and trading disruptions. Out-of-review monitoring, which would require an index modification, only applies in extraordinary circumstances. Incident types that would require one or more index modifications are outlined in the CoinDesk Digital Asset Indices Policy Methodology.

Deletions

If a constituent is removed from an index outside of the scheduled reconstitution process, its weight will be set to zero on the effective date and it will no longer contribute to index returns. The impacted constituent will be considered for inclusion at the next scheduled reconstitution if it meets the Eligibility Criteria.
Additions

There will be no additions to the index between reconstitutions unless the constituent count drops below 5. If the constituent count drops below 5, the Index Committee will review the eligible universe and determine the appropriate action.

DACS Sector Reclassification

In the event the DACS sector is modified for an existing index constituent between reconstitutions, the impacted constituent will remain in the index until the next scheduled reconstitution.

Data Distribution

Index values are calculated 24x7 and follow UTC convention. Real-time index values are available publicly at https://tradeblock.com. Index values are available to subscribers via REST and WebSocket APIs as well as scheduled email updates.

Index Governance

The CoinDesk Index Committee provides ongoing oversight of the Index and this Methodology. For more details on the Index Committee, please refer to the Index Governance section of the CoinDesk Digital Asset Indices Policy Methodology.
Appendix 1: Data sources

This section describes data sources used to reconstitute, maintain, and calculate the Index. If data is not available for any reason from the sources described in this appendix, other data sources may be used.

Price data

Prices used to calculate VWAPs are sourced from eligible exchanges.

Volume data

Volume data used to calculate VWAPs are sourced from eligible exchanges.

Circulating supply data

Circulating supply is observed directly on network nodes maintained by TradeBlock.

Custody data

The availability of requisite custodian services for Cohort and constituent currencies is obtained directly from the custody provider(s).

Reconstitution Data

Market capitalization data is provided by CoinMarketCap.com. Notional volume is sourced from eligible exchanges.
Appendix 2: Reference Rate Details

The table below is a summary of the three contributing exchanges for each constituent reference rate.

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Binance.US</th>
<th>Coinbase Pro</th>
<th>Gemini</th>
<th>Kraken</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAVE (AAVE)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amp (AMP)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compound (COMP)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curve DAO Token (CRV)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maker (MKR)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uniswap (UNI)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yearn.finance (YFI)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3: Methodology Changes

The table below is a summary of material changes to this Index Methodology.

<table>
<thead>
<tr>
<th>Effective Date</th>
<th>Section</th>
<th>Prior Treatment</th>
<th>Updated Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4 2021 Reconstitution</td>
<td>Eligibility</td>
<td>Digital assets that pass/fail Inclusion Requirements at a Reconstitution were eligible for addition/deletion.</td>
<td>Digital assets must pass/fail Inclusion Requirements for two consecutive Reconstitutions prior to becoming eligible for addition/deletion.</td>
</tr>
</tbody>
</table>
# Appendix 3: Document Review History

<table>
<thead>
<tr>
<th>Description</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Version</td>
<td>April 4, 2022</td>
</tr>
</tbody>
</table>
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