TECHEMY CAPITAL

BNC::BMVI-ETP

BNC Maker Vault ETP

Exchange Traded Portfolio Methodology

BNC
MAKER
VAULT ETP

Version history

Version	Date	Update
1	2020-18-02	Initial methodology

1. Introduction

BNC Maker Vault ETP (Exchange Traded Portfolio) is a physical representation of the BNC Maker Vault Index, issued on Balancer Protocol. The ETP mimics the constitution and weights of the index. It is rebalanced in alignment with the index, providing traders an opportunity to get non-synthetic exposure to the assets that are made up of the index, and/or speculate on arbitrage between the price parity of the index-powered perpetual swaps and the spot market for ETP.

BNC Maker Vault Index is a rules-based sector index designed to measure the growth of crypto assets used as collateral and locked in the Maker Vaults. In the context of the BNC BMVI, the term "Maker Vault" refers to assets available and vetted by the MakerDAO governance body. For a new token to be added to the protocol, it needs to be accepted by the decentralised governance body of MakerDAO. This is done via Executive Voting, Governance Polling, and ensures that 'unstable' crypto-assets cannot be used in the DAI ecosystem.

This institutional-grade index product tracks the market performance of the **8** largest crypto assets in the Maker Vaults at a sub-second frequency. The constituent asset weightings are rebalanced every three months based on free float market capitalisation with capped at a maximum constituent weight of **25**%.

BNC Maker Vault ETP is exactly like the index, but physically holds onto the underlying assets in a non-custodial way, powered by Balancer.

Please refer to the full BNC Maker Vault Index Methodology here:

https://bravenewcoin.com/insights/bnc-maker-vault-index-methodology

The ETP is owned and administered by Brave New Coin under the principles:

Representative	The ETP should closely follow the index and represent it adequately.
Transparent	The ETP should be transparent in its design and reproducible in its calculation.
Timely	The ETP should be computed as frequently as necessary to reflect price changes in the constituent assets of the index..
Robust	The ETP should be robust to disruptions such as erroneous data or pricing source outages, and be resistant to manipulation.

Product logic:

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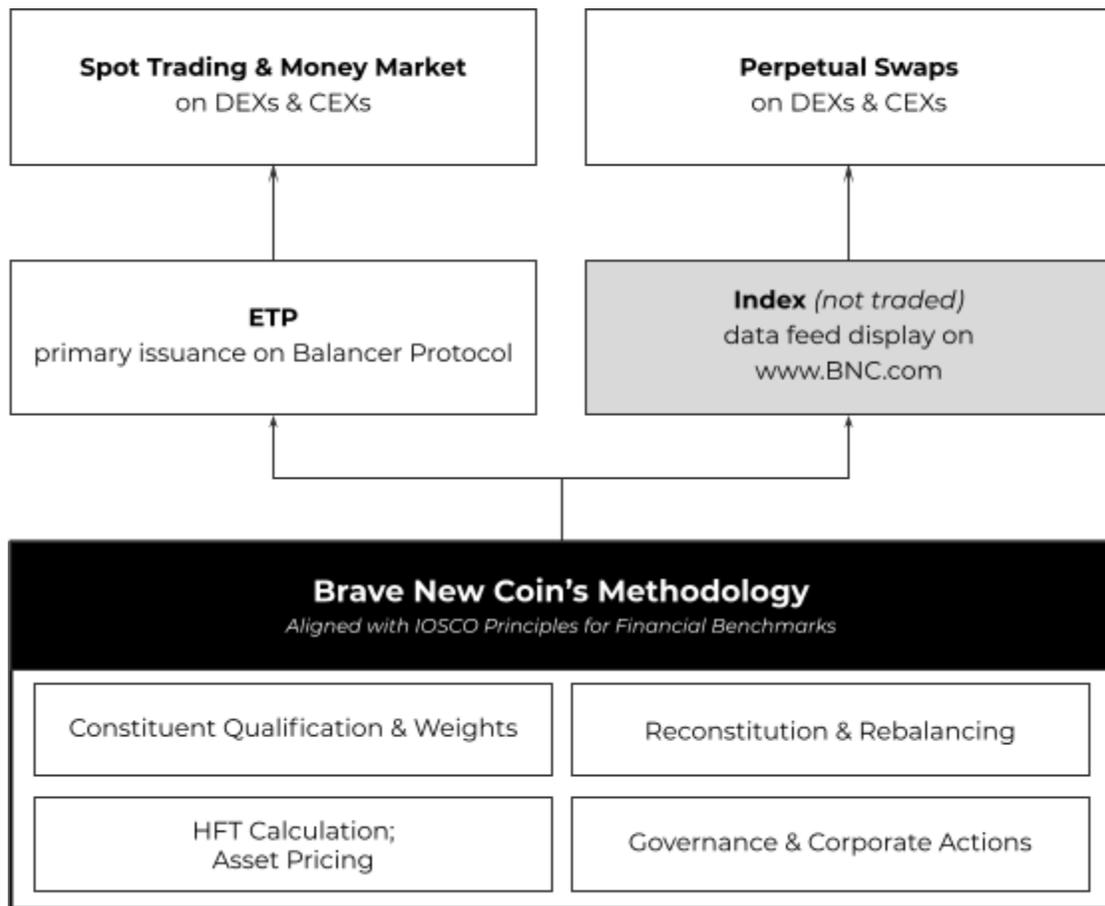
2. Key Balancer Concepts

- **Balancer Finance** is a non-custodial portfolio manager and liquidity provider platform.
- **Balancer Pools** are automated market makers with certain key properties that cause them to function as self-balancing weighted portfolios and price sensors.
- **Core Pool** - a Balancer Pool contract object - this is the "base" pool that actually holds the tokens. Core Pool is effectively a premiere issuance market. Core pools are tokenised in ERC-20 format, representing units of the underlying portfolio. Tokenisation of Core Pools effectively makes them Exchange Traded Portfolios (ETPs) as the tokenised pool can be listed and traded on a secondary market.
- **Smart Pool** - a contract that owns (i.e., is the controller), of a Core Pool. Not all core pools are controlled by smart pools, but only those that are tuned to perform certain functions or follow a certain thesis, hence are different to uncontrolled public pools. A smart contract controlled pool can fully emulate a finalised core pool, while also allowing complex logic to readjust balances, weights, and fees. Such a construct is used to create an ETP to support BraveNewCoin's index. Hereby, a Balancer Smart Pool ETP represents a spot market exposure to a physical basket of assets that reflect the constituents and weights of the index.
- **BPT Token** - all pools in Balancer are also ERC-20 tokens known as BPTs (Balancer Pool Tokens), which represent proportional ownership of the pool's assets. When users add assets, they receive BPTs proportional to the amount of assets they are adding to the pool. When listed, these tokens can be traded on a secondary market.

3. Configurable Rights

Smart Pools are managed according to the rights granted to the controller on creation. By deploying a Smart Pool, Techemy Capital (TCap) becomes the controller of the Smart Pool - and the Smart Pool itself becomes the controller of the Core Pool. Hence BNC only has access to rebalancing of the assets, but not a custodial control over the funds in the Core Pool.

Set of rights for the ETP:

1) **Paused Swapping**: the controller will halt trading (swaps) on the underlying core pool. With paused swapping, the logic in the smart contract can toggle trading on and off. For instance, the controller might want to "short-circuit" the contract in certain pathological cases, such as market crashes.
2) **Add/Remove Tokens**: allows the controller to change the composition of the pool. This will occur in accordance with the Index methodology and rebalancing directives. Adding a token is a two-step process meant to mitigate this risk and lower the trust required. The protocol emits an event when a token is "committed" (about to be added), and enforces a minimum wait time before the controller can "apply" (actually add) the token. Current "add/remove token" function delay is set to 6 hours (1440 blocks).
3) **Change Weights**: the controller will call updateWeight (to directly update a single token's weight), or updateWeightsGradually (to linearly transform a set of weights over time). This will occur in accordance with the Index rebalancing events. Naturally, altering weights will change balances - which means transferring tokens - in order to leave prices unchanged. When updating weights gradually, the protocol enforces a minimum time between updates, and a minimum total time for the update. These parameters are set at create time, and are immutable thereafter. Current "change weights" function delay is set for gradual change over a 3 day period (17280 blocks).
4) **Change Swap Fee**: after contract deployment, the controller will be able to change the Swap Fee within the bounds set by the underlying core pool (e.g., it cannot be zero, or greater than 10%). With this right, it would be possible to implement fee optimisation strategies (i.e., to maintain the peg to the index and minimise impermanent loss).

5) **Whitelist**: When enabled, no one can add liquidity (including the controller, beyond initial creation of the pool), unless they are added to a whitelist by the creator. Although this function is available to the controller, it will be disabled for this portfolio.

6) **Change Cap**: When enabled, the cap is set to the initial supply on creation - and can be changed later by the controller. Although this function is available to the controller, it will be disabled for this pool (there will be no cap for this pool).

4. BAL Liquidity Mining

To incentivise traders, fund managers, and liquidity providers and to pursue decentralisation, Balancer Labs implemented the concept of liquidity mining, where Balancer governance tokens ($BAL) are distributed proportionally to the amount of liquidity each address contributed to each qualified pool, relative to the total liquidity on Balancer.

Investors of the ETP should be able to receive $BAL rewards once it's the ETP is whitelisted with Balancer. The rewards must be claimed by investors individually via https://claim.balancer.finance/#/.

5. Portfolio Fees Structure

Currently there are no fee mechanisms in the Balancer Smart Pools. Hence, the investors in this ETP will not be charged performance or management fees when they opt for self-service.

This will be changed once the ETP migrates from Balancer v1 to v2 platform (ETA early Q2 2021).

6 Technical Constraints of Balancer Pools

Balancer is meant to be a flexible and agnostic DeFi primitive. Due to constraints such as gas and math approximations, there are some limitations built into the protocol, including:

- **ERC-20 compliance**: pool tokens have to be ERC-20 compliant. There are no upgrade mechanisms in the contracts to allow for token upgrades. Any upgrade will need to be manually coordinated and moved into new pools. Tokens that have internal transfer fees or other non-standard balance updates (e.g. AMPL) may be excluded from the constituent lists at the discretion of the index committee.
- **Minimum Bound Tokens - 2.** A functional pool must contain at least two tokens. (If the pool creator can remove tokens, it is possible to remove them all and have one or zero, but of course no swaps are possible if there is only one token, and a 0-token pool cannot be restored).
- **Maximum Bound Tokens - 8.** The maximum number of tokens that can be in a given pool is 8.
- **Maximum Swap In Ratio - ½.** A maximum swap in ratio of 0.50 means a user can only swap in less than 50% of the current balance of tokenIn for a given pool.
- **Maximum Swap Out Ratio - ⅓.** A maximum swap out ratio of 1/3 means a user can only swap out less than 33.33% of the current balance of tokenOut for a given pool
- **Minimum Swap Fee - 0.0001%.** There is a minimum swap fee of 0.0001% (or a hundredth of a basis point) to counteract any unfavorable pool rounding.
- **Maximum Swap Fee - 10%.** This is to prevent malicious pool controllers from setting predatory trading fees. (for instance, a pool controller could front-run a large trade and set the fee to 99%).
- **Minimum Balance - (10^18) / (10^12).** The minimum balance of any token in a pool is 10^6 wei. **Important**: this is agnostic to token decimals and may cause issues for tokens with less than 6 decimals. Also note that this is only enforced on initial token binding.

7. ETP Specs

- **Constituent Assets** will be mirroring the Index composition to maintain parity.
- **Reconstitution & Rebalancing** will be implemented in accordance with the Index methodology.
- **Asset Pricing** - Balancer protocol does not use outside price oracles. When a portfolio asset prices start to differ from market prices, arbitrators sweep in to eliminate price differences. Asset prices in Balancer Pools do not move unless someone makes a trade.
- **Governance** - The BNC Index Governance Committee is responsible for the oversight and transparency of all aspects relating to the provision of benchmarks administered by Brave New Coin Limited with periodic reviews in accordance with the Index methodology.

Brave New Coin (BNC) is a leading provider of market data services (aggregated pricing) and institutional grade indices (proprietary and bespoke) that are designed to track the most liquid areas of the cryptocurrency markets. Founded in 2014, BNC has built a strong reputation for independence, objectivity, robust processes and technical innovation.

For further information on BNC Indices please visit bravenewcoin.com.