DECIND Project Whitepaper

Decentralized Index Funds

Louis FRADIN

Version 0.3.0 - March 8, 2021

1 Overview

1.1 Initial Problem

Investing in the cryptographic finance world is technically hard, time consuming, or can be costly in terms of fees. Solutions to invest easily on cryptocurrencies exist, but unfortunately they require users to trust a company with their funds and customers are loaded for using their products. Sometimes, the minimum amount required for these products is just too high for the common people. The vast majority of people cannot invest easily on the promising decentralized finance, lacking trustless, ease of use and low entry ticket products.

1.2 Proposed Solution

The traditional finance world created a popular solution for this problem: Exchange Traded Funds or ETFs. These funds replicate stock indexes and are gaining in popularity as they perform better than active trading on the long term : *time in market beats timing the market*. Also, they are simple, low on fees and automatable.

The idea behind the Decentralized Index Funds Project is to use decentralized finance exchanges with smart contracts to replicate indexes on most valued cryptocurrencies. The project aimed to have the lowest fees, be trustless, and decentralized. The final goal is to give access to an investment product in the crypto world that is cheap and simple, for everybody. For this goal to become a reality, not only this needs well-designed products, but also a need for simple investment tools for non-tech people.

2 Index Fund Token

2.1 Assets investment and tokens creation

The user can buy compatible cryptographic assets in exchange markets and convert them through the smart contract to the *IFT*.

IFTs will be created to represent the asset value, when it enters the fund, as user investment. The *IFTs amount* generated by the smart contract corresponds to the asset value in *IFT* price.

Example A user will invest $100 worth of *ETH* in the fund and will get $100 of freshly created IFT in return. If the *IFT* is valued at $10, the user will get 10 *IFT*.

2.2 Assets liquidation and tokens destruction

When users wants to get back their investments, they can sell their *IFTs* on exchange markets or liquidate by smart contract against any wanted cryptographic asset available.

The *IFT* retrieved will be exchanged for a wanted cryptographic asset amount at the *IFT* price, as it represents the *UAV*. *IFTs* retrieved by the contract will be burnt as the asset as left the fund to keep the IFT value consistence.

Following the previous example, the user wants to get his investments back. The *UAV* has increased, and the *IFT* price is now at $20. The user will liquidate his 10 *IFTs* for $200 worth of cryptographic assets.

2.3 Conversion Costs

Conversion cost to required assets in order to keep the index balanced will be ensured by those investors, and not by the fund to avoid other investors penalization. This conversion should take place when adding assets to the or withdrawing them. As an incentive for investors to introduce the right coin, if they provide the correct asset, they won't be loaded as there is no conversion to do. This will also be positive for the index fund as the need for asset balancing is diminished.

2.4 Arbitrage Trading

IFT is an exchangeable token, so it can be bought on any exchange market that lists the coin. To avoid the *IFT* value deviation from its real value, there is a mechanism that act as an incentive to keep the right price.

As the assets on the fund will increase/decrease in value and quantities, the value on exchange markets will deviate between the token and the underlying assets. This gap between prices is profitable and will be used as an incentive for traders to fill the gap between assets market value, *UAV*, and *IFT* market value. These traders doing arbitrage between exchange markets and smart contracts are called *arbitrage traders*.

Example A user just withdrawn his investments, there are now fewer assets in the fund, driving the *UAV* lower. On exchange markets, the token value is now higher than the *UAV*. If a trader sells his token funds at a high price in exchange markets and exchange the same token amount through the smart contract for a lower price, then the operation is profitable and acts as an incentive. The opposite is also true.

2.5 Governance Token

IFT holders have an amount of *IFT* representing the index fund assets percentage that they detain, compared to the total *IFT* supply. Also, as the assets are detained by *IFT* holders, they have investments at stake : the more *IFT* you have, the more you have at stake. *IFT* holders are best placed to decide on matters of index fund decisions.

3 Index Fund Pool

3.1 Description

The Index Fund Pool, or *IFP*, is the pool that contains the assets. The pool will automatically balance to follow the index fund strategy, when some conditions are encountered, via blockchain liquidity pools.

Example The index is following a strategy that holds the top X cryptographic assets, weighted by their market capitalization. If one of the assets is over or under represented by a certain amount or after a certain amount of time, the pool can automatically rebalance to match the targeted allocation.

3.2 Funds use

Through decentralized finance technological advancements, the underlying assets usage can be considered for different purposes (as lending, or any other), on the condition that there are no assets loss risks.

3.3 Cross-chain funds federation

As some of the interesting functionnalities can be located on some blockchains and not others, or if there is lower fees, and more, it can be interesting to have the index placed on multiple blockchains.

Now that cross-chain technology is being developped, it is possible to operate the main token, the *IFP*, on the cross-chain blockchain (as Fusion[1]) and some sub-tokens, or *subIFP*, on specific blockchains to dispatch the funds. As the coherency between main token and sub-tokens can deviate, the incentive for *arbitrage trading* will close the gap.

Example The *IFP* is located on the Fusion network, or *FSN*, and the *subIFPs* are located on Ethereum and Fantom network. The *subIFPs* are named *seIFP* on Ethereum network and *sfIFP* on Fantom network. Those two sub-funds contain differents coins for different reasons. For the sake of this example, the *IFP* is composed of the two *subIFPs* at equal values ($IFP = 0.5$ *seIFP* and 0.5 *sfIFP*). Also $seIFP = \$2$ and $sfIFP = \$2$, so $IFP = \$4$.

[1] Fusion (`https://fusion.org`)

Now Alice buy some *IFP* and its price rises to $6. This means that the *subIFPs* are valued $3 on the Fusion network. However, on the Ethereum and Fantom network, *subIFPs* are still at $2. That is why Bob, an arbitrage trader, will buy *subIFPs* on Ethereum and Fantom networks to transfer them to the Fusion network and sell them. On Ethereum and Fantom network, the price will rise ($2,5 by example), on the Fusion network, the price will fall ($2,5 by example), and the balance will be restored.

3.4 Development sustainability

As developers are invited, as everyone, to invest in the index fund, they can work for the Index Fund by ensuring or improving its profitability. Their work will be directly rewarded by this profitability, through their investment. Therefore, there is no need for more incentive, limiting fees.

However, if there is a need for critical/sustained development or even bug bounties and so forth, a part of the foundation allowance could be used as an incentive or a reward for developers (see more on the foundation section).

4 Index Fund Board

4.1 Governance

As index fund holders have investments represented by the *IFT*, they tend to make the best decisions regarding the index fund profitability. So, by holding their *IFT*, holders will be rewarded with a governance right.

As underlying assets are the only index fund possessions, they literally represent the index fund organization shares. With the same idea as a company's shares, *IFT* gives every holder a right to vote proportionally to their *IFT* amount (more information on the index fund organization section).

4.2 Holding incentive

As *IFT* earners have their investments at stake, it is better for them to keep this governance token to make the best decision for their index locked assets.

Also not selling *IFT* avoids letting other people making decisions by selling their governance token to them. But even if they prefer to sell their *IFTs*, buyers should also make the right decisions or they will lose their *IFTs* value, as they are now the investors.

4.3 Decision process

Decisions will be made as a DAO[2] and will be submitted to vote. *IFT* holders can use their funds to weigh their vote in the decision process.

[2]Decentralized Autonomous Organization (`https://en.wikipedia.org/wiki/Decentralized_autonomous_organization`)

Example Next developments and finished developments deployments will be submitted to the DAO members for approval before being executed.

5 Index Fund Foundation

As the project needs external services for the ecosystem to be complete or for people responsible for the project running.

5.1 Role

The foundation should act as an executive of the board decisions and should use its available funds (describe later) to accomplish its mission. It is free to act for the index fund right development and for the foundation sustainment, but should always respect the board decisions. The fund should also be transparent on its activities and make all available documents readable by the board.

5.2 Allowance

The foundation purpose will need funds in order to operate. Consequently, an allowance can be applied to the fund to help this effort. Obviously, this allowance must be as little as possible to be the less of a burden as possible. If the funds detained by the foundation are enough and if the capital gain is not enough to diminish these funds with the necessary spending, then the allowance will be disabled.

That is why the allowance will be generated in function of its revenue and spending, with a max value (0,12%/year). This means that bigger is the fund, lower is the allowance percentage and if the fundation is well managed and the market is prosperous, then it should be zeroed rapidly.

This allowance will be generated inside the protocol by generating new $IFTs$, respecting the allowance. As the IFT value is linked to the UAV, when the first one quantity increase without the second one to change, it will decrease the IFT value, as a dilution. This resulting in from all fund participants to the allowance, without having to pay for assets exchange. If this allowance is really low faced to the fund value, it will be nearly imperceptible (e.g. 0.12% per year by example).