PairX: Single-Cryptocurrency Pairing Mining Protocol

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Content

Abstract

PairX is a decentralized single-cryptocurrency paring mining platform based on smart contract, allowing users to get rewards in the high-income AMM market.

PairX helps users with single crypto to participate in the liquidity mining by using smart contract pair these assets automatically to become liquidity providers(LP), and liquidity mining proceeds are automatically settled and distributed for users.

At the same time, PairX introduces secondary allocation to reduce users' possible impermanent loss, improve the utilization of assets, provide more liquidity and trading depth to the DeFi industry.

Background

The DeFi industry has locked up assets of more than $16 billion on chain, and it shows accelerated development. Locked assets are mainly composed of several parts: (1) Lending platform, which supports a limited number of asset to stake; (2) AMM platform, almost supports all assets to become market makers, but usually requires two asset paired to become LPs; (3) Derivative platform, which supports a limited number of asset to stake; (4) Smart asset management platform, which supports a limited number of asset to stake.

In fact, the large amount of single-crypto assets held by users are in a passive state of waiting for appreciation, and there is no way to participate in the lock-up of AMM platform to get more benefits, because participating in the mining of AMM platform requires additional ETH, stablecoins or other assets to get paired to become LPs, which limits the effective use of these assets to provide DeFi with more liquidity and trading depth.

For example, some users hold AMPL for a period of time, while others hold ETH at the same time. They are unwilling (or have the ability) to use excess capital to match and participate

in the liquidity mining of AMPL in official website. How to enable these two groups to achieve unilateral liquidity mining and get more benefits? It is obvious, pair the assets of the investors in need. PairX is designed to solve the problem.

Solution

Currently, high-income liquidity mining is mainly to provide AMM with liquidity and become an automatic market maker. Just like the dual-crypto 50-50 pairing on Uniswap to become an LP, and then stake the obtained LP tokens in the official website to get the airdrop rewarded by the project.

Taking AMPL as an example, users need to add the same value of AMPL/ETH to the Uniswap V2 liquidity pool to obtain Uni V2 tokens, and then stake Uni V2 tokens to the Ampleforth official website to obtain AMPL rewards. This incentive has resulted in more than 10 million USD AMPL/ETH trading pairs being locked in Uniswap to provide liquidity. On the balancer platform, AMPL also provides liquidity rewards for AMPL-USDC trading pairs. Therefore, users who hold a single crypto can effectively get paired and participate in mining, and they can capture more revenue than simply holding the crypto.

1.Merging Deposits

In the first version, we will selectively support certain crypto based on market dynamics. Merging deposits refers to placing all users' deposited tokens in a separate pool, and users can withdraw deposits from it once the mining period ends.

PairX creates a pool for each supported crypto. The user deposits a single crypto in the pool and obtains the pool's share tokens; two pools that can be paired are deposited in AMM

with the same value, and then the generated LP tokens are automatically staked in the official website.

To simplify the analysis, we assume that there are two pools (α and β), each with one participant (Alice and Bob), and assume that the total asset value of the two pools can be paired to participate in mining (If a pool has surplus, although the surplus part cannot participate in mining, it will get profit distributed). According to the constant product formula of Uniswap:

$$(R_\alpha - \Delta_\alpha)(R_\beta + \gamma\Delta_\beta) = k.$$

R represents the quantity of assets, α and β represent asset types, γ represents commissions, Δ represents trading assets, and k is a constant.

At the end of mining, due to price fluctuation, the quantity of cryptocurrencies returned to PairX changed. The quantity of one crypto increased to (Rβ+γΔβ), and the quantity of the other crypto decreased to (Rα- Δα), so when the user redistributes the assets, PairX needs to redistribute the assets. The assets of Alice are still Rβ*β, and the assets of Bob are (Rα-Δα) α and γΔβ* B, the system will automatically sell γΔβ β back to α. Therefore, Bob may have to bear some impermanent loss.

Take a specific example to illustrate. Assuming that A is Allice’ s single-crypto asset (10), B is Bob’ s single-crypto asset (500). After Alice and Bob deposit these two assets in PairX, PairX will deposit 10 A and 500 B in A/B pool on Uniswap according to the price of 1A =

50B. Consequently, there are 100 A and 5000 B in this pool, and PairX's LP share accounts for 10%.

Before Trading			
Token	**Quantity**	**Price**	**Total Value**
A	100	50	5000
B	5000	1	5000

From the fixed product formula of AMM, K=100*5000=500,000. When the market price fluctuates to 1A=100B, in the fixed product formula of AMM, K is a fixed value and remains unchanged. Assuming that the pool is stable, the total number of A becomes X, and the number of B becomes Y. In order to facilitate the discussion, we dismiss the commissions here, then X*Y=K=500,000

100X=Y

solve X, Y, get:

After Trading			
Token	**Quantity**	**Price**	**Total Value**
A	70.71	100	7071
B	7071	1	7071

After the price fluctuated, since PairX' s LP share occupies 10% of the pool, PairX' s token value is 7.071A+707.1B, and the initial assets provided by the user are: Alice had 10A (value 500), Bob had 500B (Value of 500), so the asset allocation adjustment at the time of redemption is: Alice got 7.071A+207.1B, while Bob got 500B. The smart contract

automatically sells 207.1B at the current price to exchange it for 2.071A, and then A can eventually redeem 9.14A (value 941), and needs to bear an impermanent loss of 10A-9.14A=0.86A. Bob got full redemption of 500B (Value 500), without any loss. Mining rewards are evenly distributed to Alice and Bob.

In this example, because the price of A relative to B has risen, although Alice has suffered some impermanent losses, the total value has increased relative to the previous. A lot of increase in total value, coupled with mining rewards, from the investment decision-making point of view, can withstand these impermanent losses.

In the follow-up improvement plan, PairX will rebalance the mining rewards, use part of the mining rewards to make up for the impermanent losses, and then distribute them to participants according to the capital ratio to reduce the possible initial losses.

2. Queuing Mechanism

Participating in the AMM liquidity pool staking requires the value of the two assets to be equal, so the pool designed to have a minimum amount of asset (to reduce the commission fee, meanwhile, to meet the mining needs of any amount of asset). When one of the assets reaches the minimum amount in advance, new comers need to queue up, and recharge assets enter the queue pool. When the queued funds exceed 3 times the minimum amount, the deposits will not be accepted. In case that the amount of one asset being too large, while the other asset being insufficient.

3. Optional Pool and Vaults

The optional pool means that the platform lists all supported mining options, and users can choose a pool to deposit. If the user wants to participate in AMPL/ETH liquidity mining, he only needs to choose to deposit AMPL or ETH.

Vaults, following a unique strategy, aim to maximize the return of locked assets and minimize the risk of impermanent losses. Users who deposit in this pool can get “non-impermanent loss” mining protection. This feature will be launched in the next version.

4. Mining Cycle

If the mining time is too short, it may cause the income to be unable to cover the impermanent loss. In addition, when a user temporarily withdraws his asset, the paired crypto will also be withdrawn and become idle. In order to increase profits and reduce losses, PairX has set a mining cycle of 2 weeks (30 days for some projects), and the system locks liquidity and deploys it to the AMM platform.

At the end of a certain period, PairX liquidates and calculates the income earned, and distributes them to depositors based on their deposit assets. After the mining period ends, PAIR tokens will be generated and rewarded for participation. Tokens can be redeemed based the same percentage calculation as the redemption income.

5. Impermanent Loss Compensation（IL Insurance）

At the end of mining, due to the price fluctuations, one party may experience impermanent loss. This risk will occur if and only when the price of the paired token falls sharply relative to its own token. In order to lower the barriers to participation, PairX has introduced an impermanent loss compensation mechanism. There are generally three ways to compensate for impermanence losses that may occur.

The first mechanism is to allocate a larger proportion of the mining revenue to the party that has the impermanence loss (the ratio of the loss party to the counterparty is 6:4)；the second mechanism is to compensate users with token rewards to reduce losses; the third mechanism is that the cooperative project uses project tokens to subsidize the participants' impermanent loss.

In future versions, PairX will create risk hedging management options for LPs through built-in non-permanent loss insurance.

Tokenomics

The PAIR token is a multi-year issuance plan, and the total planned issuance in the first year is 900,000 PAIR. 65% of the token will be allocated to PairX community members. In the first 12 months, PAIR tokens will be distributed to community participants through liquidity mining and impermanent loss compensation.

After the first year, 100,000 PAIR will be minted every year, and it will be halved every year. Of them, 90% is used for liquidity mining and compensation for infrequent losses, and 10% belongs to PairX's Vault. And 10% of the mining reward and LP commission fee will be automatically entered into the Vault as platform revenue. Platform revenue is used to pay for the continuous iteration of the development team and repurchase PAIR tokens.

PAIR token holders have the right to shape the future of the protocol. Soon after the protocol is launched, a dedicated snapshot will be activated to initiate community governance. The working principle of the governance process is to allow users to use the PAIR tokens they hold to vote on various suggestions, ranging from protocol parameters to the use of assets stored in the Vault to create new incentives, capitalization and user growth, etc.

Summary

The goal of PairX is to provide unilateral liquidity mining opportunities for token holders, bringing more liquidity and asset trading depth to the entire DeFi industry. The capital efficiency of activating inventory assets is critical to the health and success of the crypto market.

The mission of PairX is to promote the prosperity of the DeFi industry and build an open financial infrastructure for the future. Starting from cryptocurrency trading pairs, and then

move to encrypted securities, NFT. The only limitation of PairX asset growth is the availability of assets on the Ethereum.

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