

Azizos/Arsu: An Expansion to the “Durable and Unique” Asset Class and a New Approach to Staking Rewards

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Abstract

The concept of a token with an oscillating supply has already been brought forth in the form of the Orbicular token. How can this idea be expanded though? Are there additional ways to incentivize trading besides the arbitrage events provided by rebases? An interesting idea is to introduce two tokens with sinusoidal supplies that change inverse to one another. Azizos and Arsu are two tokens with this property, further expanding trading incentives as well as being new additions to the “Durable and Unique” asset class introduced in Orbicular. Azizos and Arsu also serve to introduce staking to this new asset class, with a solution to some existing issues with how staking rewards are currently given. Specifically, these new tokens seek to answer how one can give staking rewards without permanently inflating the reward token as well as without giving the vast majority of rewards only to those who participate first.

1. Introduction

Azizos and Arsu are two new twin-tokens and expansions to the ecosystem of “Durable and Unique” assets created by the introduction of Orbicular. They expand on the idea of a sinusoidally changing supply by both having sinusoidally changing supplies inverse to one another. As the supply of one token is contracting, the supply of the other token is expanding, and vice versa. This introduces a unique incentive to trading besides the existing arbitrage events created by rebases. A trader would have the opportunity to, if the arbitrage events created by rebases were not being taken

advantage of fully, swap one of the twin tokens for the other at the time the former twin token's expansion supply ends. A trader that does this continually will find that their tokens are perpetually in a state of expansion, but, due to the sinusoidal nature of both tokens' supplies, the supply of each token never inflates to infinity. Additional to this new trading incentive is a new approach to staking rewards. Currently, tokens that offer liquidity mining or staking rewards offer so in a few, simple ways, each with disadvantages. Some tokens offer rewards forever, which will always result in infinite inflation, which will render the rewarded token to become worthless in the long run. Some tokens offer rewards according to a pattern of *disinflation*, where the rewards are highest when rewards begin to be offered but tapers off to zero over time. The Azizos/Arsu reward system offers rewards distributed according to a logistic curve, where the rate of rewards given is lowest at the beginning and at the end of an arbitrary amount of time known as the "reward period". The rate of rewards given is highest in the middle of this reward period. This allows Azizos/Arsu the ability to not inflate to infinity, becoming worthless, and allows Azizos/Arsu to have a reward system that does not decline in quality of rewards perpetually. Additionally, Azizos/Arsu has two different paths and mechanisms for delivering rewards, one relatively low-risk, and one relatively high-risk. The low-risk mechanism is where one can lock the either of the twin-tokens, and rewards are given according to the principle that one is locking their percent of the total supply at the time of lock, and receiving rewards to equal to the maximum potential change in that percent of locked supply between lock and unlock. The high-risk mechanism is where one can lock either of the twin-tokens' liquidity tokens, which would be a pair consisting of a twin token and Orbicular. This mechanism is riskier because rewards are influenced by the total amount of locked liquidity in the system, and as more liquidity is locked, one's reward will decrease. However, if one has locked liquidity and that locked liquidity is the only locked liquidity in the system, they will be rewarded the maximum possible change in supply from the time of lock to the time of unlocking, regardless of how much liquidity is locked. The low-risk mechanism is allocated one-third of the supply change between two points in time, and the high-risk mechanism is allocated two-thirds of the supply change between two points in time, further incentivizing locking liquidity over locking tokens.

3. Rebase Function

The rebase function for each of these tokens is almost the same as the rebase function for Orbicular, the only difference being a phase offset. Orbicular will be in the middle of its supply cycle while one twin token will be at the highest point of its supply cycle, and while the other twin token will be at the lowest point of its supply cycle. Azizos/Arsu also features a function allowing the owner of each token's contract to

change the owner, so that the owner can be switched to a smart contract allowing anyone to call the rebase function.

4. Reward Functions

The reward system for Azizos/Arsu follows a logistic curve with the following function:

$$\frac{9993763464232}{1 + e^{-0.0000005*(t-15768000)}} + 6236535767$$

Where t is the time in seconds after locking is enabled in the Azizos/Arsu contracts.

When locking Azizos/Arsu, the percent of the supply at the time of locking is stored, and the reward upon unlocking is the lockers' percent of the supply at the time of locking multiplied by the total change in the logistic function between the time locked and the time unlocked. A locker is allowed to unlock early, but upon doing so will receive not just reduced rewards, but half of the number of rewards they would have received, to incentivize keeping locked tokens locked. A locker may also update their locked position. When a position is updated, the rewards that could've been gained up to the point of a position being updated are stored as *confirmed reward* and the position's percent of supply locked is updated to whatever it may be at the time of update. Upon unlocking, the reward is given plus the stored *confirmed reward*. If a position is updated in any negative way, such as the time of a position being reduced or the amount of a position being reduced, the position stores a *punishment flag* variable. Any position with a *punishment flag* receives only half the rewards it would have otherwise received. The total rewards received by unlocking Azizos/Arsu is multiplied by one-third.

When locking liquidity tokens, the locker's position is represented by their percent of total *value* of their position at the time of locking, where value is determined by the number of locked liquidity tokens multiplied by the duration of the position squared. This provides extra incentive to lock tokens for a longer time rather than locking a very large number of tokens for a short amount of time. The total *value* of all positions is stored in a variable and is used to calculate the percent of *value* to total *value* of a position. Unlocking a liquidity position rewards you based on the percent of total *value* at the time of unlocking, minus the quotient of total liquidity rewards given and the total possible change in rewards. This means that if one has the only locked liquidity, and is the only one holding locked liquidity until the time of unlocking, they would receive the full amount of rewards, no matter how many liquidity tokens were locked and no matter the percent of liquidity locked versus existing liquidity tokens. This also means that if one has locked liquidity, their rewards will be reduced every time anyone unlocks liquidity. This is to prevent the number of rewards given from

ever exceeding the total supply following the above logistic function. The total rewards received by unlocking Azizos/Arsu is multiplied by two-thirds. Therefore, if one were to lock an equivalent fraction of the supply of Azizos/Arsu to the total supply of Azizos/Arsu compared to the value of a locked liquidity position to the total value of all locked liquidity positions, one would receive double the rewards from locking liquidity.

5. Roadmap

Azizos/Arsu has already undergone a week of testing on the Ropsten testnet, only needing a few very minor changes, such as making a variable public for easier computation of expected rewards before locking, and making some functions internal only, as those functions were simple math functions that did not need to be external. Azizos/Arsu will also have a more thorough release, including a presale auction using the bounce.finance platform, and an airdrop to existing Orbicular and Orbicular liquidity holders.

6. Token Distribution

Azizos/Arsu will each have an initial supply of 10 tokens, increasing to 10,000 tokens each with tokens being awarded by a reward system that follows a logistic curve. 20% of the initial supply of Azizos/Arsu will be airdropped to existing Orbicular and Orbicular liquidity holders, and 40% of the initial supply of Azizos/Arsu will be offered in a presale auction using bounce.finance. 30% of the supply of Azizos/Arsu will be locked in liquidity pools for one year. The remaining 10% of the supply will belong to the founders and primary contributors of the Orbicular and Azizos/Arsu community for contribution rewards, development funding, marketing funding, and exchange listing funding.