Synergy Turbo Stake: Description & Rationale

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May 24, 2015

Abstract

Here we describe Turbo Stake, the early staking incentive of the Synergy cryptocurrency. Turbo Stake rewards holders for staking consistently over the first 30 days of Synergy's life. Central to Turbo Stake is an award system where the holder's interest increases with each stake. If the holder "takes a break" from staking, the holder is likely to lose interest as his share of the minted blocks decreases. Unlike other staking incentives, like "Hi-PoS", it is possible to significantly beat inflation with Turbo Stake, giving the holder true rewards for staking rather than simply the ability to stay even with inflation while he awaits a favorable trading opportunity.

1 Description

Turbo Stake is an incentive system where a holder can earn up to 288 times the base Synergy PoS (Proof of Stake) interst rate of 10% per year, making the maximum Turbo Stake interest rate 2880% per year before compounding. Compounding can be expected approximately weekly depending on the stake weight of the network.

In Turbo Stake, a holder's interest rate is based on the fraction of total blocks he finds over a two day period. Because Synergy block times are 2 minutes, the Synergy chain should advance an average of 1440 blocks in two days.

The formula Synergy uses to calculate the Turbo Stake multiplier uses integer division and can be expressed as

$$multiplier = 288 * \frac{stakes}{blocks} * \frac{100\%}{20\%} \tag{1}$$

In this equation, *stakes* is the number of stakes a holder had over the prior 48 hours and *blocks* is the number of blocks advanced by the Synergy block chain over the same period. Not shown in this equation is that the maximum Turbo Stake multiplier is 288. The cap means that if a holder mints more than 20% of Synergy's blocks in a 48 hour period, the holder's interest will be capped at 2880%.

2 Example

Let's assume that Synergy advances a block exactly every two minutes, ignoring variability in block times to keep the example simple. The following table shows the Turbo Stake multiplier after the holder mints the given number of blocks.

Stakes	Multiplier	Yearly Interest
1	1	10%
2	2	20%
3	3	30%
4	4	40%
5	5	50%

Here it is obvious that the interest rate increases exactly with the number of stakes, only because we assume that Synergy advances one block exactly every two minutes. The table shows that the stake used to mint this holder's fifth block earns at a 50% yearly interest rate. If the holder sustains a rate of minting exactly 5 blocks over two days, all further blocks will earn at 50% per year.

3 Implementation

Because it is impossible for any arbitrary node in they Synergy network to determine unambigously that two public keys belong to the same wallet, Turbo Stake multipliers are calculated only for single public keys. A consequence is that if a holder were staking with two different public keys, he would have two different multipliers, each less than if he were minting with a single public key.

For example, let's assume that over 48 hours, a holder mints 3 blocks with a first key and 5 blocks with a second key. The multiplier for the first key would be 3 for the first key and 5 for the second, after these blocks. If a single key staked all 8 blocks, the multiplier would be 8. Clearly it is advantageous to consolidate one's stake to a single key to maximize Turbo Stake.

Turbo Stake **strictly** enforces the two minute block target time with harsh penalties. If a holder stakes two blocks within two minutes, his multiplier will become zero. Additionally, he will not be eligible for a non-zero multiplier for two days. With this in mind, holders are strongly advised not to attempt staking the same public key with two different wallets. We have ensured that the reference implementation will not violate the target time as long as the holder uses only one wallet with which to stake Synergy.

4 Rationale

A common problem early in the life of PoW/PoS (Proof of Work/Proof of Stake) hybrid cryptocurrences is that few holders of the cryptocurrency bother to stake their coins. Instead, most send their coins to an exchange, expecting that the guaranteed returns of stake interest will not compensate for the risk of missing an opportunity for higher profit by trading.

Recently, Hi-PoS (High Proof of Stake) has been introduced to incentivize early staking. Hi-PoS uses large, flat-rate block rewards to encourage holders to stake their coins. Hi-PoS has a number of problems. Most notably, very little potential staking returns are lost if a holder moves coins to an exchange in anticipation of a favorable trading environment. If a trading opportunity does not materialize, a holder can simply move coins back to his wallet and begin staking, losing only a little coin age and a few high block rewards in the process. This tendency to move coins between one's wallet and exchanges is compounded by the rapid maturation times of most Hi-PoS coins, which minimizes the penalties for abandoning the block chain.

Synergy Turbo Stake addresses these problems by increasing rewards interest for every stake that the holder makes. The holder is effectively given two days to develop his Turbo Stake multiplier, but must maintain consistent staking to maintain it. Moving coins to the exchange for any significant amount of time severely damages the multiplier, which will take up to two days to rebuild. During this time, not only are the holder's very high rewards sacrificed, but also the extraordinary returns of compounding at high interest rates.