Synchronizing § Cryptographic Bonds

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Abstract. Projects in the decentralized finance space have been utilizing stake and proof-of-liquidity mechanics to develop a trustless decentralized market. However, the massive successes of these mechanics came with some new problems. Cryptobonds addresses these problems by offering a solution with 'tradeable stake positions', requiring the bonding of Uniswap liquidity pairs with our ERC-20 token (SYNC).
The CryptoBond smart contract allows users to mine SYNC by staking a bond between SYNC and Uniswap liquidity provider tokens.
CryptoBonds are a tradeable ERC-721 (NFT) with collectible attributes and SYNC-mining features. The CryptoBond smart contract automatically adjusts its SYNC mining rates once a day depending on the SYNC economy. SYNC rates decline as a result of net CryptoBond creation and increase when CryptoBonds cause new SYNC to be minted and issued to the CryptoBond holder (which may happen entirely at 'maturity' of the CryptoBond or on a more periodic schedule—see "CryptoBond Types" below).
The SYNC Network works to bring stability and risk mitigation to decentralized finance by demonstrating a long-term backbone for liquidity pools, building a needed, stable foundation for the DeFi space in the long term and helping to foster a more robust decentralized market.

1 Introduction

1.1 The SYNC Network

The SYNC Network is composed of two main smart contracts: the SYNC ERC-20 contract and the CryptoBond ERC-721 contract. SYNC tokens have an undefined (i.e., theoretically uncapped) total maximum supply with inflationary and deflationary effects arising from the market's organic use of CryptoBonds.

Despite being a long-term tradeable stake, **CryptoBonds do not share anything in common with traditional finance bonds** and do not represent a debt obligation owed by a person to the holder of the CryptoBond. They are called "bonds" because they are created by "bonding" tokens representing the creators share of a decentralized liquidity pool (e.g., Uniswap 'liquidity-tokens') with an equally valued amount of SYNC until a specific pre-comitted period of time (randing from 90 days to 3 years) has elapsed (i.e., until the 'maturity'). CryptoBonds introduce **proof of long-term position** in DeFi liquidity pools, and will naturally strengthen the core of DeFi finance as a whole.

The market for CryptoBonds determines the deflation and inflation of SYNC. Deflation of the SYNC currency happens when CryptoBonds are created, burning SYNC from the total supply. When created, a CryptoBond locks liquidity-pair tokens with the corresponding dollar-to-dollar value in SYNC at the currently offered proof-of-liquidity SYNC mining reward rate of SYNC. The longer the CryptoBond stake, the higher the mining reward rate offered. When a CryptoBond matures and is claimed by the holder, the original bonded SYNC re-enters the market. The SYNC mined by the CryptoBond during the maturation period may either be released periodically during the maturation period or may all be released upon maturity of the CryptoBond–see "CryptoBond Types" below. On the smart contract level, all of the SYNC 'released' by CryptoBonds is newly minted by the SYNC ERC20 contract. This process can be roughly analogized to a traditional bond issuer repaying the principal and interest on a traditional bond to the bond holder upon redemption, or paying the bond holder periodic interest while the bond matures and repaying the 'principal' upon maturity. **However, with CryptoBonds, the 'issuer' is not a company, but a decentralized smart contract system, and there is no 'debt' or 'interest' being paid;** instead, redemption occurs when the CryptoBond holder un-stakes his SYNC from the CryptoBond to regain that SYNC plus additional SYNC granted as a reward for staking to validate proof-of-long-term-position.

1.2 The Fundamentals

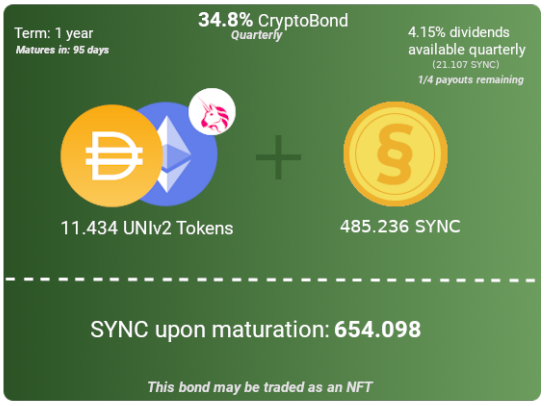
1. Provide $X worth of liquidity to Uniswap to receive LPT tokens

11.434 UniV2 $\approx \$500 USD$

2. Acquire same $X USD worth of SYNC

§485.236 $\approx \$500 USD$
(Note: worth in USD of Uniswap liquidity and SYNC bonded must be equal)

3. Create a CryptoBond



(§485.236 burned from total supply)

4. Trade your CryptoBond, or wait until it matures and pocket both the staked SYNC, and the mined SYNC.

(§654.098 re-minted into total supply)

1.3 Why create a CryptoBond?

CryptoBonds employ a unique risk management and liquidity-commitment incentive strategy. At time of creation, a CryptoBond takes equally valued amounts of liquidity token pairs from Uniswap and SYNC and then virtually 'locks' them into an ERC-721 Non-Fungible Token. At a technical level, the locking of SYNC occurs by 'burning' the SYNC from the total supply until maturity of the CryptoBond.

CryptoBond types There are two types of CryptoBonds: simple and periodic. Periodic bonds allow the withdrawal of a quarterly payment of SYNC at the end of each 90-day period during the maturation period. When a bond matures, liquidity tokens are returned, the original amount of SYNC is returned plus SYNC mining rewards, and all Uniswap fees are still the holder's to keep. Simple CryptoBonds pay the original SYNC and all of the SYNC mining rewards only upon maturation, rather than paying some SYNC mining rewards quarterly.

Trustless Transfer and Trading with NFTs The ability to trade and transfer your CryptoBonds to another wallet address at only the expense of a GAS fee, or list the CryptoBond NFT on a market for a completely second-layer solution.

Proof of Locked Liquidity. Time locking Uniswap liquidity pool tokens allows others in the DeFi space, and new token releases, to show how much money is locked up so that 'pulling the rug' is not possible.

Both Inflationary and Deflationary CryptoBonds are able to offer SYNC mining rewards during or at the end of the maturation period without runaway inflation because CryptoBonds burn SYNC upon creation. However, overall, SYNC is expected to be slightly inflationary. SYNC mining reward rates depend on the total supply of SYNC. SYNC is burned when CryptoBonds are created, and re-minted when CryptoBonds mature (or quarterly during the maturity period, if the CryptoBond is of the periodic variety). The result is a realistic ebb and flow of reward rates, total supply, and a stable backbone to the SYNC token under an inflationary CryptoBond mechanism.

1.4 Types of CryptoBonds

Simple CryptoBonds offered at 90-day, 180-day, 1, 2, and 3-year time durations.

Periodic CryptoBonds Quarterly CryptoBonds are only available for 1, 2, and 3 year bond lengths, and are subject to a different reward rate because of their periodic behavior. See below for details.

2 Problems that CryptoBonds Address

Lack of long-term incentives in DeFi With staking platforms comes the ability to un-stake at any point in time. The cycle that is often seen with this relatively simple model is: Early users stake, project gains popularity increasing the price of the coin/token, followed by a mass un-staking of those early entrants for the profit. Thus, the market crashes quickly, and possibly results in collapse of an otherwise healthy project. As a result of this common scenario, the staking model is often flawed and not serving its purpose. New projects that want to incentivize long term holding do not need to worry about developing these staking technologies into their contracts, they can simply apply for whitelisting to CryptoBonds, and if their token is approved by SYNC governance, they can both provide long-term liquidity on Uniswap to their community, and increase their holdings of SYNC by holding through bond maturity.

A mechanism for founders to promise long term commitment When founders of a new coin or technology are trying to get their feet into the door in the Crypto space, it is hard to gain traction with all sorts of scams happening on a day to day basis. New tokens are viewed skeptically by the community, and a large amount of research should be done on whether the team is experienced, will stick around, etc. Showing a long term lockup of liquidity transparently through CryptoBonds could generate confidence with the community.

Forever Functional Ownership of the SYNC contract will be terminated by setting the owner of the smart contract to the zero address, effectively preventing any administrative changes to the contract ever again, and not allowing any SYNC to be minted by anything other than a CryptoBond maturing or rewarding proof-of-locked-liquidity. **As long as the Ethereum blockchain is running, CryptoBonds will always provide a means of mining SYNC by staking to provide proof-of-locked liquidity.**

Proof of liquidity flaw Uniswap's decentralized exchange requires pairs to be added for liquidity. This gives new projects initial market value. For example, 100 ETH added with 1 million new tokens would list at the total value of the ETH divided by the total amount of coins paired with it. This gives initial value with no guarantee for liquidity lock. There is no known work-around to discern nefarious contracts vs. legitimate ones. Every day new tokens launch, are marketed, pumped and then the liquidity pool is drained, resulting in massive losses for those who weren't able to escape.

Administrative White-Listing The CryptoBond contract allows SYNC governance to approve Liquidity Provider Token pairs on an individual basis. SYNC governance will initially be undertaken by the SYNC core developers and/or other members of the SYNC community polling the community (through social forums and/or snapshot or another token voting mechanism) on whitelisting proposals and implementing the community's expressed will. In this way, the collective wisdom of the SYNC community can be harnessed to conduct due diligence on liquidity token pairs.

3 CryptoBond Mining Reward Rates

The SYNC network balances itself through daily, self-correcting SYNC mining reward rates.
Although CryptoBond mining reward rates change daily, **a CryptoBond's mining reward rate is fixed and locked in when that CryptoBond is created** – i.e., each CryptoBond's SYNC reward rate is permanently set at the 'market rate' for CryptoBond mining rewards at the creation time.

Mining reward rates of bonds depends on three factors.

1. Total supply of sync in the market.
2. Duration of bond
3. Total bonded amount of that liquidity pair token

The motivation of having multiple facets to CryptoBonds mining reward rates is that it allows diversity amongst the offered CryptoBonds, which allows CryptoBonds to be tailored to the needs of different users.

3.1 Base Reward Rate

This is the main driver of equilibrium to keep SYNC going up and down, both inflating and deflating the currency. Inflation is intended to provide the utility of bond-making and attracting new CryptoBond creators with higher SYNC mining reward rates, and deflation is intended to prevent precipitous devaluation of SYNC. This behavior creates a balanced rhythmic SYNC economy.

$$YesterdaysRewardRate \cdot \frac{TS_{today}}{TS_{yesterday}} = TodaysRewardRate \tag{1}$$

TS = SYNC Total Supply

3.2 Duration

For the success of a stable SYNC, it is more desirable to lock for longer, and it is important to make sure that compounding shorter-term bonds do not outperform those that are longer. We define the following equation where:

t = term in years
k = risk
R = currently offered base rate
p = liquidity pair bonus

$$(1 + (\mathrm{R} + \mathrm{p}) + \mathrm{k}(4\mathrm{t}\text{-}1))^{4t} = BondRewardRate \tag{2}$$

The risk k is a linear constant approximator intended to reflect the risk incurred by holding a CryptoBond. The more duration risk, the higher the reward rate. This calculation scales with time, ensuring that even under a compounding event of lower term bonds, higher term bonds will always perform marginally better. This constant we define as k = 0.0005 and it will never change in the smart contracts governing the CryptoBond system. In the traditional economic markets, there are additional, subjective changes that also affect interest rates, apart from the numerical calculations. In the SYNC network, the notion of subjectivity, agendas, or world events will not ever affect reward rates.

On the first day of release, the CryptoBond contract will offer around a 4% base interest rate. Here is what the above calculation provides us for the different term tiers and an initial §1000 investment.

(Due to solidity rounding, reward rates at launch may slightly vary)

TERM	AMT	OVERALL ROI	FINAL AMT
90 Days	§1000	4%	§1040.00
180 Days	§1000	8.264%	§1086.26
1 year	§1000	17.662%	§1176.66
2 years	§1000	40.585%	§1405.85
3 years	§1000	70.564%	§1705.64

3.3 Liquidity Pair Incentive Rate

In order to incentivize investors to create CryptoBonds in token pairs that may be decreasing in bonded volume, a mining reward rate multiplier is performed. It reacts in the inverse of the SYNC total supply – as the amount bonded in liquidity pair XXX-YYY decreases, the reward rate will approach a base rate adjustment of 2.2%. This is a relatively small adjustment, but makes a difference for long-term bonds. For example, although it may only add a maximum of 2.2% to the 90 day CryptoBond, that scales up to be around 38% added to the 3yr bond rates.

As more money is liquidated from a certain liquidity pair, we will attract users with bonus rates to re-invest into bonds with that liquidity pair.

$$min(.001 \cdot \frac{LPT_{yesterday}}{LPT_{today}}, .001) = IncentiveRateBonus \tag{3}$$

LPT = Liquidity Pair Total Supply

3.4 Quarterly Returning CryptoBonds

Quarterly CryptoBonds are an option for users that want to collect part of their returns per-quarter. The reward rates are lower than a simple bond, but unlike a simple bond, they will provide investors with faster returns.

Quarterly periodics are only an option for 1 year bond lengths or longer.

The quarterly mining reward rate is computed similarly to the way duration rates on simple bonds are calculated:

t = term in years
k = risk
R = currently offered base rate
p = liquidity pair bonus

$$(R+p) + k(4t-1) = QuarterlyRewardRate \tag{4}$$

Collecting Quarterly Returns with an initial §1000 investment assuming a base reward rate of 4% and ignoring any modifiers:

TERM	AMT	Q. ROI	TOT. ROI	Q. PMT	PMTS	LAST PMT	FINAL AMT
1 year	§1000	4.15%	16.6%	§41.50	4	§1041.50	§1166.00
2 years	§1000	4.35%	34.8%	§43.50	8	§1043.50	§1348.00
3 years	§1000	4.55%	54.6%	§45.50	12	§1045.50	§1546.00

4 How SYNC Network Interacts With The Market

SYNC Network incentivizes to strengthen liquidity pools. The idea behind this is the more liquidity that is locked via CryptoBonds directly correlates to more market certainty for investors. SYNC Network could become the standard for risk management by incentivizing founders to use CryptoBonds to trustlessly prove liquidity commitment. Being listed on CryptoBond will signify that the project has been thoroughly vetted by SYNC governance. We also aim to establish a norm that SYNC governance will only approve projects that have been vetted by an industry-leading smart contract auditor; thus, whitelisting liquidity pairs through SYNC governance would also imply a certain level of technical merit or safety to the project. When a new contract/token is added, the founding team can deposit liquidity into both sides of the tradeable pair. When doing this the coin sets its initial value along with the depositor's liquidity while receiving Liquidity Provider Tokens (LPT's) from Uniswap which also represents the corresponding liquidity provided.

Sync Network introduces a tradeable proof of Long-term Position via CryptoBonds. After a project provides liquidity to Uniswap and receives their pool tokens, the pool tokens are then paired with an equal monetary evaluation of Sync tokens and time locked in a fully transferable and tradable CryptoBond. This allows founders to prove that the liquidity provided to Uniswap will remain in Uniswap for the full duration of the CryptoBond's term. Once a CryptoBond is created it cannot be broken, but it can be sold to another investor. While the CryptoBond is in effect the LPT's earn Uniswap trading fees and the paired SYNC tokens earn additional SYNC mining rewards for generating proof of liquidity commitment.

5 NFT Trading and the secondary CryptoBond Exchange

5.1 ERC-721 Compliant

The ERC-721 CryptoBond contract contains a vanity tokenURI endpoint which will generate and serve both artwork of the specific CryptoBond that is held,

and also the difference attributes that the CryptoBond is composed of such as 'price upon maturation', current value, liquidity provider token type, and more. This metadata is used by wallets to display NFT tokens, and also by sites like opensea.io – which are open marketplaces where you can view, post and sell your NFTs.

5.2 CryptoBond Marketplace

CryptoBonds are an NFT token and therefore are unique, tradeable, and sellable. The bonds can be traded on any NFT marketplace such as Opensea.io.

6 Risks & Legal Disclaimers

The forward-looking statements in this whitepaper are subject to numerous assumptions, risks and uncertainties. There are many risk factors, including those relating to blockchain and cryptographic technology generally, as well as Ethereum, Uniswap and the CryptoBond and SYNC token smart contracts specifically, that could cause actual outcomes to differ from the anticipated outcomes described in this whitepaper. Even if the predicted outcomes arise, they may fail to achieve any or all of the benefits described in this whitepaper. For example, the CryptoBond system could function as described, but SYNC could fail to achieve or sustain a material market value, and thus SYNC mining rewards could become insufficient to adequately incentivize staking and the creation of CryptoBonds. Our predictions regarding the matters described in this whitepaper could change based on new information or subsequent developments, and we do not assume or undertake any obligation or liability to update publicly or revise any forward-looking statement contained herein. ACCORDINGLY, WE RECOMMEND THAT YOU DO NOT RELY ON, AND DO NOT MAKE ANY FINANCIAL DECISION OR INVESTMENT BASED ON, THE STATEMENTS CONTAINED IN THIS WHITEPAPER. You must conduct your own due diligence into the matters described herein, and we do not represent, warrant or guarantee any of the outcomes or benefits anticipated herein.

CRYPTOBONDS AND SYNC (COLLECTIVELY, "TOKENS") ARE NON-REFUNDABLE. TOKENS ARE NOT FOR SPECULATIVE INVESTMENT. ANY INCOME/PROFIT GENERATING REFERENCES DO NOT APPLY TO THE SYNC TOKENS IN ISOLATION, ONLY THE AMOUNT OF SYNC RECEIVED UPON CRYPTOBOND MATURATION. NO PROMISES OF FUTURE PERFORMANCE OR VALUE ARE MADE WITH RESPECT TO TOKENS. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, INCLUDING NO PROMISE OF INHERENT VALUE THE CREATORS OF THE SYNC AND CRYPTOBOND SYSTEMS HEREBY DISCLAIM ANY AND ALL OBLIGATIONS, PROMISES AND EXPECTATIONS THAT SUCH PERSONS OR OTHER PERSONS WILL IMPROVE, MARKET, MAINTAIN OR OPERATE SUCH SYSTEMS AFTER THEY FIRST BECOME PUBLICALLY

AVAILABLE. THERE IS NO GUARANTEE THAT TOKENS WILL HOLD ANY PARTICULAR VALUE.

SYNC TOKENS ARE USED ONLY AS THE INSIDE UNIT OF CRYPTOBONDS. THERE IS NO GUARANTEE THAT SYNC TOKEN REWARDS RECEIVED FROM CRYPTOBONDS WILL HAVE ANY VALUE OR RENDER THE CRYPTOBOND PROFITABLE.

References

1. ZACKS - How Are Bond Ratings Determined?, `https://finance.zacks.com/bond-ratings-determined-2859.html`. Last accessed 11 Sep 2020
2. Crypto Briefing - A Guide to Vulnerabilities in Decentralized Finance, `https://cryptobriefing.com/guide-vulnerabilities-decentralized-finance/`. Last accessed 11 Sep 2020