CRYPTO
PRAGMATIST
PRO

Name	Synthetix (SNX)
Market Cap	$464,959,321
Fully Diluted Market Cap	$597,031,396
Executive Summary	Synthetix is a protocol on the Ethereum and Optimism networks that allow for users to mint synthetic asset positions by posting $SNX as collateral. When users post collateral, they can mint $sUSD, and then use that stablecoin on either Synthetix integrated dApps or other DeFi protocols to trade into other synthetic assets. Started in early 2018, Synthetix is one of the initial implementations of DeFi. By allowing for any asset to be minted against a large pool of debt, Synthetix creates a way to unlock completely new DeFi use cases.
Problem Solved	Synthetix protocol solves two critical problems in decentralized finance: perpetual future support and stablecoins. By minting a synthetic asset using native $SNX as collateral, there is a huge benefit of “infinite liquidity” based on the amount of collateral posted. In other words, there is no upper bound for the amount of $sUSD that could be created. When users trade between synths they are interacting with a smart contract, meaning there is no counterparty. This is what allows for infinite liquidity to be created. Additionally, these assets are obviously only *representations* of the actual assets, which means the real asset is not involved in any way in a given transaction, leading to *zero slippage.* These two points of non-restricted liquidity (for perps and spot trades), and zero-slippage trades are highly impactful for DeFi traders. Finally, the goal of Synthetix is to continue to build out product offerings, bringing commodities, more forex pairs, index tokens, and more.

Tokens	**$SNX:** The native token of the protocol can be staked to mint $sUSD, the synthetic stablecoin. $SNX has two ways to accumulate earnings when staked: 1. Earn 10-60bps on all trading fees generated from synthetic assets 2. Receive $SNX inflation rewards Additionally, $SNX is the governance token for the protocol to vote on platform upgrades. **$sUSD:** This is the foundation of the Synthetix protocol and can be minted by staking $SNX with a target collateralization ratio of 400%. Currently with $47m supply on the market, $sUSD can be infinitely minted so long as it is overcollateralized by $SNX. $sUSD can be used across various DeFi protocols to swap into other assets/synthetic assets. **$sETH:** $ETH can be posted as collateral to mint a synthetic version of the asset natively on Synthetix
Terminology	**Collateralization Ratio (CR):** The CR determines how much $SNX you must maintain in order to keep your position open. Currently, the target CR sits at 350%, but that can change over time. The *minimum acceptable* CR is 200%, anything below will result in liquidation. **Synthetic Assets / Synths:** It is important we have a clear understanding of how these synthetic assets actually work. When minting $sUSD on Synthetix, you can then go and trade on Kwenta's spot exchange into other synths (or other platforms), such as $sBTC and $sETH. When "swapping" into different synths, you are simply burning your previous debt ($sUSD) and minting a new position in $sBTC. **Oracles:** The prices of the synthetic assets are maintained by Chainlink Oracles.
Founder	Kain Warwick
Backing/Funding	Synthetix is an "OG" DeFi protocol and had a $30M ICO in February 2018.

	Since then, there have been two venture rounds totalling $15.8M raised, with Coinbase, Framework, and Paradigm leading the rounds.
Risks	One unique risk is the structure of the current debt pool–which is the outstanding $sUSD that has been minted. Because the value of volatile synths can fluctuate over time, this can create a situation in which the debt pool is increasing in value, while the value of our $SNX collateral may be constant or increasing at a slower rate. There are, however, simple ways to combat this discussed in the report. A major risk of the protocol is its reliance on Chainlink oracles. Although Chainlink has proven to be the robust leader in the oracle market, there is always a possibility for some level of exploit, and given that synths completely rely on Chainlink for their value, that could be a problem.
Competitors	Obviously, there are DeFi protocols that are solely focused on the development of a robust stablecoin that can be utilized across the space. While this is one of the value adds for Synthetix, the general application of synthetic assets is a unique value not seen in other competitors. Other perpetual protocols, like GMX and Gains, have discussed synthetic asset minting as part of their suite of products. While this would encroach on Synthetix's market share, it is unreasonable to expect that the first mover advantage $SNX possesses is insignificant.
Documentation	Litepaper
Code Repository	Libraries GitHub
Site	https://synthetix.io/
Social Media	Twitter Discord Blog

Intro
Within the world of DeFi, there are a lot of independent moving parts:

- Exchanges to swap assets
- Debt protocols to create a stablecoin or borrow against your assets
- Derivative platforms to increase capital efficiency and allow users to speculate

And of course there are aggregators built on top of all of this. While it objectively makes sense that all of these projects are independent of one another, Synthetix aims to create a one stop shop for all of the above.

Users can mint synthetic tokens against collateral (currently $SNX and $ETH, soon to be more), trade futures positions, trade options, and perform large volume swaps. As Synthetix has grown and developed its product offering, its presence has permeated through different parts of DeFi, most notably regularly transacting *9 figures worth* of volume via its atomic swaps this summer.

With a handful of significant upgrades on the horizon, Synthetix is in a position to continue to grow its presence in DeFi, and we are confident that it has the ability to stay relevant during the growth of Layer 2's due to its already dominant presence on Optimism.

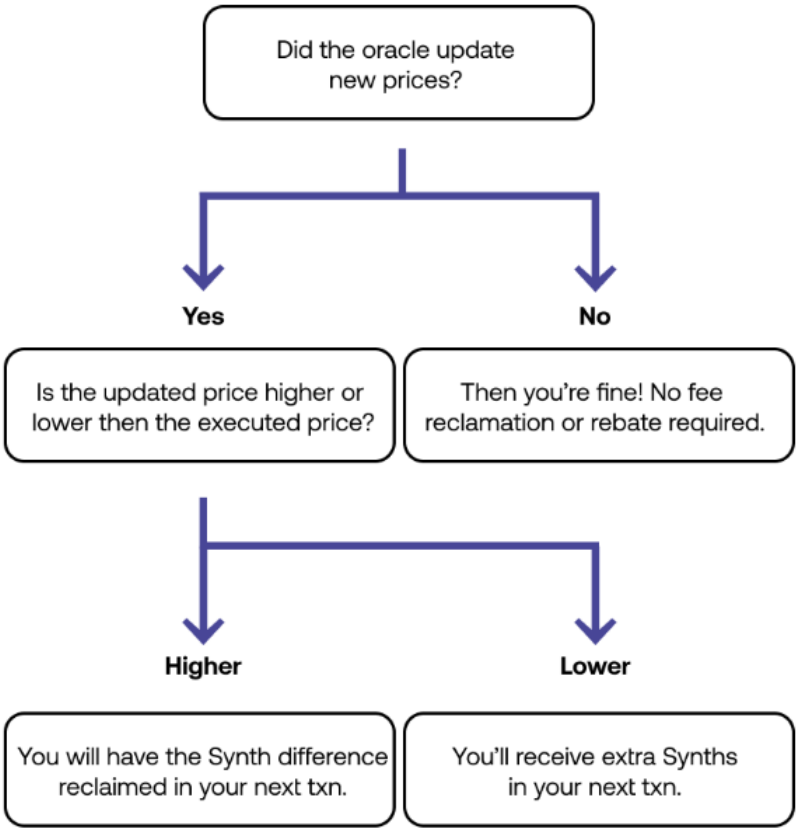
The Evolution of Atomic Swaps
One of the biggest novelties Synthetix brought to the table in its production was fighting arb-bots ability to front run user trades. Because $SNX stakers are the ones that hold the debt positions that make up Synthetix, any front-running comes at their expense (receiving worse pricing on their debt positions). So, the development team sought to eliminate this externality, which in turn would help increase the number of $SNX stakers and growth of the protocol. In order to achieve this, there were two protocol upgrades that deterred arb-bots ability to front-run a trade due to the lag in Oracle pricing and on-chain pricing:

- Fee reclamation and rebate
- Dynamic exchange fee

The reclamation and rebate has a couple mechanisms which make it work. The first is a simple timer, which restricts a user's ability to exchange or transfer out of a given synth for a specified period of time. For example, if I swap $sUSD into $sETH, I would need to wait 10 mins before swapping into $sBTC. This makes up for the time it takes for Chainlink Oracle prices to be updated (this also only occurred on mainnet, as Optimism block times are much faster).

The other function is essentially a repricing mechanism. If the above trade of $sUSD to $sETH were to be execute at 100:1 (100 $sUSD for 1 $sETH), but the incoming oracle price showed 105 $sUSD per $sETH, then I would *owe* a fee to $SNX stakers. The same works for prices that come in *lower* than our execution price, and we get a rebate on our trade:

After executing a synth swap:

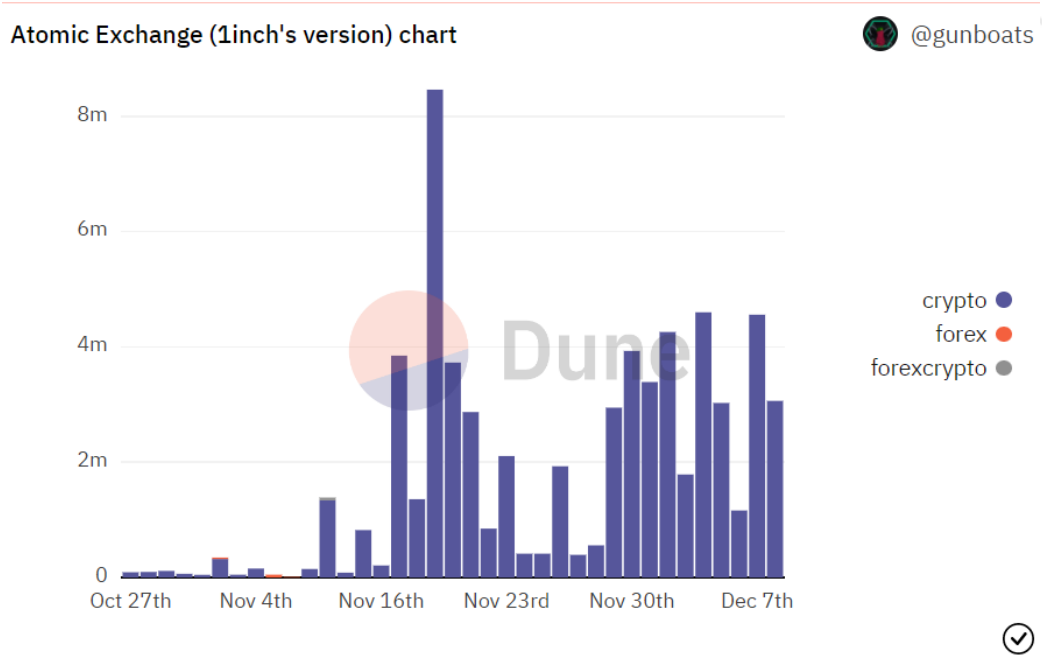


Synthetix Blog

It is pretty easy to see that trying to scale or create meaningful use behind this model is not possible due to the delay. The **Atomic Swap** implementation completely changed this by eradicating the need for fee reclamation and swap delay. This is made possible by integrating Uniswap v3 as a "DEX oracle" when determining synthetic asset prices, eliminating the "oracle delay" we previously discussed.

As such, synthetic asset swaps can be done instantaneously via an aggregator like 1Inch. This allows users to make trades that go from ETH -> sETH → sUSD → BTC. Now, larger orders benefit immensely from utilizing synthetic assets to go through their trade due to the *zero slippage* feature of synthetic swaps. And because $SNX stakers receive a fee on *all* swaps done with synths, this was a massive increase in earnings for stakers.

Atomic swaps are relatively new, and have undergone recent upgrades after initially launching earlier this year. V2 upgrades are an objective success, seeing large increase in synth volume via the 1Inch integration:



Dune

Staking $SNX

As covered in the intro, staking the Synthetix token, $SNX, is crucial for the ecosystem to operate. By staking, you provide deep liquidity for users/yourself to mint debt positions, and you allow for the stack of DeFi protocols built on top of Synthetix to operate (Lyra, Kwenta, dHEDGE, Curve, and more). By staking, you earn fees from all trades and $SNX inflationary rewards.

Rewards are accrued and can be claimed on a weekly basis. If you fail to collect your rewards within the week, they will be distributed to other $SNX stakers, so it is important to continue to collect your earnings. Additionally, $SNX rewards that are paid out will be escrowed for the next year and non-transferable or sellable, but they can be staked to accrue additional rewards (similar to $esGMX).

Here are the current staking stats for Synthetix:

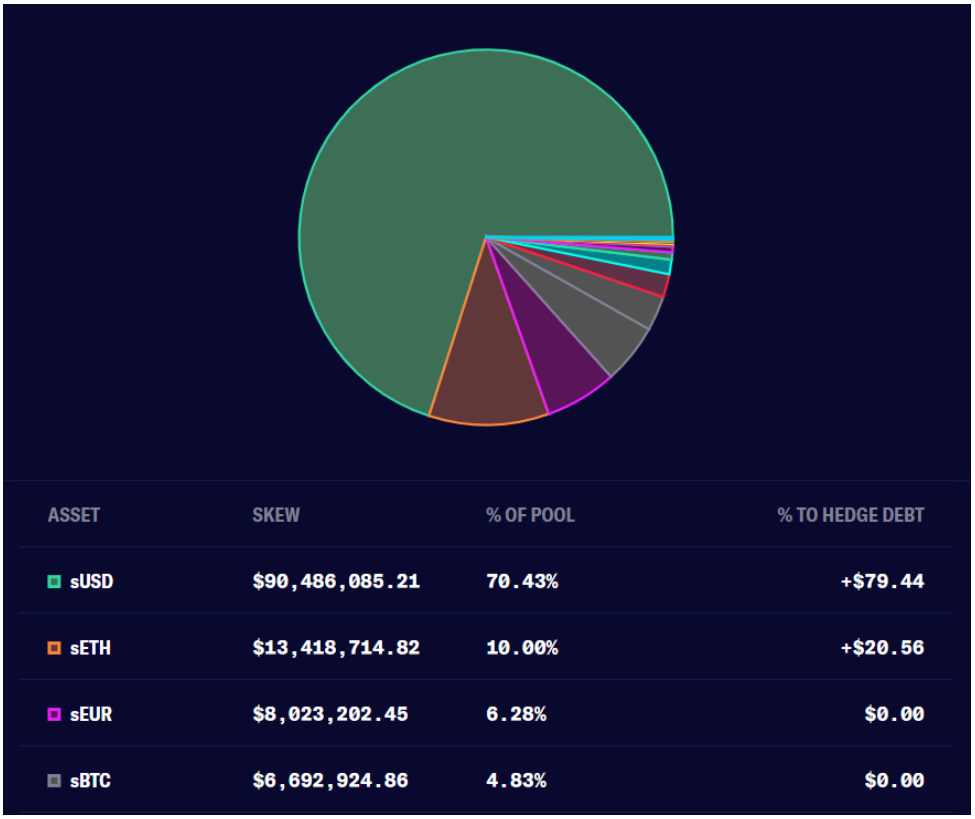
- $157m $SNX staked earning **~30% APR** on Optimism
- $283M staked on Ethereum mainnet earning **48.17% APR**

Staking $SNX obviously comes with clear risks, and is highly dependent on protocol fees generated. And per usual, the $SNX inflationary rewards are not necessarily a *realized* APR. Nonetheless, the protocol fees are looking strong, and we will dive into that more below. But another risk we need to touch on in regards to staking is the debt pool.

Active Debt and Debt Hedging

As a staker of $SNX, you take on a share of the total debt outstanding of the protocol (the synthetic assets minted). Thus, you can also experience gains and losses as the debt pool increases or decreases in value. For example, let's say that I deposited $SNX and minted $100 of $sUSD, and the current debt pool is 80% $sUSD and 20% $sETH. My exposure to this debt can be seen in the case of an $ETH increase in price.

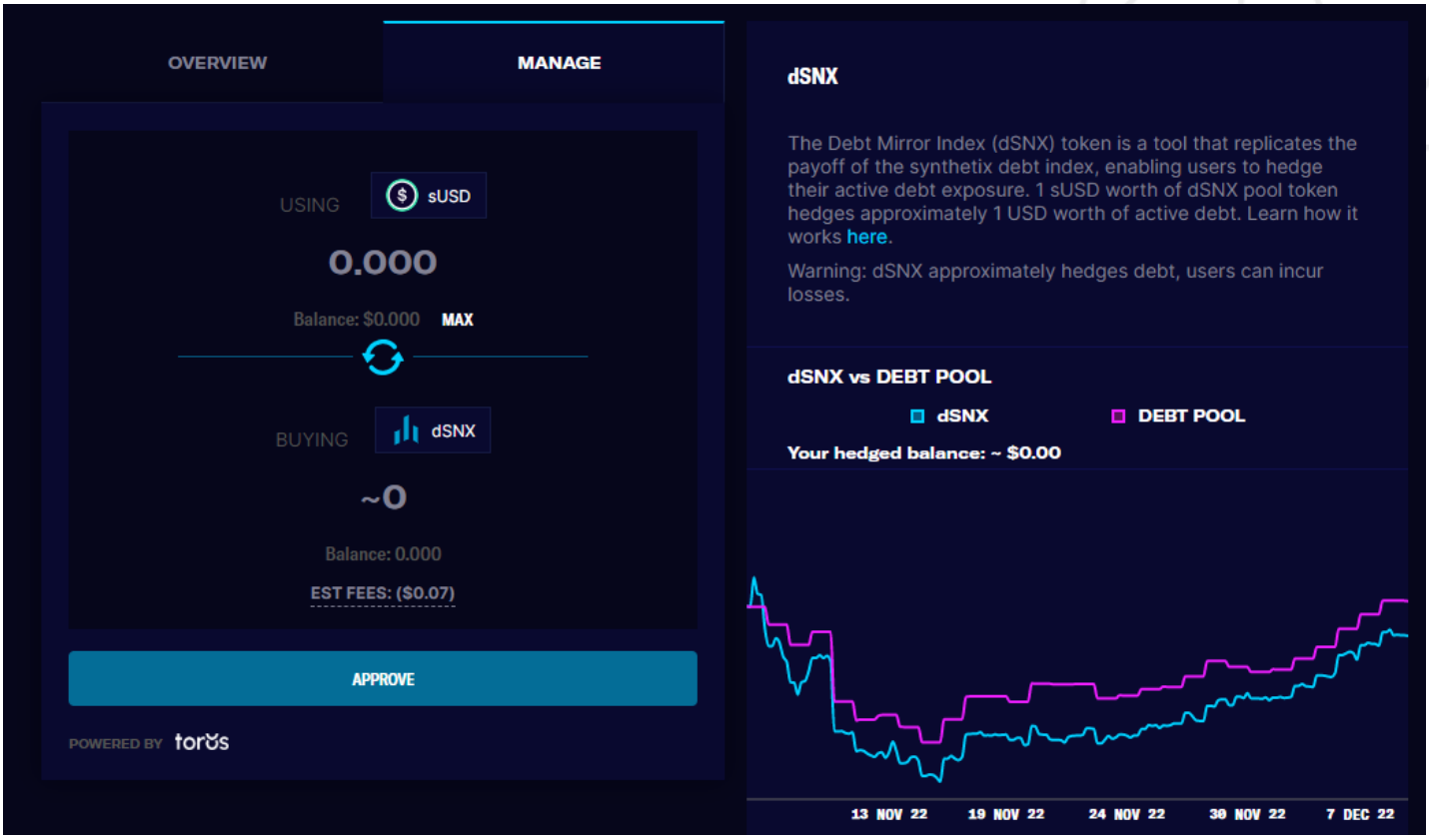
If $ETH doubles in price, the debt pool will now be 33% $ETH *and have a higher outstanding value*, meaning my initial $100 $sUSD does not cover my current share of the pool anymore. In order to square up, I'd need to eventually repay the new increased value of debt to unlock my $SNX collateral.



ASSET	SKEW	% OF POOL	% TO HEDGE DEBT
sUSD	$90,486,085.21	70.43%	+$79.44
sETH	$13,418,714.82	10.00%	+$20.56
sEUR	$8,023,202.45	6.28%	$0.00
sBTC	$6,692,924.86	4.83%	$0.00

Debt Pool Info

To prevent this, debt holders can simply long the proportionate amount of tokens in the debt pool. This means that any increases in the debt pool, which means we will owe money to unlock our collateral, will be offset by the increase in our long position. Obviously, constantly adjusting positions is a bit cumbersome for the layperson. Luckily, there is a one-step efficient solution to combat this fluctuation of active debt. The dHEDGE "Debt Mirror Index" ($dSNX) is a constantly adjusting index according to the synthetix debt index:

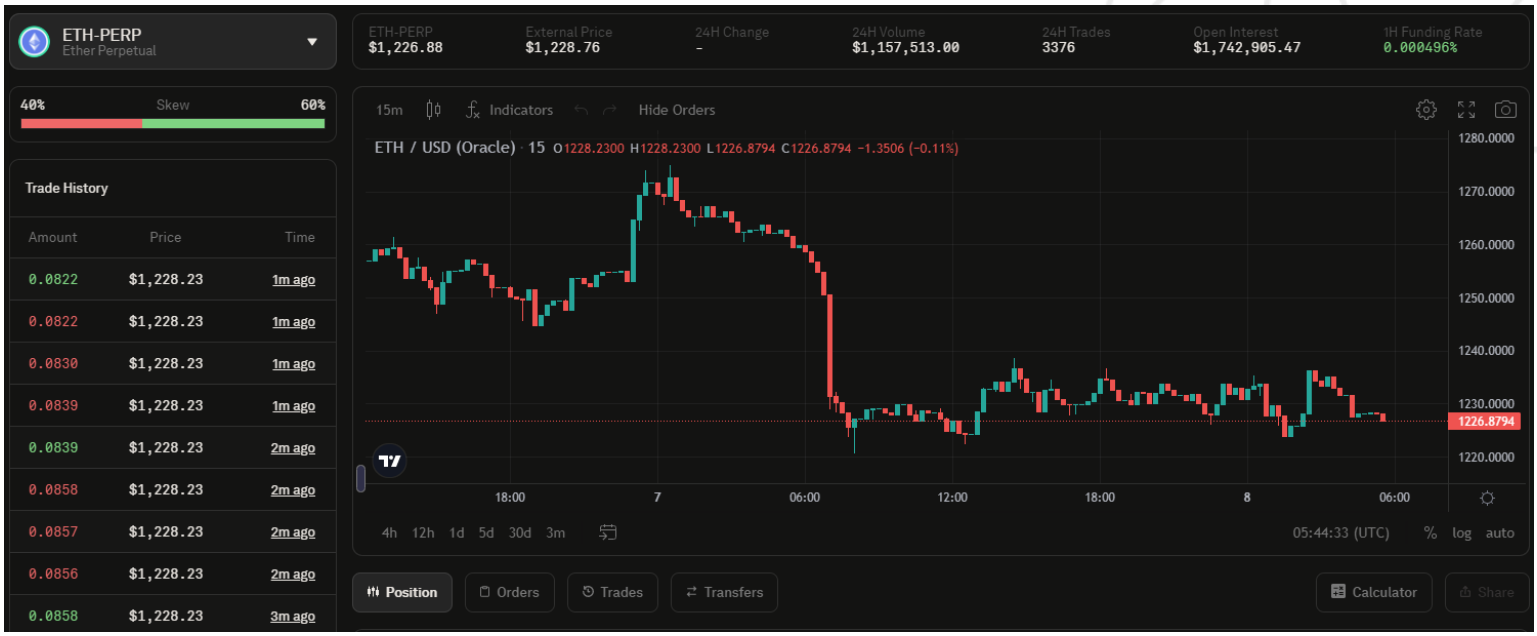


Debt Pool Manager

Futures and Kwenta

One of the core features of the Synthetix stack is its perpetual futures offering via Kwenta. Synthetix has a variety of projects using its assets to create useful DeFi projects, but Kwenta is undoubtedly the most important. In utilizing the massive debt pool of Synthetix, all $SNX stakers, or debt holders, take the other side of Kwenta traders.

This is similar to GMX's model, and if traders become overly long or short in their positions, stakers can have some significant exposure. This usually ends up good for the debt holders (the casino always wins), but, to eradicate all speculation on trader performance just utilize the above hedging strategy.

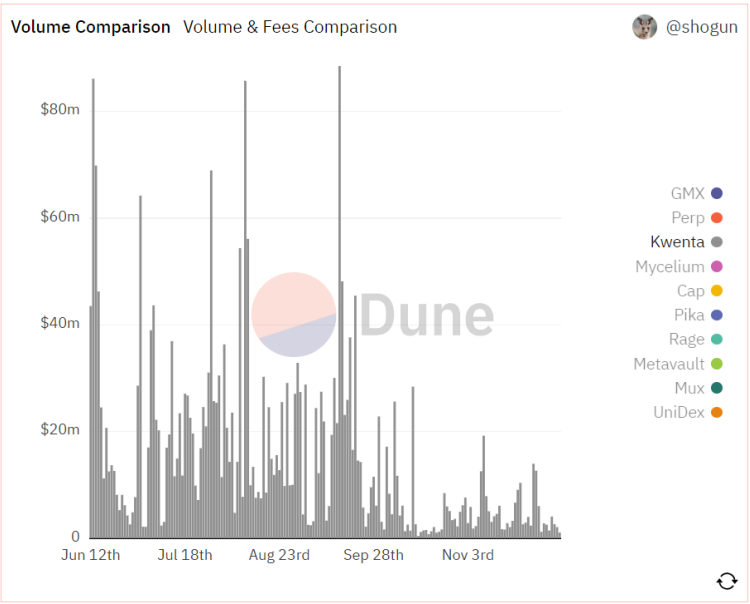


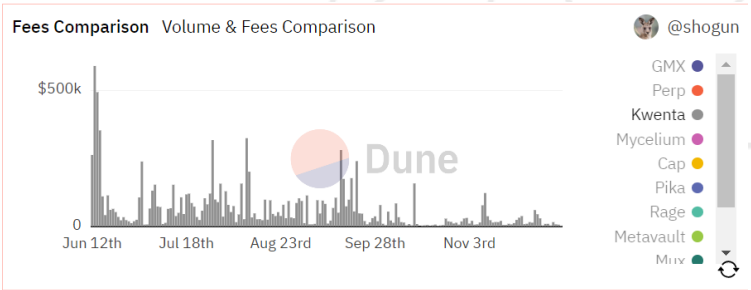
Kwenta Trading Dashboard

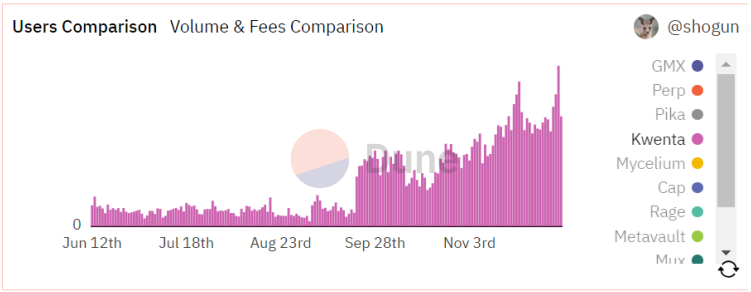
Aside from taking hedging matters into your own hands described above, Kwenta has more conservative leverage and position caps in order to prevent someone from draining the debt pool and leaving $SNX holders with bad debt. The protocol utilizes a funding rate and dynamic fees that fluctuate based on the ratio of long/short positions, which also help facilitate the lopsided exposure of $SNX stakers.

Kwenta currently offers 18 assets and recently launched their cross margin accounts, which allows users to create highly customizable positions and implement more robust risk management. When opening positions, you can set collateral limits and trade different markets with the same collateral pool, leading to less transactions and less effort.

Kwenta was launched earlier this year, and after an initial level of high volumes and trading fees earned, demand has slowed. Despite this, users are at an all time high, which makes sense given crypto's search for decentralized perpetual exchanges like Gains and GMX post-FTX crash.







Dune - Perpetual Dex Overview

Kwenta's ability to grow is dependent on Synthetix's continued development. As Synthetix aims to offer more synth products, and has a slew of upgrades coming in v3, it will be likely that Kwenta is able to follow suit and continue to generate more interest. And remember, a portion of *all swap fees* go to $SNX stakers.

Synthetix is planning on launching Perps v2 soon along with the v3 protocol upgrade. This will enable three features that improve the current trading restrictions in place:

- New off-chain oracle system
- Adjusted funding rate
- Premium / discount function

The adjusted funding rate simply implements a time-weighted component that continues to increase the funding rate paid the longer a position contributes to the skew for a given market. The premium/discount is just an upfront cost that disincentivizes adding to the skew as well. The new off-chain oracle system is an adjustment that will help reduce the amount of information coming into the contracts at a given time, and only pull information when a trade is initiated. Users who want to trade will have the same experience, but with reduced trading fees. Read more about perps v2 here.

Synthetix v3

One of the last major points we want to discuss in terms of the fundamentals of this project is its v3 upgrade that is going to be implemented in January. At the front of this upgrade is a focus on building out the stablecoin product offering on Synthetix. The goal would be to add different types of collateral to be used to create $sUSD, making it more of a Liquity or Maker mechanism.

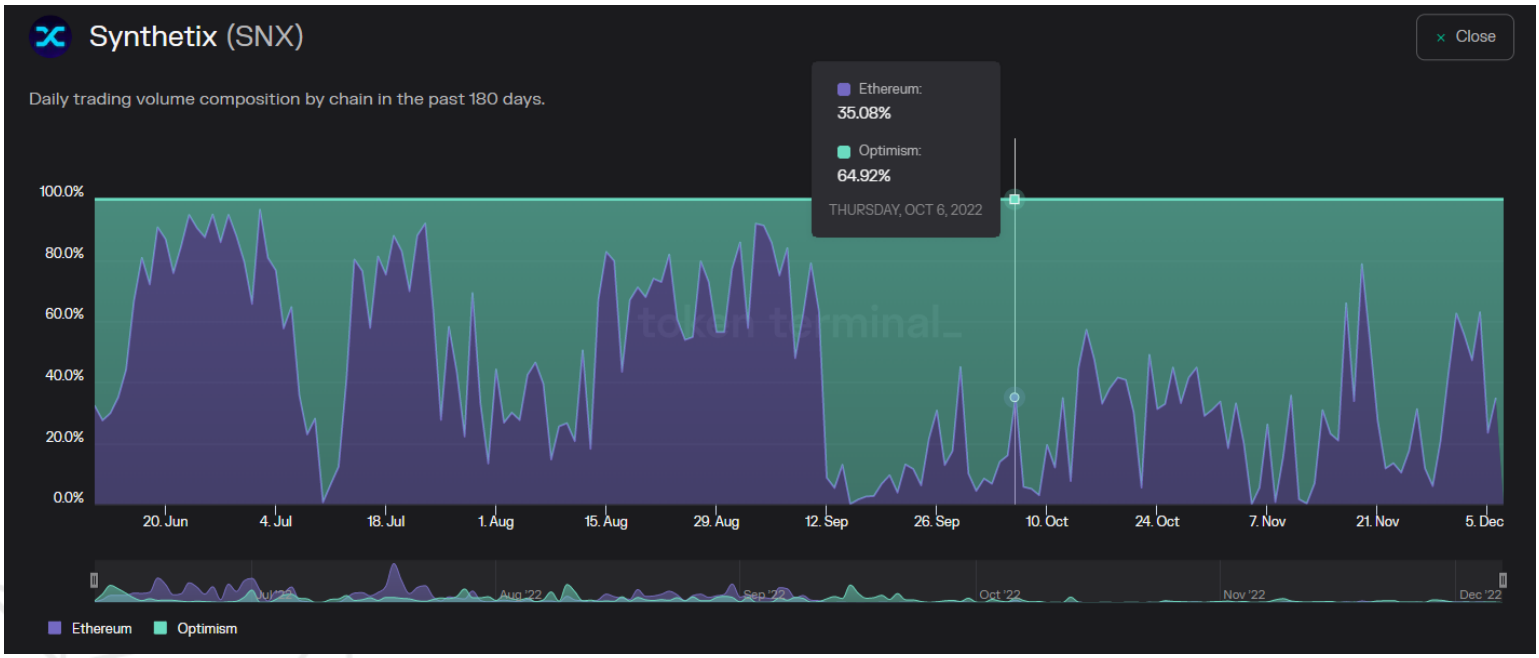
Another key feature is debt pool synthesis, which will merge the debt pools across *both L1 and L2 chains*. If you've been up to speed on everything we've talked about so far, you'll easily be able to see how this is a big deal. By allowing the debt in all chains to be backed by one conglomerative pool, it makes position management and composability much easier. This can be accomplished via cross chain communication, and the specifications can be viewed in more detail here.

More importantly is the upgrade that will allow for any protocol to *permissionlessly create their own synthetic asset*. In order to achieve this, $SNX stakers need to be able to choose which asset pools they provide collateral for. This is similar to the discussion we have talked about with Aave, Euler, and Silo Finance: by allowing stakers to specify their exposure, users can decide whether they want to be exposed to the more risky assets within the debt pool.

Growth on Optimism

While Ethereum mainnet TVL trumps that of Optimism, all of the usage statistics for the Layer 2 network takes the edge. One reason for this could be the share of liquidity on each respective chain. On Optimism, Synthetix retains the #2 spot by TVL for the network, whereas on Ethereum it sits at #19.

There are also numerous other protocols that can serve a similar purpose to Sythetix, at least in the ability to mint a collateralized debt position, like Liquity and Maker. As investors have more optionality, it will be harder to compete for their dollars. As such, we have seen a significant growth in the usage of Synthetix on Optimism, which is the only other chain that the products are offered other than Ethereum mainnet:



Token Terminal

Accordingly, the fees generated by L1 and L2 behave in a similar way to the above graph. The reasoning behind this growth in L2 can be largely attributable to two things:

- The fee reclamation was removed/atomic swaps introduced on Optimism well before Ethereum
- Synthetix built a native $sUSD bridge from Ethereum to Optimism

The bridge helped remove the obstacle of thin $sUSD liquidity on Optimism, allowing larger traders to make their way to Optimism and utilize synths.

Earnings and Fees
Synthetix is a strong revenue generator simply because of its use case across all of DeFi. The synthetic assets minted through the protocol are utilized in the largest DEXes: Uniswap, Curve, and DEX aggregator 1Inch. By having a toe in the water in all of these different DeFi use cases, a bet on $SNX is essentially a bet on DeFi. Synthetic is in the top 5 revenue generators (including OpenSea and Ethereum).

Unfortunately, revenue != earnings, and in Synthetix's case, that couldn't be more true. The main factor here is the inflationary rewards program, which we know all too well from the infamous farm and dump schemes last bull run.

On the other hand, both the Atomic swaps upgrade and continued development of protocols built on top of Synthetix have contributed to the protocol gaining meaningful increases in its usage statistics. Here is an excerpt from the Frogs Anonymous quarterly report for Q3:

> *"Similarly, Synthetix network usage rose markedly in Q3, with trading volume on Ethereum mainnet rising from $3.06B to $3.48B and the number of trades more than doubling from 3.63K to 7.51K. Meanwhile, on Optimism, trading volume rose from $1.52B to $2.03B and the number of trades from 73.2K to 77.4K."*

Atomic swaps being tested out and then paused can help explain the inconsistent tracking in earnings as a portion of revenues observed in the token terminal graph below:

Token Terminal

Although the atomic swaps won't turn Synthetix into a profit generating company immediately, it will absolutely beef up the revenue numbers, which have been on a steady decline.

Tokenomics and Token

$SNX has been around for a while, has a clear use case and team that continues to ship, and users can stake for a juicy APR. Thus, it is no surprise to see a chart that looks like this:

CoinGecko - SNX Market Cap

Market cap is a better proxy to look at in this scenario because of how inflationary the token has been since launch (for example, the price is only 2.5x above the ICO, but MC is 10x). We were not following $SNX closely this past bull market, but like everything else it probably just got ahead of itself in terms of valuation.

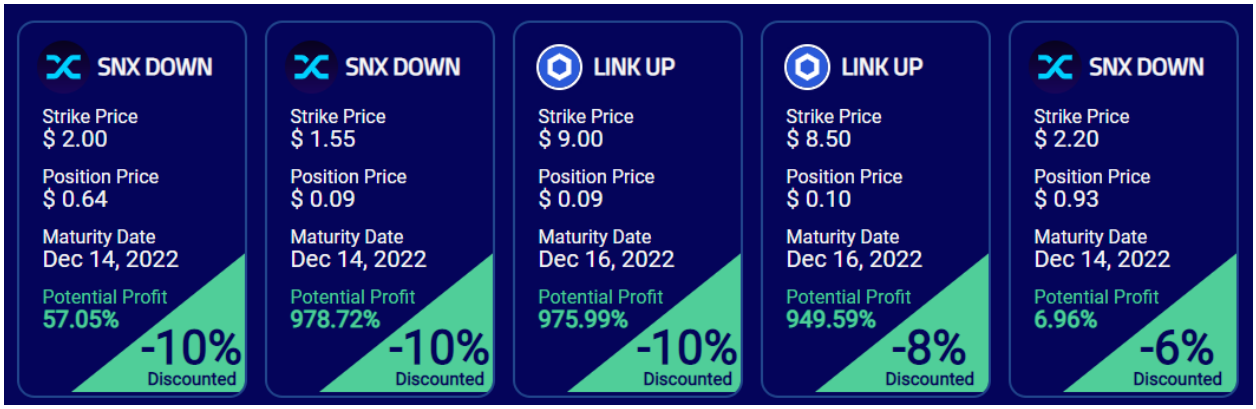
All of this to say that there could be some attractive prices here in the near future (if we are not already there). The team is clearly resilient and focused on bringing novel and robust use cases to DeFi. Synths *literally* have no limit to how much they could grow, and Synthetix is no doubt at the front of the pack.

The team has expressed interest in turning off inflationary rewards as seen in this governance proposal from August of this year. The rationale is that token incentives are meant to bootstrap the growth of a protocol, not sustain the growth. Synthetix has proven that there are true, consistent use cases for its model across the world of DeFi. Incentivizing growth via inflationary token rewards just dilutes token holders and adds to selling pressure over time.

While the above proposal has not been pushed to a vote, it is nice to see that it is in the talks, and will likely lead to some level of adjustment in the future.

Other Integrations

Kwenta is only one of the use cases of Synthetix in the DeFi ecosystem. Two other popular applications are Lyra, an options market for $sBTC and $sETH, and Thales, a parimutuel market with sports betting integrations. Think of Thales as an AMM for options contracts, allowing continuous pricing for the contracts. Positions can be discounted according to the AMM's weighting, which helps incentivize balancing the exposure:

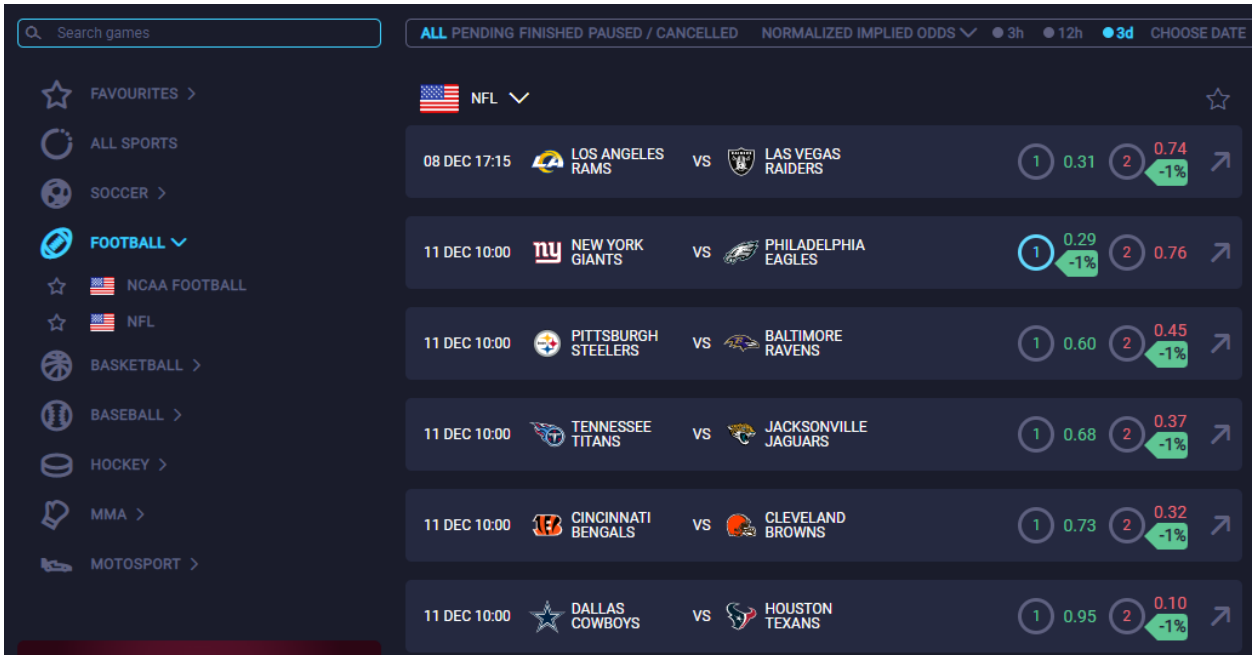


Thales Markets

These markets allow users to place bets on a given outcome, risking no capital other than what you initially put up, which can be as low as you'd like. We highly recommend taking a deeper dive into Thales's documentation here. We will save our breath on much more detail, partly

because there is a lot more to be developed with Thales, and partly because it could almost take a whole report in itself.

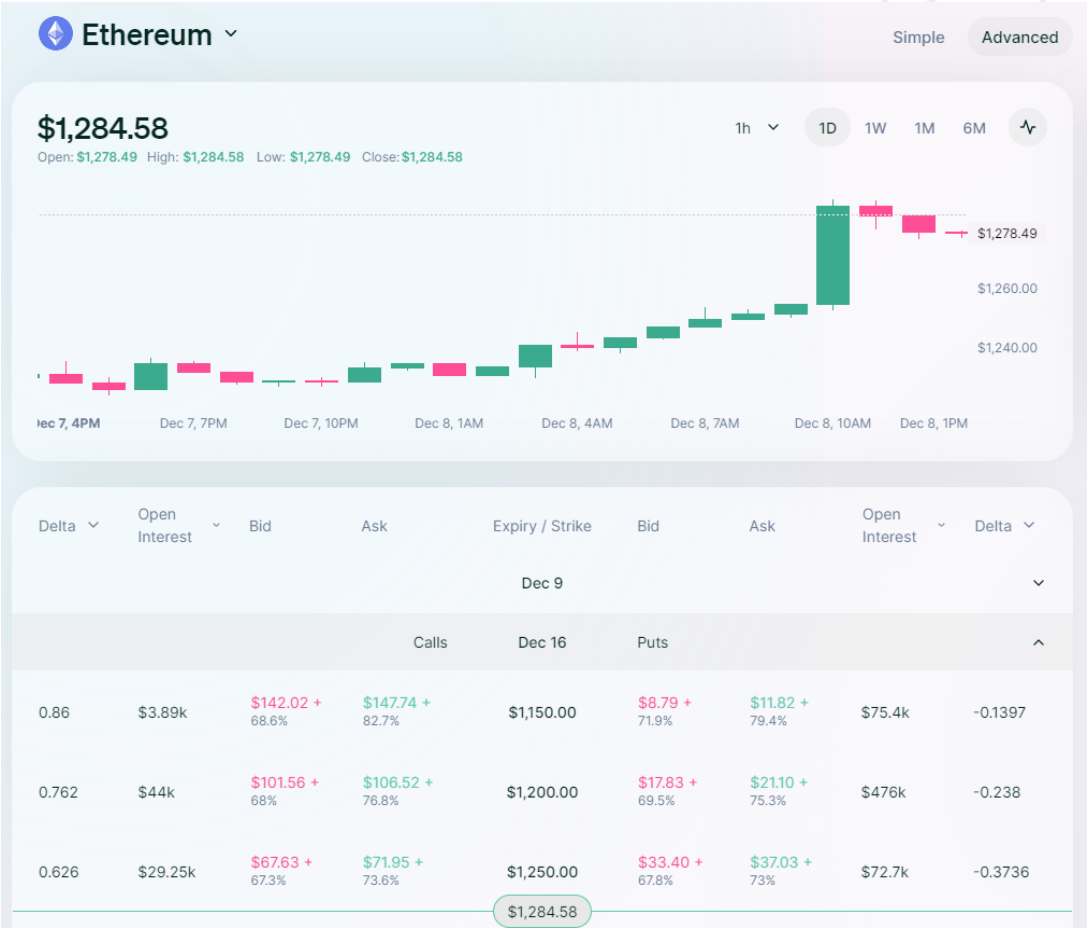
In addition to the parimutuel markets, there is the Overtime sports betting platform and an exotic events market, similar to Kalshi:



Overtime Sports Betting

Overall, Thales offers *a ton* of optionality that utilizes the synth ecosystem, and more importantly, $sUSD. As the interest in on-chain markets like these continue to increase, the vertical integration of Synthetix/Thales will aid in all of these protocols gaining meaningful adoption.

Lyra utilizes synth assets for its option liquidity. Liquidity providers deposit into market maker vaults, which means they take the other side of the option trades on the platform (both buying and selling). All options are cash settled in $sUSD:



Lyra

TVL for Lyra has not been strong, peaking at $120m late 2021 and now falling to roughly $14m. Despite the decline in volume flowing through the protocol, the fact that there is an options protocol utilizing synths is beneficial towards the ecosystem. On top of Lyra is Polynomial, which automates different strategies with Lyra vaults.

Conclusion

The future looks bright for Synthetix, with v2 Atomic swaps recently coming onto market and the v3 upgrades coming out early 2023. The biggest factor we are considering is an adjustment to the $SNX monetary policy that has been brought to the table before. It is promising that there has been previous conversation about turning off the printer, but expect this to not take effect until v3 implementation is well underway and revenue shows to be sustainable.

In terms of the stack being built on top of Synthetix, there really is no limit to how much can be created with synthetic assets. Once more real world assets are able to be safely implemented (stocks and commodities), we believe there will be a noticeable rapid growth of the protocol.