SynLev: Synthetic Leveraged Assets
Living Litepaper
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Abstract

SynLev is a group of synthetic leveraged asset pairs built and tokenized on Ethereum, price fed data from Chainlink oracles. The goal of SynLev is to provide decentralized, trustless, and non-KYC gated leveraged assets that behave similarly to traditional leveraged ETF's (e.g. 3X BULL ETH/USD token). Traditionally leverage is achieved through debt or fund re-balancing. SynLev assets do not require fund re-balancing or any form of debt. SynLev assets are deployed in pairs and are collateralized by both the ETH required to mint the tokens, the performance of the opposing asset, and liquidity providers. This system enables unique benefits. Foremost there is no need for an individual counterparty, the effective counterparty for a BEAR token is the entire equity of a BULL token and liquidity providers, greatly reducing counterparty risk. Token pairs are isolated, dramatic price movement cannot affect liquidity of the entire system. Assets do not rely on pooled shared collateral, there is no limit to the amount of assets that can be minted. Assets always retain 100% liquidity.

SynLev supports assets, commodities, or indices that have public decentralized oracles. All fees generated from asset purchasing (minting) and selling(burning) are distributed to SYN holders who stake SYN tokens and liquidity providers.

Price cycles

The price cycle or refresh rate of any assets are dependent on the oracle refresh rate. For example a Chainlink price feed refreshes on a heartbeat ranging from 1–24 hours. In addition to a deviation

threshold of typically .5-2%. In the case of ETHUSD a new trusted answer is submitted every 3 hours and every time the price changes by more than .5%. For every new answer submitted token pair price and leverage are recalculated. Increasing stability and predictability of leveraged asset performance.

Leverage

SynLev leverage is defined by a target leverage (L) and an actual leverage (L_a). Target leverage is the intended leverage of the asset pair, typically 3X but will vary per asset pair. Actual leverage (L_a) is the real leverage achieved and defined by the ratio of token pair equities or Equity ratio(k), defined by Eq_1 and Eq_2. At any given time actual leverage of a 3X leverage asset can never be higher than 4.5X and generally will not dip below 1.5X.

$$k = \frac{E_{tot}}{2*E}$$

Eq 1: Equity Ratio

$$L_a = L*k$$

Eq 2: L_a Actual leverage

Equity ratio k is upper bound limited to 1.5 by default. To mitigate any asset price from reaching 0 a loss limiter is enforced, on any given price cycle the price of an asset cannot decrease more than 90%. Both the upper bound limit of equity ratio k and lost limiter are both adjustable to increase stability and ensure actual leverage (L_a) is as close to target leverage (L) as possible.

Buy Bonuses and Sell Penalties

While equity ratio k is 1 actual leverage is equal to target leverage. Therefore it is a high priority of SynLev asset pairs are to maintain k values as close 1 as possible. Buy bonuses and sell penalties are introduced to incentivize users to balance the equity of asset pairs. A sell penalty is incurred when an asset is sold and burned resulting in k being greater than 1, penalties are defined by Eq_3. All sell penalties are diverted to a balance fund (E_{bal}), providing the equity for buy bonuses. Sell penalties are variable but hard capped at 15%.

$$\frac{E_{tot}}{2} > E - E_{out} \rightarrow Penalty = E_{out} * p_k * \left(\frac{2*(E - E_{out})}{E_{tot} - E_{out}} \right)$$

$$\frac{E_{tot}}{2} < E - E_{out} \rightarrow Penalty = 0$$

Eq 3: Sell Penalties

Buy bonuses are awarded when the buying and minting of an asset results in k trending towards 1, bonuses are determined by Eq4. Buy bonuses are dependent on the amount of sell penalties incurred. The more imbalanced a token pair becomes the higher the incentives for users to balance the token pair through buys. (See table 1 for examples)

$$\frac{E_{tot}}{2} > E_{in} + E \quad \rightarrow \quad Bonus = \frac{E_{in} * E_{bal}}{E_{tot} - 2 * E}$$

$$\frac{E_{tot}}{2} \geq E_{in} + E \quad \rightarrow \quad Bonus = E_{bal}$$

Eq 4: Buy Bonuses

	ETH/USD 3X BULL	ETH/USD 3X BEAR
Equity	100 ETH	50 ETH
Buy	None	Bonus
Sell	None	Penalty

Table 1:   Buy/sell bonus and penalty examples.

It's important to note that there are no buy penalties or sell bonuses. Their inclusion would additionally incentivize users to balance token pair equity. However this would also incentivize equity flowing out of the token pair as a whole increasing the impact buying and selling have on asset k value.

Liquidity Providers

Users have the option to provide liquidity to any SynLev asset pair. Liquidity providers earn half of fees generated by the buying and selling of that particular SynLev asset pair. Earned fees may be withdrawn at any time without removing liquidity from the asset pair. Added liquidity mints Bull and Bear tokens directly to the SynLev vault contract, these tokens cannot be transferred and are burned when liquidity is removed.

It is important to note that users provide liquidity to just one specific asset pair. Differentiating providing liquidity from staking SYN, as it only earns fees from one asset pair. While staking SYN earns fees from the entire SynLev ecosystem.

The SYN token

The SYN token acts as shares of the SynLev ecosystem, earning staking rewards from half of the fees generated by users buying and selling SynLev assets. It is important to note that SYN is not a governance token, governance of the SynLev project is centralized. SYN staking will be enabled

shortly after the first SynLev assets launch. Prior to staking being enabled all staking fees generated will be allocated to the dev fund.

10% of SYN tokens are allocated to a manual claim airdrop to LINK and ETH holders based on block #10600000 at the rate of 5,000 SYN/ETH and 1,000 SYN/LINK. The maximum supply of SYN is 100 Million, detailed token distribution in Table 3. Public token sales will take place shortly after main net assets are launched and token staking is enabled.

	Allocation (%)	Allocation (SYN)
Airdrop	10%	10,000,000
Public Sales	25%	25,000,000
Business Development	15%	15,000,000
Bounty Program	10%	10,000,000
Dev Team	40%	40,000,000

Table 2: Token supply allocation

Risks

There are several risks in the current implementation of Synthetic Leverages. Foremost the risk of the equity of an asset in a pair going to 0. Resulting in an effective leverage of zero for the opposite asset and zero price reactivity. This would result in large buy bonuses encouraging the 0 equity asset to be minted. Even in the unlikely case of a base asset becoming completely defunct 100% of Ethereum sent to the token pair would be recoverable.

While built on decentralized oracles many aspects of SynLev are highly centralized. This is an intentional design choice to avoid the pitfalls of DAOs (decentralized autonomous organizations). Allowing ease of upgrades, allocation of funds for advertising and exchange listings, and intentional direction of the SynLev project. Safeguards against abuse are built into the asset controller contracts such as hard limiting sell fees, a 72 hour delay for contract upgrade, etc... Currently asset reference to oracle contracts are replaceable, eventually they will be locked permanently when Chainlink price feed proxies are implemented.

Conclusion

SynLev's goal is to provide decentralized leveraged assets that are censorship-resistant and do not require any form of KYC. The development of financial products similar to those of traditional markets are vital to the health and success of crypto markets. It is SynLev's mission to provide assets that perform similarly to leveraged ETF's. Starting with crypto-fiat trading pairs and progressing to stocks, indicies, and commodities. The only limit to the growth of Synlev assets are the availability of trusted, decentralized oracles.