

Proposal: Add Support for Set Protocol Markets

This is a proposal to add support for a new Set Protocol market that will enable the use of SetTokens as collateral and currency, expanding the surface area of markets that Aave is able to support - a key feature available with Aave 2.0. We imagine the first asset supported by the Set market to be the DeFi Pulse Index (DPI) and others to be subsequently added.

Set Protocol and Index Coop Summary

Set is an Ethereum-based protocol that enables the world's on-chain asset managers to create and run asset management strategies. Live since April 2019, Set has created smart contract automated strategies (RoboSets), strategies run by 3rd parties (Social Trading), and is now spinning up organizations that run categories of strategies (Index Coop being the first).

SetTokens are ERC20 tokens that directly represent a basket of the underlying components, which are fully collateralized (assets held in 1:1 collateralization in a smart contract like Wrapped Ether). SetTokens can be issued by depositing the underlying collateral to mint a SetToken and can be redeemed by burning the SetToken and retrieving the underlying constituents. SetTokens can be rebalanced, where constituents and weights can be adjusted through trades on DEXes.

The DeFi Pulse Index is a SetToken that represents a basket of the top DeFi projects, a great addition to Aave as it has the following properties:

- **Significant Borrow Demand:** There is significant desire from whales to lend out the DeFi Pulse index and to use the DPI as collateral to borrow stablecoins for farming, going leveraged long/short, and implementing structured products (e.g. carry trade).
- **Low Volatility:** Because indices are a basket of tokens, they represent less volatility than the component assets by themselves
- **Efficient Sector Representation:** Adding an index as collateral also gives exposure to all the component tokens while only having to add in a single token, thus saving gas in Aave's system
- **Liquidity via Primary and Secondary Markets:** Minting and redeeming represent the primary market of the indices, but many users can buy and sell indices on the secondary markets - mostly Uniswap. The price on the secondary markets are kept at Net Asset Value (the market value of all the underlying components) through a network of market makers that redeem the tokens when price is below NAV and vice versa.

Key Risks

The risks of Set Protocol are derived from the methodology described in the currency risk section as well as the following analysis.

Smart Contract Risk

Set's V1 contracts have had upwards of \$27M locked and have been live for 18 months. Set's V2 contracts have had upwards of \$22M locked and have been live for 3 months.

V1 Smart Contract Audits:

- [PeckShield Audit](#) [January 8th, 2020]
- [Trail of Bits audit](#) [April 8th, 2019]
- [ChainSecurity audit](#) [February 18th, 2019]

V2 Smart Contract Audits:

- [OpenZeppelin](#) [September 2020]

Counterparty Risk

DPI is the first index product released by Set Protocol and has been functioning securely since its launch in September. Anyone can permissionlessly issue the DPI token by depositing the underlying component tokens and can redeem the DPI token for the underlying components.

Only the Index Cooperative is able to make decisions regarding the index composition and the rebalancing process. Governance over the Index Cooperative is decentralized with the community making critical system decisions.

In the current version of V2, rebalances do not have any lockup times so that does not pose a risk.

Market Risk

DPI is backed by the component ERC20 assets leading to exposure to the market risks of the underlying tokens. Because DPI is a basket of tokens, the volatility of the DPI is significantly less than each individual token as seen in this graph below:

[

1022x669 91.1 KB

](https://europe1.discourse-cdn.com/business2/uploads/aave/original/1X/f9f2e61cb97e7f78f83ebb04f21aa9c5cc546347.png)

DPI is currently the 9th most liquid token with over \$31M in liquidity in it's Uniswap pool.

Set Market Risk Parameter Considerations

DPI price will be derived from the prices of the underlying components. Rebalancing happens once a month where weights and the underlying assets can change and as a result, oracles must be available for the assets that are added.

The liquidation process can happen in two ways. Liquidators need to liquidate on Aave and then either sell DPI on the Uniswap market or redeem the underlying assets and then sell them.

The Concourse team has an open source version of an [arbitrage bot](#) that mints and redeems automatically. It is possible to build a liquidation bot that does the mint/redeem and liquidate function on Aave in 1 transaction.

Proposed Interest Rate Model

We derived the variables of the interest rate model based on the rates DPI's component assets have on the main Aave market. Slight adjustments were made to reflect the lower volatility of DPI due to it being a basket product and the Set market being a segregated market.

Utilization Optimal

Base

Slope 1

Slope 2

50%

0%

7%

200%

Proposed DPI Risk Parameters

DPI risk parameter values were also derived from referencing the values for DPI's component assets. Adjustments were made for lower volatility of the DPI, multiple liquidation models (Uniswap and redeeming), and segregated markets were taken into consideration.

LTV

Security Margin

Liquidation Threshold

Liquidation Bonus

50%

5%

60%

10%