

APWine - Whitepaper [Draft]

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Abstract

APWine is a protocol to tokenize future yield generated through DeFi protocols. Lenders lock bearing interest tokens in our smart contracts for predefined periods in exchange of index tokens representing the total yield that will be generated at the end of the period.

1 Introduction

The traditional finance is composed of a large set of instruments facilitating exchanges and management of value. It relies on institutions and businesses operating in a regulated and controlled environment.

Blockchain and smart contracts allowed the release of autonomous protocols and applications, operating in a verifiable way on a decentralized ledger. Decentralized Finance ("DeFi") is built using this new paradigm. Traditional financial instruments are replicated relying on new premises for reliability and accountability.

Those protocols incentivize their users to lend funds so that they can operate correctly (loans, leverage, etc). Users generate passive income quantified as an "annual percentage yield ("APY"). Those returns depend on 1) the utilization of the protocols and 2) the asset composing the income and their price (i.e with liquidity mining). It is therefore subject to speculation and volatility.

The goal of APWine is multiple:

- Provide the DeFi yield farmers with the ability to tokenize their yield(s) as a future, thus allowing them to hedge their risks selling it at a fixed rate in advance, and allowing other people to speculate on it.
- Provide traders with the ability to speculate on the yield of DeFi platforms

Along with the yield tokenization mechanism (this protocol), APWine will provide a decentralized exchange for all users to trade their yield token on it.

2 Architecture

2.1 DeFi loans

A major component of the Decentralized Finance is to make loans possible on-chains. They work mostly in an over-collateralized way, even though some projects have been exploring other functioning (i.e. Aave¹, DyDx² and Uniswap³ allow their users to leverage the particularity of the Ethereum blockchain through Flash-Loans [1]). A User deposit X amount of asset A which allows him to borrow an amount Y of asset B only if less valuable, making the loan over-collateralized. Interests are taken directly on this collateral. The collateralization of the loan can drop with the price of the collateral or with the sum of the interests withdrawn from it. To avoid insolvency, anyone with the necessary assets (Liquidators) can liquidate the loans before it becomes under-collateralized, taking a predefined fee for this action.

2.2 Futures

2.2.1 Introduction

Interests paid by the borrower are being shared between other actors in this economy, including the lenders. They generate an APY that depends directly on it. Sometimes protocols run a "liquidity mining campaign", where they give tokens to the users for their contribution (i.e. lenders and borrowers). This contributes to a higher overall APY for those lenders.

APWine allows the lenders to lock their bearing interest token for a defined amount of time against an yield index token that represents the yield that will be generated during this amount of time. This token is therefore different for each period, asset, and lending platform.

Once the token is generated, it can be traded as a standard ERC20 token. All the yield collected during this time by the lent assets will be redeemable against it, minus the pool fees (see token-economics). Note that if a lenders does not wish to sell its future yield after-all, it will still be able to claim it with its own yield index tokens.

DeFi protocols operate in different ways to generate the yield, therefore the locking and collection of profits work differently for each lending platform. Nevertheless, the same interactions on our protocol will be needed for the users regardless of the platform it is lending its funds on (the only difference being the small gas cost gap for the locking transaction). We describe later the index (token) generation process for the main platform we are building our protocol with.

¹<https://aave.com/>

²<https://dydx.exchange/>

³<https://uniswap.org/>

2.2.2 Life-cycle of a future

Creating a future. At the beginning of the platform only owners of the contracts will be able to define a period for a future (it may evolve in the future depending on the market will). A period is defined for one asset, one lending platform, with a starting and ending timestamp.

Registering lent assets to a future. Once a period is defined, any user with funds deposited on our platform can register (and unregister) to it with a transaction before the starting timestamp.

Starting a future. After the starting timestamp and for a predefined delay of X blocks, anyone can issue a transaction that will start the future. This transaction results in the locking of the bearing interest token registered for this future by the users. At the beginning of the protocol development, the team will issue this transaction with their funds. Withdrawal of the registered funds of a user after the start of a period will be possible and defined later in the protocol development.

Ending a future. After the ending timestamp, anyone can issue a transaction that will end the future. This transaction results in the unlocking of the registered funds by the users corresponding to the amount of token they could redeem closing their loan when the period started. The rest of the funds (the yield) is now redeemable by yield index token owner.

3 Yield index token generation

As mentioned earlier, the generation of the tokens works differently internationally in our smart contracts as the bearing interest token mechanisms depends on the lending platform. The choice of which platform to integrate with APWine will be based on their maturity and community demand.

3.0.1 The example of Compound

The Compound platform⁴ enable to deposit and earn interests on the deposited funds. It works with a particular token: the cToken[2]). Basically, when a user deposits a particular asset on the platform for it to be lent (i.e. Dai), they receive the corresponding cToken in exchange (in this case cDai), with an exchange rate that changes at each block. The interests generated with the loan of this pool⁵ are injected into the token, which value grows accordingly.

The percentage yield between two blocs b_0 and b_1 , with respecting exchange rate r_0 and r_1 can be computed the following way : $((r_0 - r_1)/r_1) * 100$.

To get the yield index token, the user must lock its cToken on our protocol for a defined period. At the end of the period, the user will be able to get back an amount of cToken that correspond to the value of the amount of tokens he initially deposited at the beginning. The extra cToken left is the value redeemable with the yield index token.

⁴<https://compound.finance/>

⁵<https://compound.finance/markets>

Example: A user lend 100 Dai and receive 50 cDai (exchange rate r_0 of 0.5) at a block b_0 . After some time, the period expire and the Dai/cDai exchange rate is now at 0.25 (a 100% yield occurred during that amount of time). He can now withdraw 25 cDai (that now have a value of 100Dai originally deposited), and the holder of the yield token generated at the beginning can redeem 25 cDai as well (as it correspond to the yield during that particular period).

3.0.2 Aave

Aave is a lending and borrowing platform. The interests accrue through liquidity rate. It means that the balance increase directly in our wallet depending on your holdings of aTokens. Aave also has several markets with different "risks" and assets accepted. There isn't any liquidity campaign at the moment on the platform. The generated yield collected by our contract holding the aTokens is then redeemable against the yield index token.

3.0.3 Yearn Finance

We plan to later integrate Yearn Finance (YFI) to our platform. Yearn Finance is a relatively new platform aiming to provide its users with predefined yield "farming" strategies targeting the highest yield possible.

4 APW Token

4.1 Governance

The owner's rights on the smart contract of the protocol are initially divided equally between the core members of the team. After a defined development period of 80 weeks, the governance of those contracts will be hand over to a DAO, where the token holders can vote on the changes to be made (treasury allocation, protocol upgrade, etc.). The token distribution is designed so that the community and stakeholders of the APWine platform progressively earn tokens that will give them a voting power on the DAO that will be realized after the initial development period.

4.2 Token allocation

A total of 1 000 000 APW are minted at the launch. They will be allocated following a distribution that will be released later in the project development.

4.3 Token economics

Along with the governance that those token provide, token holders are incentivized to act in a positive direction with the protocol and its development. For each future that expires, 1% of the collected yield is redistributed to the token holders, proportionally to the amount they hold. The governance mechanism

of the protocol will entitle them to decide on a different percentage or other rewards.

References

- [1] Aave – Open Source DeFi Protocol — FlashLoan.
- [2] Compound — cTokens.