AlphaSwap : On DEX and Prediction Market

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AlphaSwap (www.alphaswap.org) works in a layer above all SWAPs, providing advanced trading functionalities for both KittenSwap and Uniswap (note KittenSwap will have better support for AlphaSwap).

AlphaSwap traders can enjoy:

(1) Zero slippage. (2) No frontrunning. (3) Limited downside. (4) Fully decentralized. (5) No collateral.

I will explain it in following sections. Some details are deliberately left out in this draft, to prevent potential immediate copycats.

Note AlphaSwap and KittenSwap are complementary and they work together. KittenSwap and Uniswap provide the underlying liquidity for AlphaSwap, while AlphaSwap enhances KittenSwap and Uniswap.

AlphaSwap is a bit similar to an aggregator, yet far more powerful.

The governance token for AlphaSwap is ALPHA (as trading is about seeking alpha). And the only way to get ALPHA is through these staking pools (or directly buying ALPHA from the market):

(1) KIF. (2) KIF-ETH LP. (3) kBASEv0-USDC LP. (4) ALPHA-ETH LP. (5) possibly a pure kBASEv0 pool. (6) possibly a pure ALPHA pool.

To ensure a safe launch, the ALPHA and AlphaSwap contracts will be deployed on Ropsten testnet first. Stay tuned and join our Discord (https://discord.gg/pMaZswC) for announcements.

1 AlphaSwap : the basic design

The basic AlphaSwap is a decentralized prediction market for derivatives of various trading pairs on SWAPs.

Many traders avoid derivatives because of the high risks associated with them. However, in the case of AlphaSwap, the derivatives may be more friendly than trading directly,

and traders have limited downside.

Here I will only describe the basic use case.

Let the current epoch be i, covering $\{t_i, t_{i+1}\}$.

During epoch i, traders can call 3 functions:

1. STAKE : stake any TOKEN for the OUTCOME of any MARKET in $\{t_{i+1}, t_{i+2}\}$ comparing with $\{t_i, t_{i+1}\}$.
2. SYNC : synchronize the contract with MARKET. There is no need to do this for KittenSwap because KittenSwap will automatically keep track of it.
3. PAYOFF : request payoff of previously staked TOKEN regarding the OUTCOME of MARKET in $\{t_{a+1}, t_{a+2}\}$ comparing with $\{t_a, t_{a+1}\}$ where $a \leqslant i - 2$.

As an example, let there be only 2 traders: A and B.

During epoch i:

- Trader A staked 10 ETH taking a bullish view on KIF-ETH, and 2 KIF taking a bullish view on ETH-USDC.
- Trader B staked 5 ETH taking a bearish view on KIF-ETH, and 4 KIF taking a bearish view on ETH-USDC.

At t_{i+1} the contract compute the TWAP of KIF-ETH and ETH-USDC during $\{t_i, t_{i+1}\}$.

At t_{i+2} the contract compute the TWAP of KIF-ETH and ETH-USDC during $\{t_{i+1}, t_{i+2}\}$.

Assume both prices increase.

And then traders can call PAYOFF for epoch i. In this case trader A had the correct view, therefore he will receive $15 = 10 + 5$ ETH and $6 = 2 + 4$ KIF.

2 Merits of AlphaSwap

Now we can review the merits of AlphaSwap:

(1) **Zero slippage**. You can stake any TOKEN for any MARKET. Arbitragers will take care of everything.

(2) **No frontrunning**. Since TWAP is used in AlphaSwap, bots can never take advantage of you.

(3) **Limited downside**. The most you can lose is your stake. Many retail traders lose money because money management is hard. While in AlphaSwap traders have a clear idea of how much capital is at stake.

Moreover, there is no longer any need to monitor the market 24/7 for the best exit (arguably the worst part of trading). One can stake, take a good night's sleep, and come back to check the results.

(4) **Fully decentralized**. AlphaSwap does not require an external oracle.

(5) **No collateral**. Traders have 100% capital utilization rate.

Finally, we can easily create more complex payoff functions and the possibilities are limitless. Here I am only showing the tip of the iceberg.

An intriguing and important question is, whether it is possible to manipulate both the underlying pair and the AlphaSwap market for profit. There are very interesting game theory going on here, and I would not show my analysis in this draft, save for saying that the cost of manipulation is huge for any liquid pair.

If AlphaSwap becomes popular and someone decides to try a "cross-swap arbitrage", we might see significant ethereum network congestion as a result.

Therefore Kitten.finance is actively evaluating current layer 2 solutions. And our own chain is in planning as well, which targets some problems of ethereum regarding DeFi usage.