Vertex DEX

A decentralized exchange to provide more profits to liquidity providers.

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Contents

1. Abstract

The white paper presents Vertex - A decentralized exchange to provide more profits to liquidity providers. Vertex achieves it by an optimized Automated Market Maker (AMM) algorithm that uses a constant-product invariant with synthetic balances. The "synthetic balances" approach permits blunting the short-term slippage in liquidity pool based decentralized exchanges. These advancements will provide more profits to liquidity providers that are currently captured by arbitrageurs. Thus, Vertex DEX will considerably be a lot more profitable for liquidity providers than most existing AMMs.

Vertex has been built upon the core ideas of Uniswap and its intuitive interface loved by the whole DeFi community. While incorporating existing ideas and infrastructure, Vertex has kept its commitment to provide the most profit possible to liquidity providers out of each trade on Vertex DEX. For the same reason, there are no hidden protocol charges, and all trading fees (0.3% of each trade) go to liquidity providers.

Upon providing the liquidity to Vertex Pools, Vertex liquidity providers receive "Liquidity Provider" tokens called "VERTLP." These LP tokens serve as IOUs, indicating the ownership of liquidity pool earnings. In addition to that, Vertex DEX has a deflationary token at its core called "VERTX," which has utilities to promote more trading activities on Vertex DEX.

We believe the adoption of DEXes will keep increasing as traders lose faith in CEXes due to some recent big hacks and many other reasons. The total value locked in DEXes has reached from $2B to $11B within three months, which solidifies the position of Vertex DEX in this space for years to come.

2. Introduction

To explain what Vertex is all about, we will first define the problem Vertex DEX solves. Then, there will be an explanation of an "Automated Market Maker," which is an integral part of any liquidity pool based decentralized exchange.

In the next section, we will propose our solution to the problem we will implement in Vertex DEX.

In the last section, there will be a discussion on the future direction and the DeFi potential. Those are important points as Vertex DEX's growth will be dependent on the DeFi ecosystem and its future potential.

3. Problem Statement

There is no doubt that exchanges are the quintessential part of the whole crypto-currencies and the DeFi ecosystem. Centralized exchanges have always been the dominant players in this space. But due to so many massive hacks, the community has started to support decentralized exchanges tremendously.

But decentralized exchanges, who can match up centralized exchanges' performance, are not possible due to blockchain scalability issues. Ethereum developers are already building Layer-2 solutions, but it still may take some time. Thus, developers came up with an idea to run decentralized exchanges; the way prediction markets work using a constant-product invariant equation. This approach was innovative as it was completely different from the traditional method of running exchanges using order-books. Now, there was no need for an expensive market-making process that required creating and remove an order that takes a lot of gas fees.

Many projects followed the same constant-product invariant approach to create liquidity pool based decentralized exchanges like Bancor, Balancer, Uniswap, etc. But all of these exchanges brought their own set of problems. The biggest one being the price slippage after each trade, which is captured by arbitrageurs as a profit-making opportunity.

For any decentralized exchange, the most prominent supporters are Liquidity Providers, as they put an initial deposit as liquidity so traders can get better prices and a smooth trading experience. They also bear the risk of impermanent loss. At the same time, arbitrageurs make a profit from these arbitrage opportunities without any initial investment. Moreover, they can leverage flash loans to increase their profit by many folds. Due to these reasons, Vertex DEX is committed to providing more profit to liquidity providers.

4. Automated Market Maker

To understand the problem even better and how our solution can solve the problem, let's understand how an "Automated Market Maker" works.

An AMM based on a constant product invariant equation creates the opposite side of a trade for each trade. Whenever a trader establishes a trade in a pool, its price deviates from the original price. This price difference between the AMM and other exchanges is called arbitrage. Arbitrageurs use this opportunity to earn profit by trading on both exchanges. But all these actions do make the AMM operate without any external price-feed oracle.

5. Proposed Solution

The solution is inspired by a proposal given by Vitalik Buterin using "virtual quantities." Using the concepts in this proposal, Vertex DEX does not let arbitrageurs extract the

profit from price slippage after each trade; instead, the profit stays in the pool. This profit is added to the trading fees profit, which can be withdrawn by liquidity providers.

The solution is to delay the exchange rates over time rather than immediately by applying the constant product invariant equation. This simple idea makes arbitrage opportunity less profitable and less attractive to arbitrageurs. Thus, the profit which was being taken by arbitrageurs earlier now can be enjoyed by liquidity providers. This profit increase can be from 100% to up to a staggering 500% over a period of time.

6. Future Direction

The solution that we proposed here may seem simple, but there can still be future enhancements to provide more efficiency. Every solution also brings some inefficiencies; this solution may have it as well, which might be discovered at a later time. Vertex DEX will be committed to identify and resolve those efficacies in time.

As there are many smart-contract blockchain implementations, we believe that this innovative solution can be implemented in all those blockchains and not just Ethereum. That's why Vertex DEX will implement the same solution in Binance Smart Chain and then in other blockchains.

Decentralized Exchange can be combined with other supported products. Thus, Vertex will always try to develop the best products and integrate them into our platform.

7. DeFi Potential

The future potential of DeFi is massive. DeFi Pulse is the leading DeFi statistics website, tracking all the statistics from the past two years. When DeFi Pulse started publishing the total value locked statistics, it was merely $276 million. Today, the total value locked (USD) in DeFi stands at $11.3 billion. That's 4000% growth in just two years.

Thus, we have a strong belief that after five years, the DeFi is going to take over the world, and initial contributors will be the prominent market players. Vertex will be one of them too. We are committed to remain innovative in this fast-growing space and come up with more ideas for our platform and future DeFi products.

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