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Automated Market Maker

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Abstract - Automated market makers (AMM) have grown to gain a significant market share within the cryptocurrency world, which has led to the proliferation of new products pursuing unique horizontal segmentation strategies. However, their theoretical features are remarkably similar when meeting a basic set of assumptions. In this paper, we begin by introducing a global approach to obtain funding formulae for AMMs. Next, we demonstrate the differences between the Version 1.0 and Version 2.0 of the Uniswap protocol. Continuing to examine the microstructure of the AMM market, we show how the indirect price effect translates into traders and the constant losses to investors. We continue to point out that chronic loss is your job both in terms of market volatility and depth and we discuss the implications of these findings within the context of the literature.

1 INTRODUCTION -In recent years there has been a rapid growth in assets that are included in or, 'locked up', in distributed finance applications (DeFi) used as smart contracts in an unauthorised blockchain, Ethereum. The total amount of assets under DeFi's application management ranged from a fixed range of $ 400-500m to an estimated value of $ 23.3bn by the end of January of the following year.

In most cases, single DeFi applications are more efficient than medium-volume liquid exchanges for daily work volumes, registering aggregated transaction values in excess of $ 60bn for January 2020. Currently, most assets locked in DeFi applications can be allocated within the contract category smart ones commonly called Automated Market Maker (AMM) were also divided into Constant Function Market Maker (CFMM) or Token Swap Market Makers (TSMM), both of which are not limited to using pricing law. between two or more pools of token goods. AMM models are usable and uncluttered, allowing external users to withdraw and withdraw funds directly from a smart contract in return for normal trading costs and, more recently, the benefits of administrative tokens. In contrast to the limit order book model, the processfor CFMMs trades in a stable environment and time in an effort to reduce costly maintenance activities on a distributed website as this is ultimately imposed on the end user in the form of transaction costs paid by miners to a native 'gas' unit. While these new blockchain technology applications are often hailed as new innovations within the financial industry, there are a few peer-reviewed books available for their completeness. In this paper, we examine the common characteristics of AMMs and the differences between existing implementation projects with similar learning and the differences between CFMM and TSMM design expressions. Producing theoretical novel findings, we move on to a discussion of AMM's unique and striking features and incorporate these findings into the first results presented in the literature.

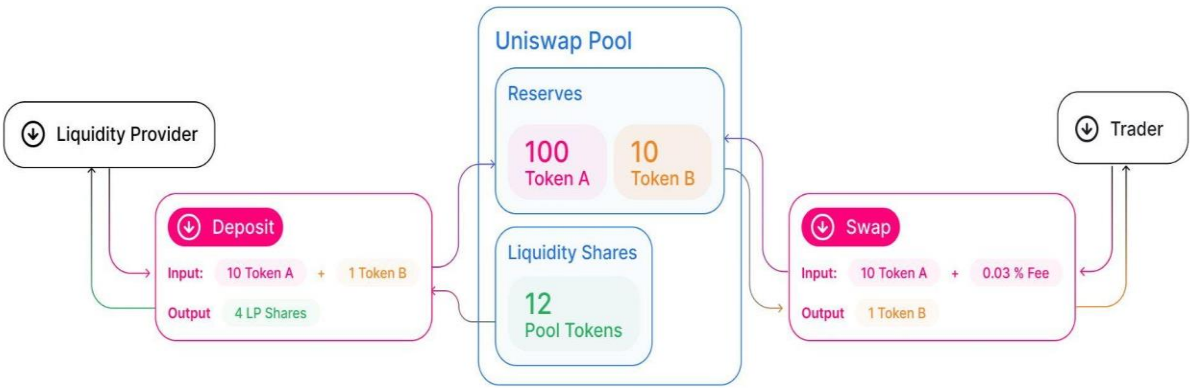
Specifically, we begin by introducing a common way we can earn money a supply formula that satisfies a specific pricing law. Next, we show that (ii) all AMM models bring the same results where cash reserves are similar to (iii) price implications. . loss of funding providers. We continue to point out that this loss in itself is a function of (iv) price volatility and (v) deepening of the stock market.

2 OVERVIEW - The unifying concept of Uniswap v2 is a focused investment: money shared within the custom price range. In previous versions, liquidity
was evenly distributed at a price difference between 0 and infinity.

The same previous distribution allowed trading at all price intervals (0, ∞) without loss of revenue.

However, in most lakes, most of the liquidity has never been used. Consider stablecoin pairs, where therelative price of two assets remains
constant. Liquidity outside the normal pear price of stablecoin is rarely touched. For example, the v2 DAI / USDC pair uses ~ 0.50% of total trading available between $ 0.99 and $ 1.01, the price range where LPs can expect to see the maximum volume - and consequently earn the most payments.

With v2, financiers may focus their money on their currencies at times less than (0, ∞). In the case of stablecoin / stablecoin, for example, LP may choose to allocate funds in the range of only 0.99 - 1.01. As a result, traders are given a deep-rooted cashback, and LPs earn more money to trade with their money. We call liquidity concentrated in a limited space. LPs may have many different positions per pool, making individual price curves that reflect the preferences of each LP.



In Uniswap v1, a user who buys ABC via XYZ needs to send XYZ to the contract before they can get ABC. This is frustrating if that user needs the
ABC they are buying to get the XYZ they pay for. For example, a user may use that ABC to purchase XYZ on another contract to settle the price difference from Uniswap, or he may
release the position of Maker or Compound by selling securities to pay Uniswap. Uniswap v2 adds a new feature that allows a user to receive and use an item before paying for it, as long as they make a payment within the same atomic counter. Exchange the employee makes a call to a voluntary refund agreement between the transfer of user-requested tokens and the flexible enforcement. Once the re-driving is complete, the contract checks the new balances and ensures the flexibility is satisfied. (after adjusting the amount paid into the amounts paid). If the contract does not have enough money, it returns all the work. The user can also restore the Uniswap pool using the same token, rather than completing the exchange.
This is exactly the same as allowing anyone to borrow any property stored at Uniswap swimming pool (for the
same fee of 0.30% as Uniswap trading costs).

3 ACTIVE LIQUIDITY -

As the price of an asset increases or decreases, it may be out of the range of the prices the LPs put in place. If the amount exits the position, the position money is no longer valid and no longer receives payments.
As the price goes in one direction, LPs gain more than one asset as swappers demand another, until all of their cash includes only one asset. (In v2, we generally do not see this behaviour because LPs rarely reach the upper or lower limit of the price of two assets, i.e., 0 and ∞). When the price re-enters the space, the liquidity reactivates, and the wide-ranging LPs begin to earn payments again.
Importantly, LPs are free to create as many positions as they see fit, each with its own time value. Focused investments serve as a way to allow the market to determine which is a reasonable distribution of liquidity, as sensible LPs are encouraged to focus their money while ensuring that their money remains viable.

4 PEER TO PEER EXCHANGE WITH BLOCKCHAIN TECHNOLOGY -

The emergence of the first generation of blockchain-specific ‘automated’
market makers was fueled by the inefficiency of pre-existing spatial exchange models, imitating the conventional central limit order (CLOB) design. Although early implementation has successfully demonstrated the possibility of making the asset exchange on unauthorised blockchain technology seem impossible on the scale. First, in the unique cost structure of a blockchain-based virtual machine format, vendors who engage in the application, pay the costs associated with the complexity of the com- putation and the amount of storage required for the performancethey wish to calculate. Because a

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virtual machine replicates across all active nodes, storing even a small amount of data is very expensive.

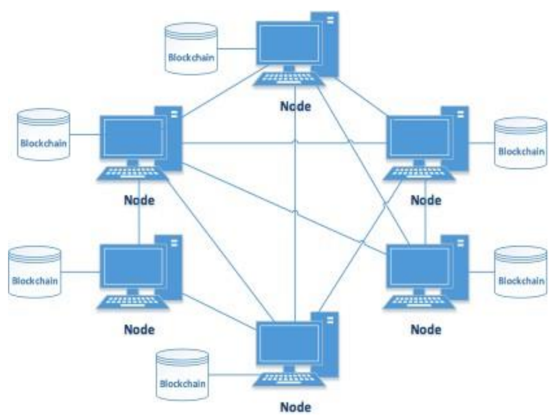
Combined with the same solid concept required to keep a liquid order book, computer payments have undoubtedly exceeded users' willingness to trade.

Second, as 'miners' choose a transaction to be placed in the next block with the amount of gas attached to the block, it is possible to proceed with the status changes in the decen-tralized order book by attaching a large accounting fee to a transaction that includes transactions, which automatically use the next transaction method benefits from resolving a future deter-ministic situation.

Subsequent repetitions of the international trade deal with these problems by maintaining the order

separately, using only the blockchain to calculate final compensation.

However, payment problems continued, as this implementation introduced complex integration issues between order book storage providers, introducing additional risks to storagesecurity.



5 COMPARISON BETWEEN UNISWAP V1 AND V2 -

Name	Uniswap V1	Uniswap V2
Liquidity	ETH-ERC20 pairs ERC20-ERC20 pairs through 2 swaps. Does not work with “missing return” ERC20 tokens	ERC20-ERC20 pairs (including WETH) in the core contract. ETH-ERC20 pairs through helper contracts. Custom multi-step paths through a Router contract.
Order Types	Trades	Flash Swaps
Fees	0.3% Reinvested	0.3% (with a switch of sending 0.05% as a protocol fee, leaving LPs with 0.25%). Reinvested
Other features	Custom Pools	Improved Initial Shares
Language	Vyper	Solidity
Technical Features	No core /helper Architecture	Core /helper Architecture Deterministic Pair Addresses

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CONCLUSIONS -

Though simple, constant product markets and their generalisations have very nice theoretical properties (such as fairly strict no-arbitrage bounds on the reference price) which appear to hold in practice. Our simulations confirm that this is the case under a wide range of different market parameters and conditions, implying that the use of constant product markets as price oracles is, at least at first glance, sound. Additionally, we suspect that there is an even larger class of automated market maker mechanisms which satisfy the above properties, and it would be interesting to further explore its mathematical properties. We leave this possible generalisation for future work.