INTRODUCTION TO ETHEREUM'S DAPPS – DEEP DIVE INTO AAVE

Wisdomtree EU
24 Aug 2021

This is the first blog in a series about Ethereum blockchain's applications.

Ethereum's recent popularization is driven by decentralized applications' (dApps) growth. Decentralized financial system (DeFi) within dApps constitutes one of the most prominent areas of development.

DeFi's goal is to create an alternative to traditional financial systems by being open, transparent, and available to anyone with access to the internet.

One of the most popular DeFi applications is Aave. It is a decentralized money market that allows users to lend and borrow cryptocurrencies.

As users and volume of transactions massively surged, AAVE, the native token for Aave the platform, saw a 642% price increase from $56.16 to $360.36.[1]

What does Aave do?

Aave is an open-source, non-custodial money market that uses liquidity pools to facilitate lending and borrowing of crypto assets. Users can earn interest with deposits or take out loans by using those deposits as collateral. Currently, there are 28 supported tokens on Aave, with over $14 billion in assets locked up.[2]

Stani Kulechov, the founder of Aave, launched the Initial Coin Offering in 2017, then called ETHLend. They changed the name to Aave in 2018, which is Finnish for ghost, to reflect their transparent policies. The rebrand also coincided with their switch from a peer-to-peer lending model to pool-to-peer model. Below, we will introduce several main functionalities of Aave.

Depositing and Borrowing

When users deposit cryptocurrencies into Aave, new temporary tokens are minted, called aTokens. For example, if ether is deposited, equally valued aEth tokens are minted and given to the lender. These tokens peg to the value of the underlying asset, and there is an aToken for every token that can be lent on Aave.

This allows Aave to be non-custodial, as Aave is never in control of an individual's crypto tokens. When lenders want to make a withdrawal, they need to trade their aTokens back for the original tokens, and Aave destroys the aTokens. While lenders own aTokens,

they receive interest paid by Aave, and can use those aTokens as collateral for loans. ATokens can also be traded on different crypto exchanges, so they can be sold to someone else (independent of Aave). ATokens would still need to bought back to withdraw the original tokens.

Because of the volatility of cryptocurrencies, Aave loans tend to be overcollateralized: to take a loan of $500, users will need more than $500 as collateral. Depending on the token, borrow interest rates can vary from 0.02% APR (Annual Percentage Rate) to over 12% APR.[3] The rate is variable, and changes based on supply and demand of the specific token within Aave's liquidity pool, determined by a formula programmed into the Aave smart contract. Aave also allows users to borrow from a stable rate, although stable rates could be much higher.

Aave also allows for credit delegation. If users don't have enough collateral for a loan, they can ask another user to privately delegate the credit. The borrower pays additional fees to the delegator, and the delegator earns additional interest on top of the interest earned by just depositing.

Many users simply deposit money in Aave to earn passive income, taking advantage of the high interest rates. Depending on the token, interests are earned as the original token or the AAVE token, which in addition to securing the protocol by being staked in the Security Module, can be used for governance to propose changes to the protocol.

Flash Loans

Aave's most unique functionality compared to other lending dApps is its flash loans. A flash loan is an uncollateralized loan that allows users to borrow cryptocurrencies for a very short time – within one transaction. A typical loan, however, takes a longer duration and requires collateral to be staked.

Aave achieves the flash loan concept by relying on blockchain technology. In a blockchain, new transaction information is appended as a block. For the flash loan, if the initial amount and borrowing fees are returned by the end of the transaction, the flash loan takes place and transaction are recorded. If the transaction doesn't take place, the entire loan is taken back and cancelled, as if it never happened.

One use case for flash loans is arbitrage. Cryptocurrencies can be priced differently on different exchanges, so users can borrow at one price and immediately sell to another exchange at a higher price. Aave's flash loan garnered interests and hit $1 billion in total volume in February 2021.[4]

Aave and Other Lending Protocols

The two largest competitors to Aave are Compound and MakerDAO. Overall, the structure of all three are very similar, using a decentralized, open source, non-custodial, liquidity pool model, with their main differences being the way interest is paid and how the interest rates are calculated. Aave rose to be more popular than the others due to their flash loans, and now Aave has the most total value locked in the protocol.[5]

Aave's Future

Aave is gaining more users and the total amount of assets has spiked. Aave is also the largest lending protocol and one of the most popular tokens to be purchased on Coinbase.[6] While it is undeniable that cryptocurrencies' mainstream attention has led to their higher prices, Aave's success cannot be attributed to just the hype. Aave has continued to improve and develop, pioneering new functions like flash loans.

Currently, Aave is working on a new protocol, Aave Arc, with the goal of being a gateway to decentralized finance for institutions. It will still use the same liquidity pool model but will be stricter about who can join, to lower credit risk. It will allow users who pass certain qualifications to enter a private liquidity pool, as opposed to the public pool available now.

Conclusion

DApps like Aave represent an interesting use case for Ethereum. Aave is a protocol built on the Ethereum blockchain, where smart contracts run and execute. The native tokens for dApps, like the AAVE token and aTokens, use the Ethereum blockchain for transactions. More and more dApps are being built and used, adding to an optimistic future for Ethereum. DApps are one of the best examples of both the value of Ethereum and how it is unique from Bitcoin.

Sources

[1] CoinGecko, from 10/02/2020 to 8/8/2021.

[2] Defi Pulse, 8/8/2021

[3] Borrow interest rates are taken from aave.com, as of 8/9/2021.

[4] Bloomberg, on 2/7/2021.

[5] DeFi Pulse, on 8/9/2021.

[6] Coinbase, on 8/3/2021.

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