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Date: March 14, 2023
Topic: Digital Assets

GLOBAL X ETFs RESEARCH

Aave: The Basics

What separates Aave from traditional lending and borrowing is that all aspects of Aave's operations are dictated by code. In its most basic application, Aave offers a first principles approach to increasing the productivity of digital assets. Aave connects users seeking a source of passive income or yield from their digital asset holdings with those seeking accessible and affordable liquidity.

Smart contracts govern the platform's operations, including making funds readily available to borrow, determining interest rates, and maintaining and liquidating collateral when necessary. By removing intermediaries from the process, lending and borrowing can become highly cost-effective, credit risk-minimized, and globally accessible.

What to Know About Aave and How It Works

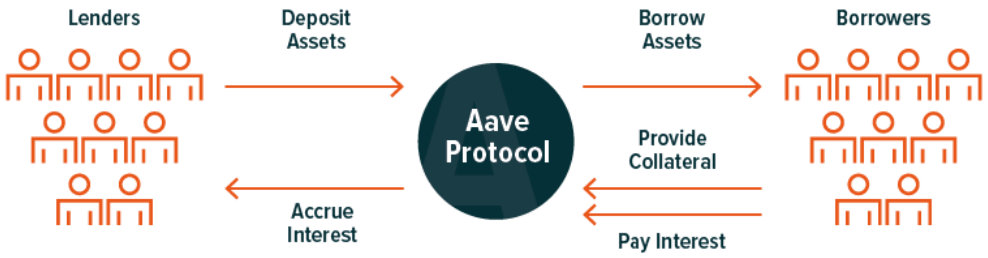
- Aave is a protocol that connects lenders and borrowers through smart contracts. It is active on seven networks and supports lending markets for more than 30 tokens.
- The AAVE token is a multifunctional asset that is used in protocol governance, as a liquidity reserve in the rare case of bad debt, and as a mechanism for revenue accrual. The token creates a strong alignment of interests between all stakeholders.
- Aave has a strong security record, a user-friendly interface, and a strong community. The protocol is constantly developing and plans to launch a stablecoin, "GHO."

Aave has Evolved to Become the Leading Lending & Borrowing DeFi Dapp

Aave dates to 2017, when it was called ETHLend and when DeFi was largely conceptual. Developed by Stani Kulechov and his team, ETHLend introduced basic rules-based lending and borrowing systems governed by smart contracts. The protocol connected users on the Ethereum network and allowed them to issue and take loans of ETH against one another. Its native asset, LEND, raised $16.2 million in an initial coin offering (ICO).[1]

ETHLend transitioned to Aave in January 2020, and users were able to swap LEND for the AAVE token on a 100:1 basis. The first version of the Aave protocol changed how users lend and borrow in DeFi, shifting from direct loans between lenders and borrowers to a pool-based strategy.[2] Aave's pools are smart contracts containing loaned assets which borrowers can draw from by putting up collateral and paying interest.

AAVE'S POOL-BASED DESIGN AGGREGATES MULTIPLE LENDERS AND BORROWERS
Source: Global X ETFs.

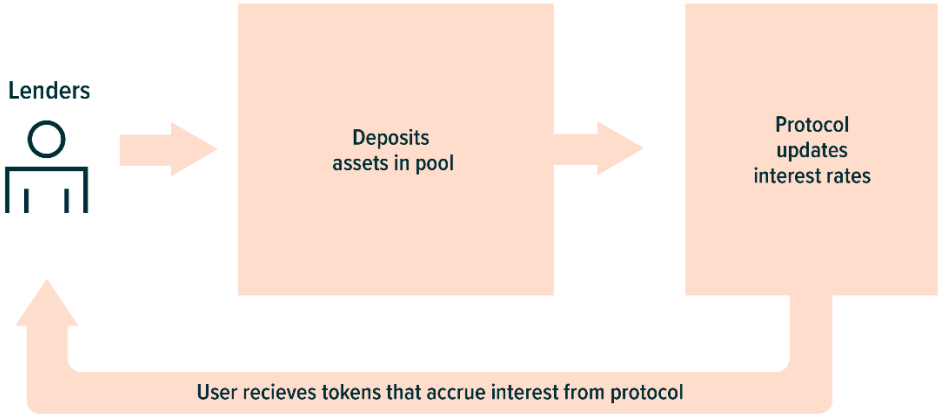


All Activities Within Aave Are Designed Around Capital Efficiency and Risk Management

Lending: aTokens in Exchange for Deposited Assets

Lending in Aave is as simple as depositing one of the 30+ supported assets into a liquidity pool. In exchange, depositors receive aTokens which represent a pro-rata share of the pool's deposited liquidity and which serve as a receipt for lenders' claims to their principal and any accrued interest. For example, a lender depositing ETH to a pool will receive aETH in return.[3] aTokens increase in value proportionately to the interest accrued by the pool. To redeem loaned assets and the accrued interest from the pool, lenders "burn" their aTokens and receive the corresponding amount of value in return. The process can be thought of in a similar manner to cashing a check at the bank. A check represents a claim to some amount of value. When a check is cashed, funds are transferred and the check no longer represents a valid claim.

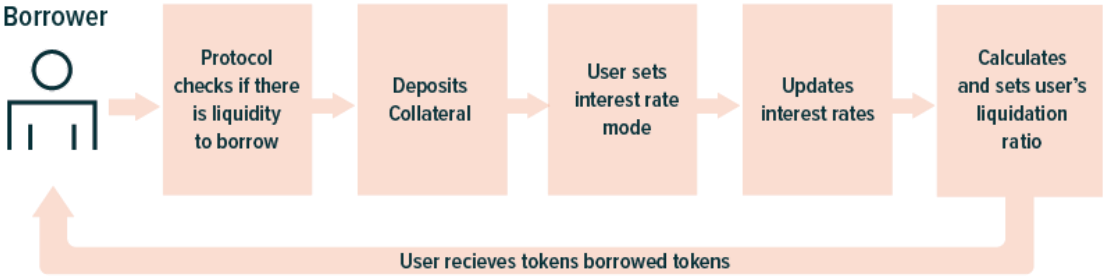
THE LENDING PROCESS IN AAVE
Source: Global X ETFs.



Overcollateralized Borrowing: The Most Common Form of Borrowing in Aave

Users can borrow funds from liquidity pools in exchange for an interest rate when they deposit collateral. The amount of collateral required is pool-dependent, but it must always exceed the value of the assets borrowed. Only specific low-risk digital assets such as stablecoins, BTC, and ETH are accepted as collateral. Aave offers maximum flexibility for loan repayment, allowing users to fully or partially repay loans at any time.

THE BORROWING PROCESS IN AAVE
Source: Global X ETFs.



In traditional lending and borrowing, an inherent risk is that borrowers may not be able to pay back their loans, leading to bad debt. While credit risk still exists in Aave, bad debt is managed by the platform's proprietary algorithm which liquidates collateral at pre-defined debt-to-collateral ratios.[4]

Interest: Specific to Each Asset Pool, Set Algorithmically

Interest rates are specific to each liquidity pool and are dependent on the amount of funds available at a given time. The algorithm governing interest rates sets low rates when a pool's liquidity reserves are plentiful in order to encourage borrowing activity. Conversely, interest rates are raised when a pool's reserves fall.

Lenders accrue the majority of the interest paid by borrowers. The remaining interest earned is used to secure the protocol. In 2022, lenders accrued $169m in fees or 89% of the total interest, while users securing the protocol received $21m, the remaining 11%.[5]

Flash Loans: Borrowing Without Pledging Collateral

Flash loans allow any user to access large uncollateralized loans, but the borrowed assets must be returned plus a fee within a single transaction. The fee is 0.09% of the flash loan volume, which is a source of revenue for the Aave protocol.[6]

To execute a flash loan, a user requests the Aave protocol to transfer assets from a pool, or from multiple pools to a smart contract. The smart contract is usually purpose-built to carry out a specific task, such as a pure arbitrage strategy. After the specific transaction is executed, the smart contract returns the principal to the pool.

Once received, Aave audits the deposit to ensure the principal and loan fee have been repaid in full. Because this process happens within a single transaction, Aave is able to reverse the entirety of the transaction before any data is settled on the blockchain should any shortfall materialize.

Flash loans are complex and require technical knowledge and programming proficiency. However, they are a unique and powerful tool that level the financial playing field by enabling skilled users to profit from opportunities that are typically reserved for large financial institutions.

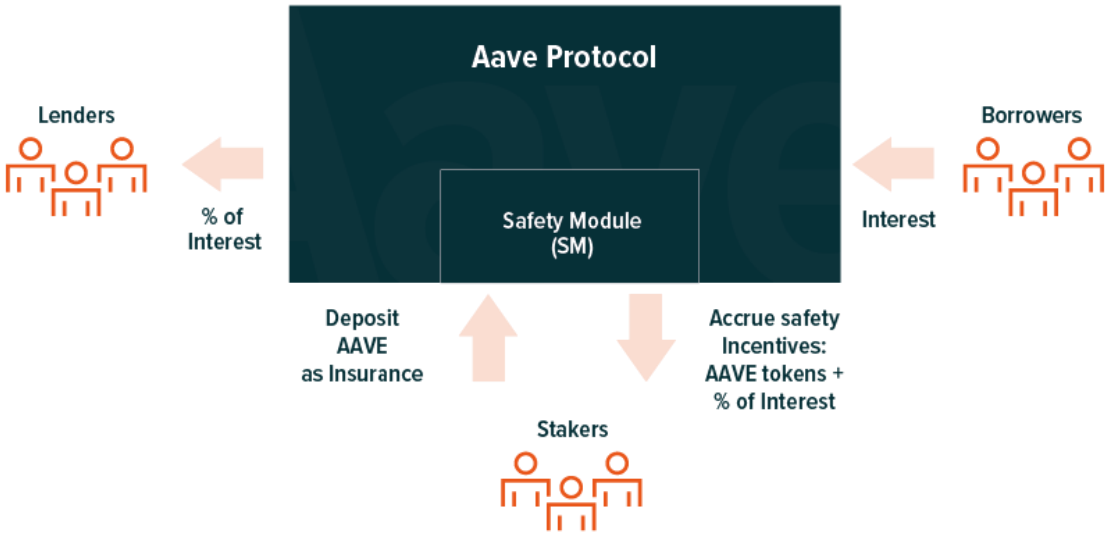
The AAVE Token Is a Multifunctional Asset with Cashflows

Security: The Safety Module Protects Aave's Lenders

The AAVE token is a critical component of the protocol's built-in insurance mechanism called the Safety Module (SM).[7] The SM is a smart contract containing AAVE tokens that are staked by users in exchange for AAVE-denominated rewards. This reserve of tokens is used primarily as a liquidity backstop for loan pools in the rare occurrence of bad debt. While Aave's liquidation algorithm is highly effective at

reducing bad debt, such scenarios may arise from thin liquidity for a particular token used as collateral, for example. Thin liquidity can lead to significant price slippage during the auto-liquidation process and can result in fewer funds returned to the pool than borrowed. In these scenarios, the SM can sell a portion of the AAVE tokens held in its smart contract on the open market in order to make the pool whole.

THE SIMPLIFIED MECHANICS OF THE AAVE SAFETY MODULE
Source: Global X ETFs.



Revenue Accrual: Positive Feedback Loop Through Safety Module

Users are incentivized to stake AAVE in the Safety Module. The rewards, called Safety Incentives, consist of AAVE tokens as well as the portion of accrued yield and fees not distributed to lenders. The clever design of the SM creates a positive feedback loop:

- Users are incentivized to stake AAVE in the SM to accrue staking rewards and fees.
- More AAVE staked in the SM offers greater insurance against bad debt, decreasing the risk of lending.
- Decreased credit risk incentivizes lending and increases available liquidity.
- Greater liquidity decreases borrowing costs, which can incentivize borrowing activity.
- Greater borrowing activity generates more protocol fees for the SM. This can provide a powerful incentive to stake AAVE in the SM and increase demand for the AAVE token.

Governance: Protocol Evolves Based on Input From the Decentralized Community

Aave's on-chain governance system allows token holders and stakers to participate in the platform's decision-making. Governance voting occurs at both the protocol and pool level, as every pool has independent parameters. AAVE holders can vote on:

- New pools and assets: The community determines what new asset pools the protocol may support, what assets can be used as collateral, and whether to pause any existing pools.

- Altering pool parameters: The community can determine risk parameters including the percentage of deposited collateral a user can borrow and the debt-to-collateral ratio above which a position is liquidated.
- Platform fees: Governance voting can be used to change how protocol fees are distributed.
- Platform upgrades: Aave's governance system can also be used to vote on upgrades to the platform, such as the addition of new features or improvements to existing ones.

Protocol Developments Could Drive Value to the AAVE Token

Aave's focus on security, transparency, and ease of use has helped it attract a large and growing user base. The protocol's upgrades demonstrate a commitment to continuous improvement and innovation. In January 2023, Aave governance unanimously approved the V3 version of the protocol to go live on Ethereum. V3 unlocks new technical features and benefits including capital efficiency, collateral options, and gas optimization improvements.[8]

In July 2022, Aave users also approved a proposal to launch GHO, a U.S. dollar-pegged stablecoin. Users will be able to mint the stablecoin by depositing an excess amount of accepted cryptocurrencies into a smart contract in a process similar to an overcollateralized loan. With GHO's potential to attract more liquidity providers to the protocol, the AAVE token could benefit from increased adoption and protocol fees.

Footnotes

1. Aavesome. (2017, November 30). ETHLend token sale event successfully Closes With $16.2 million usd raised [Aave Blog]. Accessed on January 31, 2023.
2. Aave. (2020, January). Aave Protocol Whitepaper V1.0. GitHub. Accessed on January 31, 2023.
3. Aave Docs. (n.d.) Supplying & Earning. Accessed on January 31, 2023.
4. Aave Docs. (n.d.) Risk Parameters. Accessed on January 31, 2023.
5. Global X ETFs with information derived from Token Terminal. (n.d.) Data from January 1, 2022 to December 31, 2022. Accessed on January 31, 2023.
6. Aave Docs. (n.d.) Developers. Flash Loans. Accessed on January 31, 2023.
7. Aave Docs. (n.d.) Safety Module. Accessed on January 31, 2023.
8. Aave. [@AaveAave]. (2023, January 27). Aave Protocol V3 is now live on the Ethereum market [Image attached] [Tweet]. Twitter.

Glossary

Governance: The process by which decisions are made about the development, operation, and maintenance of the application. Some Dapps may have a more centralized governance structure, with a single team or organization making decisions about the direction of the Dapp. Others may have a decentralized governance structure, with decisions being made through voting or by using a decentralized decision-making process.

Smart contracts: Smart contracts are programs that automate the execution of an agreement so that all participants can be immediately sure of the outcome without any intermediary's involvement or time delay. Smart contracts remove trust concerns in transactions, without the need for third parties. Data feeds, conditions, and rules embedded in the contract trigger a pre-defined outcome executing the agreed-upon terms.

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