Ajna ELI5

The Ajna Protocol is decentralized software that facilitates peer-to-pool secured loans on Ethereum and other compatible networks. Ajna empowers users by allowing anyone to create a lending pool for almost any pair of assets including NFTs.

What problems does Ajna solve?

- Users are at the mercy of governance decisions as current protocols manually adjust interest rates, collateralization requirements, and other parameters.
    - Parameters can be manipulated by different parties with conflicting intentions.
    - Interest rates may be suboptimal because they are not decided automatically by market forces.
    - Teams waste valuable resources to determine parameter changes.
    - Governance can be attacked, harming users for the benefit of a malicious party.
- Competing protocols expose themselves and their users to the risk of price feed manipulation. A few examples:
    - Mango manipulated.
    - Aave manipulated.
    - Chainlink managed by 4 of 9 multisig.
- Competing protocols like Maker, Aave, and Compound must approve collaterals that can be used, limiting options for their users.
    - Approving new assets is slow due to bureaucratic requirements.
    - Less-popular, but legitimately valuable assets, are unlikely to ever be approved.
- Users are left without options for less-popular NFTs due to current protocols which have NFTs as collateral using whitelists or verified collections.
- Lack of options for shorting markets.

How does Ajna solve these problems?

- No protocol-level governance. Once deployed, the protocol is immutable and parameter adjustments only occur automatically as a result of market forces.
    - Pool utilization determines interest rates.
    - Lenders determine collateralization ratios.
- No price feeds.
    - Lenders decide the prices at which they value collateral.
    - Liquidation bonds incentivize liquidators to do the work of oracles.
- Permissionless pool creation allows anyone to create pools with almost any collateral and quote-token.
    - Less popular assets, NFTs, and NFT collections can be used as collateral without the need for whitelists.
- Permissionless pool creation enables the creation of shorting markets for any ERC-20.
    - No NFT shorting markets since denominating interest in an NFT is impossible.

Use Cases

Below is a non-exhaustive list of interesting use cases.

Stablecoin/Stablecoin

Ajna enables the creation of like-asset money markets. For example, stablecoin collateral and stablecoin quote tokens can be used, such as USDC as collateral and USDT as quote token. The lowest collateralization ratio is only possible with Ajna because this parameter is set by users rather than by governance.

Leverage

Ajna offers borrowers the ability to access leverage, which involves using borrowed funds to increase their trading position beyond what would be possible with their cash balance alone. While existing DeFi protocols work well for large and liquid tokens, they often have high minimum collateralization ratios that limit the maximum amount of leverage available. Ajna's unique feature of allowing lenders to choose their own collateralization ratios enables borrowers to open positions that may not be feasible with current protocols. Where current protocols reject lower tier tokens, Ajna creates a possibility for these assets to be utilized for leverage.

NFT borrowing

Another use case is NFT borrowing. In the current market, only the top 20 collections are serviced, but Ajna has no such limitation. It can be used by current NFT owners to get loans instead of selling their assets. This is especially useful for newer projects that don’t want to deal with getting their NFTs whitelisted elsewhere.

Shorting Markets

Lastly, Ajna can facilitate shorting markets. By designating an “XYZ” token as the quote token and a stablecoin as the collateral token, a borrowing market is created where “XYZ” tokens can be borrowed and shorted, allowing for speculation on the “XYZ” token's declining price. Such facilities are essential for market makers to develop efficient sell-side liquidity. What makes Ajna distinct among current DeFi protocols is the variety of possible shorting markets it can offer.

How it Works

Borrow

In Ajna, loans are unlimited duration with automated variable interest rates and can be secured with nearly any tokenized collateral so long as there is a willing lender.

Borrowers take out loans by pledging collateral and withdrawing quote tokens. If they use an NFT as collateral, they must pledge the entire NFT. The borrower may add or withdraw collateral at any time, unless it would leave their loan insufficiently collateralized.

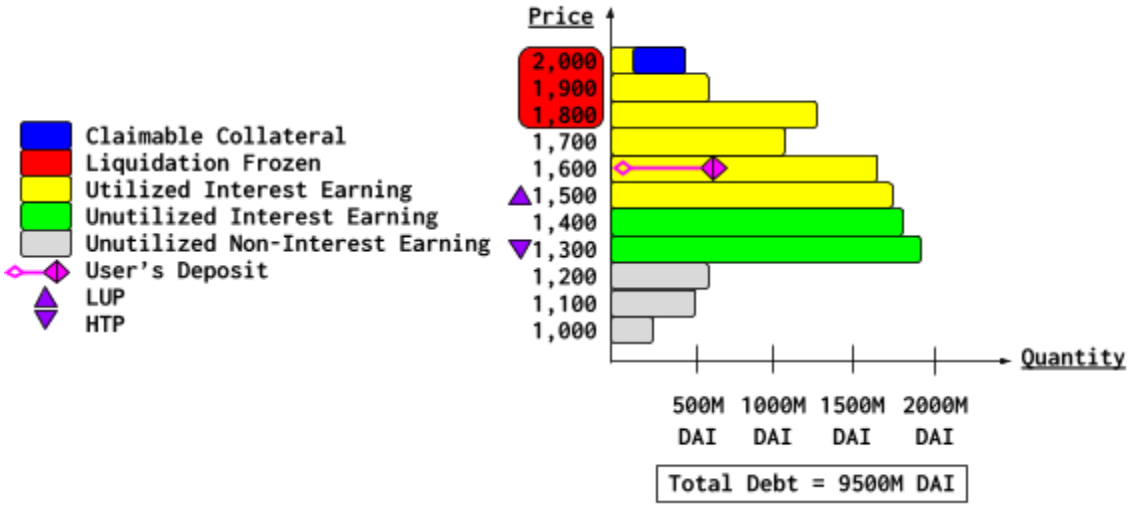
Loans have a minimum borrow size, an origination fee, and a liquidation penalty. The minimum borrow size is 10% of the pool's average loan's debt. The origination fee is the greater of 0.05% or one week of interest, and applies to all debt. The liquidation penalty is applied when collateral is sold, depending on the price at which it's sold and its relationship to the loan's liquidation price, also known as the neutral price. Borrowers cannot rescue their loans once they've been sent to liquidation.

Lend

In Ajna, lenders choose what valuation they are willing to lend against by depositing quote tokens into specific prices. They are credited with Liquidity Provider Balance units(LPB) that can be minted as non-fungible tokens (NFTs) which represent a transferable version of their balance.

All deposits above the Lowest Utilized Price (LUP) or Threshold Price (TP) of the least collateralized loan, known as the Highest Threshold Price(HTP), earn interest at the same rate, while deposits below earn no interest. Each loan's TP is set by the borrower and is the debt divided by the collateral. A pool's LUP is defined as the lowest collateral price against which someone is actively borrowing.

Lenders cannot withdraw their deposit in two cases, being limited by a third. The first, if it would cause an otherwise safe position to be liquidated. The second, if there is an active liquidation and their deposit is temporarily frozen. The third constraint is the utilization of the pool; lenders can only withdraw what's present as unutilized deposits.



visualization of a pool

Liquidations

Ajna's key innovation is that it functions without price feeds. Naturally, this leaves people wondering how liquidations work.

Ajna requires a bond to be posted in order to trigger a liquidation. The purpose of the bond is to prevent borrowers from being unfairly liquidated. The Neutral Price (NP) of a loan is set at origination and acts as the liquidation price. If the auction sells the collateral for more than the position's liquidation price, some or all of the bond is lost. If the auction sells the loan for less than that liquidation price, the bond is returned plus a reward. In practice, a loan may be profitably liquidated when the market price of the collateral crosses below the liquidation price.

Once a loan goes to liquidation it cannot be saved. If a loan was sent to liquidation even though the collateral value was above the NP at the time, the liquidator will lose a substantial amount of money on the bond.

Interest Rates

In Ajna, interest rates are determined by pool utilization. If there is a surplus of lenders, rates are lowered, and if there is a shortage of lenders, rates are increased. Rates can change once every 12 hours, at 10% of the existing rate in either direction.

Reserve Auctions

Ajna pools earn a portion of all interest revenue. The funds accumulate in pool reserves, denominated in pool quote tokens. Periodically, a portion of the reserves are sold for AJNA tokens through a dutch auction. The protocol permanently burns the proceeds, reducing the overall AJNA token supply over time.

Grants

Ajna is designed with a built-in grants program to give professionals the ability to raise funds for Ajna-related work projects that increase the protocol's probability of success. Grants are approved through voting with AJNA tokens.

See the whitepaper for more specifics.

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