Hi Aave Community,

I'm Brian, a long-time contributor to Gamma Strategies, which is an active manager on Uniswap v3, and I am excited to discuss an ARC on potentially listing Gamma Strategies' GHO-USDC Uniswap v3 LP position as collateral in an isolated lending market to mint GHO on Aave v3 when GHO becomes available to the public.

Sentence Rational

This is an ARC regarding onboarding Gamma Strategies' GHO-USDC LP position on Uniswap v3 as collateral, utilizing Gamma's infrastructure to deepen liquidity and proliferate the distribution of GHO in the ecosystem.

References

Link to:

- Project: https://www.gamma.xyz/
- Document Portal: Gamma - Gamma
- Source code: hypervisor/contracts at master · GammaStrategies/hypervisor · GitHub
- Ethereum addresses contracts: Supported Pairs - Gamma
- ChainLink Oracle: N/A
- Audits both procedural and smart contract focused:
- ConsenSys Diligence: hypervisor/ConsenSys-Diligence-Audit-28-03-22.pdf at master · GammaStrategies/hypervisor · GitHub
- Arbitrary Execution: hypervisor/AE_Gamma_audit_09_03_22.pdf at master · GammaStrategies/hypervisor · GitHub
- ConsenSys Diligence: hypervisor/ConsenSys-Diligence-Audit-28-03-22.pdf at master · GammaStrategies/hypervisor · GitHub
- Arbitrary Execution: hypervisor/AE_Gamma_audit_09_03_22.pdf at master · GammaStrategies/hypervisor · GitHub
- Communities: Gamma

Paragraph Summary

Description:

Onboard Gamma's GHO-USDC LP position on Uniswap v3 as collateral for an isolated lending market. This market will allow users to deposit GHO-USDC ERC-20 LP tokens as collateral and borrow only newly minted GHO in an isolated lending market.

The liquidity ranges for this pair will be concentrated in a fixed range of 0.998 to 1.002.

Motivation

The ability to recursively provide GHO-USDC LP and borrow more GHO will allow for deep liquidity without any liquidity mining incentives. Users can gain leveraged exposure to the GHO-USDC LP pair with minimal impermanent loss. The increased liquidity in GHO-USDC will proliferate the distribution of GHO in the ecosystem by leveraging the deep liquidity in other pairs on Uniswap when using the Uniswap autorouter.

An isolated lending market that only allows borrowing GHO against GHO-USDC will prevent material manipulation opportunities.

Specifications

1. Who is the author?

The author is a core contributor to Gamma Strategies, which is the protocol that would be responsible for creating & managing the ERC-20 wrapper for the GHO-USDC LP token

1. Provide a brief high-level overview of the project and the token

Gamma Strategies is an active liquidity manager on Uniswap v3 and creates an ERC-20 wrapper around its managed positions by interacting directly with the Uniswap v3 core contracts.

Each pair managed by Gamma consists of two overlapping Uniswap v3 positions, which we call a base position and a limit position. Essentially, the base position will be a concentrated liquidity position between 0.998 - 1.002. The base position will

mandate a certain ratio of GHO and USDC be provided. The excess assets (whether in USDC or GHO) will be placed in an overlapping limit position consisting solely of one asset.

The benefits of having an overlapping limit position is that it allows for cost savings in that no swaps are performed in order to place assets in the exact ratio in the base position. Therefore, the costs of swap fees and price impact is saved.

The risks associated with a Uniswap v3 position is that when the price of USDC / GHO is outside of the range of provided liquidity, the position will be entirely in USDC or entirely in GHO. However, given that other liquidity venues like Curve, Balancer, Velodrome, etc. all have the capacity to provide liquidity beyond this range, it would behoove the Aave DAO to take advantage of the customization features of Uniswap v3 to place all liquidity directly between 0.998 to 1.002. This will allow for more “stickiness” to the price of 1 and given that Curve will most certainly provide for liquidity when the price goes off peg, it would even help to facilitate the arbitrage back to peg if there were less off peg liquidity and more on peg liquidity on Uniswap.

Fees earned from the GHO/USDC Uniswap v3 position will be automatically reinvested back into the position on a regular basis once enough fees have been accumulated. Typically, we take a 10% service fee on the LP fees earned from the position; however, we would be willing to give a 3-month no fee, trial period as a proof-of-concept.

The Gamma GHO/USDC LP token is ERC-20. Users deposit the base assets, GHO & USDC in the ratio of the assets in position and get minted ERC-20 LP tokens in return. This allows our LP tokens to be composable with Aave and other DeFi platforms for collateralization.

1. Explain positioning of token in the AAVE ecosystem. Why would it be a good borrow or collateral asset?

2. The ability to recursively provide GHO-USDC LP and borrow more GHO will allow for deep liquidity without any liquidity mining incentives. Users can gain leveraged exposure to the GHO-USDC LP pair with minimal impermanent loss.

3. The peg to 1:1 with USDC can be made stickier with more liquidity being directed exactly to 0.998 - 1.002. By not providing liquidity outside of this range, we can ensure that the majority of all GHO-USDC liquidity on Uniswap will always be on peg, and if GHO were to go off peg, we can rely on other DEXs to provide off peg liquidity that would arbitrage the price back to 1:1.

4. The increased liquidity in GHO-USDC will proliferate the distribution of GHO in the ecosystem by leveraging the deep liquidity in other pairs on Uniswap when using the Uniswap autorouter (i.e. DAI to GHO trade route will go from DAI → USDC → GHO with very low price impact due to deep DAI-USDC liquidity at the 0.01% fee tier)

5. An isolated lending market that only allows borrowing GHO against GHO-USDC will prevent material manipulation opportunity

6. Both GHO and USDC would be hardcoded a value of 1

7. Both GHO and USDC would be hardcoded a value of 1

8. Provide a brief history of the project and the different components: DAO (is it live?), products (are they live?). How did it overcome some of the challenges it faced?

Gamma Strategies was launched in March 2021 on Ethereum, focusing on active liquidity management strategies on Uniswap v3. Today, it has expanded to managing over 80 pairs across Ethereum, Polygon, Optimism, Arbitrum, and Celo.

One of the major challenges faced by many active liquidity management platforms on Uniswap v3 are strategy challenges with managing impermanent loss and configuring deposit configurations that do not allow for an exploit via oracle manipulation.

With regards to strategy, we’re continually focusing on managing pairs in a way that mitigate impermanent loss through dynamic range management. For this GHO-USDC pair in particular, this risk is highly mitigated because it’s a tightly correlated asset pair that will more often than not be trading around the price of 1:1, so no material impermanent loss is expected.

With regards to deposit configurations that are immune from Uniswap oracle manipulation, we mandated deposit ratios as determined by the liquidity position. For example, when the price is trading exactly at 1, we’ll have a ratio of assets that is approximately 50/50 when the range is 0.998 to 1.002. However, when the price hits the lower or upper limit of the range, we’ll be entirely in one asset. By mandating the ratio of the liquidity position, we prevent the exploit opportunity where a malicious actor can use a flash loan to manipulate the price of one asset and deposit that asset to mint himself excess LP tokens. ConsenSys Diligence embarked on a 4-week audit of our smart contracts and agreed that mandating the ratio of assets within the Uniswap position itself and implementing a TWAP check against deposits would highly mitigate any material oracle exploits.

1. How is the asset currently used?

The asset would be used as a receipt token for providing liquidity on Uniswap v3. It gives the holders financial rights to his or

her portion of the underlying assets and fees returned from providing liquidity.

The GHO-USDC LP tokens are permissionlessly redeemable for the underlying assets + share of trading fees when redeemed.

1. Emission schedule

There is no emissions schedule for this asset. It will only be minted upon depositing assets into the Gamma liquidity position in a proportion to the other assets within the managed pool.

1. Token (& Protocol) permissions (minting) and upgradability. Is there a multisig? What can it do? Who are the signers?

The minting of the tokens can only be performed via smart contract function when assets are deposited into the managed position and only to the depositor. The contract will be non-upgradeable with minimal admin control. The rebalances will be deterministic and hardcoded only to deploy assets into the range of 0.998 and 1.002. The only admin control would be the timing of when to re-invest fees and rebalance the positions to prevent any frontrunning or MEV opportunities. Such rebalances and re-investments will take place using OpenZeppelin defender to execute compounds and rebalances unpredictably.

1. Market data (Market Cap, 24h Volume, Volatility, Exchanges, Maturity)

Not available until the trading of GHO

1. Social channels data (Size of communities, activity on Github)

Discord: 4,774 Members Gamma

Twitter: 15.9K Followers https://twitter.com/GammaStrategies

1. Contracts date of deployments, number of transactions, number of holders for tokens

TBD upon launch of GHO because this will be specifically for the LP token for GHO-USDC