title: [ARFC] wETH & wstETH Interest Rate Curve - Ethereum Network

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Simple Summary

@Llamaxyz presents a proposal to amend wETH and wstETH interest rate parameters on the v2 and v3 deployments.

Abstract

After discussions with @bgdlabs, @MarcZeller, and @ChaosLabs, this proposal presents a revised wETH Interest Rate curve for v2 and v3, plus the initial conservative wstETH Interest Rate parameters for v3.

The recently updated wETH parameters on v2 have led to improved revenue generation but also a gradual decline in TVL and daily revenue over time. This proposal intends to implement the learnings from the v2 Ethereum deployment into the initial v3 Interest Rate curves whilst also updating the v2 deployment wETH interest rate to be the same across both deployments.

Motivation

wETH Reserve Aave v2

Since AIP 131 was implemented, the amount of stETH deposited as collateral to borrow wETH has been fairly consistent. However, the amount of wETH borrowed by users who deposited stETH as collateral has reduced from 515.21K to 413.74K between 18th December 2022 and 15th January 2023. The tapering of borrowing demand is reflected in the wETH nominated revenue.

The market is indicating that there is insufficient demand for borrowing wETH with the current Slope1 parameters for wETH. Three possible reasons are shown below:

- Structured products charge a fee
- Additional smart contract risk
- Elevated exposure to DEX liquidity

Our analysis indicates the Slope1, 5.75%, is most likely the primary causes of the reduced wETH demand. Lowering the Slope1 parameter will enable users to achieve a higher return from entering the recursive loop strategy. The chart below shows how users that deposit stETH and borrow wETH have behaved to date. The date highlighted below is the date that AIP131 was executed.

We propose reducing both the Slope1 parameters on the v2 market to 3.8% and introduce a Base of 1%. The graphic below shows the current and proposed wETH interest rate curves. Introducing a Base reduces the gradient between 0% < Utilization < Uoptimal. However, borrowing wETH becomes slightly more expensive at lower utilization.

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image

755×464 18.4 KB

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The chart below shows the relative change in borrowing costs for users, comparing the current versus the proposed interest rate curve. When utilization is less than 41% borrowing cost are higher, ranging 0 to 0.98%, and when utilization is greater than 41% borrowing costs are lower, ranging 0 to 0.95%. Current utilization is 46% on the v2 deployment which means the borrowing costs would be reduced.

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Screenshot 2023-01-21 at 10.46.34

1200×740 28.6 KB

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wstETH Reserve Aave v3

Due to the wstETH and wETH recursive strategy, we propose deploying the wstETH Reserve with a fairly flat Interest Rate curve.

- Base: 0.25%
- Slope1: 4.5%
- Slope2: 80%
- Optimal: 45%
- Reserve Factor (RF): 15%

Having a Base fee of 0.25% leads to a low pool utilization, generating a higher deposit rate than it otherwise would. This then provides additional yield for the leverage recursive strategy which will hopefully lead to greater wETH utilization.

Due to the recursive strategy, Slope1 and Slope2 parameters for wstETH shall remain lower than the majority of other assets on Aave. A material yield on wstETH deposits will provide a meaningful source of yield for the recursive strategy. Lower borrowing costs for wstETH leads to greater utilization of the wstETH and wETH liquidity, whilst the wETH interest rate largely determines the profitability of the recursive strategy. A notable non-incentivised deposit yield on wstETH is desirable for maximizing revenue from the wETH and wstETH Reserve.

A lower Slope1 parameter of 4.5% encourages users to borrow wstETH without generating a high deposit wstETH yield. Any lower and we may see a lot of wstETH borrowing due to the various incentive programs for wstETH across DeFi. ie: 6% on the wETH/wstETH Balancer v2 pool, noting user receives at best 50% of the wstETH yield. With Slope1 set at 4.5%, we are expecting users will only borrow wstETH if there is a reasonable return for the added smart contract risk.

A RF of 15% further reduces the yield to wstETH deposits. This acts to reduce wstETH deposit rates, however still passes on a meaningful amount of yield to depositors. Setting Slope2 at 80% is intended to not cause any rapid spikes in wstETH deposit rates. Fine tuning the RF, Slope1, and Slope2 parameters for revenue and risk will be an ongoing exercise.

Post v3 deployment, these variables can be changed. We will continue to monitor the borrowing demand for wstETH and wstETH deposit rate as the BorrowCap is increased over time and how it affects the recursive wstETH/wETH strategy. The Uoptimal, set at 45%, will likely need to be increased in time when the BorrowingCap is higher.

The initial 3k wstETH BorrowCap is a key variable for Aave to monitor. If both the BorrowCap and SupplyCap were reached, the utilization of the Reserve would be 1.5% and the yield to depositors would be 0.005%. If the recursive strategy utilizes 6 loops, then depositing wstETH would contribute an additional 0.03% to the strategy. The user would still have wETH borrow costs to consider. The wstETH deposit rate acts to counter the wETH borrowing rate within the recursive strategy.

The table below shows the wstETH deposit yield for the following utilization assumptions:

- A portion of the SupplyCap (200K)
- 100% of the BorrowCap (3k)

SupplyCap Utilization

Deposit Yield (%)

6x Deposit Yield (%)

25%

0.043

0.26

50%

0.014

0.08

75%

0.008

0.05

100%

0.005

0.03

The below chart shows the proposed wstETH interest rate.

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Screenshot 2023-01-21 at 12.16.42

1512×932 47.9 KB

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wETH Reserve Aave v3

As the initial 3k wstETH BorrowingCap being heavily restrictive, there is less immediate need to amend the wETH interest rate on v3 relative to v2. As the wstETH BorrowingCap and Uoptimal increases, the wETH interest rate's Slope1 parameter may need to be increased.

With a desire to migrate liquidity from v2 to v3, we propose implementing the same Interest Rate curve on v3 as is proposed above for v2. Whilst the wstETH deposit rate is not yet a meaningful yield source for the recursive strategy, due to the restrictive BorrowCap, there is no immediate need to deploy v3 with a more conservative interest rate than v2.

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Screenshot 2023-01-21 at 12.12.42

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Specification

The below table shows the current and proposed wETH interest rate curve for the Ethereum v2 and v3 deployment.

Parameter

Current (%)

Proposed (%)

Uoptimal

80.00

80.00

Base

0.00

1.00

Slope1

5.75

3.80

Slope2

80.00

80.00

Reserve Factor

15.00

15.00

The below table shows the proposed wstETH interest rate curve for the Ethereum v3 deployment.

Parameter

Current (%)

Uoptimal

45.00

Base

0.25

Slope1

4.50

Slope2

80.00

Reserve Factor

15.00

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