Note: This post is an abridged version of ourfull Uniswap protocol fee report, which contains more details on the background, methodology, results, and conclusions of this analysis.

Background

A protocol fee would redirect a fraction of the fees from liquidity providers (LPs) to Uniswap, generating revenue for the Uniswap DAO. However, this would reduce LP yield, leading to decreased liquidity, higher slippage for traders, and a potential loss of trading volume to competitors.

The Uniswap Foundation has engaged Gauntlet to model the effects of a protocol-level fee on revenue, liquidity, and trading volume for certain deployments of the Uniswap protocol. This report investigates the effects on Uniswap v3 specifically, and may serve as a reference for delegates when they consider potential future votes to implement a protocol fee.

Methodology

Using a data set comprised of all swap transactions on the Ethereum mainnet deployments of Uniswap, Curve, Balancer, and Sushi between August 2023 and January 2024, Gauntlet has built a simulation engine that can predict how a protocol fee would impact the liquidity and slippage of Uniswap pools. Based on those changes, the engine predicts how swap transactions would be impacted for two different types of orderflow: core and MEV. Core volume represents retail and institutional traders and is assumed to migrate to exchanges offering the lowest slippage. MEV volume primarily consists of toxic arbitrage trades, and is assumed to decrease in line with liquidity. The simulation also considers the potential exacerbation of the negative flywheel effect of reduced LP revenue from trading volume causing further reductions in liquidity.

Results

Using the above methodology, Gauntlet considered the impact on core volume, MEV volume, and protocol revenue across hypothetical protocol fees from 1% to 99% for pools that Uniswap Labs charges an interface fee (those that trade between stablecoins, ETH, and WBTC). While Uniswap V3 only supports protocol fees ranging from 10-25%, projections from outside of that range may be useful for designing future versions of the Uniswap protocol. The revenues are based on Uniswap's usage from August 2023 to October 2024 and should be seen as ballpark numbers. Actual revenues could be substantially higher or lower depending on macro factors such as overall DEX trading volumes and crypto market prices.

As observed, the impact on volume, TVL, and revenue depends significantly on the fee applied. In the most conservative case allowed by the v3 fee contracts, Gauntlet predicts that a flat 10% protocol fee would lead to a loss of 4.25-14.78% in liquidity, a 4.25-14.78% reduction in MEV volume, and a 0.22-1.44% decrease in core trading volume when factoring in the flywheel effect. Combining the loss in MEV volume and Core volume would result in a total volume loss of 1.93-10.87% for Uniswap with 93-96% of that lost volume coming from a reduction in toxic MEV volume.

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mev_loss

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From a revenue perspective, if this 10% fee is only applied to the pools for which Uniswap Labs charges an interface fee, Uniswap would earn $10.3-10.8M annually based on market conditions over the time period analyzed or $40m annually based on the peak market volume observed in December 2021.

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It’s important to note that the impact on revenue and trading volume varies across different pools, and further work will be required to dynamically set fees to maximize efficiency.

Recommendations

If the Uniswap governance community were to consider implementing protocol fees, Gauntlet recommends an incremental approach to rolling them out. This should begin with a low fee on select pools, followed by an extension to additional pools and a gradual increase in the fee on existing ones, in order to validate the projections presented in our report. Under current market conditions and during an upswing, a conservative fee on carefully selected pools would generate a significant amount of revenue with a limited impact on non-MEV volume.

The community choice of whether or not to institute a protocol fee comes down to whether or not the long-term revenue gained outweighs the losses in volume and liquidity.

Our analysis shows that the losses to TVL and toxic MEV volume may be significant with even a conservative fee switch. Still, we expect the impact on core, non-MEV volume to be very minor under all but the most extreme fees. The only means to identify if a fee switch is an optimal strategy for the Uniswap DAO and protocol community is to perform calculated experiments with a live fee switch, which Gauntlet is keen to help craft.