Swap Fees Are For Losers: Introducing DeltaSwap, The First Feeless Spot DEX

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Introduction

Today, we will be introducing DeltaSwap, a commission free decentralized exchange for spot token trading. This is our contribution to the "End Game" for DeFi, the complete seperation of money and state. An escape from the most regressive tax in the world, inflation. Access to powerful economic opportunities regardless of background or location.

DeltaSwap is a significant step towards the "End Game" because it reduces protocol fees that act as a barrier to entry to retail participants. Amid soaring inflation in the United States, 69% of Americans in Urban Areas are [living paycheck to paycheck](#) in 2023. Argentina is experiencing [accelerating inflation](#) clocking 211% as of Dec'23. Individuals across the world are grappling with diminished spending power. To accelerate the adoption of crypto, fees need to be reduced for a large cohort of the population to adopt DeFi.

[Reduced fees](#), along with [lower latency](#), is a primary reason we are seeing growth in L2s ([Arbitrum](#), [Optimism](#)) and Alt L1s like Solana.

Regardless of macroeconomics conditions, reducing the cost to acquire cryptocurrencies should have a significant positive effect on adoption.

Fees tend to be competed to zero

Equities

Robinhood pioneered the first commission free stock trading platform when they launched in March of 2015. They achieved [20x growth in users](#) (0.5M to 10M) from 2015 to 2019 and still eclipse every other competitor in terms of user count. Robinhood has 20M+ users while the closest runner ups (Fidelity, E-Trade) have 4-6M.

The growth of Robinhood forced other retail brokers to adopt commission free trading including TD Ameritrade, Fidelity, E*Trade, and Interactive Brokers. In fact, they all adopted commission free trading within [the same week](#) in 2019. Once one broker gave in, other members of the [oligopoly](#) followed.

Commission free brokers slashed fees by relying on the business model of [Payment for Order Flow (PFOF)](#), which is where brokers earn revenue by routing trades to particular market makers. It is similar to [Maximal Extractable Value (MEV)](#) which is the additional revenue a block validator can earn by including, censoring or reordering transactions. The organizing of the transactions in blocks is done by peering into the mempool. It enables new type of value extraction like sandwiching, time bandit attacks and many more. The good side is that it does align prices across DEXs and ensures smooth liquidations. The bad side like PFOF is that retail gets worse execution.

Uniswap Fee Tiers

Although the the liquidity for the top ten pools in [Uniswap V3](#) (excluding stable to stable pairs) is greater for the 0.3% fee tier than the 0.05% fee tier (352.79M vs 276.62M respectively), significantly more volume flows to the lower fee pools — 2.56B for 0.05% and 337.07M for 0.3% pools.

Here is a [pie graph](#) of the fee tiers by volume over the last 7 days on Uniswap V3 courtesy of Gamma Strategies. You can see that the majority of volume flows to the lower tier pools despite differences in TVL

Why? Most retail level participants aren't trading in large enough size for slippage to become an issue. For retail, execution is impacted more by protocol fees than slippage.

Growth of L2s / Solana

Gas fees are also being competed to zero with the growth of rollups on Ethereum and monolithic L1s like Solana.

Here is a graph showing the growth of Ethereum L2s over the past year in TVL.

Here is a graph of the growth of Solana's TVL.

TVL is not the most comprehensive approach to demonstrate usage of a chain, transactions are of course another metric; however, naturally with lower fees users can transact more to TWAP, airdrop hunt, etc. Transaction volume can be higher with significantly less economic value so TVL, although flawed, is a more sybil resistant and consistent metric to leverage.

The Fed just announced a pivot in 2024 so the recent increase in TVL is primarily driven by the anticipation of lower interest rates. To understand real adoption of L2s / Alt L1s, we should look at relative growth compared to Ethereum. Ethereum saw 2.8% YoY TVL growth while Arbitrum and Solana have seen 230% and 713% YoY growth respectively. Rollups and Solana are growing fast due to the competitive fees.

The tradeoff for lower fees and latency is liveness, with both Solana and Arbitrum having multiple outages since inception. It appears this is a tradeoff many users are willing to take with Solana in particular seeing an increase in uptime.

Now, we have described the trend for fees to be competed to zero and why a feeless DEX can help increase adoption of cryptocurrency, let's explain how DeltaSwap can attract liquidity providers with no swap fees.

How are DeltaSwap LPs compensated if there are no swap fees?

Borrowing Liquidity

GammaSwap enables traders to borrow liquidity from AMMs to hedge LP exposure or speculate on volatility for any token

When a trader opens a borrow position, the GammaSwap smart contract burns the LP tokens from lenders and holds the reserve tokens in the smart contract. A borrower is shorting impermanent loss to profit off impermanent gain. Borrow positions can be used to hedge IL or to speculate on volatility similar to a perpetual option. Borrowing in GammaSwap is different from a money market where the collateral can be used in other platforms, it remains frozen in the smart contracts. The debt is also not based on the value of the token but rather the liquidity invariant of the CFMM pool.

A user must deposit tokens to over collateralize the loan in either token of the pool. Users can open positions in the form of a long, short or straddle which have different ratios of borrowed liquidity. Longs and shorts are weighted to the more volatile and stable token respectively. More here.

Since liquidations aren't based on price and loaned liquidity remains in the smart contracts, GammaSwap can offer higher LTVs than other lending platforms — up to 99%.

Borrowers pay Liquidity Providers

When traders borrow liquidity from CFMMs, they must pay origination fees which are dynamic based on utilization. Origination fees are dynamic and increase exponentially near 100% utilization of the pool. This ensures that at any point in time there is always liquidity in the CFMM for LPs to withdraw and for users to swap assets in the spot market. It also makes certain attacks to the protocol economically infeasible, such as forced liquidations.

Borrowers must also pay a borrow APR to maintain their position. The curve for the borrow rate is utilization based and similar to Aave, except it is more exponential.

Liquidity providers capture 90% of the borrow APR fees and the majority of the origination fees. In an efficient market, they should earn a competitive yield that scales better with their impermanent loss risk as they are paid by those longing volatility.

Volatility != Volume. Just take a look at the new pairs section on DEX screener, you can have high volatility with little to no volume. In GammaSwap, if there is more impermanent loss (volatility), there will be more demand to borrow.

Mitigating LVR & Hedging IL

Loss Versus Rebalancing (LVR) is a more comprehensive approach to measuring the cost of providing liquidity. The problem with Impermanent Loss, the more popular metric, is that it doesn't account for adverse selection and price trajectory. Adverse selection is when market makers (MMs) realize losses by providing liquidity to informed traders.

How does Impermanent Loss fail to take into account adverse selection cost?

Let's use a UniV2 WETH/USDC pool as an example. Over a one month period the price started at 2000 USDC and oscillated violently multiple times up to to 4000 and down to 500 USDC. If the LP removed the liquidity when the price of

$ETH returned to 2000, they would have experienced no losses according to the [Impermanent Loss calculation](#). In another scenario, if the price moved up a few times to 2200 and down to 1800 and finally returned to 2000 that would be viewed as an equivalent scenario in the Impermanent Loss definition.

In both scenarios, the losses to liquidity providers are the same but in the higher volatility scenario arbitrageurs made substantially more profit. Where did those profits come from? From LPs who are forced to fill stale quotes from informed flow — bots profiting off DEX latency.

A better way to measure the opportunity cost of providing liquidity is to compare an LP position to a constantly rebalancing portfolio instead of just holding. LVR measures the difference between the value of the portfolio from buying/selling ETH at each price swing compared to the LP position.

[Tim Roughgarden](#), the author of the LVR paper, has a comprehensive lecture on LVR [here](#). The concept of LVR is a bit academic so here is a more digestible way of understanding it: if the market is moving massively in either direction the opportunity cost of providing liquidity is higher because you could be potentially earning more trading altcoins or perps. Remember that IL is also an opportunity cost because it is comparing returns to holding spot.

GammaSwap helps mitigate LVR because borrowed volume should follow price trajectory. Liquidity providers earn fees proportional to the price path since they earn origination fees paid by borrowers and higher utilization reflected in an increasing borrow APR.

Additionally, DEX market makers can also open a straddle to hedge Impermanent Loss and reduce delta exposure. Here is [the hedging calculator](#) to calculate this for yourself.

DeltaSwap Tradeoffs

Capital Efficiency

DeltaSwap is a canonical UniswapV2 style CFMM using the x*y=k formula. Unlike Uniswap V2, there are no swap fees. There are additional taxes if a swap moves a significant amount of liquidity in the pool, to protect the protocol. Liquidity is not concentrated yet meaning that borrowing is less Capital Efficient. We will solve this in GammaSwap V2 which will create virtual liquidity similar to Uniswap V3 without ticks. All LP positions will be full range and fully composable. It will be a completely novel form of concentrated liquidity that has not existed before.

Right now borrow positions have an initial delta exposure of 3–5x a normal spot position. We think according to our models that we can safely get 10–30x initial delta exposure which would be competitive with other perpetual platforms in DeFi and CeFi. It's still not necessarily a perpetual product because the returns are convex and there is no delta risk for liquidations, however it can be used for similar hedging and speculation purposes.

Slippage/MEV

In periods of high volatility, it is possible that GammaSwap will have less liquidity than other AMMs since a large percentage will have been borrowed out. For large sized trades, this could result in larger slippage and consequently more Miner Extractable Value (MEV). MEV increases with slippage because it is easier to sandwich traders.

The simple solution which other Automated Market Makers (AMMs) utilize is a slippage parameter for the swap. GammaSwap has slippage parameters with a default rate of 0.5% for swaps and perpetual loans. The slippage parameters ensure that a transaction will succeed if and only if the minimum output in the receipt token is returned after the swap / deposit. Transactions can fail but it ensures that traders do not get sandwiched. It is the most proven way to avoid the negative effects of MEV.

Conclusion

In this article, we demonstrated how a feeless DEX can lead to greater adoption for cryptocurrencies and the trend for fees to be competed to zero.

We also explained how DeltaSwap can mitigate the effects of LVR and provide yield that scales better with Impermanent Loss risk.

Stay tuned for our re-deployment and launch of DeltaSwap on [X](#) and [Discord](#).