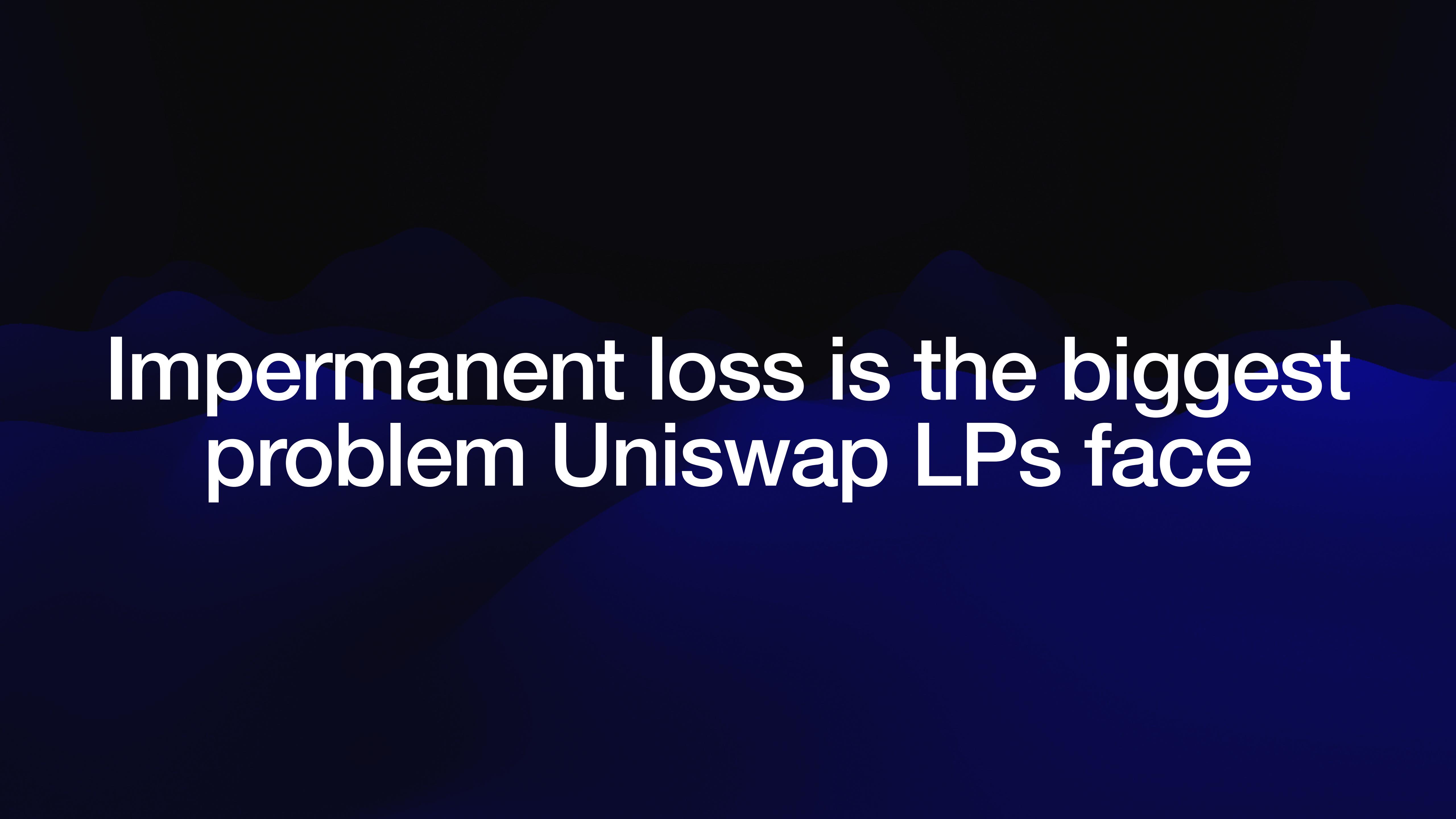




Solving* Uniswap impermanent loss with V4 hooks

The background features a dark blue gradient with three prominent, wavy horizontal lines that create a sense of depth and motion.

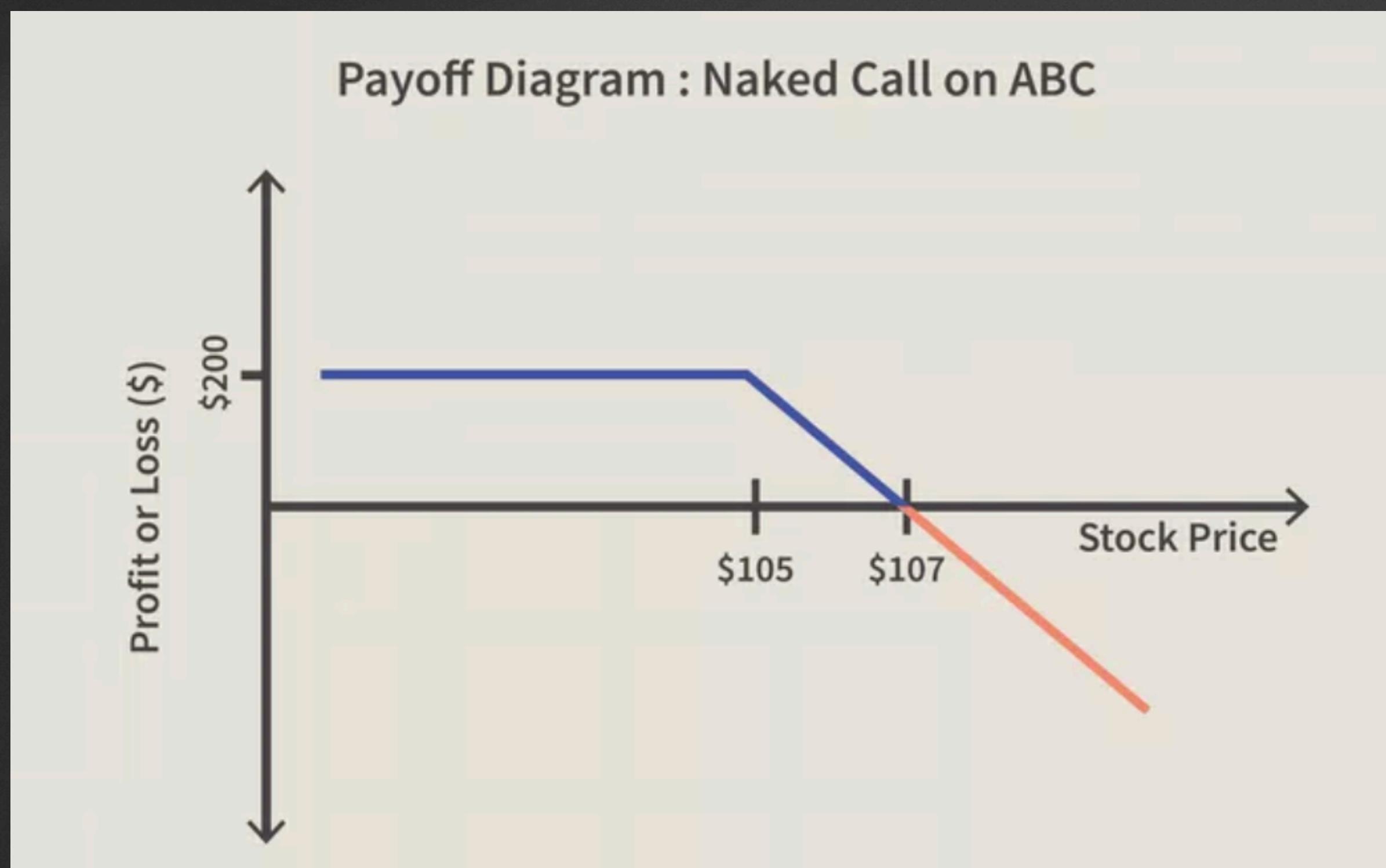
Impermanent loss is the biggest
problem Uniswap LPs face

Quick fax

- Providing liquidity is scary!
- Liquidity providers lose huge amounts of money due to IL
- V3 type AMMs compound this by making lazy LPing impossible for non-correlated pairs
- Over 50% of lazy LPs lose money!

LP position properties

- We are long volatility, short spread.
- The payoff is similar to selling a regular option.

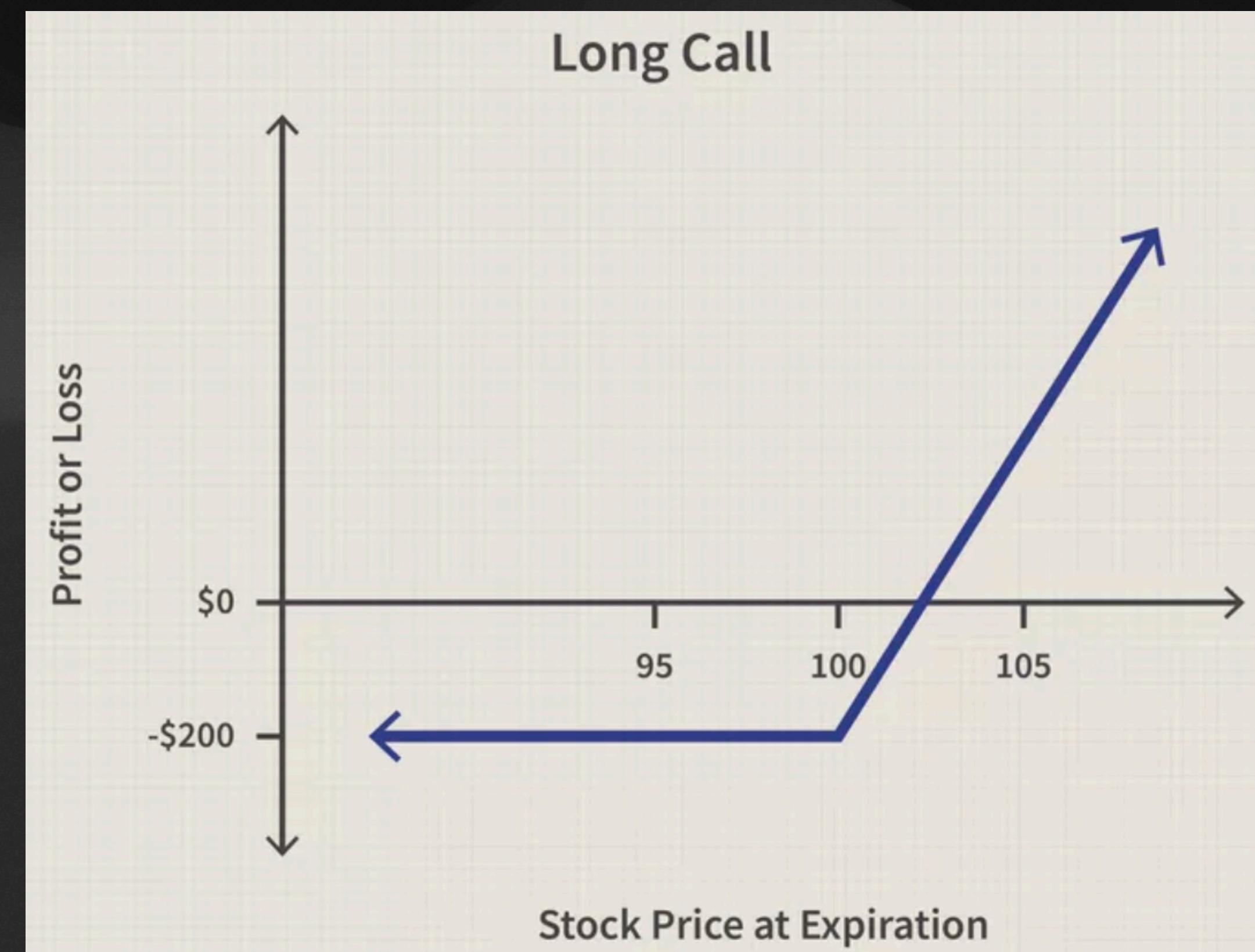


Wat do?

Hedge the spread!

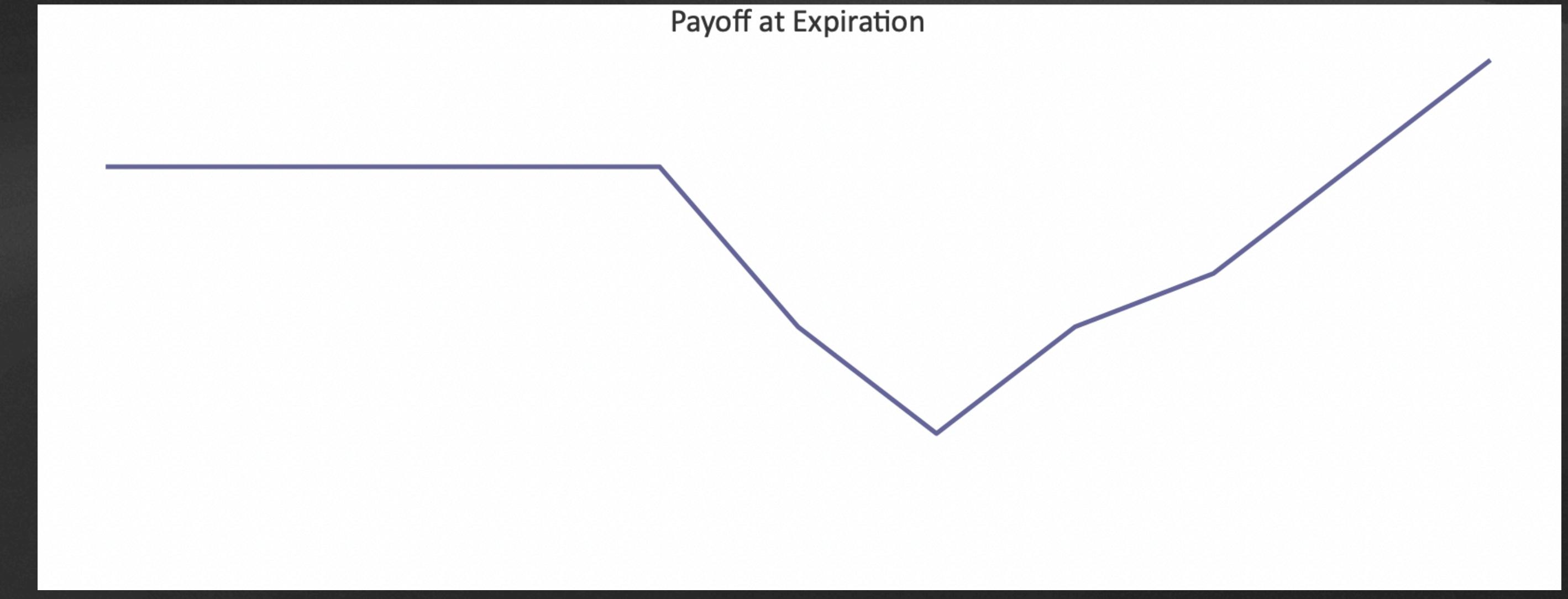
How?

- Buy a call option!
- Say we have an LP of USDC/ETH
- In order to hedge the spread, we need to buy contracts to cover the ETH
- If a contract gives us the right to buy 1 ETH, and we have 100 ETH in the pool, we need to have 100 contracts to hedge the exposure



Having our cake and eating it

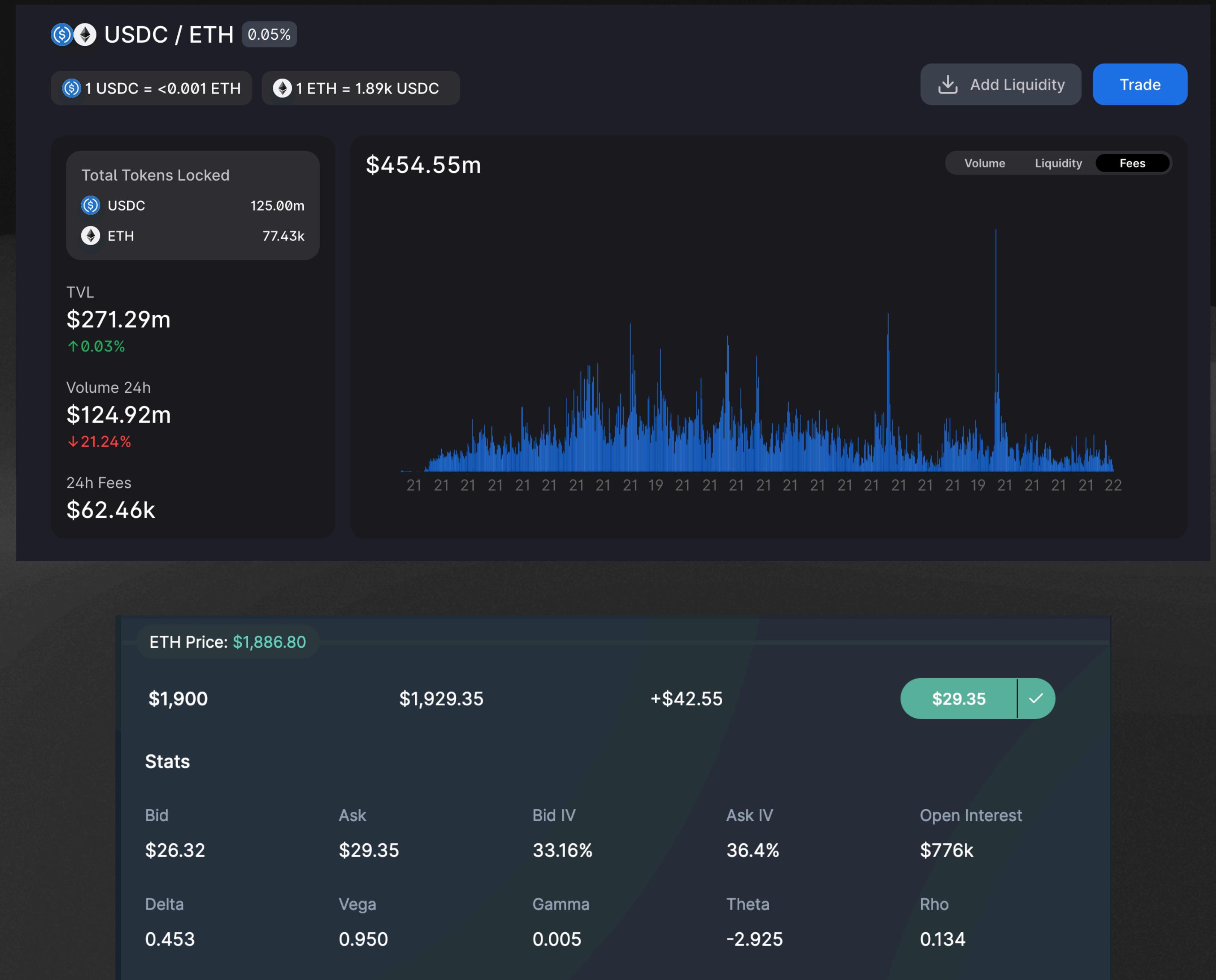
- In order to hedge the ETH, we have to spend the premium to buy the options.
- This gives us slightly worse capital efficiency
- It limits our IL to the premium



If the fees > premium, we can not
lose money

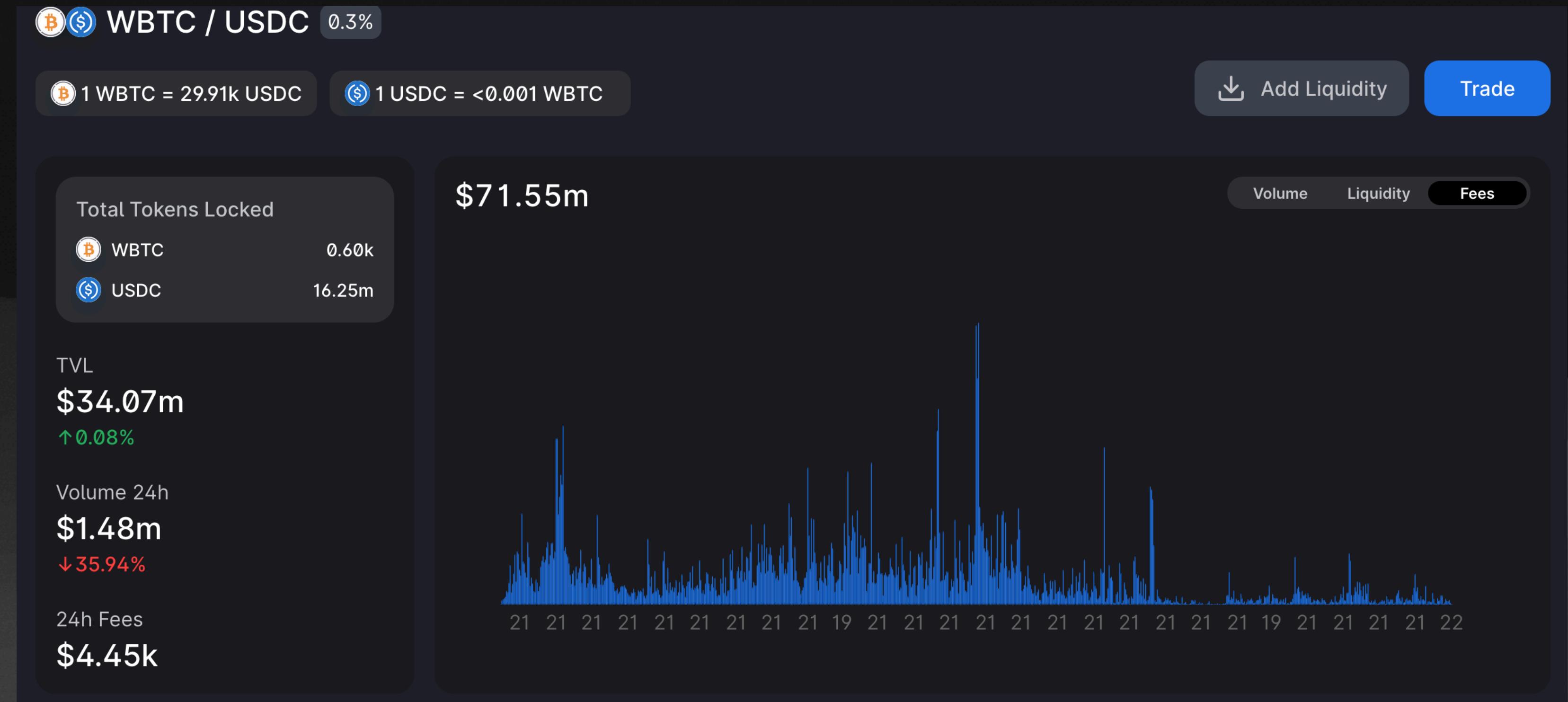
Very big “if”

- 77k ETH
- Average daily fees of ~120k USD (7.2M monthly)
- If we were to hedge now by buying out of the money options, we would spend 2.3M USD in premiums

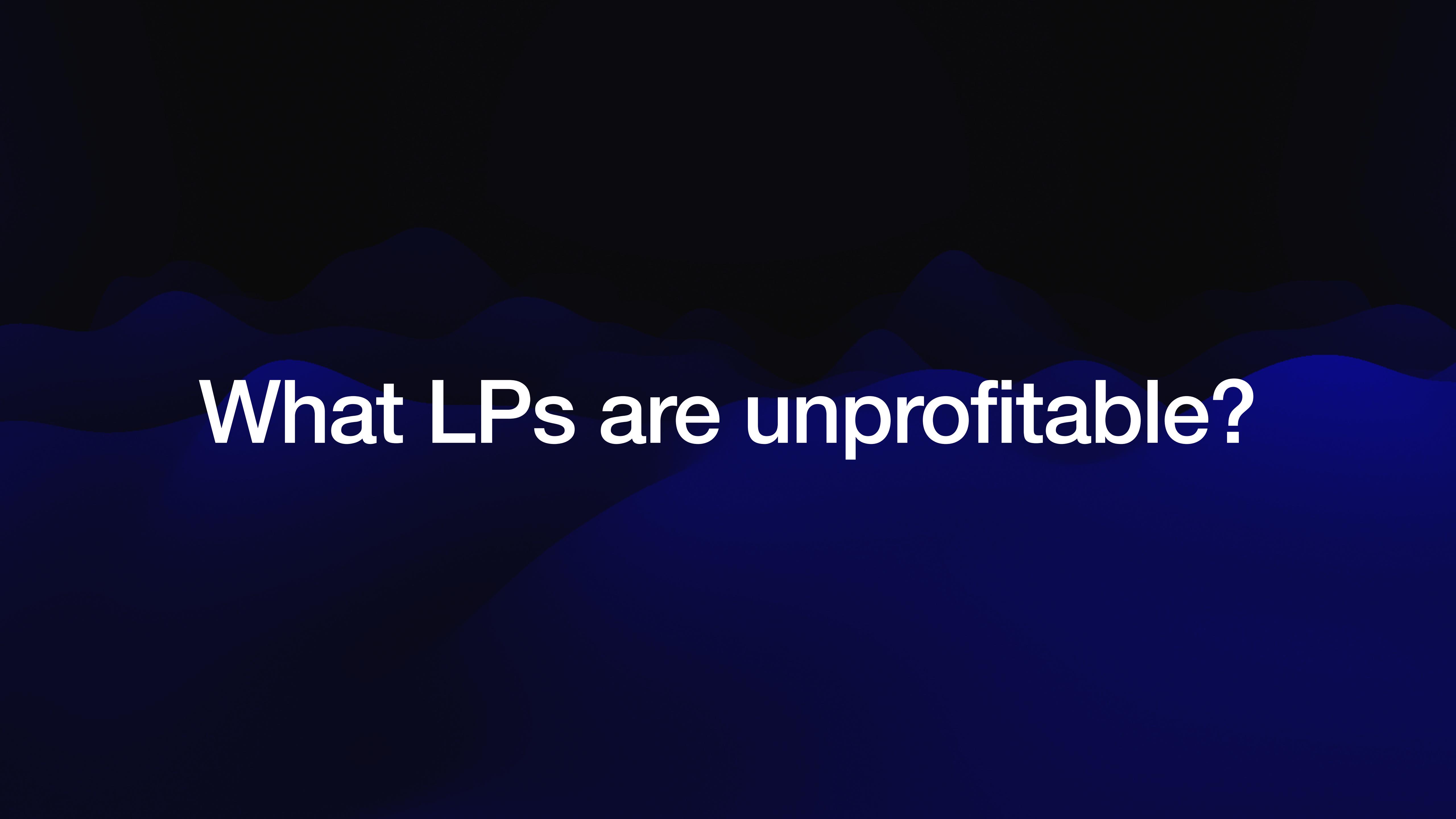


WBTC

- 600 WBTC
- Average daily fees of ~10k USD (300k monthly)
- If we were to hedge now by buying out of the money options, we would spend 139k USD in premiums



\$31,000	\$31,232.35	+\$1,338.15	\$232.35	+
Stats				
Bid	Ask	Bid IV	Ask IV	Open Interest
\$149.00	\$232.35	33.5%	41.9%	\$69.9k
Delta	Vega	Gamma	Theta	Rho
0.233	11.622	0.000	-37.547	1.094



What LPs are unprofitable?

All of them are! (Kinda)

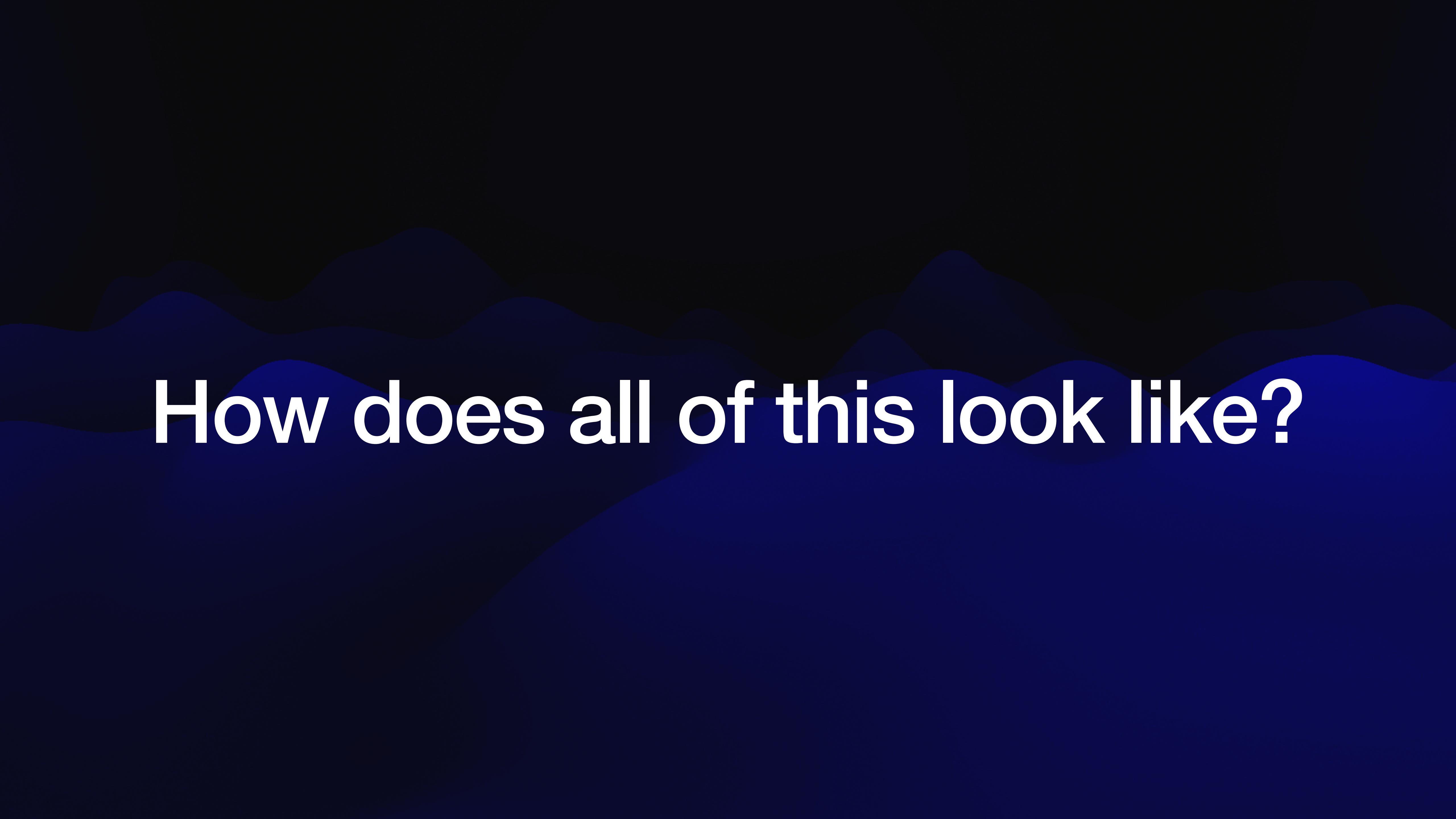
- In order to hedge, we use Lyra
- Lyra only has markets for BTC and ETH options
- On chain options markets are also not very mature
- Liquidity is an issue, but its getting better!

Troubles in paradise

- Due to Lyra not being very liquid, we have to take in some design considerations
- Mass withdrawals/deposits can incur large slippage and lead to losses
- Options rollovers can get frontran and arbitraged

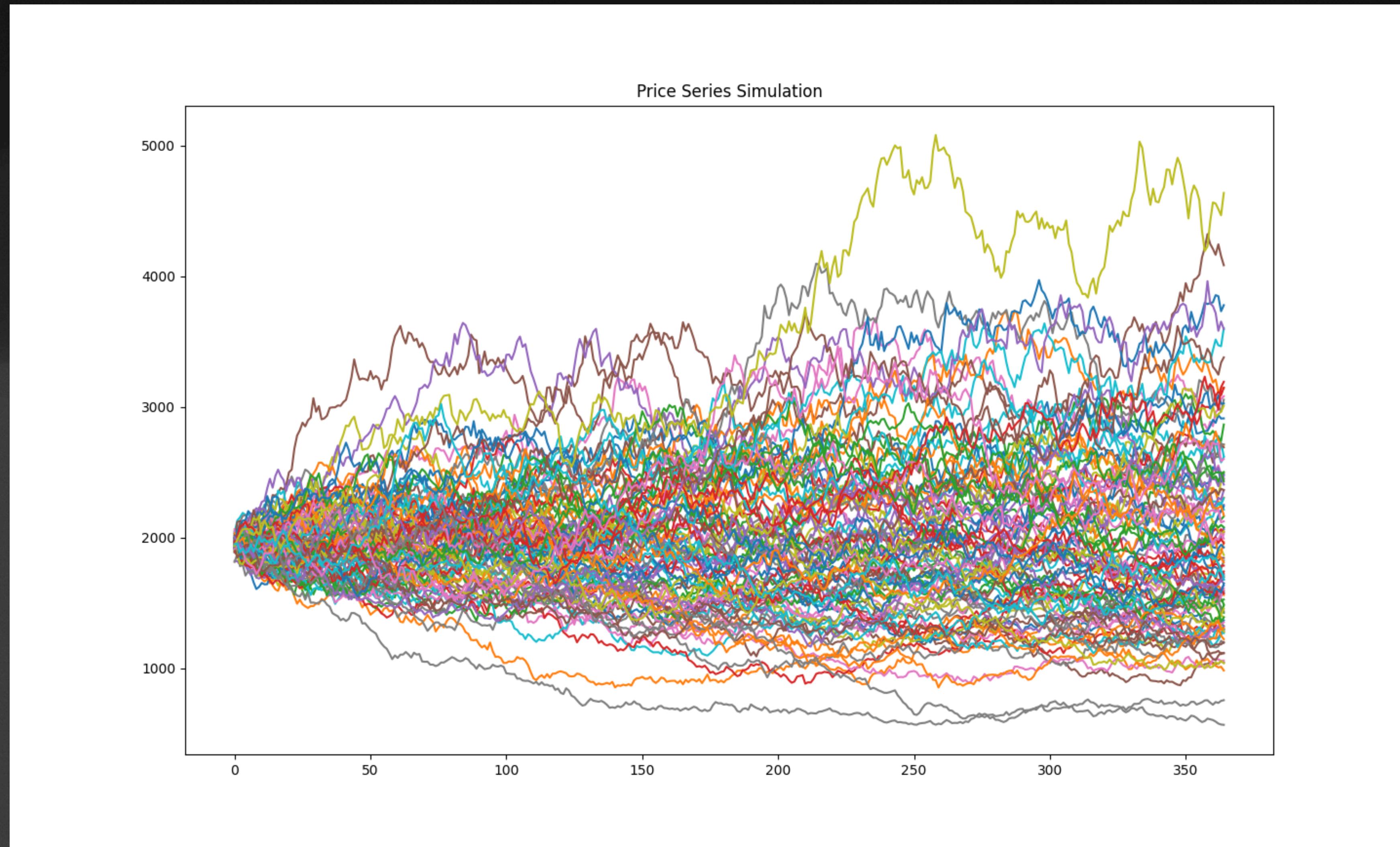
Or is there?

- While not ideal, all of these problems can be mitigated.
- We can solve the mass withdraw/deposit, and rollover problems in 1 sweep.
- We can introduce the concept of an entry/exit curve, present on the beacon chain.
- At every option rollover window, we can have people/enter exit.
- To minimize arbitrage, we can use PREVRANDAO, to randomly buy options within a specific time period.

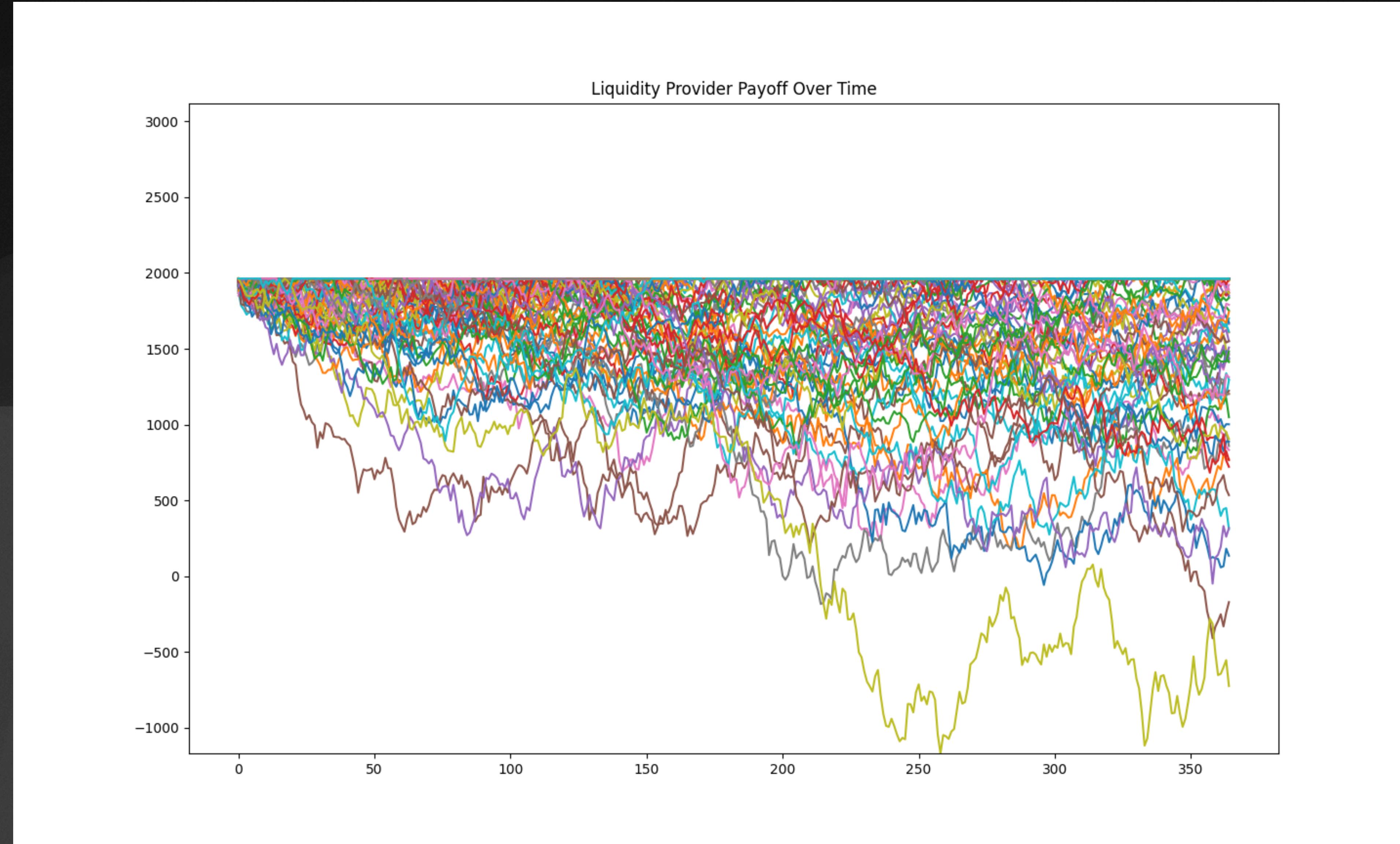
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How does all of this look like?

Simulating the price of eth



LP impermanent losses with no hedging



Simulation with hedging

