

What's the cost of Market Making to Liquidity Providers (LPs)? In a new paper with @ciamac @Tim_Roughgarden @AnthonyLeeZhang we propose a quantitative and rigorous answer: LVR ("loss versus rebalancing," pronounced "lever"):
<https://moallemi.com/ciamac/papers/lvr-2022.pdf> Details 📄 1/n

Example: consider a Uniswap v2 pool on ETH-USDC with 5% daily volatility. LVR costs the LPs 3.125 bp of the pool value daily (ignoring tx fees). If the pool has a 30 bp fee on traded volume, then it must turn over ~10% of its value on a daily basis, just to break even! 2/n

In general, our analysis framework takes as input: 1) a CFMM curve and 2) daily volatility of returns, and 3) reports back the loss of LPs. Our theory is quantitative ✅ and easy-to-use ✅.
3/n

Quick review: why do LPs in an AMM lose money? Simple: arbitrageurs make money! By sniping stale prices quoted by the pool versus centralized exchange prices, the arbs make money. Where does this money come from? The LPs! 4/n

LVR measures this adverse selection / information cost, answering the question: How much does the pool pay for being on-chain and not having access to market prices? In continuous time, we can compute this in closed form! 5/n

Viewed another way, LPing is like selling options without any upfront premium (committing to sell on a prescribed rebalancing schedule as the market price goes up 📈 and buy as it goes down 📉), and LVR measures the foregone premium. 6/n

Our work suggests that next-generation AMMs may want to better match tx fees (which depend on volume) to LVR (which depends on volatility), e.g. through dynamic fees; and/or use price oracles to limit the sniping that causes LVR losses. 7/n

FAQ: Isn't this all just Impermanent Loss™? IL is generally defined as LVH ("loss vs. HODLing"), and as such conflates two different phenomena (the true adverse selection cost and an additional market risk component). 8/n

Our work shows that, in a precise sense, rebalancing is the best benchmark strategy to compare to —it is the unique benchmark that strips out the market risk component (cf., Doob-Meyer decomposition). 9/n

We're still iterating on the draft and honing the exposition —comments/feedback/questions are very welcome! 10/n