Quoting Ben Fisch from Espresso:

"How is revenue shared among rollups sharing the same sequencing layer? Rollups choosing to use a shared sequencer are asking this question. Even if the shared sequencing layer is increasing the overall volume of transactions, bringing more utility and more users to all rollups on it, the rollups naturally want to know how this translates to the same or greater profit than running their own sequencer. If the nodes of the sequencing layer took all the profit then rollups wouldn't be incentivized to use it.

The problem isn't simply choosing a solution concept for allocation (Shapley value etc), rather the problem is that the marginal contribution of each rollup is not easily discoverable. How are rollups convinced they are each getting their fair share of the profit? If simple tx fees (i.e., fees paid for the inclusion of an individual transaction in the block) were the only source of revenue this would be simple: the contribution of rollup X is the aggregate of fees paid by users for transactions on rollup X. In fact, rollups can take these fees directly. However, a significant fraction of the profit may come from MEV, which in the case of shared sequencing may have cross-rollup dependency. This may be less of a concern for projects who want to prevent MEV via methods like threshold encryption, but some rollups are either looking to profit from MEV or distribute the MEV to their users. Finding a fair allocation of the total MEV among rollups is complicated by the fact that the MEV is typically based on private information available to various actors in the system and only discovered through an auction run by the sequencing layer – there isn't a publicly known deterministic function that calculates the MEV of an ordered bundle of transactions. These auctions may involve agents (searchers) bidding on atomic ordered bundles that include transactions from multiple rollups.

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Some additional thoughts and directions:

- Consider a situation in which a lending app-chain and a DEX opt into the shared sequencer. The lending protocol benefits from risk reduction while the DEX protocol might benefit from more LP fees. Should this factor into how MEV revenue is shared?

- The core and shapley value are obvious starting points.

- How should fees be paid? In PBS on Ethereum, builders pay directly in the EVM, however when multiple domains are being sequenced there may only be a single payment, which must somehow be distributed to different domains.

Relevant links:

- The Espresso Sequencer - HackMD

- Astria (1, 2)

- Ben Fisch's Talk at Modular Summit

- The effect of false-name bids in combinatorial auctions: new fraud in internet auctions - ScienceDirect

- [2306.17024] Towards Optimal Prior-Free Permissionless Rebate Mechanisms, with applications to Automated Market Makers & Combinatorial Orderflow Auctions

- Other forms of revenue sharing in blockchain(1, 2)

- https://web.stanford.edu/~iashlagi/papers/mixnmatchCamera.pdf

- https://www.jstor.org/stable/1913602

- Empirical perspectives on auctions - ScienceDirect