Context: @domothy

recently proposed to auction the right to propose the next block on a per-slot basis and burn the proceeds.The goals of the mechanism are to smooth validator rewards, reduce centralization pressure on validators, and distribute MEV to ETH holders. This is my response.

Hey @domothy

, thx for your proposal! it's good to see more people thinking about how to reduce & redistribute MEV. To spoil the ending, I think the mechanism is completely broken but I hope that the analysis nonetheless yields some interesting insights about block production.

We will analyze the proposal's impact on two factors:

1. Raw economic security (ETH staked)
2. Centralization pressure on the validator set

Raw economic security

I

We will establish a simple relationship: you get the economic security that you pay for. If you pay validators much, you will get high economic security. If you pay them little, you will get lower economic security. (There are some bounds where this relationship starts to inverse: if you pay validators too much, you erode the monetary properties of ETH more than you improve the security but that's out of scope for the analysis)

You state that if MEV is burned, this would lower rewards down to the issuance. But as Barnabé states, you cannot enforce only burning surplus. The validator can pay out of pocket or burn the block reward itself. I didn't think about this too deeply but I am 90% sure you cannot prevent a proposer candidate burning more

than the MEV.

As a result, all the money would go to ETH holders, and almost no money would go to stakers. That would cause staking rates to drop massively and erode Ethereum's economic security to almost nothing. I don't think there is a floor where all proposer candidates agree that it becomes unsafe to bet less because they are in a tragedy of the commons game with each other.

II

MEV already

goes to all ETH holders today for a variety of reasons

- More and more ETH will be liquid-staked (asymptotically approaching 100%)
- Even while unstaked, staking rewards trickle down to all unstaked ETH via lending rates (you can argue that burning is more tax-advantaged than lending, but we'll ignore that point here.)

Because MEV already accrues to ETH holders today, there would not even be a meaningful price effect to expect.

Centralization pressure on the validator set

III

The current mechanism is very forgiving in many ways: Validators can decide to not extract MEV. Validators can compete in spite of poor latency. Validators can connect to non-optimal (but non-censoring) relays. It is essential for Ethereum that validators can be so diverse in their quality + preferences and still all participate in the same protocol and that these preferences actually translate

into how blocks are built in Ethereum.

Where the current scheme clearly has it that if you're 1% of the validator, and you're worse than other validators, you make maybe 0.8% or 0.9% of the rewards. In the new scheme, that validator would make 0% of the rewards and be quickly forced out entirely. In other words, there's now a bigger incentive to become THE best validator because the best validator wins every block. So the rich are getting richer and the weak are culled relentlessly, and giving up any profit to support the network is no longer a choice.

IV

What does it take to be the best validator? Let's go through a few sources of competitive advantage:

- Scale economies: bigger node operators can run many validators on the same hardware

- Latency: the better connected a validator is in the network AND to block builders, the later they can propose. the later they can propose, the more valuable their block is gonna be.
- Cost of capital: the cheaper your access to funding, the more validators you can run

The race to lower latency is especially insidious: it practically guarantees that the best-positioned validators must be vertically integrated with the best block builder(s) as well as with other validators. The result is all of Ethereum block production centralizing in a small geographic area, if not a single datacenter. so the mechanism would be highly

centralizing on the validator set with almost no way to recover, and could undo years of investing into our decentralized set of validators.

Conclusion

So if we compare the proposal against its stated advantages, it actually fails on all accounts:

- Instead of reducing incentive for proposer centralization, it would increase it.
- Instead of making validator rewards close to the issuance, it would make it close to zero.
- It would let ETH capture the value of MEV but at the cost of destroying Ethereum's economic security + decentralized validator set. The long-term MEV (and value of ETH) under that model is worth 0.
- Finally, MEV is already transferred to ETH holders today, just with more extra steps.

Thanks to Barnabé Monnot for helpful comments.