

One under-appreciated aspect of the PoS transition is that it's a lot easier to relocate a validator node than a mining operation. Thus we'd expect block validators to be much more geographically mobile than the current block miners. Which means, if there's even a small advantage to a certain geolocation we'd expect a disproportionate number of validators to cluster there. That's obviously bad for the resiliency, security and decentralization of the network.

In particular my tangible concern is related to MEV arbitrage. The bulk of centralized exchange price discovery occurs in Tokyo. The FTX, Binance and Huobi matching engines all run in a single datacenter.

Being co-located to these exchanges is a major advantage to a validator engaged in MEV. Having a low latency data feed to order book activity means the ability to arbitrage against the decentralized exchanges. In contrast running a validator outside Japan adds hundreds of milliseconds of latency. With 12 second block times, putting your validator in Tokyo is worth tens of million a year to a \$1 billion CeX/DeX arbitrage strategy.

In particular, Tokyo is an especially high-risk as a geolocation for network clustering. It's at high risk for earthquakes and tsunamis. What happens to the network if 90%+ of the validators go offline at the same time? To fix this problem, I think the protocol has to either 1) completely eliminate validator's ability to extract MEV. Or 2) explicitly incentivize geographic diversity through some rewards scheme that outweighs MEV extraction.