Bank Pulse: Ethereum Proof-of-Stake may be a step towards broader adoption

The Ethereum blockchain is on the verge of a major and risky upgrade. This upgrade, if successful, would greatly reduce electricity use. This, in turn, would increase Ethereum's acceptability to policymakers and financial institutions

An ambitious upgrade to the world's second most important blockchain

After a long period of anticipation, and if final tests go well, the world's second blockchain Ethereum will probably transition from "proof of work" (PoW) to "proof of stake" (PoS) later this month. This means that transactions on the Ethereum blockchain will no longer be recorded by miners that spend a lot of computing power to prove they worked hard to verify transactions. After "the merge", transactions will be processed by validators, that have staked Ether (in other words, put collateral in escrow) that can be forfeited if it turns out they were acting in bad faith.

The discussion about the pros and cons of PoS vs PoW is almost as old as Bitcoin, and we can't represent all arguments here. What we're interested in, is that this transition to PoS may over time increase the acceptability of Ethereum, and all of the apps built on top of it, for policymakers and

regulators. This in turn may provide a boost to traditional financial institutions' willingness to develop Ethereum-based services.

Ethereum is not the first blockchain to adopt PoS. But it is generally considered the most important blockchain after Bitcoin, and Ethereum is a key building block of the decentralised finance universe. Moreover, Ethereum won't go down for scheduled maintenance over the weekend to upgrade the network. Instead, as ethereum.org describes it, the new PoS-engine will be hot-swapped in mid-flight. A flight which hosts a variety of apps, tokens and platforms. What could go wrong?

The stakes for the upgrade are high

Indeed, while the Ethereum community has spent a lot of time testing PoS (the PoS testing ground called "beacon chain" has been running since December 2020), implementing such a fundamental upgrade while the network keeps running, is ambitious. As anyone who has ever tried to quickly upgrade the operating system on their computer will know, there are almost always unexpected hiccups that end up taking much more time than anticipated. We expect leading Ethereum developers to be pulling all-nighters glued to their screens during the upgrade.

Another question during the upgrade is how Ethereum miners will respond. They have invested in dedicated hardware, typically GPUs, that can no longer be used for mining Ethereum after the upgrade to PoS. Some miners may decide to continue the PoW-based blockchain, creating a "fork". Such a duplication of the blockchain with all its tokens creates a variety of problems e.g. for exchanges and traders. Luckily, the crypto community has gained experience managing such forks over the years.

A successful upgrade would make Ethereum much more acceptable...

Describing all these challenges, you may start to wonder why Ethereum embarked on this project at all. Apart from improved scalability, the main reason is a drastic reduction in electricity consumption. Ethereum.org claims a 99.95% reduction in electricity consumption following the switch to PoS.

An important non-technical consequence of this great reduction in electricity need is that it may render Ethereum more palatable to policymakers and regulators. When the European Parliament discussed the EU's incoming Markets in Crypto Assets Regulation earlier this year, sustainability was an important topic. Policymakers are uncomfortable with the PoW consensus mechanism's high electricity use. To be sure, the pros and cons of PoW vs PoS are food for a fundamental and often heated debate, which has many more nuances than the –admittedly impressive– kWh figures suggest. We cannot do justice to this debate in this short piece. It is clear though that the switch to PoS removes power consumption as a problem for regulators. This, in turn, removes one stumbling block for traditional financial institutions and other companies to offer Ethereum-based services, although other obstacles may remain.

...though Proof-of-Stake is not the answer to life, the universe and everything either

So what's not to like about PoS? Apart from migration risks, PoS has its own challenges. For example, its code is much more complex than PoW. This may create new vulnerabilities. Hackers

will certainly be exploring the new infrastructure for flaws. Another issue is that PoS creates a new form of inequality. With PoW, there once was a sense that everybody can join in and start mining. With PoS, in contrast, the "wealthy" can stake a lot of Ethereum and reap most of the validation rewards, further increasing their wealth. Yet the reality is more nuanced. PoS staking pools do provide opportunities for those with less Ether to spare. And with PoW on the other hand, the days that an old laptop was sufficient for mining, are long gone.

Some people worry about increased possibilities for censorship by PoS validators. Yet in principle, PoW miners could apply censorship as well. It is also not evident that PoS will lead to a more concentrated validator landscape than PoW, where miners have been cooperating in mining pools for a long time. In the end, it's less the technology that makes the difference, but rather the attitude –and regulation– of those using it. More generally, there is a tradeoff between censorship resistance and the application of anti-money laundering and sanctions policies which are required to render cryptocurrency acceptable to regulators. In the end, compromises need to be struck here.

Ethereum's upcoming migration from PoW to PoS may be the biggest planned event in cryptoland this year. The migration itself and its aftermath carry risks, and will be closely watched within the crypto community. A successful migration would be a compliment to the Ethereum community's ability to manage big events. It would also remove an important obstacle to acceptability of Ethereum to regulators and hence development of Ethereum-based services by traditional financial institutions.

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