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Market Intelligence

Ethereum's Merge: Investing at an Inflection Point

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- **Ethereum's Merge (anticipated on or around September 14, 2022) represents a critical turning point for the existing proof-of-work platform as it transitions to a new consensus mechanism**
- **But the market outlook for ETH post-Merge is less clear cut despite the subsequent potential of a deflationary monetary policy and massive developer activity on the network**
- **We look at both the bear and the bull cases for ETH ahead of the Merge and address some of the misconceptions surrounding what this upgrade means to the network and its users**

David Duong, CFA
Head of Institutional Research
david.duong@coinbase.com
Tel: + 1 646-233-1947

Brian Cubellis
Research Analyst
brian.cubellis@coinbase.com

There are still important misconceptions about what Ethereum's Merge with the Beacon Chain entails, which is having an impact on the narrative and investor sentiment. What this complex, multi-year effort does is improve the energy efficiency and economic sustainability of the network by changing the consensus mechanism from proof-of-work (PoW) to proof-of-stake (PoS).

What it does *not* do is immediately reduce gas fees *nor* improve transaction speeds to a noticeable degree. Blocktimes will fall from 13.4 seconds to maybe 12.2 seconds post-Merge, possibly achieving a ~9-10% improvement, but it's hardly a game changer. From the perspective of ETH holders, the process itself shouldn't even be noticeable, with no planned downtime for the network.

The market reaction is more difficult to disentangle. From a valuation perspective, ETH issuance will be reduced by ~90% from 4.3% annually to ~0.43% and the overall token supply could actually decrease once we factor in (EIP-1559) burning and network activity. Staking yields should increase after the Merge, although withdrawals by validators will not be allowed until the Shanghai fork (~mid-2023).

The downside is that it's not clear how much of this is already priced in. Notably, the transition would make Ethereum look more like its alt layer 1 competitors except Ethereum relies on layer 2 scaling solutions (as a design choice) to achieve the costs and/or speeds that those networks can accomplish natively. Moreover, the situation has gotten more complicated due to the potential for existing miners to fork a PoW chain from the existing Ethereum mainnet.

Under the hood

The Ethereum Community Conference in late July confirmed that the Merge is only the first in a series of upgrades to the network. This will be followed by the surge, verge, purge and splurge, according to co-founder Vitalik Buterin, who suggested that Ethereum is only ~40% complete (55% complete after the Merge):

Table 1. Ethereum upgrade roadmap

Stage	Description
Merge	Transitions Ethereum from a PoW to a PoS consensus mechanism
Surge	Supports scalability for layer 2s (danksharding) and lowers gas fees on calldata
Verge	Implements scaling upgrades like Verkle trees to make stateless clients a viable prospect
Purge	Removes old data and network history to free up hard drive space
Splurge	Fine tunes the network with miscellaneous smaller upgrades (EVM enhancements, in-protocol Proposer Builder Separation, e.g.)

Dates to know

While the experience of the Merge should be seamless from a user perspective, what's happening in the background is far more complicated. The modular blockchain thesis being applied here means that validators (stakers) securing the network need to run two clients: an execution layer (i.e. Ethereum mainnet) and a consensus layer (i.e. Beacon Chain). The Beacon Chain is what implements the PoS consensus. As a result, the Merge is different from previous upgrades to the network because it requires an activation in two phases to address those layers.

There are thus at least three important dates to know as we head into the Merge:

1. **August 23.** This is when client releases (upgrade software) for both the mainnet and the Beacon Chain will be available
2. **September 6.** This is phase 1 of the two part Merge upgrade. The Bellatrix hard fork will take place on the Beacon Chain at epoch 144896.
3. **September 14.** This is phase 2 of the two part Merge upgrade, known as the Paris Upgrade. This effectively completes the Merge. The date is only an estimate, as it is based on a total terminal difficulty (TTD) value rather than a block number.

What success looks like

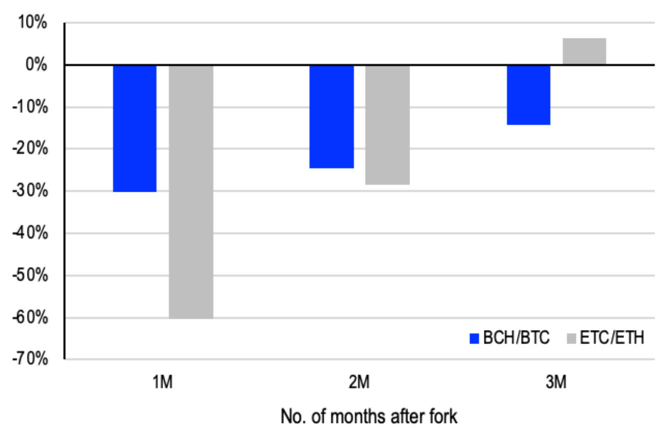
To be considered successful, the resulting blocks in the chain will need to reach finality for two justified epochs in a row (an epoch is a period of 32 slots, in which Beacon Chain blocks can be proposed). Finality means these blocks can't be changed unless there's a critical consensus failure. In the context of the upgrade, two conditions need to occur for the Merge to be considered complete: (1) a minimum two-thirds of validators need to vote in favor of including all the blocks belonging to an epoch in the canonical chain and (2) it needs to happen twice in a row to make sure those blocks cannot be reverted.

Forking hell

Something that may complicate the post-Merge environment is the potential for existing miners to fork a PoW chain from the existing Ethereum mainnet. This could potentially create uncertainty and confusion in the DeFi space as there are stablecoins and wrapped assets that could potentially exist on a forked ETH PoW chain that would not be honored by their issuers. Chainlink, a key oracle protocol that represents about half of the total value secured across the crypto ecosystem, has said they will not support any PoW forks, which may also impact smart contracts on those blockchains.

While it's unclear how meaningful the economic activity would be on such ETH PoW fork(s), this is largely dependent on the extent to which various entities and protocols are willing to provide support for the forked coins. For example, if it appears that the majority of entities and protocols will only support the new PoS chain, it's possible that many users may look to liquidate their forked ETH PoW coins as the lack of support could lead to the deterioration in value of any PoW fork. Looking at historical precedent, when Bitcoin Cash (BCH) forked from Bitcoin (BTC) in August 2017, the ratio of BCH/BTC fell by ~30% over the subsequent month and at current, the market cap of BCH represents ~0.6% of BTC's market cap. Similarly, when ETH forked in July 2016, the ratio of ETC/ETH fell by ~60% over the subsequent month and at current, the market cap of ETC represents ~2.1% of ETH's market cap.

1. Performance of BCH/BTC and ETC/ETH after their respective forks



Sources: TradingView and Coinbase

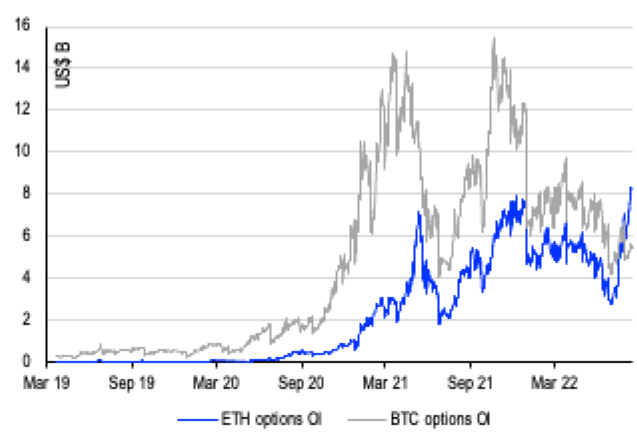
While the ideological battle at the crux of the prior Ethereum fork resulting from the 2016 DAO hack was centered around the immutability of the ledger, the upcoming fork bears its own ideological divide. Given the economic incentives of ETH PoW miners as well as users who may feel as though PoW is more resilient to censorship and/or regulatory capture, it is not out of the realm of possibility that this cohort (maligned by the transition to PoS) could foster support for the forthcoming PoW fork(s). That said, we would assign a low probability to this outcome based on historical precedent as well as current posturing of large, influential entities and protocols.

Market outlook

The Merge remains a key theme we're watching for the crypto space in 3Q22 because it has the potential to attract large inflows into the asset class, assuming all goes well with the upgrade. The bull-case argument is predicated on the idea that the risk-adjusted returns of ETH could mimic an early-growth-cycle risk asset in the medium term (3-6 months). Indeed, the coin's monetary policy would effectively be deflationary as (1) reduced issuance (variable depending on the amount of ETH staked) coupled with (2) more ETH being locked up by validators plus (3) transactional base fees being burned will reduce the actively traded circulating supply.

Plus, there is massive developer activity happening on the network that bolsters its use case. According to Electric Capital, over 4,000 open-source developers actively work on Ethereum monthly as of January 2022. Already we are seeing the open interest on ETH options at all time highs of over US$8B compared to only US$5.5B for BTC options as of August 16.

2. ETH vs BTC options open interest

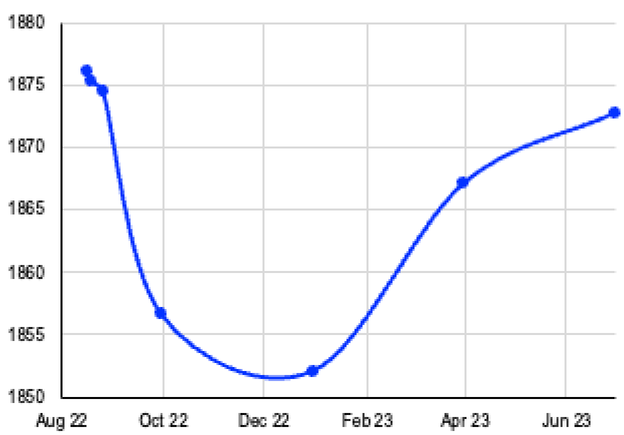


Sources: Skew and Coinbase

On the other hand, the bear-case argument is that this could well be a buy the rumor, sell the fact scenario, as much of the upside has already been priced and there is increasing scrutiny over what will constitute a successful Merge. Perhaps this could be characterized as more of a short term risk, but it does seem like the recent breakout move in ETH prices to the upside may be hard to sustain near term. The Merge also begs the question about how this positions Ethereum relative to alternative layer 1 competitors, particularly when there are many new features and upgrades that have yet to be implemented.

Moreover, the recent noise surrounding the potential PoW fork(s) has resulted in some strange price developments in the spot vs derivatives markets. For example, the September 30 ETH futures price is currently trading ~1% below spot with the curve in steep backwardation through December 30 before trending back up. We think there may be two reasons behind this. First, this reflects positive investor sentiment ahead of the Merge, which is pushing up demand for the front month future.

3. ETH futures curve in backwardation through December 30, 2022 contract



Sources: Skew, Deribit and Coinbase

Second, investors may be taking a long ETH spot vs short ETH futures position on the back of the expectation that if they own more ETH now and there is a PoW fork, then they may receive more corresponding ETH PoW tokens (assuming airdrops are made in proportion to current holdings). The futures hedge allows them to capture this exposure within a theoretically risk-free structure. Assuming a PoW fork does materialize and offer new ETH PoW tokens, then they would then be able to capture the value that's there. However, if the Merge goes well and traders want to be long ETH (PoS), they would likely need to buy those backwardated futures (presumably trading at a discount) thus pushing the curve steeper.

Conclusion

The Merge is a major software update that fulfills years of work by thousands of people and entities across the globe, including the Ethereum Foundation, independent researchers, client teams and infrastructure providers. Not only does it represent a major efficiency improvement over the existing platform, but it is conceptual proof that a decentralized framework can coordinate independent like-minded individuals to accomplish a complex task. That value is considerably harder to price compared to measurable factors like transaction costs and throughput. However, it provides insight into the future growth of the network and in our view, features heavily into its value proposition.

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