APRIL 2023 PERFORMANCE

The Fort Stable Fund generated a return of +1.29% for the month of April 2023. ETH ended 6.4% higher at $1,909 trading positively post the Shappella upgrade that we discuss below but running out of momentum towards the end of the month. The global outlook remains challenging, earnings have been mixed and while Inflation eased early in the month in the U.S. there also was a growing expectation of a looming recession in many parts of the world. The Banking system which was challenged last month has stabilised for now. While the Fed, and most global central banks, have pencilled in a peak in interest rates for 2023, there isn't an imminent expectation of action from the regulators. In the US the expectation is for 5-5.25% peak interest rate this year, after which they are expected to fall 4.25-4.5% percent by the end of 2024. It's a similar expectation in Australian but with a lower peak. This is positive for digital assets and other interest rate sensitive assets, but most likely priced in currently. This month we will speak mainly on the topic of hard Forks and upgrades to the Ethereum network.

Shappella

Another upgrade has gone off without a hitch, this was a significant milestone allowing withdrawal of staked Ethereum. Initially, investors staking in the Ethereum ecosystem were required to lock up their investment with no ability to withdraw. This was needed to ensure the stability of the system but also meant that it excluded many from investing without this clear path to be able to redeem. This upgrade encompassed changes to the blockchain's execution layer (Shanghai upgrade – withdrawals), consensus layer (Capella upgrade - scalability), and the Engine API.

We will focus mainly on the Shanghai component of the upgrade. There was a reasonable degree of fear of significant outflows from staking, this turned out to not be the case. The process of deposit and withdrawal has been throttled to ensure that the network remains stable and as such the movement of Staked assets was orderly. There were 2 categories of withdrawal. First Staking rewards which fell into the "partial" withdrawals category. These were automatically moved to an Ethereum address after the upgrade and be able to be exited from the protocol as soon as received. Withdrawing the rewards AND the 32 ETH balance per validator falls under a "full" withdrawal classification. Withdrawals here are limited to around 58,000 ETH.

In summary post the upgrade:

According to Token Unlocks on day 3 post the upgrade, 330,310 validators were waiting to make partial withdrawals, while 18,640 indicated that they would entirely exit their positions. This equated to 974,400 ($2B) at that time in the queue. At its peak that was only 4% of the eligible total to be withdrawn was flagged for withdrawal. The flows over the latter part of the month have become more balanced with some anecdotal evidence of an increase in institutional demand to move holdings to become staked. Fig1.

Fig1. (Dune)
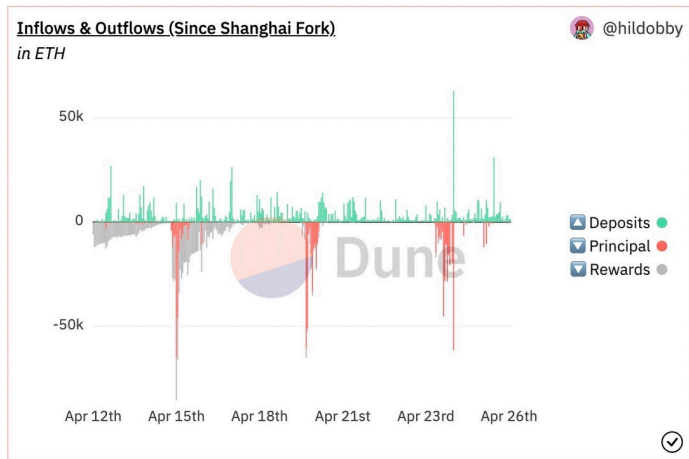
One theme that was churning of staked Ethereum. It was apparent there was movement from centralised to decentralised participants ie it stayed inside the system just between different entities running validator networks. As an example an interesting outcome post the SEC enforcement action against the centralised counterparty Kraken is the fact that there is a wholesale exit from their program. Kraken as at the 16th of April (4 days post upgrade) accounted for approximately 63.2% of the ETH pending withdrawal according to data from the blockchain analytics platform Nansen.

Each investors rationale for altering exposure is different hence it's hard to get a granular picture. Other reasons for movement were related to the way that the investor staked, whether that be domicile of the investment vehicle for tax or regulatory reason, which makes sense given the regulatory stance in the U.S. currently or even just moving to an easier way to stake. We flagged in previous notes the development of decentralized protocols where ETH could be staked to secure the network, namely services offered by

Rocketpool, Lido and Coinbase. These protocols were not as advanced or developed when the original 32 ETH was locked in the Beacon Chain. These protocols have benefitted from this upgrade. Fig 2. And will likely continue to do so.

Fig2. (Delphi)
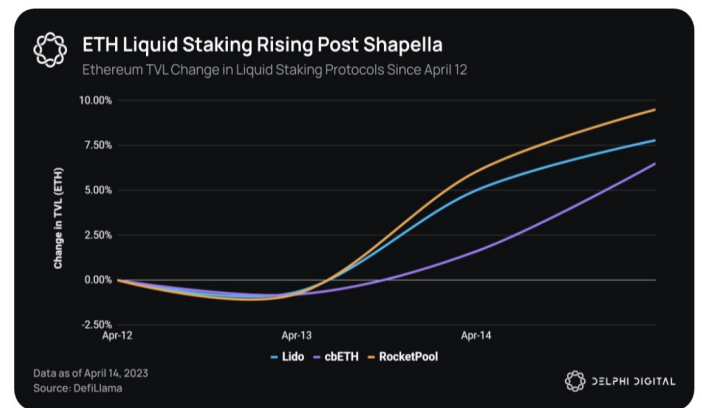
With Ethereum staking significantly de-risked, its reasonable to expect that we are likely to see an increases in ETH staked as % of value. Currently the percentage of ETH staked remains at around 16% while slightly higher it is low when compared to other less developed protocols, this is likely to increase further consolidating the network.

Fig3. (Dune analytics)
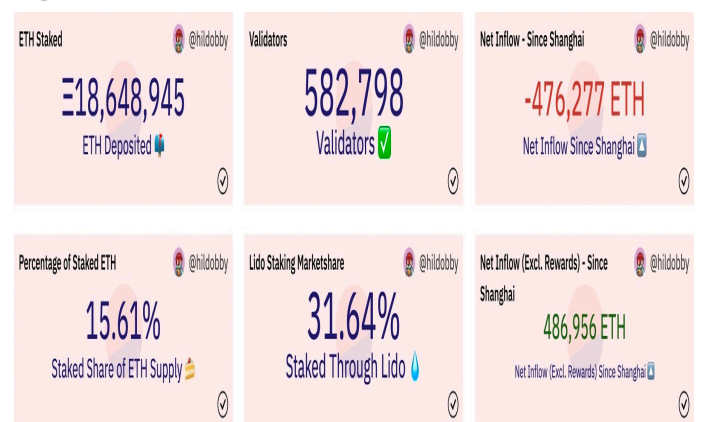
Where to now for Ethereum ?

1. Danksharding, Blobs and Scalability

The knock on Ethereum has been that upgrades were sclerotic, the cost of transactions remained high and throughput remained too slow to be scalable. Alternate L1 blockchains have elected to sacrifice reliability and have experienced significant downtime, they have also suffered from requiring significant and expensive infrastructure that has led to centralization. Ethereum has been the Tortoise while other have been the Hare.

Looking forward the focus is all about scaling - As we have flagged before a blockchain has 3 trade-offs, a Trilemma – Decentralization, Security, and Scalability. ETH has favoured the first 2 while methodically working on improving the latter. Without improved scalability, the costs of transacting could see users paying high prices for block space and see performance degrading as it has done in previous heavy transactional volume markets. This year has been a breakout for L2's (Layer 2's) or Rollups, these L2's dramatically improve the scalability of Ethereum improving processing speeds and reducing costs. The basic idea of how rollups allow Ethereum to be scaled is that they push computation away from the base layer onto this second layer. When that process is completed the transaction is sent data back onto the underlying Layer-1 Beacon chain for consensus and storage.

However even this current iteration of a rollup is suboptimal as they remain too expensive and slow. The actual idea of a rollup is optimal rather it's limited by the current design architecture of the underlying Layer-1 chain. They are still constrained by the fact that they need to submit a large amount of data to build consensus on the Layer-1 chain. The bigger the blockchain gets and the more complicated the smart contracts are the more information there is to be processed, in computing processing speed is often limited by the volume of data that needs processing. Herein lies the rub Etheruem lacks the space to store this data freely. Equally there is an issue in that it places a heavy burden on nodes (the computers that verify) to download this data – an estimated 95% of transaction fees on rollups are just for posting data costs.

What's the solution? - One of the creators of Ethereum Vitalek Buterin described minimizing transaction data as "the primary bottleneck" for scaling rollups. The inherently conservative Buterin has said proto-danksharding could deliver a 10x improvement in scalability. There is more work to be done to full sharding but this intermediate step will be essential for the various Layer 2 protocols and their teams to continue their progress. The next hard fork aims to solve this problem, expected to take place sometime around the start of 2024 it is known as proto-danksharding, also referred to as EIP-4844 (Ethereum improvement Proposal). This upgrade will dramatically improve the scalability of Layer 2 rollups.

EIP-4844 will break up the blockchain network into different databases. This will increase the space available adding a whole new data availability layer for millions more transactions on Ethereum. This process of splitting is known as "sharding", which is equivalent to adding lanes onto a congested freeway. This increased space will be used to create data set that is being referred to as "the blob"...

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These "blob-carrying transactions" will be a new transaction type will be retained in Beacon chain nodes for a limited time, weeks or months. During this time, validators use a computer science technique known as "data availability sampling" that randomly samples parts of the data blobs for verification without actually having to download all the data. This ensures that we meet the security aspect of the trilemma while increasing scalability dramatically.

The end is in sight with regards to structural and complicated upgrades, this next upgrade is the last expected structural change to the protocol, from there its fine tuning. The next upgrade is seen as essential for the protocol to become usable for many of the often touted edge case ideas such as gaming or payments. "After this [next] fork is done, and then after scaling is done, we're in a stage where the hardest and fastest parts of the Ethereum protocol's transition are essentially over," Buterin said. "Various things will need to be done, but those… things can be safely done at a slower pace."

In summary rollups are an amazing innovation however aren't the silver bullet for use cases like games or social media that require a far higher transaction load. Developers have found ways around the limitation and have scaled by compromising on generally on decentralization. This in turn has seen the use of bridges between chains that has been the focal point of a large number of hacks. EIP-4844 is the unlock to fully on-chain use cases, with the potential to usher in a wave of builder innovation.

2. Distributed validator technology

Another key technical innovation to look out for in Ethereum's near-term future is the rise of distributed validator technology (DVT), an area of research that the Ethereum foundation has explored since 2019.

Today, operating an Ethereum node is a technically burdensome solo venture that requires the operator to solo stake 32 ETH. Node operators can reduce the burden and opt to stake it via Coinbase or Lido, but these alternatives make a critical decentralization tradeoff.

DVT is an attempt to make node validation easy without sacrificing decentralization. It does so by enabling a kind of independent "squad staking". Rather than staking 32 ETH alone, a group of friends can collectively stake different amounts of ETH and run a node. This is achieved through multi-party computation (MPC), which lets a group of individuals share one private key like a multisig and run a "distributed validator" together. DVT decentralizes the cost of solo staking by reducing the financial barrier for individuals or small DAOs to participate as a validator on Ethereum. This could go a long way in reducing the market concentration of ETH staking that has accumulated today in Lido and centralized exchanges.

DVT also makes node validation an overall more robust process. Distributed validators operating the same node can stand in for one another when there is hardware malfunction. And just like a multisig, shared private keys through DVT make it harder for attackers to exploit.

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DVT is not available for public use just yet, but companies [like Obol](#) are just now starting to test deployment on mainnet, and will likely be ready by Q3 2023. For more on DVT, check out companies like RockX, SafeStake and ssv.network.

3. Proposer-builder separation

The word "decentralization" is thrown around a lot in crypto but the open secret is that most blockchains are anything but so. One major centralization vector on the Ethereum protocol layer lies in how blocks are built. When we submit transactions on our wallets, they enter a sea of pending transactions in a memory pool (mempool). Block validators (miners in PoW, stakers in PoS) with a birds-eye-view of this mempool, spotted a profit opportunity and started selling priority access to block building in an underground bribery market to arbitrage bots (searchers).

These kinds of value extraction techniques are known as maximal-extractable-value (MEV) attacks. They are largely hidden from the everyday user, but remain an existential threat to the decentralization ethos of Ethereum, with block miners having extracted an estimated [$676 million pre-Merge.](#)

Proposer-builder separation (PBS) is the Ethereum development community's answer to that problem. As its name suggests, PBS aims to create a division of labour between two crucial tasks of blockbuilding: proposing a block, and building it. By doing so, block validators are stripped of their ability to discriminate between individual transactions, as the contents of a block is not decided by the same entity who eventually builds it on-chain (for more on this, see Bankless's

[A Beginner's Guide to Ethereum Censorship](#)).

PBS will not be ready by 2023, and likely won't happen for another two years. Until then, third-party solutions like Flashbots' MEV-Boost have emerged to mitigate this problem in the meantime by creating an open free market in blockbuilding.

In summary the Ethereum Foundation continues to iterate and develop optimising now for true scalability. Rollups are an amazing innovation however aren't the silver bullet for use cases like games or social media that require a far higher transaction load. Developers have found ways around the limitation and have scaled by compromising on generally on decentralization. This in turn has seen the use of bridges between chains that has been the focal point of a large number of hacks. EIP-4844 is the first step, adding DVT and PBS will unlock many fully on-chain use cases, with the potential to usher in a wave of builder innovation.

Source: https://www.bankless.com/whats-next-for-ethereum-danksharding-dvt-pbs-shapella

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