CONSENSYS

INSIGHT REPORT

The Impact of THE MERGE on Institutions

A review of where we are in Ethereum's protocol development and how the Merge to Proof of Stake will impact institutions

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Executive Summary

Ethereum, the world's largest programmable blockchain, is the foundation for the future of the internet (Web3), and the future of finance (DeFi). Despite market volatility and macroeconomic uncertainties, Ethereum is poised for growth due to focus on building for the long term.

Currently, more than half of the entire DeFi ecosystem exists on Ethereum. The network has seen skyrocketing figures for adoption and utilization, which are strong signals for network maturity:

- Total number of unique addresses has doubled to over 200M over the last two years.
- Transactions have surpassed an average of 1M+ per day over the last 12 months.
- Gas fees have fallen steadily since January 2022.
- Protocol revenue has reached $1.8B since mid-March 2022—the highest among the 20 top blockchains. Over this period, Ethereum commanded over 90% of total protocol revenue relative to other Layer 1 (L1) networks.
- As of September 1, 2022, over 13.3M ETH has been staked by over 418.5K validators, accounting for nearly 11% of total ETH supply.
- Pseudo-profit margins are estimated at 81% for Ethereum running on PoS.

This traction demonstrates that the number of users and liquidity coming to Ethereum is incomparable to other L1 chains. This point is supported by the increasing amount of institutional activity across the network.

Over the last two years, many leading institutions have taken meaningful steps into the DeFi and Web3 ecosystem by pivoting their business models to focus on Web3, and by deploying capital into the ecosystem. We attribute this development to the growing maturity of the technology, as well as the changes in the ecosystem that have had a profound impact on institutional adoption:

- DeFi Financial Market Infrastructure ("dFMI") players have matured and created fundamental base services to accelerate adoption and trading on decentralized networks.
- The number of DeFi applications has exploded, resulting in the exponential increase of institutional yield opportunities. In addition, DeFi applications and protocols have begun to develop institution-focused services.
- Large holders of ETH—including cryptocurrency exchanges, funds, and custodians—are recognizing that holding ETH bestows a powerful position within DeFi. They have been earning rewards at 4.06% annual yield on their ETH positions.

This is a glimpse of the state of the Ethereum and institutional DeFi ecosystems on the brink of the first major upgrade on the Ethereum roadmap: The Merge.

This report analyses the key changes the Merge will deliver across Ethereum network activity, network security, and network valuation to determine how the event will impact institutions. Here are the top five outcomes we highlight:

- **Sustainability**: Ethereum will use 99.95% less energy to validate transactions—tremendously reducing its carbon footprint, and increasing its appeal toward institutions with environmental, social, and governance (ESG) mandates and energy-efficiency concerns.
- **Rewards**: In switching from the Proof of Work (PoW) to the Proof of Stake (PoS) consensus mechanism, the Merge will change the way value is accrued across the Ethereum network. While a validator will earn rewards of 5.5-13.2% for validating transactions and adding them to blocks, token holders will earn rewards through a token-burning mechanism. The burning mechanism creates a powerful flywheel of ultrasound money, which incentivizes long-term holding and staking of ETH for all Web3 participants.
- **Deflationary supply of ETH**: Reduced ETH issuance and increased burns will systematically reduce ETH supply—putting deflationary pressure on ETH, thereby alleviating institutional concerns of token price dropping to zero, and increasing likelihood of an increase in value.

- **Improved security**: With the democratized participation and improved decentralization of the PoS mechanism, the cost to attack the Ethereum blockchain will be more than $11B at current prices, roughly 10-20X more expensive vs PoW. The Merge will make Ethereum significantly more secure, producing stronger security guarantees for institutional investors. In addition, the security of the network running PoS will rise over time as more validators will come on board, and the amount of staked ETH will increase.
- **Ecosystem growth**: On-chain apps and Layer 2 solutions will likely leverage the above improved security conditions and multiply on top of Ethereum—stimulating an increase in applications, and opportunities for institutional investors.

These outcomes add to the already tremendous value circulating within the Ethereum ecosystem. They ensure that Ethereum can sustainably support the next generation of Web3 creators and developers, as well as allow for more entrants to the market.

With significant improvements across sustainability, returns, and security, and the rapid growth of opportunities—we expect institutions to become more keen to engage. As the market matures we expect to see all kinds of organizations navigate participation, and think through how best to address each stage of the capital allocation process—from ecosystem research, to pre- and post-trade compliance, best execution, monitoring, reporting, and custody.

With further upgrades planned for the Ethereum ecosystem after the Merge, Ethereum is poised to become even more secure and even more scalable. Its roadmap will present institutional investors with ever increasing opportunities for growth and returns on investment.

As we continue to build through the bear market, we believe that the future is bright for institutional DeFi.

Introduction

For a long time, investors saw cryptocurrencies as a hedge against inflation. As a result, crypto became a part of an asset class known as alternatives, which includes wines, art, and precious metals, among other things. However, the argument that crypto is not correlated to traditional markets has weakened over time.

As we have seen in the current bear market, crypto valuations have more or less tracked the direction of the overall global securities markets. We can speculate on the reasons for this correlation: from the ones grounded in economics (crypto markets have matured as more retail and institutional investors have poured in money over the last couple of years) to the more generic ones (it was a mere coincidence that crypto was an inflation hedge earlier).

Figure 1 shows that both crypto and traditional market cycles have intertwined over the past two years. Moreover, it suggests that further integration between the two may be ahead.

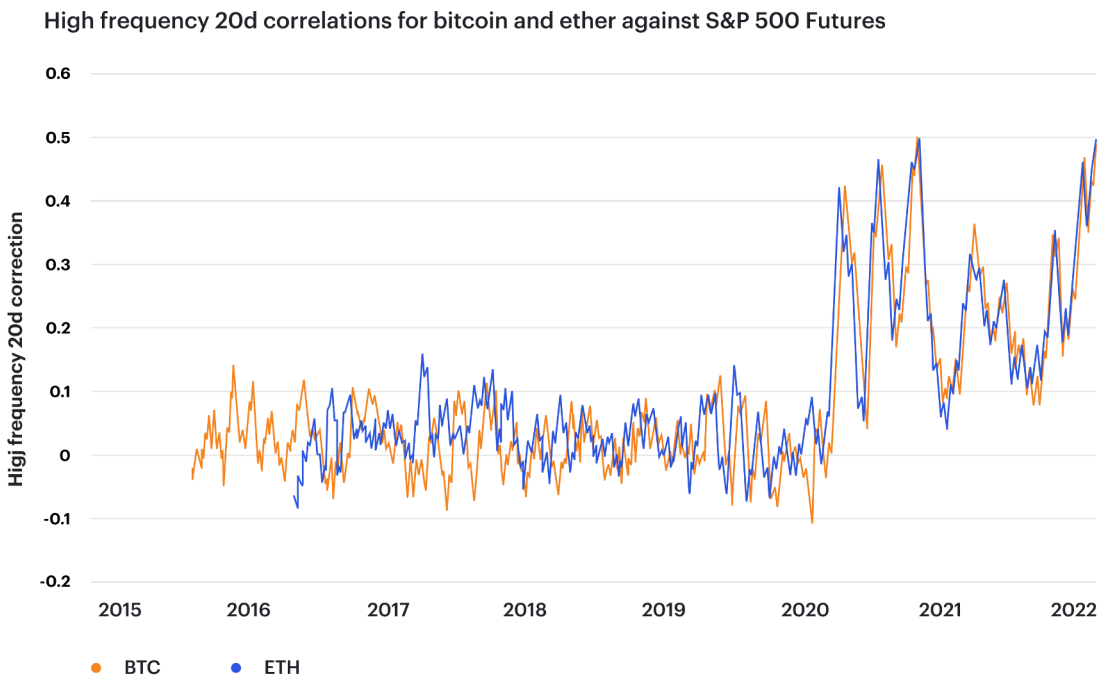


Figure 1. Correlation of BTC and ETH to Equities Through Time
Source: An Investor's Guide to Crypto

Crypto adoption among institutional investors has been on the rise. According to a CoinShares report, institutions invested $9.3B into the crypto market in 2021, up 36% from 2020. As adoption for the new asset class continues to increase, it is important to understand the changes that are coming to Ethereum, the world's largest programmable blockchain.

To understand the future of Ethereum, we need to remember first and foremost that it is a technology platform. Ethereum is the foundation on which the future of the internet (Web3), and the future of finance (DeFi) is being built. The second thing to remember is that more than half of the entire DeFi ecosystem is being built on Ethereum. And as with any efficient technology, the Ethereum roadmap is full of upgrades to its infrastructure that make it future-proof. The first such upgrade, called the Merge, will occur in mid-September 2022 .[1] It will be a historic moment for the nascent crypto industry.

What is the Merge?

The Merge is the culmination of years of coordination by Ethereum Core Developers (CoreDevs), client teams, and researchers—it will reshape the world's largest programmable blockchain.

To understand the magnitude of this upgrade, consider an analogy: The Ethereum network is a car running on a gas engine, but instead of providing motion to the car, Ethereum's engine provides security to the entire network. As part of an upgrade, the automotive engineers decide that they want to replace the gas engine with a more efficient electric one, reducing the car's carbon emissions by 99.95%. They also want to make the switch while the car is running full throttle, and to do so in a way wherein the driver does not even realize that the engine has been switched. This is what Ethereum's CoreDevs are planning to achieve through the Merge. The Ethereum network will switch from the energy-intensive Proof of Work (PoW) consensus mechanism to the Proof of Stake (PoS) mechanism, with no downtime to the Ethereum network and no impact to or action required from end users or developers.

[1] There is no precise date because it will be based on a specific block, 5.875 sextillion, which by some estimates will occur on September 15th, 2022.

Currently, the Ethereum network has two blockchain layers running in parallel – the layer running PoW, called the execution layer (the historic state of Ethereum and block production), and the layer running PoS, called the consensus layer. The Merge refers to the event when these two layers will merge, effectively ending PoW and transitioning the Ethereum mainnet fully to PoS.

Apart from making Ethereum, the network, significantly more sustainable, the Merge will also make ETH, the network's token, net deflationary. Unlike Bitcoin, Ethereum does not have a predefined maximum token supply. Its supply is collectively regulated by the Ethereum community, including developers, node operators, and other participants. While its issuance has historically been inflationary, the implementation of EIP-1559 in August 2021 started a deflationary force by introducing a burning mechanism for transaction fees.

Ethereum improvement proposals (EIPs) are a set of standards for the Ethereum platform that any user can propose to improve the development of the blockchain. Prior to EIP-1559, transaction fees (or gas fees) were paid to the miner approving the transaction, along with a reward to mine the block (2ETH per block). With EIP-1559, the gas fee is burned, which means the ETH equivalent to the gas fee is removed from the total token supply. There has been a net reduction of 51.4% (Figure 2) in the supply of ETH since EIP-1559 was implemented, amounting to a value between 1,090 and 71,718 ETH per day (Figure 3).

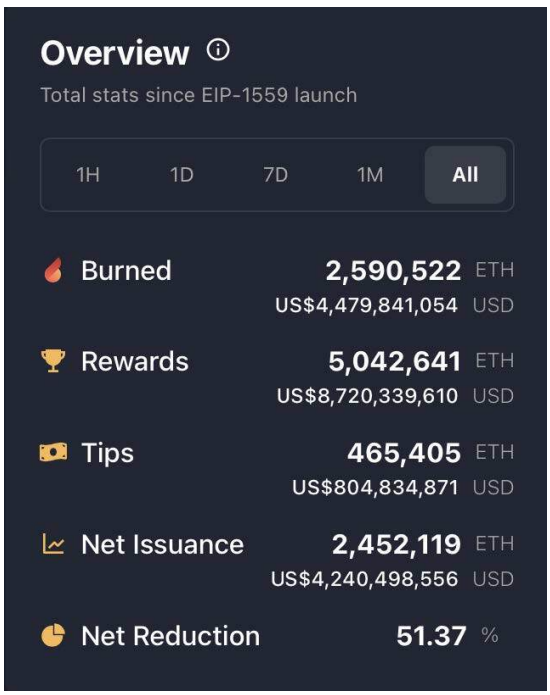


Figure 2. Total ETH Stats since the Launch of EIP-1559
Source: Watch the Burn

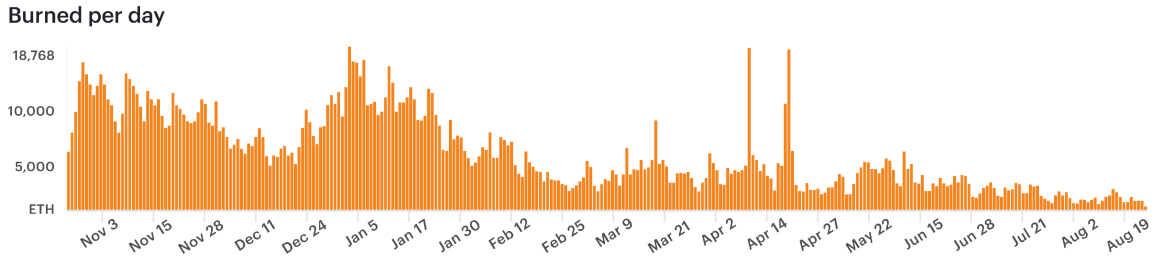


Figure 3. ETH Removed from Circulation Daily
Source: Watch the Burn

The Merge will make Ethereum even more deflationary by reducing ETH issuance. Currently, ETH is being issued on the execution layer as rewards for miners, as well as on the consensus layer as rewards for validators. Post the Merge, issuance on the execution layer will stop, dropping new ETH issuance by nearly 90%.

The gross inflation for ETH supply currently stands at 4.6%, and is expected to shrink to 0.5% after the Merge. As a result of the burning mechanism introduced by EIP-1559, Ethereum will ultimately become deflationary following the Merge and net issuance is projected to range between -0.5% to -4.5% depending on network activity.

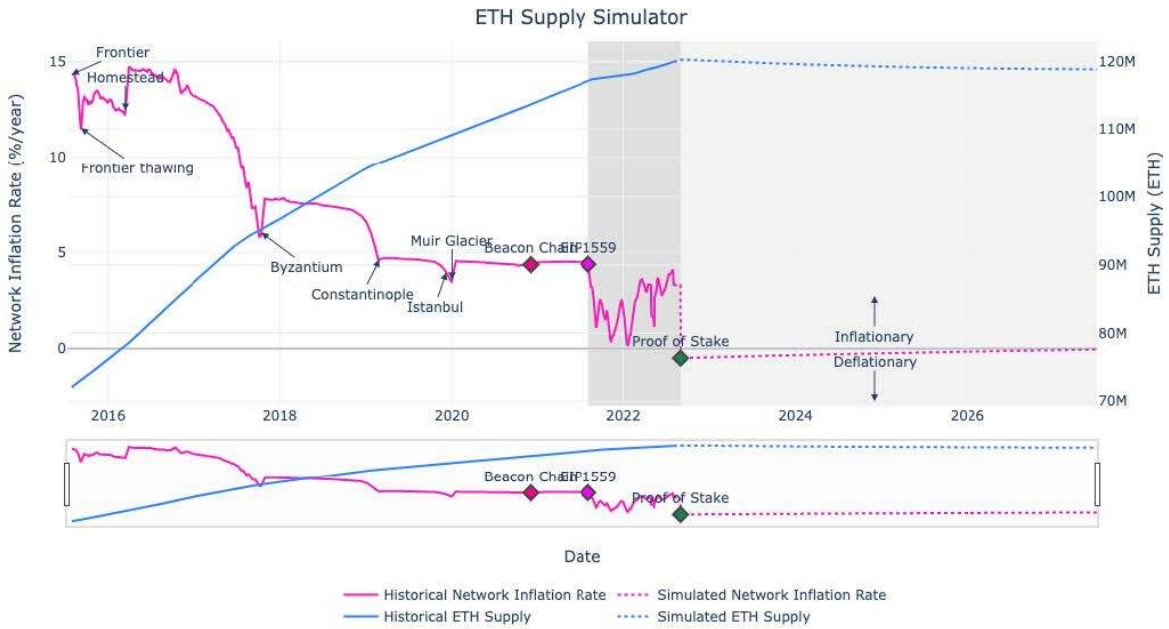


Figure 4. A simulation analysis using the open source CADLabs Ethereum economics model[2] shows that Ethereum is expected to turn deflationary after the Merge.

[2] Notes about the simulation: The CADLabs model source code is here and original model assumptions are here. In running the simulation, we set the Merge (PoS) date to the current consensus date of September 2022 and updated historical ETH price, ETH supply, ETH gas price, and ETH average block rewards data up to 8/1/22.

This report aims to provide an overview of where we are in Ethereum's protocol development, and how the Merge to Proof of Stake will impact institutions. We will first look at the macroeconomic conditions that have preceded Ethereum's rise as ultrasound money, and the factors that have contributed to ETH's popularity among investors. We will then dive into how institutions are diversifying into crypto and further explore the impact of the Merge on institutional engagement with ETH. Finally, we will look at the future of Ethereum, and institutional opportunities after the Merge.

Ethereum is Ultrasound Money

To dive into the idea of ultrasound money, we need to back up a little to understand the economic and market conditions that led to the need for an 'ultrasound' asset.

Over the past decade, traditional forms of money (fiat) have gradually lost their buying power. A major reason for this debasement of fiat currency has been market interventions from central banks across the world in response to macro challenges such as the Global Financial Crisis of 2008, and most recently, the Covid-19 pandemic.

During the 2008 great financial crisis, central banks across the world embarked on quantitative easing to support their ailing domestic economies. These central bank interventions included setting historically-low interest rate policies and purchasing assets like government bonds onto their balance sheets. Central banks even resorted to yield curve control, where a central bank sets a long-term interest rate and then buys up enough long-term bonds to maintain that target rate. This unprecedented monetary stimulus worked to prop up domestic economies. Most economies gradually recovered after multiple years of supportive policies. For example, in the United States, the overleveraged real estate sector normalized and aggregate household finances became stronger.

The recovery cycle was led by monetary policy, as changes to fiscal measures such as taxation and government spending are often politically challenging to enact. Central bankers were able to act independently and, therefore, implement an easy money policy faster than fiscal policymakers. In addition, they were emboldened to continue the accommodative policies to help economies recover because real inflation remained low. However, as Figure 5 illustrates, price inflation skyrocketed across asset classes due to such artificially-low interest rates.

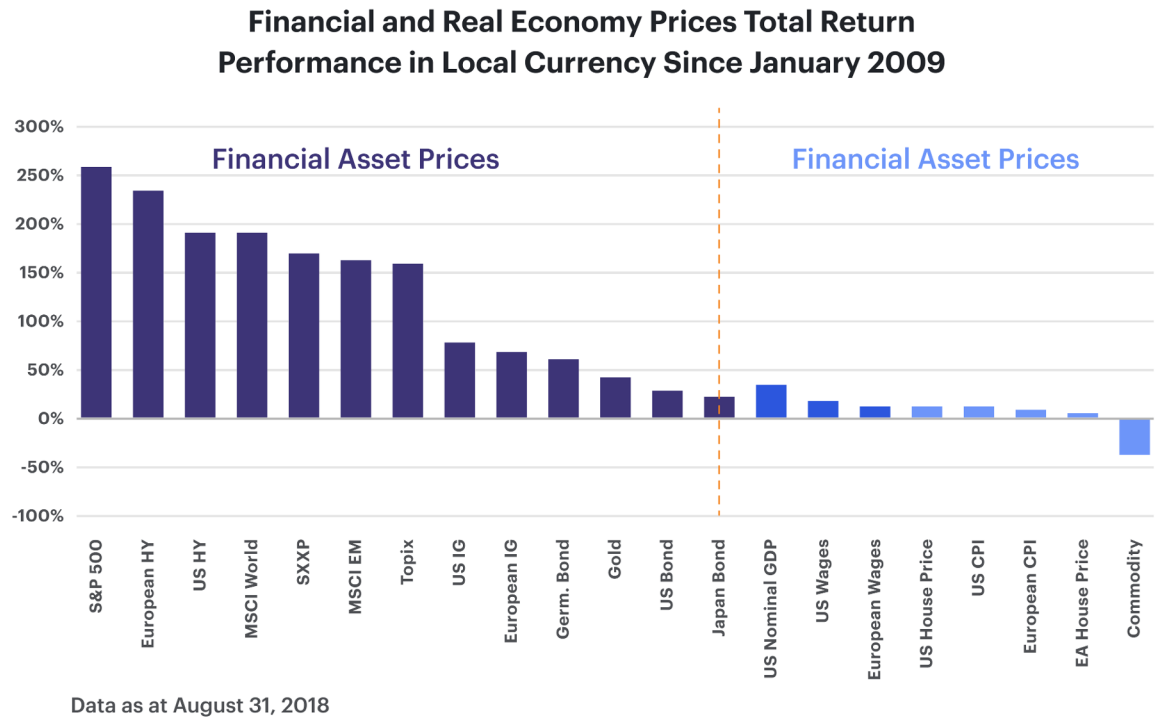


Figure 5. Dispersion Between Asset Price Inflation and Real Economy Inflation
Source: KKR

Central banks essentially distorted the efficiency of financial markets in their quest to pump financial stimulus into the economy (Figure 6). Many financial market observers questioned how long the recovery cycle could continue, with asset prices reaching new heights and volatility remaining subdued.

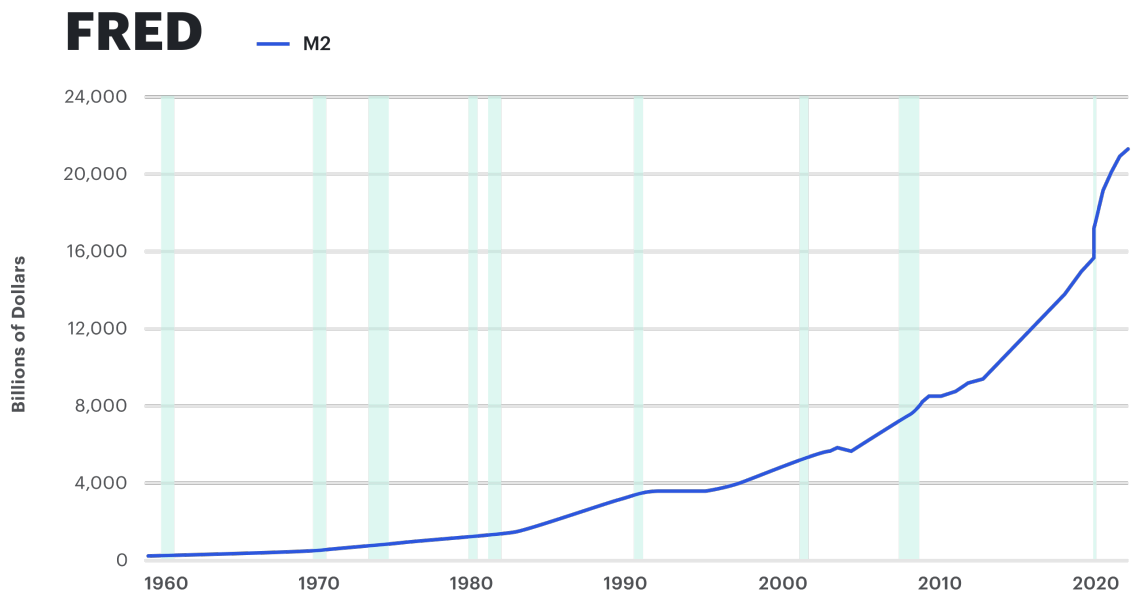


Figure 6. Supply of Cash and Cash Equivalents in the US
Source: FRED database

The Covid-19 pandemic posed another incredible challenge for policymakers. While lockdowns were imperative to contain the spread of the virus, they led to a complete halt of most economic activity. As a result, many countries provided economic support and stimulus packages to both consumers and businesses in a coordinated effort between monetary and fiscal policy. By many measures, these actions worked, as the economic growth and hiring rebounded after Covid-19 vaccines became widely distributed and lockdowns were lifted.

While the unprecedented monetary and fiscal policies adopted by central banks led to a rebound in economic activity in 2021, they also brought along inflation levels that have not been seen in over 40 years.

The level of uncertainty in the current global macro environment is at some of the highest levels in decades. Price inflation of most goods and services has increased across the globe.

Central banks have been forced to reverse the easy monetary policy over the past decade. In the US, the Federal Reserve is withdrawing liquidity and reducing the supply of cash and cash equivalents. This has resulted in some of the fastest tightening of financial conditions in history. As a result, consumers, businesses, and policymakers are now confronted with the instability of fiat purchasing power. People's purchasing power has declined due to the record-breaking inflation.

Rising inflation has hit investors too, and no asset class has proven a safe bet in 2022. Most assets have negative returns, with the exception of energy stocks and a few value stocks with strong cash flows. Assets like technology stocks (those listed on NASDAQ) and cryptocurrencies have particularly come under pressure. While ETH has fared no better in terms of returns this year, there are some key changes slated to happen to the cryptoeconomics of the Ethereum token as a result of the Merge that will turn it into a unique asset.

As a permissionless and decentralized blockchain built on smart contracts, any value that ETH generates (gas fees) is paid back to the network in the form of rewards to miners. Following the Merge, ETH is likely to acquire characteristics that resemble traditional forms of value, namely value accrual via cash flows.

First up, the Merge will change the way value is accrued across the Ethereum network. In the PoW mechanism, miners accrue value as payment for mining a block in the form of a block reward codified by the protocol, in addition to related transaction fees paid by users depending on network activity. In the PoS mechanism, with the elimination of miners, the value from network usage accrues to both the validators and token holders. While a validator earns rewards for validating transactions and adding them to blocks, token holders earn rewards through the burning mechanism. The average percentage of fees burned for ETH is estimated at 85%. In contrast with traditional assets, even the most attractive dividend paying stocks have payout ratios that range between 30-50%. This level of network distribution makes ETH a unique and pioneering form of value that will resemble a high dividend-paying asset.

The burning mechanism creates a powerful flywheel of ultrasound money, which incentivizes long-term holding and staking of ETH. Without debasement of value, ETH will hold a monetary premium that bolsters its role as a collateral asset—both to secure the network and in applications like in the DeFi industry.

Apart from upgrades to the tokenomics of ETH, the Merge will also make Ethereum a sustainable blockchain network. So far, a fundamental and persistent criticism of Ethereum has been its energy consumption. The PoW consensus mechanism consumes a lot of energy, which can generate an outsized carbon footprint depending on the source of energy. In addition, this energy consumption competes with other industries. By some estimates, the Ethereum network's total annualized power consumption is equal to Kazakhstan and its carbon footprint is similar to that of Sweden.

The Merge, by some estimates, will result in a 99.95% reduction in total energy use, as the PoS protocol is roughly 2000x more energy-efficient than PoW. This is likely to allow ETH to fit into the investment frameworks of investors that are focused on the environmental, social, and governance principles of their investments.

Why Ethereum is poised for growth

About 60% of all DeFi activity today happens on the Ethereum network.

Currently, the DeFi ecosystem is worth $62.6B, and Ethereum accounts for a majority of the overall DeFi ecosystem, with $36.7B total value locked (TVL). Part of the reason for Ethereum's dominance in DeFi is that most of the popular DeFi applications such as MakerDAO, Aave, Uniswap, and Curve were built natively on Ethereum. While some of these applications have implemented cross-chain compatibility, activity beyond native Ethereum is substantially lower. For instance, Curve has $5.5B in TVL on Ethereum, while Aave has $5.2B. Their combined TVL on Polygon is only $527.6M. The higher TVL of these protocols on Ethereum is attractive – to the end-users who are seeking to, say, obtain the best rate for a loan on Aave; and to the developers who are creating an application that creates capital efficiency and another layer of usage for otherwise locked liquidity.

Ethereum also benefits from a strong community of developers and users, especially the Ethereum CoreDevs, who are committed to improving the network by creating documentation and regularly rolling out network updates. These resources help maintain a robust and decentralized network, and drive further adoption.

Network Activity

To understand how user adoption has increased for Ethereum, let's take a look at some statistics.

Since January 2020, the total number of unique addresses on the Ethereum network has more than doubled to over 200M (Figure 7). This shows the popularity of the Ethereum network among Web3 users.

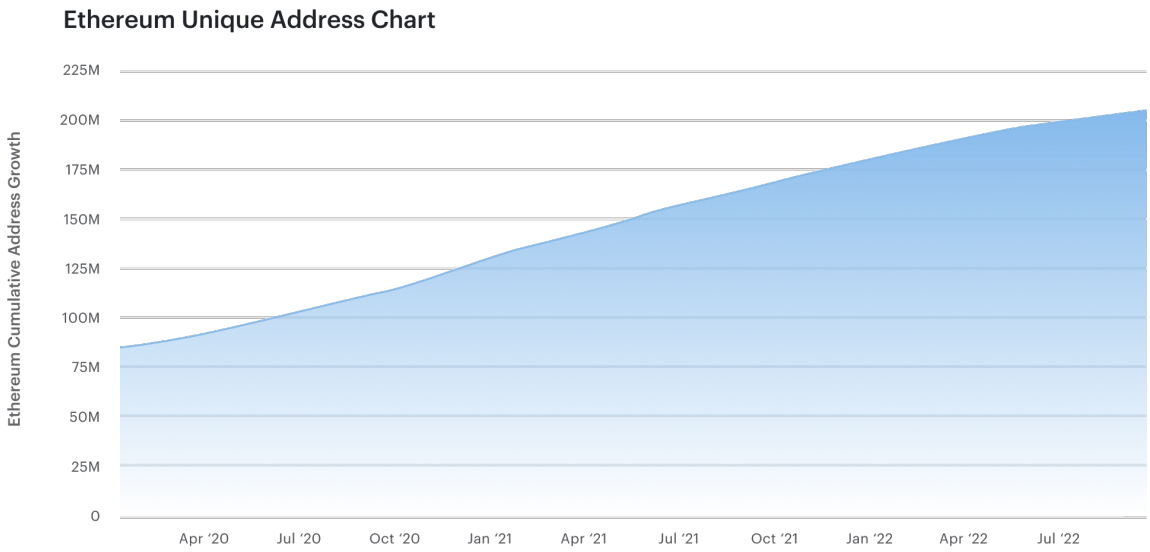


Figure 7. Ethereum Unique Addresses Since January 2020
Source: Etherscan

The number of active Ethereum addresses has also trended upwards since January 2020, and is currently above 504K, despite the recent market downturn (Figure 8). User participation in the network despite market volatility points to the fact that there are use cases of Ethereum that transcend price activity. In comparison, growth on Fantom is down 70% since the market crash in May.

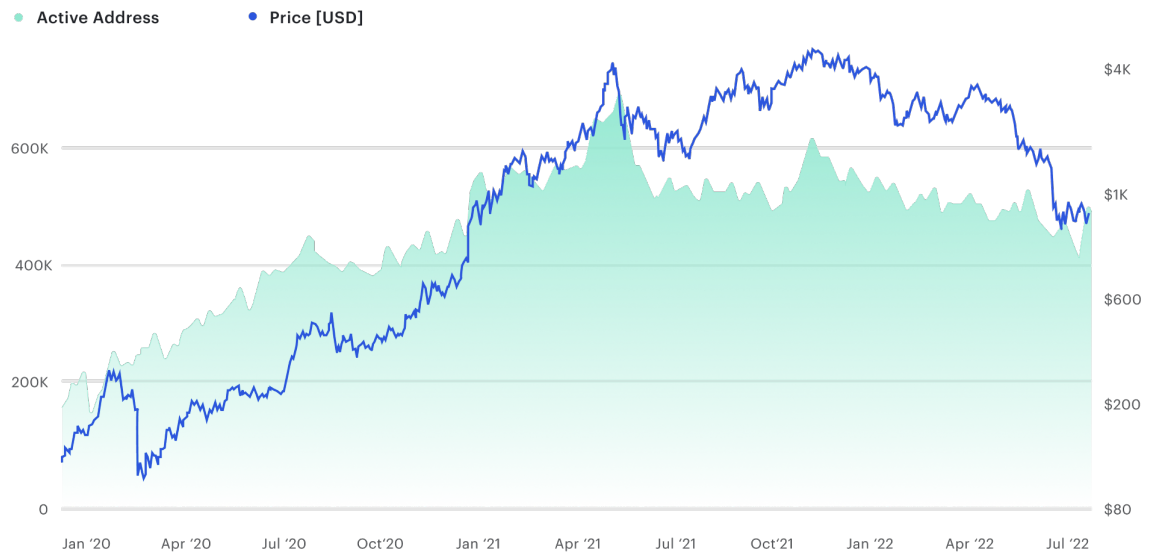


Figure 8. Ethereum Active Addresses and ETH Price since January 2020
Source: Glassnode

In a sign of the maturity of the Ethereum network, gas fees have fallen steadily since January this year (Figure 9). They have also become more predictable even as network activity has increased. Lower gas fee makes Ethereum transactions cost efficient, and agnostic of network activity. As a result, users do not need to worry about paying $100 to complete a transaction during times of congestion.

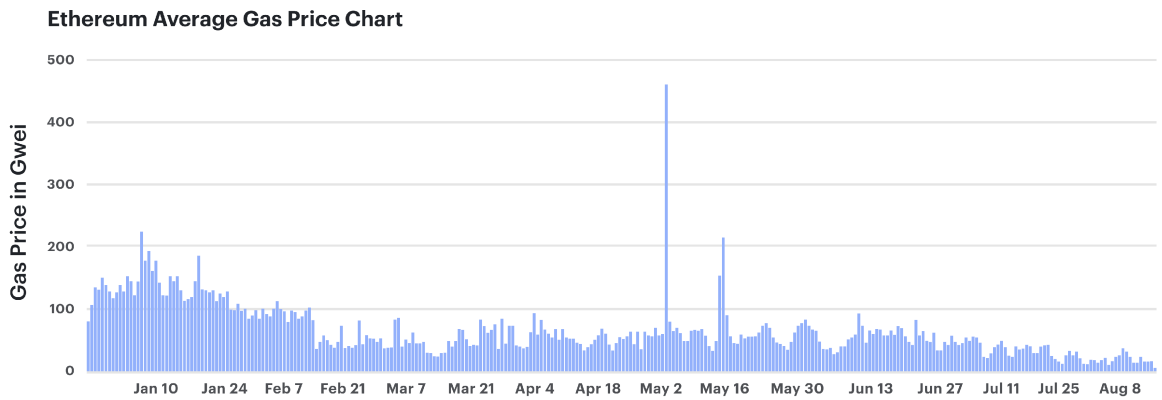


Figure 9. Ethereum Average Gas Fee
Source: Etherscan

Since January 2020, daily transactions on Ethereum have trended upwards and have stabilized (Figure 10). On average, over 1M transactions per day have been completed on Ethereum over the last 12 months. So users continue to leverage the network, despite Web3 and global macro market volatility. This is also a signal that meaningful applications with real world use cases are being built on Ethereum.

Figure 10. Daily Transactions on Ethereum
Source: Etherscan

To understand the magnitude of the number of transactions happening on Ethereum, sample this: In 2021, Ethereum processed more transaction volume than Visa, the world's largest payments processor. Ethereum processed transactions worth $11.6 trillion, while Visa processed $10.4 trillion (Figure 11)

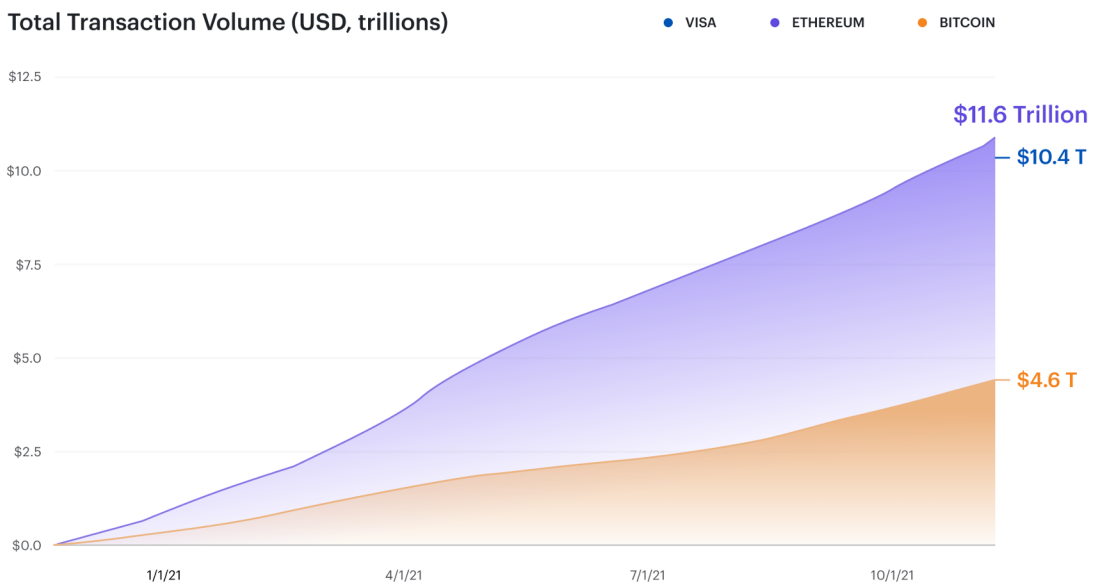


Figure 11. A Comparison of Total Transaction Volume of BTC, ETH, and Visa
Source: Stark Mirror

A powerful metric to determine network demand for a blockchain is protocol revenue, which is the amount of money users are willing to pay to transact on a blockchain. A blockchain earns revenue by selling block space, which a miner (or validator on the consensus layer) purchases to complete transactions.

On the other hand, a blockchain's primary expenditures are around the resources it spends on shoring up network integrity and maintaining security. These expenses are generally attributable to issuance. Currently, nearly every blockchain spends more money on securing their network than they receive from selling blocks. Therefore, revenue provides a better sense of network demand than simply relying on the total number of transactions. While using Tron or Solana might be cheaper than Ethereum, users may be willing to pay a premium to use Ethereum due to factors such as better security and reliability of the network.

Since mid-March this year, ETH generated $1.8B in protocol revenue, the highest among 20 top blockchains including Avalanche, Solana, Polkadot and Polygon (Figure 11). For a comparison, take Avalanche: It recorded the second-highest protocol revenue in the same time period, generating only $72.6M.

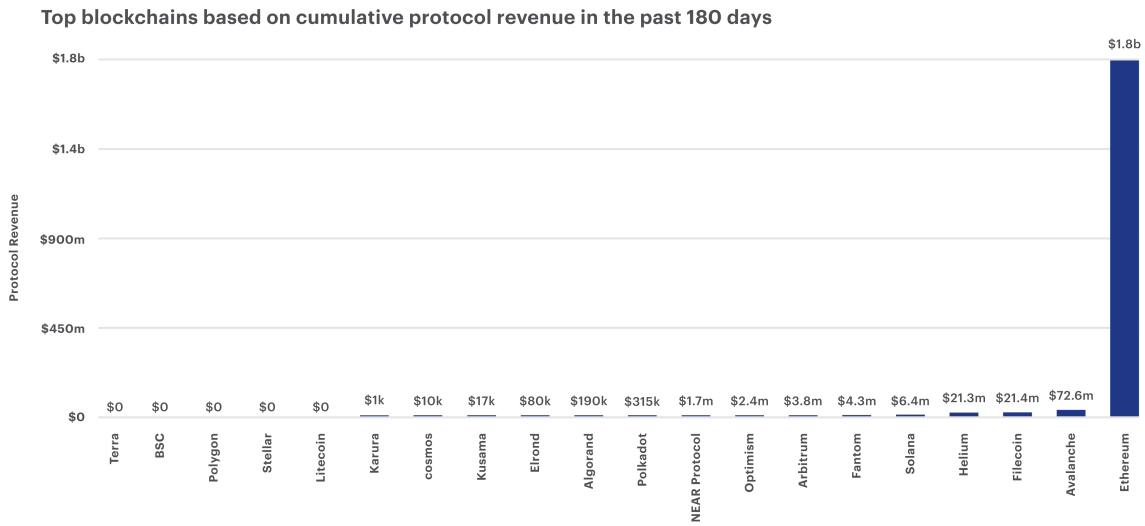


Figure 11. Cumulative Protocol Revenue for Top Blockchains
Source: Token Terminal

Over the same time period, Ethereum commanded over 90% of the total protocol revenue compared with other Layer 1 (L1) networks (Figure 12).

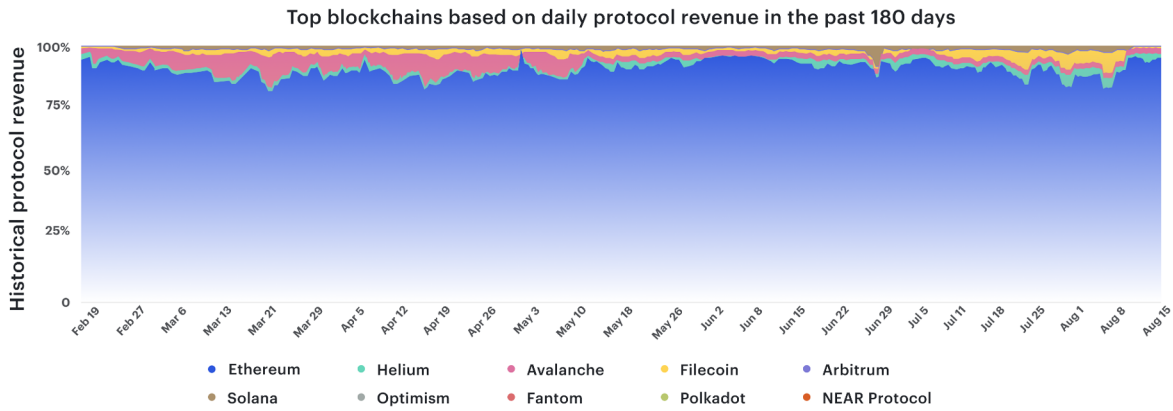


Figure 12. Daily Protocol Revenue for Top Blockchains
Source: Token Terminal

Since December 2020, staking on Ethereum has gained enormous traction. Over 13.3M ETH had been staked as of September 1, 2022, accounting for nearly 11% of total ETH supply (Figure 13).

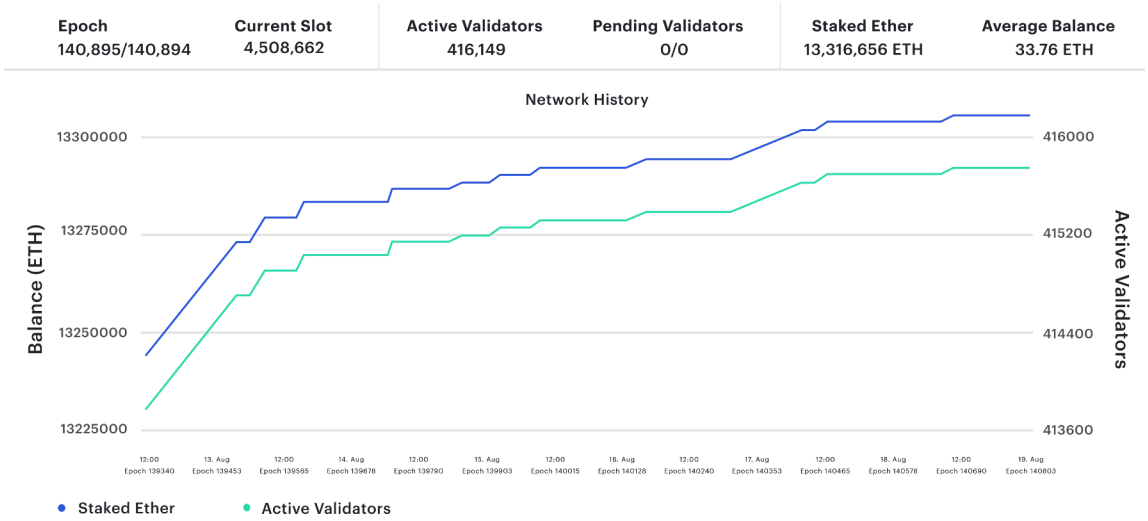


Figure 13. Amount of ETH Staked on the Consensus Layer
Source: Beaconcha.in

As we have seen above, the number of users and liquidity coming to Ethereum is incomparable to other L1 networks. As a result of this high liquidity and large user base, Ethereum becomes attractive to developers who are choosing between different blockchains on which to build. This popularity contributes to building a moat of liquidity for Ethereum. Most decentralized applications (dapps) with the highest TVL and usage across Web3 are built natively on Ethereum. As a result, there is a tremendous amount of value circulating within the network and institutional players can benefit from tapping into this value.

Network Security

Security is an important factor in the adoption of a blockchain—and the Merge will set Ethereum up for enhanced security through increased network participation and decentralization. But before we dive into these factors, let's understand the Ethereum Virtual Machine (EVM) and bridges.

The EVM is a platform where Ethereum data and smart contracts live. It allows developers to develop dapps on the Ethereum network as well as to easily port their code to other chains. For example, Ethereum devs no longer need to learn all the nuances of Solana, and can instead build on Neon EVM with much less friction to deploy their dapp on Solana. This adds a layer of composability and provides users the ability to perform all their transactions on the Ethereum network without needing to bridge to other networks.

Significantly popular infrastructure and applications already exist within the Ethereum ecosystem. This mitigates a notable existential risk of bridge hacks that other networks face since they often need to interact beyond their native network and with the Ethereum infrastructure.

In the past one year, over $2B has been stolen in bridge hacks (Figure 14). Some of the bridges that have been attacked include Axie's Ronin, Solana's Wormhole, Harmony's Horizon and Nomad. While they are one of the greatest risks to blockchain security, bridges are not inherently part of blockchain security design. Instead, they are simply a means of moving liquidity across different networks.

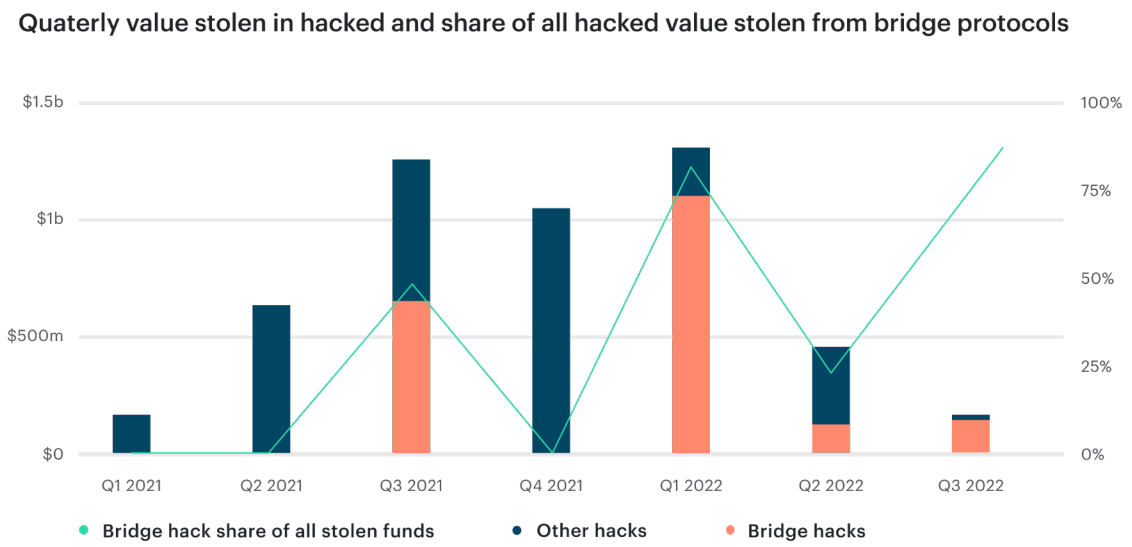


Figure 14. Value of Funds Lost in Bridge Hacks
Source: Chainalysis

One factor that can make other networks (such as Solana and Arbitrum) more attractive than Ethereum to developers and users is the low transaction costs on those networks. Gas fees remain a function of demand. As a higher number of users come to Ethereum and transact on the network, the gas fees go up. And vice-versa.

The Merge, however, will set the stage for further upgrades that will help lower the cost of using the Ethereum network. A successful Merge will enable sharding, the next upgrade outlined in the Ethereum roadmap. *Sharding* is the act of splitting a network's data into smaller portions to ensure easy storage of the data and avoid network congestion.

By reducing network congestion and enabling scalability, sharding will allow the Ethereum blockchain to process more transactions faster, effectively bringing down transaction costs. Therefore, developers and users will have less need to engage in bridging and risk their assets by moving between blockchains. They will be able to stay within the Ethereum moat for all their DeFi needs.

In addition to reducing bridging risks, the Merge will make Ethereum significantly more secure by making it overly expensive to attack. According to some estimates, hacking a blockchain running on the PoS mechanism will cost about 10-20X more than one operating on a PoW mechanism.

A key way through which the Merge enhances the security of Ethereum is by democratizing network participation.

By ensuring that single-node validators get the same chance to earn rewards as a whale stake, PoS will lead to further decentralization of the Ethereum network. In addition, it is difficult for a malicious actor to amass the 51% tokens required to launch an attack. Apart from being incredibly expensive to acquire that 51% stake on the network, it will be difficult to convince that many stakers to part with their stake. Currently, it will cost over $11B to launch a 51% attack on the Ethereum network for an hour.

Even if a bad actor manages to launch a 51% attack on the Ethereum network, the cost to sustain that attack will keep increasing because of a mechanism called slashing. If a validator attacks the network, their staked ETH will be burnt and their access to the network will be revoked. The attacker will effectively have to keep putting in more ETH, which will keep getting burnt, to sustain the attack. *Slashing* is a mechanism that is unique to PoS, and makes it more expensive to attack the Ethereum network when compared with PoW.

Security of crypto investments is a top concern for institutional investors, ahead of even regulations and market volatility. According to a survey by Nickel Digital Asset Management, Europe's largest regulated digital asset hedge fund manager, security is the main factor that affects an institutional investor's engagement with crypto. By enhancing the security of the Ethereum network, the Merge addresses this key issue.

Network Valuation

To contextualize Ethereum in the overall Web3 ecosystem, let's take a look at its valuation in comparison to other L1 networks.

Blockchains, quite simply, sell blockspace. Each blockchain has a methodology for pricing the transactions that is included in blocks. These methodologies range from first- and second-price auctions to a target number of transactions per block. Think of transaction flows in a blockchain as gross merchandise value, which is the total value of merchandise sold on a platform over a given period of time.

Different blockchains are at different stages in their life cycle. PoS requires the blockchain token to accrue value in order to function optimally, and burning the tokens is a popular mechanism for value accrual. As a framework to value public blockchains, we look at data from CoinShares on network fees, issuance cost, sustainability and value accrual for L1s to derive pseudo profit margins.

Network fees: Network fees are the amount that a network sells its blockspace for. It can be considered as supply-side revenue, or the total fees paid by users who want to have their transactions included in the network. As we can see in Figure 15, Ethereum has the highest network fees, at $4.8B, among six networks, including Binance Smart Chain, Avalanche and Solana.

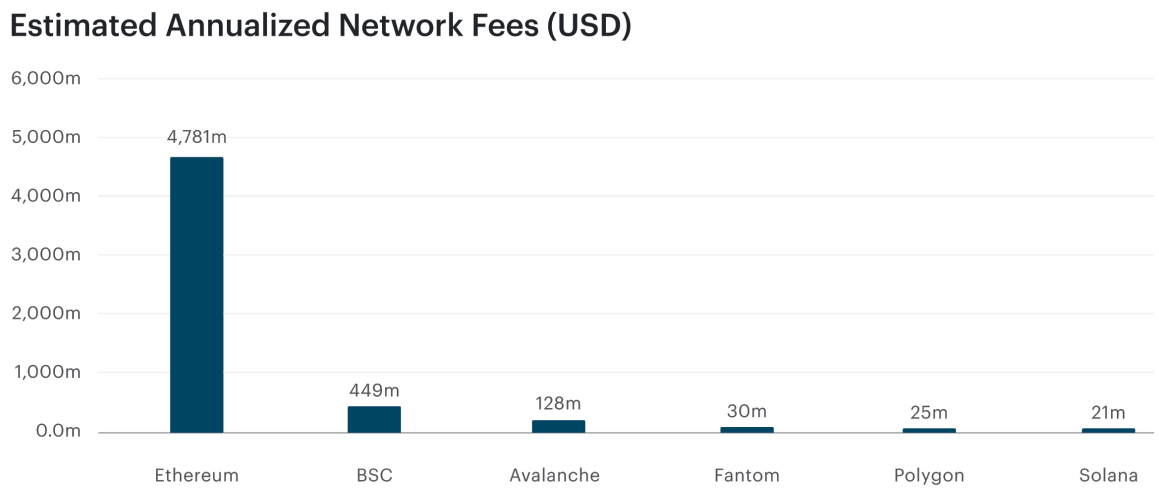


Figure 15. Estimated Annualized Fee from Various Blockchains
Source: CoinShares

Issuance costs: The production and protection of the blockspace do not come for free. The network must pay out rewards to key participants (miners and validators) of the network to maintain liveness, order, and security. This is called issuance cost. Among the six networks, Ethereum has the highest issuance costs at $10.3B (Figure 16).

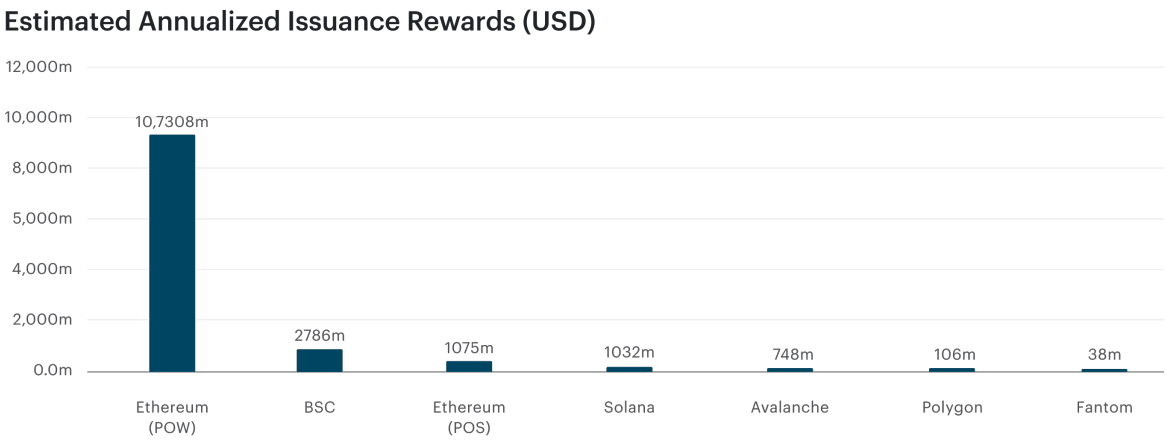


Figure 16 Estimated Annualized Issuance Rewards on Various Blockchains
Source: CoinShares

Sustainability: All six blockchains that we are looking at operate at varying scales. They have different hardware requirements, number of users, transaction speeds, number of validators, etc. Therefore, the issuance rewards for each network differ based on the network's specific needs. Depending on the burn rate (coins issued minus coins burned), a blockchain would need a ratio of at least one to be sustainable. Among the six blockchains we are looking at, only Ethereum has a ratio over 1 (Figure 17).

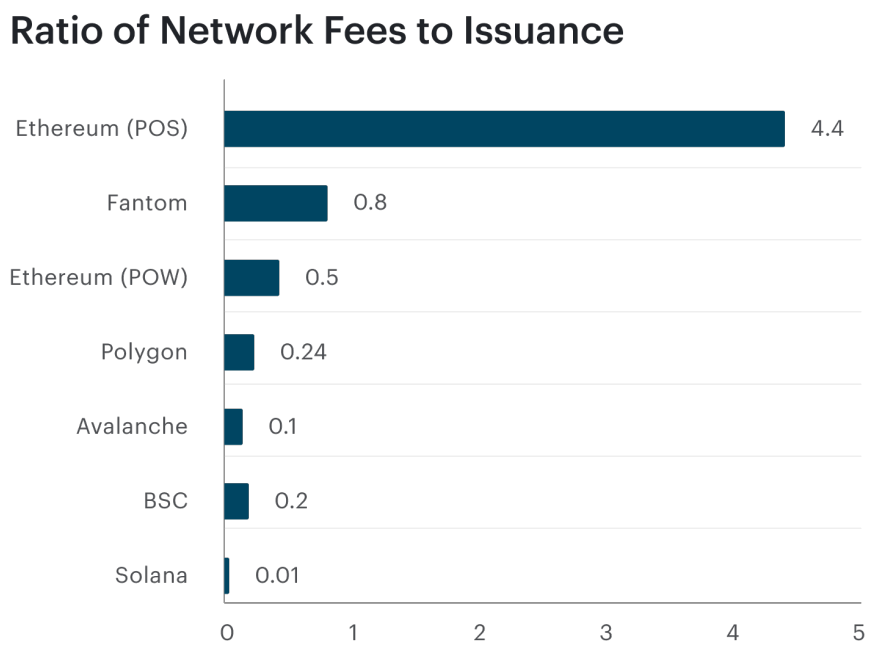


Figure 17. Ratio of Network Fee to Issuance
Source: CoinShares

Value Accrual: In a network secured by PoS, it is essential that the stake has a significant value in order to ensure the right crypto-economic incentives are in play. Some blockchains, including Ethereum, fulfill this need for value accrual by burning a portion of the fees paid to validators. Burned coins are akin to revenue, and have a similar effect on coin value as share buybacks have for shareholders. As we can see in Figure 18, Ethereum currently burns $5.7M worth of tokens annually

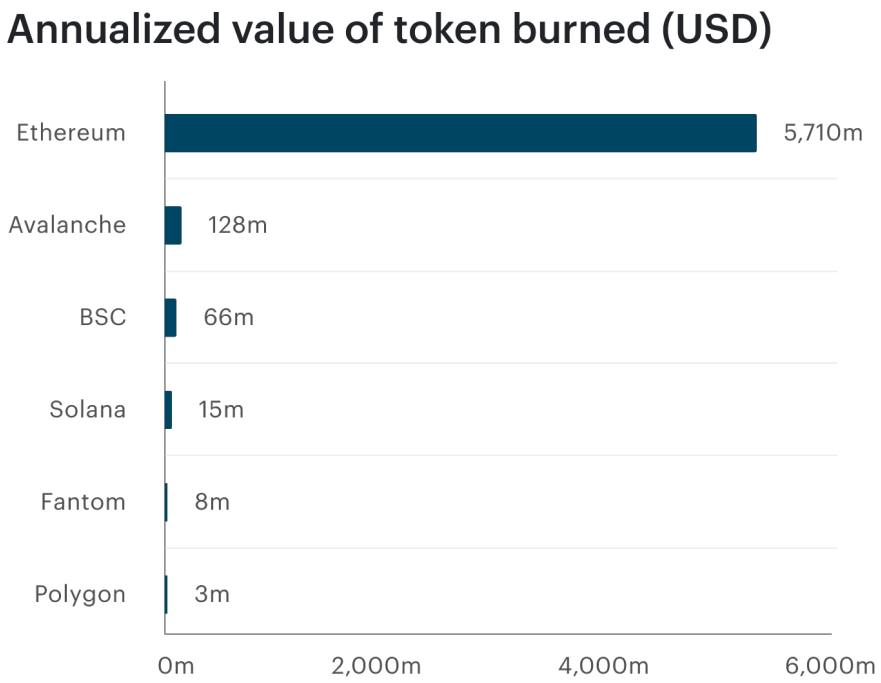


Figure 18. Annualized Value of Tokens Burned
Source: CoinShares

Net Issuance: The net issuance of a blockchain is the number of coins issued less the number of coins burned. If burned coins are greater than issued coins, then value is accrued to the remaining coins. Ethereum running PoS is expected to have a deflationary supply, as we can see in Figure 19.

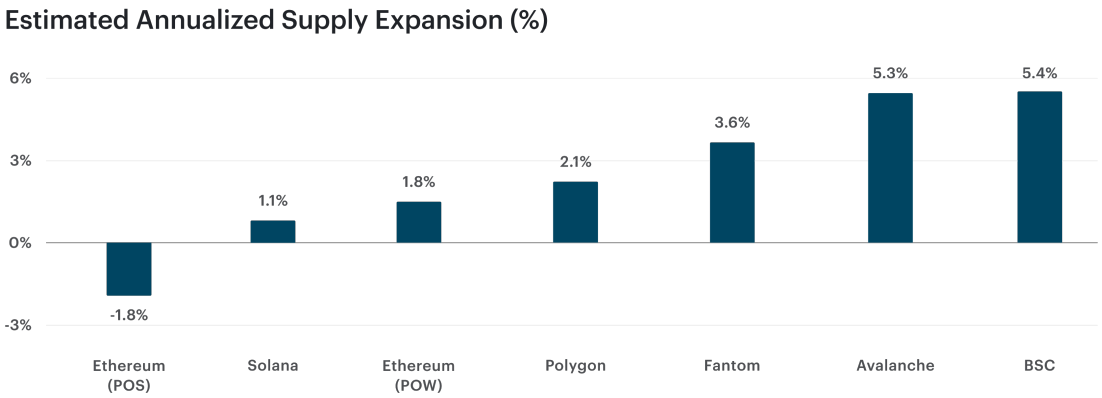


Figure 19. Estimated Annualized Supply Expansion
Source: CoinShares

Burned coins less issued coins can be seen as a form of profit for the chain. If burned coins are greater than issued coins, then value is accrued to the remaining coins. Keeping all the above factors in mind, we can see that an Ethereum chain running PoS is estimated to have pseudo-profit margins of 81% (Figure 20).

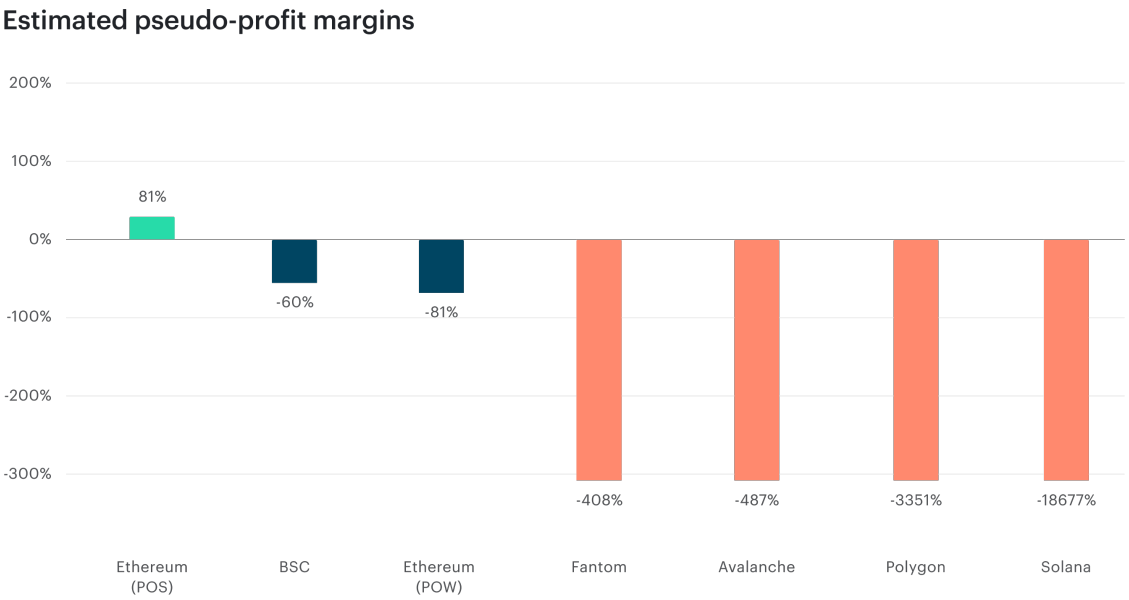


Figure 20. Estimated Pseudo Profit Margins
Source: CoinShares

Institutional Engagement with Ethereum

In the past decade, every industry at some point has reviewed their "crypto," "blockchain," or "Web3" strategy. While some have tried to pass legislation for Bitcoin/Ethereum exchange traded funds (ETFs) that could connect traditional financial (TradFi) instruments to cryptocurrency exposure throughout this time, different groups inside companies have been carefully experimenting and exploring this technology sector more directly. An evolution of institutional exposure and research may have followed this timeline:

2016 - 2018: Innovation Groups and Trading

- Start Proof of Concepts on new business lines leveraging blockchain tech
- Create in-house private testnets to engage with development teams to build internal interest
- Gain momentum through internal hackathons and product-line-specific integrations
- Review Ethereum as an open source venture capital platform to help fund projects through initial coin offerings (ICOs) with only a whitepaper, a pitch deck, and no product
- Join groups like the Hyperledger Foundation and the Enterprise Ethereum Alliance to explore privacy and identification of network participants
- Push standards and form consortia to align on multi-industry use cases involving digital asset marketplaces connected to global trade
- Weigh risk to existing business/reputation by removing direct exposure to crypto assets. For example, institutions may have invested into venture capital or directly to early stage companies rather than adding cryptocurrency to their balance sheet

2018 - 2020: Architecture and Strategy

- Create a strategic plan connecting to blockchain vendors or incorporating with core architecture frameworks
- Consider new business plans for existing software that can be deployed to broader audiences via blockchain networks rather than consortia/partnerships
- Play around with early stage DeFi through borrow/lend protocols such as Compound and Aave, or decentralized exchanges and automatic market makers such as Uniswap, Sushiswap
- Start new public networks (Alt L1s) by incentivizing core institutions to be contributors as validators or legal tenants
- Lean into custody, identity/wallets, and central bank digital currencies (CBDCs) as main use cases for exploration
- Launch pilot use cases that may have gotten traction through exchanges or larger software vendors
- At this point, financial services started trading desks or allocated to crypto hedge funds

2020 - 2022: Digital Assets and Marketing

- Abandon private networks due to lack of funding or adoption
- Front office digital asset groups consider issuing assets on public networks and creating on-chain dark pools for institutional participation
- Consider buying exposure or increasing capital allocation to cryptocurrencies or non-fungible tokens (NFTs) on public company balance sheets due to inverse correlation with traditional markets
  - Realize inverse correlation is not the case after seeing more than 80% declines from all time highs in November 2021
- Issue POAPs, which are digital mementos to mark a moment, or NFTs connected to a marketing budget for engagement with events and public projects
- Build “Web3 Modules” or tools providing these modules that can leverage social influence and virality from Web2 companies
- Launch stablecoins and new economic mechanisms for creating “fresh DeFi 2.0” value to the networks
- Launch Layer 2 (L2) solutions that use the EVM and leverage Ethereum for protocol settlement via Zero Knowledge (zk) Proof roll-up technology
- Recognize advancement in decentralized autonomous organizations (DAOs), NFTs, and DeFi to have become the prominent use cases

While these are fairly generalized phases of development, there is a clear trend of mainstream adoption and institutional participation in Ethereum and other networks via digital assets that did not exist prior.

Over the last 2 years, many leading institutions have taken meaningful steps into the DeFi and Web3 ecosystem with business model pivots and capital deployment.

How Institutional Defi has Evolved in the Last Two Years

In recent years, three changes in the ecosystem have had a profound impact on institutional adoption:

1. DeFi Financial Market Infrastructure ("dFMI") players have matured and created fundamental base services to accelerate adoption and trading on decentralized networks
2. DeFi applications and protocols have begun to develop institution-focused services
3. L2 solutions have improved Ethereum blockchain performance, privacy, and cost per transaction

	TradeFi	DeFi
Buyer and Sellers	Real Money Investors Leveraged Investors Corporates Banks and Financial Institutions	Crypto Funds DeFi Protocols Lenders DAOs
Market Makers	Top 20 Investment Banks Market Makers (Large tech and capital barriers)	DEXes & AMMs DeFi Protocols (Some sophisticated consumers)
Custodians	Top 5 Traditional Custody Providers Prime Brokers	Crypto Custodians Custody Tech Providers
Clearing and Settlement	CSDs FMIs	Cryptographically secure execution layer and consensus layer (Decentralized public networks)

Figure 21. DeFi-Established Comparable Functions to Traditional Finance

Institutional infrastructure, including DeFi wallets for organizations such as MetaMask Institutional (MMI), have come on scene offering services that span the entire capital allocation process—from ecosystem research, pre- and post-trade compliance, best execution, monitoring, reporting, and custody.

With the unparalleled ecosystem reach of MetaMask, MMI offers unrivaled access to DeFi with institution-required security, operational efficiency, and compliance. It enables cryptofunds, market makers, trading desks, DAOs, and other organizations to trade, stake, borrow, lend, invest, bridge assets, and interact with over 17,000 DeFi protocols and applications. In addition, MMI is unique in its integration of multiple top-tier institutional custody solutions. MMI is currently partnered with seven custodians that provide global coverage and diverse tech stack offerings including multi-party computation (MPC) and hardware security module (HSM) wallets.

Apart from the development of Web3 infrastructure and wallet services, the sheer number of decentralized applications has exploded—resulting in the exponential increase of institutional yield opportunities.

There has been a notable increase specifically in the number of applications that cater to institutional audiences, such as Maple Finance and Alkemi. Some established DeFi dapps have also expanded their services to create a foundation for institutional use cases. Examples include MakerDAO for stablecoins, Uniswap for AMM pools, order routing algorithms to create a decentralized exchange (DEX), and Compound borrow/lending with interest bearing token rewards. These innovations have helped institutions adopt DeFi to replace some standard Open Banking APIs for the next generation of finance.

Today, the access to these DeFi smart contracts creates an open source layer of finance with deals on yield rates that traditionally would require bank licenses and large volumes. With DeFi, trading bots could be deployed for activities such as market making that could programmatically adjust investor staking schemes. This has led to accelerated growth in this space and high demand for diversification into the crypto asset class.

Layer 2 solutions have specifically addressed some of the technical concerns related to performance, privacy, and cost per transaction to cover enterprise security and deployment requirements. This has allowed the Ethereum Foundation and maintained-infrastructure clients to expedite the move from PoW to PoS via the Merge.

These ecosystem developments have together created improved conditions to encourage a meaningful increase in institutional DeFi adoption.

Navigating Institutional Participation in DeFi and Web3

Entering the DeFi space is not without its challenges for organizations. To better understand how to navigate participation, we map out the adoption cycle noting the role of compliance and regulation. We use a mental model of the transaction flow process to identify institutional needs and challenges.

Figure 22. Pyramid of Institutional Needs

Security: Custody and Risk Management

Different institutions of different sizes face different challenges. Yet, there is one aspect that unites the entire institutional world regardless of regulatory oversight or assets under management (AUM): Risk. Risk management within DeFi takes on several dimensions. At the base of our institutional needs pyramid is security. This entails the safe storage of private keys,which are most often held on HSMs or MPCs custody tech, or with qualified custodians.

That's not all. Institutions need to ensure that their keys are protected from hacks and theft. To this end, they must rely on custody, key recovery, and multi-signature capabilities, so that assets cannot be sent anywhere within the network without multiple parties approving and signing the transaction.

Within the base layer, additional security includes allow-listing wallet addresses and smart contracts, and placing limits on the number or size of transactions. Effectively, building in risk management rules depends on the complexity of an organization. It often involves insurance against loss of access (the loss of private keys) and loss against theft.

Compliance

The next layer in the pyramid is compliance—a risk and challenge not yet faced by the entire institutional world, even though increased regulatory oversight will no doubt become paramount in the years ahead. Within Europe, Asia, and the US, institutions have to comply with Anti-Money Laundering (AML) regulations that often carry with them the threat of fines, fund closures, and incarceration when trading with nefarious counterparties.

Today, many tools exist in the market to track Know Your Transaction (KYT) risks, identifying the flow of funds risk. Yet, the depth and breadth required to step into DeFi pools require analysis of all transfers within a transaction, and not just the transactions themselves. This means it's important that any tools evaluated in the market need to provide risk management within DeFi itself.

Access

The next layer in the pyramid is access. DeFi access can be achieved through two main execution venues. The first is indirect via the limited number of centralized crypto exchanges, offering access to (often, a limited number of) tokens from some well known DeFi primitive. Yet, to access DeFi directly, which means access to the tens of thousands of DeFi tokens and DeFi protocols that exist today, institutions will require the second, direct venue: a Web3 wallet.

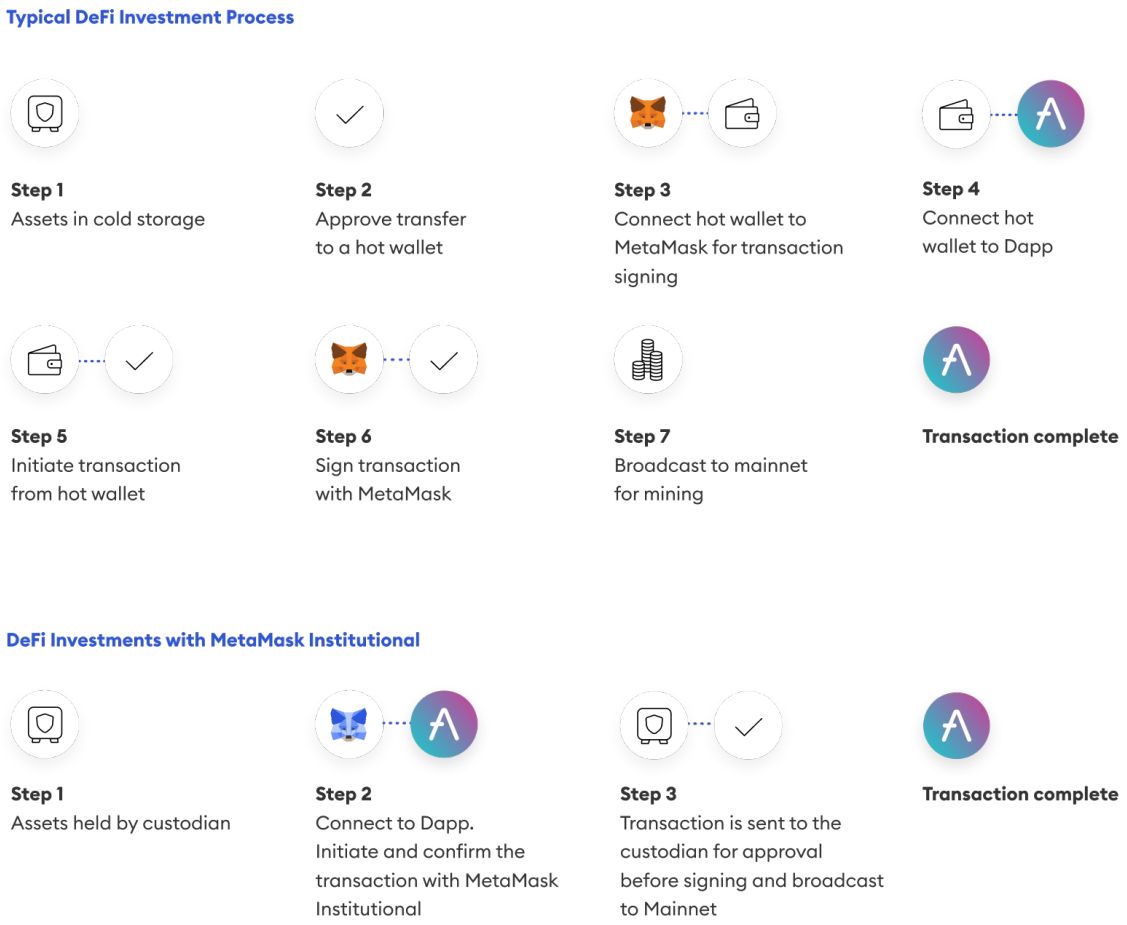


Figure 23. Typical DeFi Investment Process VS Investment Process with MMI

Monitoring

This brings us to the next challenge, monitoring: Often institutions execute their trades from the walled garden of their custodian accounts, trading on centralized exchanges (CEXs) to move assets.

Three years ago all trading by crypto funds occured through CEXs. Yet, with the rise of DeFi, direct access has increased, offering a more efficient route into the asset class—but this brings challenges. As institutions leave their walled custodian gardens, they need to ensure that they are able to track their assets, yields, attribution of annual percentage yields (APY), and risk management around their positions.

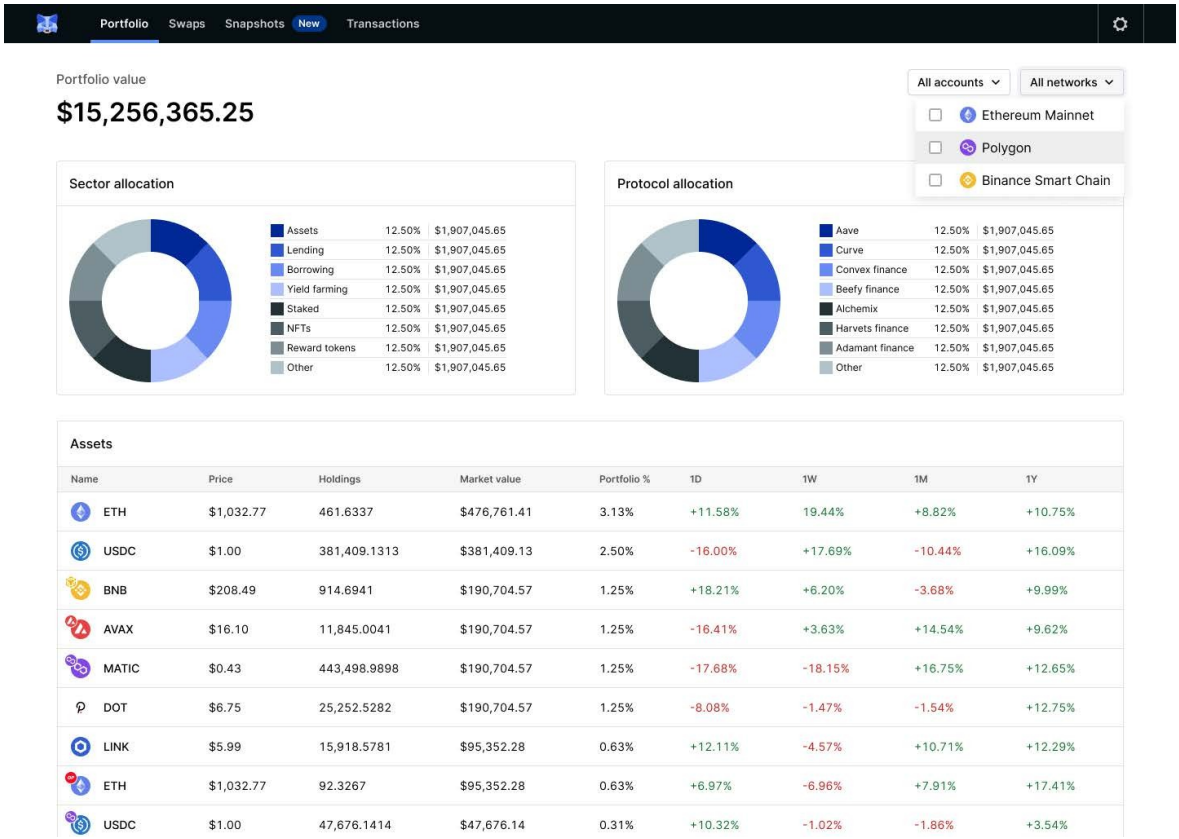


Figure 24. The MetaMask Institutional Portfolio Dashboard Helps Institutions Monitor and Report on Web3 Activity

Reporting

Reporting makes up the fourth layer in the pyramid, which includes a variety of new challenges for the institutional world: A new financial world gives rise to new conventions—from airdrops to governance tokens. For example, yield farming actively across DeFi entails building complex trading strategies that include staking reward tokens across multiple primitives. These positions generate capital gains, additional governance tokens, and APYs.

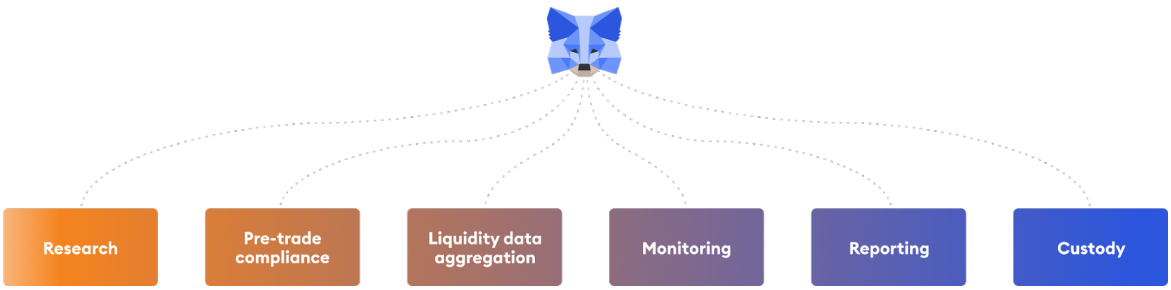
Price and total return performance require accurate reporting by fund administrators to fund investors. Given how new and vastly expanding this ecosystem is, fund administrators are still coming to terms with the jargon, conventions, technical details and reporting. Institutional investors need reporting tools that provide detailed transaction data for their fund administrators and investors.

Research

Lastly, there is research: how to better understand and filter the growing nuances and most important opportunities within the DeFi ecosystem.

Figure 25. Cryptoeconomic Research Focus Areas from ConsenSys

In order for institutions to safely and effectively engage with DeFi, it is crucial that each of the six challenges above are addressed, and investment processes are made secure, compliant, and efficient. This is the value offered by MetaMask Institutional.



Explore MetaMask Institutional

How Institutions are Diversifying into the Crypto Asset Class

With the explosion of DeFi applications and the emergence of institutional infrastructure, institutions have established direct and indirect exposure to the sector.

Staking

Staking, specifically on Ethereum, has gained enormous traction as the ecosystem approaches the Merge. On September 1, 2022 over 13.3M ETH has been staked to secure the Ethereum network and generate rewards for over 418.5k validators. Trends show that custodians and other organizations have increasingly been allocating here.

Institutional staking services from ConsenSys Codefi help organizations maximize rewards. Codefi does this by managing the complicated deposit process and continuously maintaining infrastructure in order to guard against many of the operational risks of staking. Codefi follows Systems and Organization Control (SOC)2 approved processes to manage the operational risks around deposits, connectivity, security, priority fee distribution and key management.

Digital Asset Trading

Decentralized exchanges (DEXs)—like Uniswap, Sushiswap, 0x, ParaSwap—along with automated market makers (AMMs), and token swapping aggregators, are solving the issue of being able to access crypto assets from anywhere in the world as long as organizations are set up with an institutional Web3 wallet like MetaMask Institutional. MetaMask itself has also developed a Swaps feature that aggregates liquidity data from across the DeFi ecosystem. It enables individuals and organizations alike to identify the best price quote, coupled with optimal gas prices for the given quote, the lowest failure rates, and largest market depth. Although centralized exchanges (CEXs) dominate trading volume today, DEXs have recorded an increase in average trading volume in 2022, despite unfavorable market conditions. As of July 2022, the average DEX volume was 104B, up from 92B a year earlier.

Lending and Borrowing

Compound and Aave are non-custodial, decentralized peer-to-peer lending platforms. Both offer users opportunities to (1) borrow funds while putting up their crypto assets as collateral, and to (2) lend their cryptocurrency for interest rates that are exponentially higher than those offered in traditional finance. Aave is known for popularizing flash loans, which are instant loans that users can borrow without collateral as long as the loan is repaid in full before the block is completed. Providing liquidity on Aave can generate attractive yields. As protocols chase liquidity, attractive yields are increasingly the norm.

In January this year, Aave launched Aave Arc, which uses KYC'd pools to provide institutional investors with direct access to decentralized lending markets. These pools are separate from existing liquidity pools on Aave in order to comply with institutional compliance and regulatory requirements.

Yield Farming

Unique to DeFi, yield farming allows organizations to stake crypto assets in various non-custodial, DeFi protocols to earn high fixed or variable interest rates. Yearn, Idle Finance, Enzyme, and Vesper are some examples.

In the absence of yield farming platforms, users had to manually search for protocols with the highest returns, and move their crypto assets onto that platform to earn higher rewards. The platforms automate this process by finding, and switching to, the highest yielding opportunities for yield farmers and liquidity providers.

Collateralized NFTs

NFTs are enabling a new era of collectability and ownership, with new ways for enterprises to engage with fans, patrons, and communities. Whether it is profile picture collections, artistic 1 of 1s, music clips, collectibles, or simply utility badges, Web3 wouldn't be where it is today without NFT mainstream adoption. The platform largely facilitating this revolution is OpenSea, an NFT marketplace where users can buy and sell pieces from almost any NFT collection out there.

Because NFTs are inherently composable with other Ethereum smart contracts and protocols, they are suitable for financialization. While there are three main ways– collective bidding, fractionalization, collateralized loans— that NFTs can be financialized, the one most relevant to institutions is collateralized loans.

Platforms like NFTfi offer NFT collateralized loans, where a user can put up any ERC-721 token up for collateralization, and other users can begin offering you a loan. Once accepted, the ETH gets paid to the user and the NFT is locked in the NFTfi smart contract, only to be returned once the loan is paid. If a user can't pay back the loan then the NFT is then transferred to the lender.

Other Avenues of Direct Exposure

Institutions have also been getting direct exposure to the crypto asset class in different ways. Some examples include buying and trading spot cryptocurrency tokens such as BTC, ETH; opening accounts on crypto exchanges such as Gemini, Coinbase; operating accounts through traditional exchanges such as Robinhood or payment service providers such as PayPal and Venmo. Some institutions have also been running accounts through 401k providers such as Fidelity Digital Assets.

Many institutions are buying tokens representing an index of tokens such as Set protocol, are issuing their own tokens, buying and managing mining operations, buying and trading future contracts through the CME Group, or becoming a liquidity provider for token pairs on AMM pools such as Uniswap and Aave. Some are even staking tokens directly into protocols, or staking via centralized financial CeFi services such as Genesis Trading through Gemini.

Accessing DeFi and Web3

To engage in these activities, organizations must consider heightened risk and operational requirements. MMI offers unrivaled access to the DeFi and Web3 ecosystem with institution-required security, operational efficiency, and compliance. MMI enables funds to trade, stake, borrow, lend, invest, bridge assets, and interact with over 17,000 DeFi protocols and applications.

Explore MetaMask Institutional

Indirect Exposure

In terms of indirect exposure to crypto assets: Institutional investors have been investing directly into cryptocurrency projects or networks, investing into building separate entity trading desks, or investing in VCs that diversify into crypto or blockchain projects. They have also been building crypto-adjacent services such as custody or insurance, buying stocks in companies experimenting with crypto technology, buying stocks in companies with exposure to cryptocurrency on their balance sheet or buying crypto-linked fund tokens, for example through Grayscale

The Impact of the Merge on Institutions

We've examined what the Merge means for the Ethereum network and for ETH; we've walked through the challenges and evolution of institutional engagement with Ethereum. Now we turn to how the Merge will impact institutions.

Reduced carbon footprint

The shift to PoS means a 99.95% decrease in energy consumption due to the removal of PoW physical GPU (graphics processing unit) node processors and their replacement by lightweight servers running validator clients. The reduction of Ethereum's carbon footprint will be significant for institutional investors, especially traditional organizations who need to meet certain ESG mandates in their portfolios. After the Merge, there will be an opportunity to obtain real yield without compromising on sustainability goals.

Through this lens, transacting on Ethereum may look more attractive than on other L1 chains that do not offer the same energy efficiency.

New and attractive staking opportunities

Staking contracts will continue to follow the staking vs TVL % earning curve (Figure 36). Individuals and institutions can earn rewards through staking for participating in network consensus. Investors are likely to obtain positive real yield, estimated to be between 5.5-13.2%. In a world of negative real yields, the positive real yield will make ETH staking a particularly attractive opportunity. In addition, liquid staking opportunities created by centralized services like Lido will continue to lower barriers to entry by allowing investors to stake their ETH while retaining liquidity in the form of ETH derivatives.

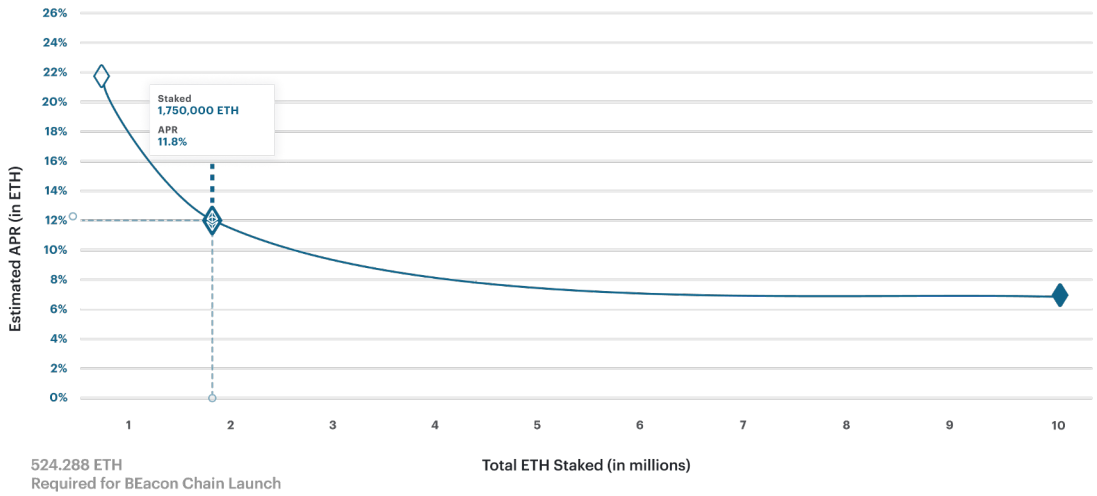


Figure 36. Total ETH Staked vs Estimated APR
Source: Staking Rewards

Deflationary supply of ETH

Reduced ETH issuance and increased burns not only caps, but systematically reduces ETH supply. The reduced supply will put deflationary pressure on ETH and diminish the risk of token price dropping to zero. For institutions, ETH may become a more attractive asset, as reduced supply may lead to an increase in value.

Improved security

Enhanced decentralization
The democratized participation of the PoS system produces enhanced decentralization, and thereby a dramatic increase in the cost of attacking the Ethereum blockchain. As of September 2022, more that 13.3M ETH had been staked by over 418,500 validators—This ensures the near impossibility of attack. With these numbers, a 51% attack would cost over $11B.

Cross-team ecosystem collaboration
The Ethereum network is fueled by a diverse ecosystem of participants building together on an open-source framework, on a global scale. Collaboration across the protocol ecosystem leads to fewer centralized points of failure. This ensures confidence in the community to build and execute.

These points each provide stronger security guarantees for both institutional and retail participation.

Ecosystem growth
On-chain applications and L2 solutions will likely leverage the above improved security conditions and multiply on top of Ethereum. This could produce another explosion in the number of applications deployed, and thus the number of opportunities created for institutions.

Client diversity and interoperability

Ethereum is the network with the highest number of live client instances that can fully interoperate. Integration can occur with any major coding language and in collaboration with different companies. The breadth of options will allow institutions to choose how they want to interact with Web3. Each one can choose to rely on client(s) that fit with their precise requirements.

Beyond these general outcomes, we expect to see the Merge impact different kinds of institutions in different ways.

Crypto funds are likely to diversify their investment strategy with protocol staking for base returns. ETH and ETH derivatives, such as for liquid staking, offer liquid yield returns in addition to other farming strategies funds may deploy.

Trading firms are likely to see short-term gains with high-volume trades and position adjustments leading up to the Merge. Volatile markets provide opportunities for market makers.

For pension funds and endowments, 401k spot exposure to cryptocurrency assets may expand to tokens representing derivatives of these assets. There may be an adjustment of positions for long term returns.

If L2s and other protocols use ETH to settle their transactions to Ethereum, then these projects may have already been buying ETH through the bear market in order to operate on the network for future launches. At the time of this report, this demand may have already been priced in.

As ETH dramatically reduces its carbon footprint,**traditional organizations and financial institutions** may look into opportunities to get exposure to DeFi services. This may start with NFT drops or embedding wallet features into banking applications for stablecoin custody and conversion. Further, financial institutions may add stablecoins onto their balance sheets and attract portfolio managers to build exposure to yield farming opportunities on DeFi protocols launched on Ethereum.

Even as the Merge will provide an impetus for institutions to develop further strategies to engage with the Ethereum and DeFi ecosystem, there are critiques of the blockchain network that remain. We explore these critiques, as well as how Ethereum plans to address these in its future roadmap in the next section.

The Future of Ethereum

Threats

As we have seen above, the Merge is a significant upgrade to Ethereum's infrastructure and will set it up to be more secure, sustainable, and scalable. However, some of the long-standing criticisms of Ethereum such as high transaction costs and slower transaction processing, will still remain after the Merge.

In addition, the PoS mechanism could introduce an existential risk of increasing centralization, censorship, and collusion in the Ethereum network. Following the Merge, large holders of ETH could theoretically interfere with the network's performance. While this does not extend to catastrophic events like reversing transactions, it could potentially prevent finality from happening for an extended period of time, such as a day. One example of this existential threat is the growth of liquid staking derivatives on protocols like Lido Finance, Rocket Pool, and similar protocols. Lido, for instance, now controls nearly a third of all staked ETH. While there is decentralization within Lido (e.g. 21 validators on Lido responsible for staking), the potential attack vector is still there.

Improvements in interoperability pose an existential threat to Ethereum. This includes the emergence of cross-chain messaging protocols such as Axelar, the proliferation of protocols with built-in interoperability such as Cosmos and Polkadot, as well as improvements to bridge technology. All of these factors enable developers to build applications that are chain-agnostic while allowing users to move frictionlessly across chains with more security.

While the Merge may not directly address some of these criticisms, it does set Ethereum up for further upgrades outlined in its roadmap. The Merge is a step in the right direction. However, it is only the first one in the journey towards a better Ethereum.

Roadmap

The Surge

The first update after the Merge will be the Surge. The surge will allow the Ethereum network to scale massively through sharding. As an overall concept, sharding splits the data processing responsibility of a database (decentralized or otherwise) among many nodes, allowing parallel transaction, storing, and processing of information. As we mentioned in earlier sections, sharding will split the Ethereum network into shards, which will work as independent blockchains. Currently, Ethereum processes 15 transactions per second (TPS) on an average. Ethereum could reach processing capability of up to 100,000 TPS once its roadmap is complete, according Ethereum co-founder Vitalik Buterin.

Sharding will also tackle an existential threat to Ethereum posed by L2s such as Arbitrum and Polygon. Currently, Ethereum is significantly more expensive to use than most L2s.

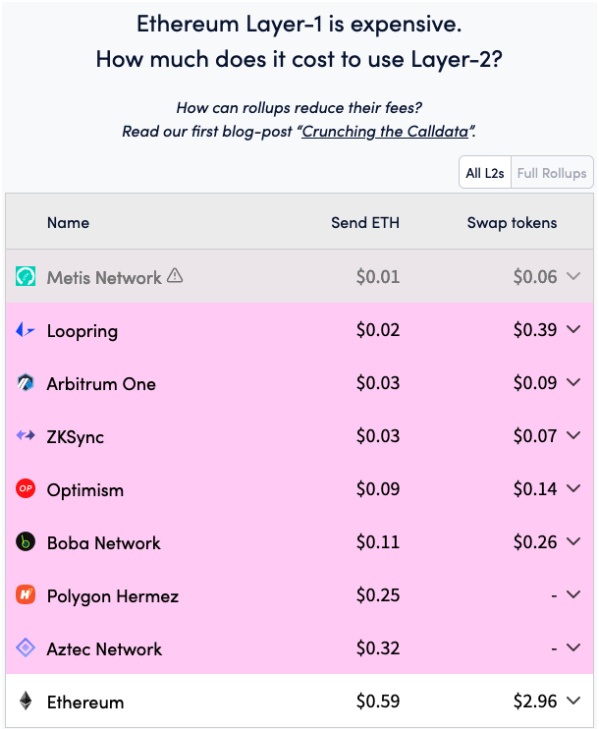


Figure 37. Gas Fee for Various L2s Compared to Ethereum
Source: L2Fees

Well-established optimistic rollups like Optimism and optimized zk-rollups like Starkware direct usage away from Ethereum's base layer, while settlement still ultimately resolves on the base layer.

Increasing transaction processing speed will allow Ethereum to reduce network congestion, which in turn can lower transaction costs. This is done through L2 hierarchical splits of tasks in rollups and parallel processing of unrelated tasks through sharding. At first these shards will function like rollups, bundling multiple transactions on each shard into one and then posting that one transaction to the Mainnet. Eventually, these shards will be able to function like independent blockchains, with their own smart contracts and account balances. Transactions between different shards will happen through cross-shard communication.

The Verge

The next phase of the Ethereum roadmap, the Verge, will focus on further increasing scalability of the network. This upgrade will work on optimizing storage through Verkle Trees, a kind of mathematical proof that is an upgrade to the Merkle proof Ethereum currently uses. By reducing the amount of data validators need to store on their computers to run operations, node sizes will shrink and allow more users to become validators. This will further decentralize the network and increase security.

The Purge

The Purge will reduce hardware requirements and streamline storage for validators by eliminating historical data and technical debt. This, in turn, will further reduce network congestion.

The Splurge

The final stage of the Ethereum roadmap will work on introducing smaller upgrades that will essentially fine tune the network. Buterin has referred to these upgrades as the “fun stuff”.

A good thing to remember here is that these upgrades will not necessarily follow one after the other. They are fairly independent, and are being worked on in parallel. The order of rollout of these upgrades has not yet been decided, but the work for all these upgrades is happening simultaneously.

Conclusion: The Future of Institutional DeFi

As we have seen in this report, the Ethereum ecosystem is building for the long term. Despite current geopolitical and macroeconomic factors, and the recent market volatility—the community remains committed to building innovative products and systems, and institutional appetite for being a part of these innovations remains strong. Financial institutions—investment banks like Goldman Sachs and Barclays, hedge funds like Citadel Securities and Point72 Ventures, an retail banks such as Banco Santander and Itau Unibanco—are putting their money in crypto, or furthering their plans to offer crypto investment options to their clients.

As we continue to build through the bear market, we believe that the future of institutional DeFi is bright.

For a long time, the debate around institutional investment in crypto was about TradFi vs DeFi. The increasing popularity of DeFi was often considered a death knell for TradFi. However, the digital asset management strategies of a number of TradFi companies in the downturn point to the fact that TradFi and DeFi are now coming together to complement each other. This trend is likely to increase post-Merge, as institutions acknowledge that it is all about the long game.

With the Merge increasing the security of the Ethereum network, and setting it up for future scalability, we expect institutions to become more keen to engage with the Web3 ecosystem.

For the past two years, DeFi innovation has created the infrastructure and tooling required for institutional DeFi adoption. From permissioned-lending pools that ensure only KYC'd participants, to on-chain asset management, MEV-resistant best execution protocols, and decentralized identity—more and more institution-focused projects have come to market.

We are also seeing L2 projects such as Optimism, Polygon, and Arbitrum achieve good DeFi volume for yield farming. We expect more institution-focused projects to come to market as L2 scaling accelerates post the Merge.

The transition to PoS has created compelling reward opportunities for institutions. With large holders of ETH—including cryptocurrency exchanges, funds, and custodians—already recognizing that holding ETH bestows a powerful position within DeFi, they have been able to earn rewards at 4.06% annual yield on their ETH positions. After the Merge, we expect real yield from ETH staking to be between 5.5% and 13.2%, depending on several factors such as block rewards, transaction fees, and maximum extractable value (MEV) accrued to validators.

Staking Rewards (APR)	Conservative	Base	Aggressive
Block rewards	4.2%	4.3%	4.4%
Transaction fees (Tips)	0.9%	2.9%	5.5%
MEV	0.3%	0.3%	0.2%
Cash flow yield	**5.4%**	**7.6%**	**10.1%**
Network deflationary accrual	**0.1%**	**1.5%**	**3.1%**
Real staking yield	**5.5%**	**9.1%**	**13.2%**

Figure 38. Estimated Staking Rewards
Source: ConsenSys

The opportunities for institutional DeFi are vast, and the Merge will only help the market mature and create opportunities for investors chasing yield in high-risk areas. Institutional investors, who may have been skeptical about the investment opportunities of DeFi earlier, have now come to recognize the growth of Web3 and its related financial instruments powered by DeFi to be inevitable. They may not yet fully understand the drivers behind DeFi or Web3, but have learned that the asset class cannot be ignored.

Ethereum's next phase on the roadmap will tackle the challenges of scaling, thereby building confidence in the ecosystem, especially among those who may see crypto assets as too risky an investment. We expect progress and innovation to come fast, whether from cryptonative funds and DAOs, or traditional Web2 institutions.

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