BINANCE RESEARCH

Ethereum DeFi Ecosystem: A Deep Dive



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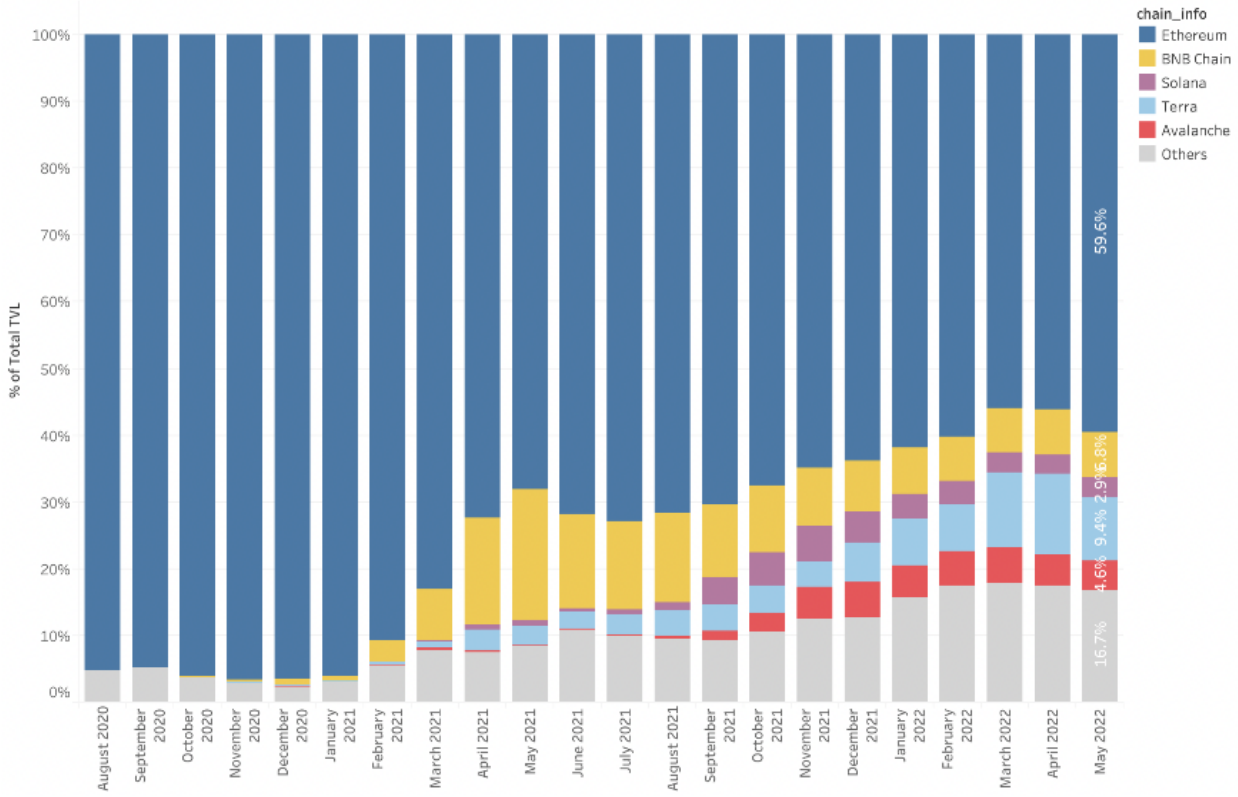
Key Takeaways

- Ethereum's decentralized finance ("DeFi") ecosystem has been at the forefront of innovation in the space
- Decentralized Exchanges ("DEXes") and Lending are the leading categories of decentralized applications ("dApps") within DeFi, with Uniswap, Curve, Aave and Compound topping the charts
- Derivatives and Yield Aggregators also form an important part of the ecosystem, while Liquid Staking is a newer, but rapidly growing category, currently largely dominated by Lido
- First-mover advantage, innovative integrations within wallets and a vibrant developer community has allowed Ethereum to maintain their leading position
- EVM-compatibility, a focus on layer 2 scaling & sidechains and programming language choices are important factors for competing chains to consider and could potentially exacerbate the erosion in market share that Ethereum DeFi has experienced in the last 18 months

Introduction

Ethereum has been at the forefront of innovation and true value accumulation in the crypto world. **Smart contracts changed the game in terms of what was possible to do and truly thrust the crypto landscape onto its next frontier.** Ethereum-based decentralized applications ("dApps") like MakerDAO, Uniswap, and Compound set the precedent for the wider DeFi landscape and played a significant part in driving Ethereum's incredibly skewed leadership position in terms of total value locked ("TVL") on DeFi applications. Nonetheless, competition has been on the rise, with **Ethereum's total share of DeFi TVL dropping from 97% at the start of 2021 down to 64% in May 2022**. In this report, we provide an overview of the top DeFi apps on the Ethereum blockchain, discuss why they were so successful and how they gained so much market share, and what other chains can do.

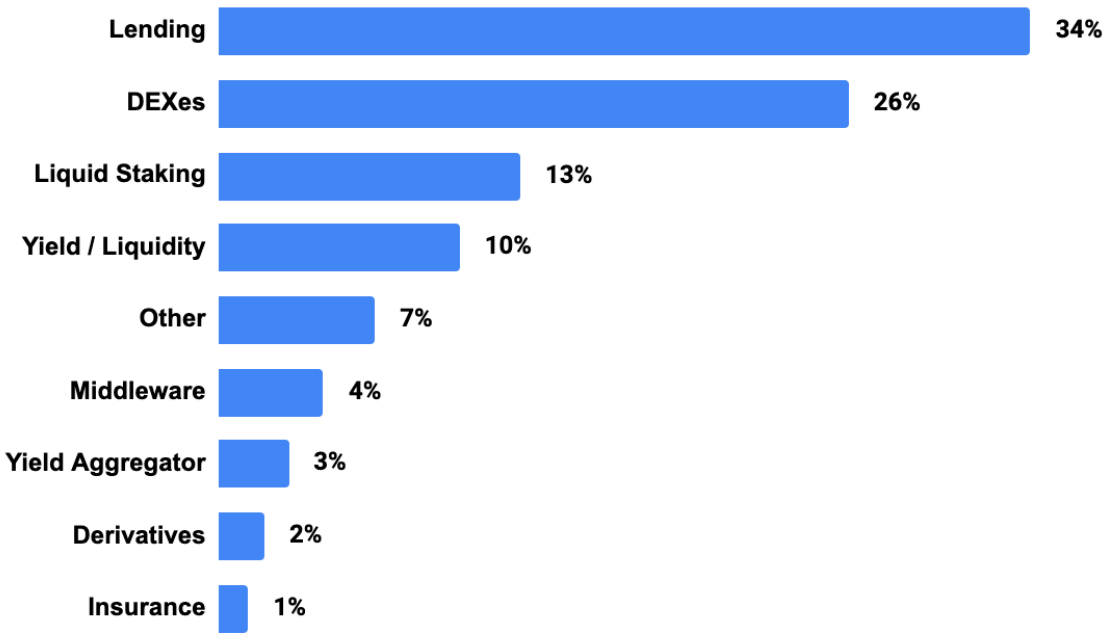
Figure 1: Average monthly DeFi TVL by Chain (% share of total TVL)



Source: DeFiLlama / Binance Research

**note that the chart uses monthly averages and thus still includes Terra (which had close to $30bn in TVL at the start of May)*

Figure 2: Ethereum DeFi TVL by Category (%)



Source: DeFiLlama / Binance Research

Decentralized Exchanges ("DEXes")

To open the discussion, we can discuss the primary means of exchange in the DeFi world; decentralized exchanges or DEXes. And what discussion on DEXes can start without talking about all things Uniswap. **Uniswap is a leading DEX, or to be more precise, automated liquidity protocol, on Ethereum.** Uniswap matches buyers and sellers through a model called an automated market maker ("AMM"), which are essentially smart contracts that hold liquidity pools that can be traded against. Traders are incentivized to become liquidity providers ("LPs") and deposit tokens into pools in exchange for a share of trading fees. **Closely related to Uniswap is its most famous fork, SushiSwap.** SushiSwap launched in 2020 via what was later dubbed a "vampire attack," which, in short, involved a strategy to siphon liquidity off of their key competitor, Uniswap, in order to boost the launch of Sushi. **SushiSwap is similarly an AMM-based DEX and differentiates itself from Uniswap through a larger suite of in-house DeFi products, including farming, lending, and yield optimization protocols.** Both projects have their own governance token, UNI, and SUSHI, respectively, and rank among the top five

DEXes across DeFi. Uniswap, with their latest iteration (Uniswap v3), is now deployed on the Ethereum mainnet, as well leading layer 2 scaling solutions, Polygon, Arbitrum, and Optimism. On the other hand, SushiSwap has cast an even wider net to ensure TVL growth and now supports 14 different chains.

In terms of share of DEX volume[(1)], looking at **Uniswap v3, we see a peak of around ~45% in February of this year, just slightly above the current ~44% share**. For context, this compares to an October 2020 peak, albeit for Uniswap v2, at over 58%. **SushiSwap has had a slightly more rocky ride, peaking around ~26% in January 2021 but slowly falling since then to single digits for the majority of the last few months**. In terms of recent developments, **Uniswap's most impactful change in the last year was the introduction of Uniswap v3[(2)]**, which added a number of improvements, including higher capital efficiency, layer 2 integration and flexible fees, among others. For SushiSwap, after some community friction following a failed takeover from the now infamous Frog Nation, a few months of deliberation has led to **a proposal for Sushi 2.0[(3)]**. The proposal revolves around retaining talent, establishing a formal compensation committee and earmarks 6 million SUSHI to allocate towards future hires, strategy and leadership. Volume metrics do show that SushiSwap is demonstrating some increase in volume in what has been a relatively quiet market, indicating that the proposal might be starting to have some positive impact on the project.

Other DEXes

In talking of other Ethereum-based DEXes, a quick search of the top DeFi applications will lead you to **Curve Finance**. Curve is the most popular dapp across DeFi (or closely bested by Maker or Lido, depending on the day) and is another AMM-based DEX. **Curve focuses its attention on stablecoins and other stable pairs and thus maintains lower fees, slippage and minimizes impermanent loss when compared to other competing protocols**. Curve also pays close attention to composability and has integrated with Compound, Yearn Finance and Synthetix among others. Additionally, the Curve DAO, controlled by the CRV token, is also a major part of the puzzle and the **ensuing accumulation race for the control of DAO has led to the aptly named 'Curve Wars'.** Curve has been actively deploying across chains and is currently active across both layer 2 and alt-layer 1 chains, most recently integrating with NEAR Protocol's Aurora network[(4)]. Very **closely linked to Curve is Convex Finance; a yield optimizer dedicated to maximizing the CRV boost for those providing liquidity to Curve's pools.** Since launching in May 2021, Convex saw incredible growth and now ranks in the top 10 DeFi apps[(5)], boasting over $5bn in TVL. Convex essentially pools together assets from numerous users in order to maximize the boost to each LP - something that could be difficult to achieve for each individual LP by themselves.

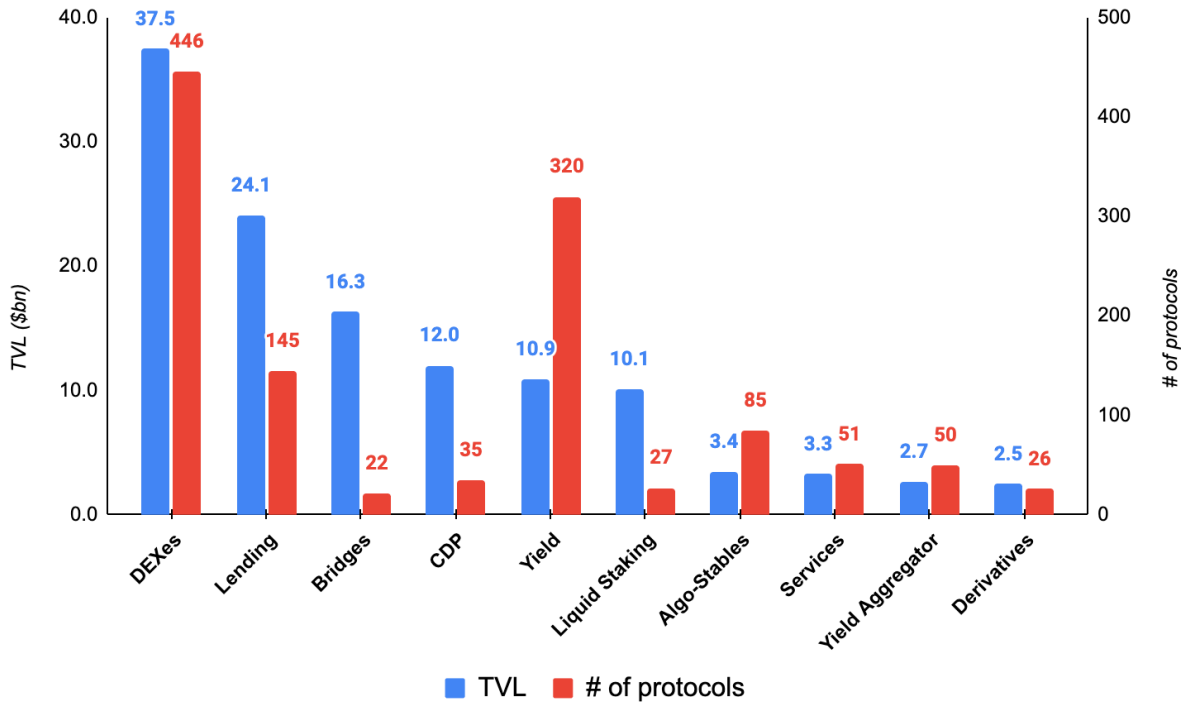
Our final mention in the DEX section of this report would be **Balancer**. Another AMM-based protocol, **Balancer, introduced the concept of 'balancer pools', which allow for two to eight different cryptocurrencies to be bundled together in a liquidity pool**, in which LPs can deposit tokens to earn fees in return. Various types of liquidity pools, including private, public, and smart pools, can be created, while on the governance side, the BAL token had (until very recently) helped token holders propose and vote on proposals. **Balancer aims to be a platform for DAOs and other protocols to build upon to provide liquidity for their products.** Following its V2 launch last year, Balancer expanded its product line and has seen increased adoption, as evidenced by a steadily rising rate of new pool creation. **Balancer also overhauled its governance system and announced a new incentive and voting mechanism through its veBAL system.** While it is quite early to see the true effects of this tokenomic overhaul, if the similar but not identical veCRV system for Curve is anything to look at for comparison, Balancer could have a bright future ahead.

Derivatives

The crypto derivatives space is in a more nascent stage of its growth when compared to the more established sectors across Lending and Exchanges. This is evident in terms of TVL, with **Derivatives protocols holding around ~$2bn, compared to ~$37bn for DEXes and ~$24bn in Lending protocols**[(6)]. Nonetheless, the level of innovation within crypto derivatives protocols is noteworthy and undoubtedly a sector to keep a close eye on. **Leading the charge with around ~$1bn in TVL, dYdX was founded in 2017 and is from the same graduating class as some of the biggest Ethereum projects, including Uniswap and Compound.** dYdX is the leading crypto derivatives DEX that focus on perpetuals trading. Starting off with Ethereum-based margin trading, dYdX started trading perpetuals in 2019 and further improved the experience with the implementation of StarkEX layer-2 rollups last year. To add some numbers to the equation, **dYdX facilitated $191.3bn[(7)] of trading volume in Q1 2022**, down around ~25% from Q4 2021. However, a large reason for this was due to the sentiment shift in crypto markets, and dYdX continued to maintain an upward trend in terms of weekly traders, having largely cemented their status as the leading DeFi derivatives exchange. Q4 2021 also saw testing of a new iOS app (which recently launched) and a gamified and NFT-linked Trading League feature, which rewards the top traders every week. In terms of near-future developments, **the launch of dYdX's V4[(8)] is hotly anticipated and aims to fully decentralize the protocol by the end of this year.** Other products outside perpetuals, including spot and margin, might also be supported and improvements to market structure and collateral options is also expected.

The only other major derivatives platform in the space, at least by current TVL and history, is Synthetix. **Synthetix is a protocol that allows users to issue synthetic assets on Ethereum.** These are analogous to derivatives in TradFi, as these **"Synths" track and provide the returns for an underlying asset, without requiring you to hold that particular asset.** Assets which can be issued as "Synths" include cryptocurrencies, commodities and even fiat currencies. The protocol uses price oracles to track prices of underlying assets and given the fact that the Synths are ERC-20 tokens, they can easily be deposited into other DeFi protocols like Uniswap, SushiSwap or Curve. **Their native SNX token, as well as Ethereum, can be deposited into pools to be used as collateral when generating new Synths, with a collateralization ratio of 600% required to do so.** Locking SNX tokens makes users eligible to receive a cut of trading fees as well as staking rewards, further incentivizing users to continue to provide liquidity. Their most notable recent development was last year's integration of layer 2 scaling solution, Optimism, into their protocol, further helping reduce fees and improving the user experience. With governance dispersed across three different DAOs and no public roadmap, the road ahead for this rather sophisticated protocol looks interesting and perhaps depends more on broader crypto sentiment and adoption by institutional traders rather than any other factors.

Figure 3: A Nascent DeFi Derivatives Sector (Top 10 DeFi categories, with TVL and number of protocols)



Source: DeFiLlama / Binance Research

Lending

Launched in 2017, **MakerDAO was one of the original DeFi protocols and the first Ethereum project to issue loans**. The Maker Protocol issues the **Dai stablecoin, a decentralized ERC-20 token that is soft-pegged to the US Dollar,** which it maintains through collateral in the form of Ethereum-based assets. Dai can be generated via depositing collateral into a Maker Vault and can then be used for a myriad of purposes, including earning the Dai Savings Rate, for use in DEXes to purchase other assets, and also to provide loans. Governance occurs through the DAO, and proposals are voted upon using the native MKR token. MakerDAO and Dai are a regular part of the DeFi and broader crypto discussion and are generally seen in a well-respected light, given the protocol's role as somewhat of an originator in DeFi. **Most recently, MakerDAO started branching out into real-world assets ("RWAs") and issued a notable $7.8m Dai loan to Tesla**[9] - an amount that is expected to increase and is said to represent the first of many such loans. **MakerDAO remains one of the top DeFi protocols and while they have seen some competition in recent years, their embrace of layer 2 solutions in the form of Arbitrum, Optimism and StarkNet, as well as their foray into the integration of RWAs, means that they are staying updated with the rapidly evolving market while also looking to the future.**

Next on our list is another behemoth of the space, Aave, with over $8.4bn in TVL and consistently ranking among the top ten DeFi apps. **Aave is a decentralized lending protocol that effectively functions as an algorithmic money market i.e. loans are offered through liquidity pools that are governed by smart contracts.** Interest rates depend on the 'Utilization Rate', which indicates the availability of capital in that particular pool, with higher levels of capital corresponding to lower interest rates to encourage loans and vice versa. **Aave is also largely credited with pioneering the usage of flash loans**, through which users can borrow cryptocurrency either under- or uncollateralized, use the crypto for any number of reasons, including arbitrage and pay back the funds plus any fees within the same block. **Aave currently has pools for 30+ Ethereum-based assets** and has also been deployed on Polygon and Avalanche. They are also able to provide pools for RWAs, where they work with tokenization company Centrifuge. Additionally, the AAVE governance token provides a number of advantages including voting rights, higher borrowing limits and fee discounts. Most recently, **Aave launched their V3 update, which included Portals (allowing for cross-chain transactions), a high efficiency mode for larger borrowers, an isolation mode for new assets, as well as, gas optimization.** V3 was also deployed on six chains simultaneously, including Fantom, Harmony, Arbitrum and Optimism. Finally, **Aave also recently launched Lens Protocol, which hopes to pioneer Web3 social media and allow users to build their own unique ecosystems on top.** YouTube's recent actions with regards to the unprovoked

banning of some notable crypto education accounts has further fueled the fire for Web3 social media[10] and it will be interesting to observe what role Lens will play here.

To round off our section on DeFi Lending, we would be remiss if we did not mention Compound. **Compound is a decentralized lending protocol with around ~$4bn in TVL**. The mechanics of Compound are largely similar to Aave, in that users can borrow and lend on the platform, with rates being determined by the supply of each asset in the specific pool. Much like Aave provides aTokens to those who lock up assets to earn interest, Compound provides cTokens. Both are ERC-20 tokens and have a level of composability across other dapps in the broader DeFi ecosystem. Compound utilizes the COMP governance token for proposals and voting. **The differences between Compound and Aave are centered around innovation, with Compound not supporting flash loans nor being deployed on any other chains except Ethereum.** Additionally, Compound supports 18 assets at this point, whereas Aave has 30+. Recent developments for Compound include the passing of a few governance proposals which added a security partnership with OpenZeppelin, among other moves. **The project appears to be following an 'EVM-first' approach, with integrations for Optimism, Avalanche and Polygon in the making.** While the protocol remains among the top ten DeFi applications by TVL, recent metrics for loans and deposits are diminishing. **For Compound to remain competitive with the highly active Aave and even Maker, it is clear that community members need to continue to drive strategic initiatives and push for protocol improvements.**

Liquid Staking

A slightly newer addition to the DeFi landscape, liquid staking allows users to stake their tokens without having to lock up the assets nor maintain staking infrastructure. **Lido is the market leader in the sector, holding ~33% of all staked Ether on the Beacon Chain**[11][12]. Users can stake any amount of Ether on Lido and get stETH in return, which can then be used for lending, collateral and other DeFi activities, all while your staked Ether still earns staking rewards. Your Ether can also be unstaked at any time through the stETH - ETH liquidity pools. **This provides an incredible level of flexibility for users, many of whom will not be able to become validators due to the minimum 32 Ether stake required and the responsibilities that come with being a proof-of-stake validator.** In addition, users can avoid the immovability of staked funds and utilize their Ether, while still earning staking rewards. Given the long and uncertain waiting period for the successful ETH 2.0 transition, many users who would have been discouraged from staking their Ether are now able to do so via Lido. While Lido's focus was on Ethereum to start, having launched just a few weeks after the Beacon Chain went live in late 2020, they have since **expanded to offer liquid staking for Terra,**

Solana, Kusama and Polygon. The LDO token, recently listed on Binance[13], governs the project and grants voting rights in the Lido DAO.

Lido has seen strong growth since their launch in December 2020, recently overtaking Curve as the largest DeFi application, albeit only for a short period of time. Lido currently holds ~$7.8bn in TVL and with no concrete announcements regarding the next stage of Ethereum's transition to proof-of-stake, except for some rumored delays, Lido's TVL is expected to grow according to many market commentators. Co-founder, Vasiliy Shapovalov, recently appeared on the Modern Finance podcast[14] and further added that the team is looking to expand onto other chains and there is at least one other chain in the pipeline, with other proposals expected in the near future.

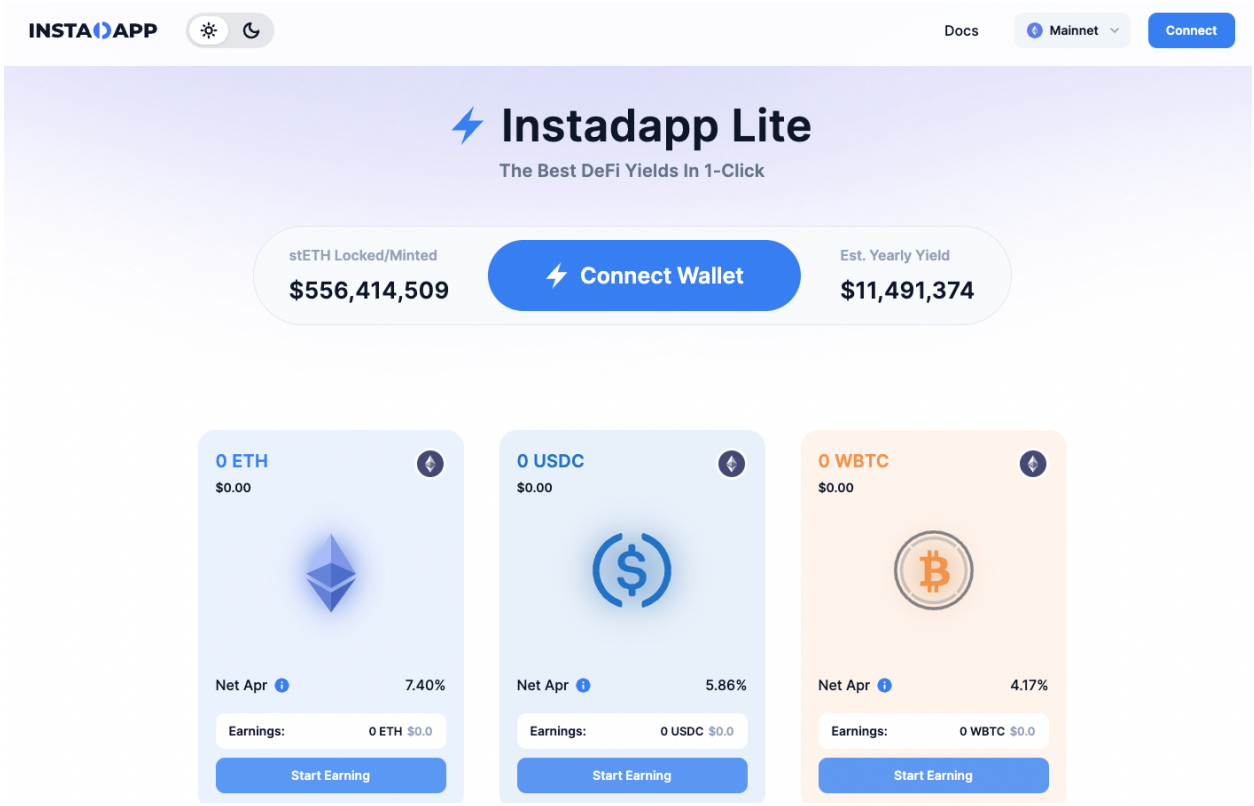
Yield Aggregators

Yearn FInance is a leading yield optimizer which aggregates offerings from other DeFi protocols such as Aave, Curve and Compound to help give users the best returns. With Yearn Finance, users can choose among **three primary product offerings: the Iron Bank, Labs and Vaults.** The simplest strategy is via the Iron Bank, which allows users to borrow and lend crypto, while using crypto as collateral - not dissimilar to some of the other lending protocols we discussed above. Their Vaults product includes various different yield-maximizing strategies in which the user can deposit the required tokens and generate yield as well as benefit from Yearn's auto-compounding and rebalancing. Labs is probably the highest risk product they offer, on a relative basis, and the strategies used are self-described as "the newest and most unconventional around" on their website[15]. Governance occurs via the YFI token which allows holders to vote on a number of off-chain proposals and submit rules for the ecosystem. **Yearn has deployed on Fantom and Arbitrum and will look to further embrace a multi-chain future in the coming months.** Recent developments include the well-publicized abrupt departure of founder Andre Cronje from the DeFi space, although news reports suggested that he had little to no daily involvement in running the company. Outside this, **Yearn released V3 of their Vaults product earlier in May, which included a number of improvements and was received well by the market.** Their announcement[16] included references to further products and improvements that the team was working on and it does indeed appear as if Yearn is following the age-old adage (at least in crypto years) of building in a bear market.

The other project we'll discuss in this section is **Instadapp**. While not strictly a yield aggregator, Instadapp functions as a DeFi protocol aggregator and asset management service and can thus arguably fit into this section. **Instadapp allows users to connect multiple DeFi**

protocols under one very simple and user-friendly interface. Users can connect their wallet to Instadapp and **instantly interact with Maker, Compound, Uniswap and Aave (among others),** under one common roof, rather than having to separately interact with all of these protocols. Instadapp utilizes their **DeFi Smart Layer ("DSL")** to aid their functionality. DSL consists of a smart contract account standard, composable connectors to base DeFi protocols, and an authorization framework that allows extremely modular permissions. Instadapp is deployed across a number of chains including Polygon, Avalanche and Fantom, as well as layer 2 solutions, Optimism and Arbitrum. The INST token is the governance token for the protocol and allows users to earn token rewards when providing liquidity, as well as pay for transaction fees for platform services. Instadapp is among the top DeFi protocols by TVL and growing. **Their website clarifies that their long term goal is "to have frontend developers use DSL as a middleware for all their DeFi needs**[17]. With DeFi and the broader crypto landscape expected to grow in coming years, middleware-focused projects like Instadapp are in a good position to capture some of the growth from innovative new protocols through simply integrating with them on their platform.

Figure 4: Instadapp focuses on simplifying their UI and also feature a Lite mode



Source: Instadapp

Why have they been so successful? What allowed them to gain so much market share?

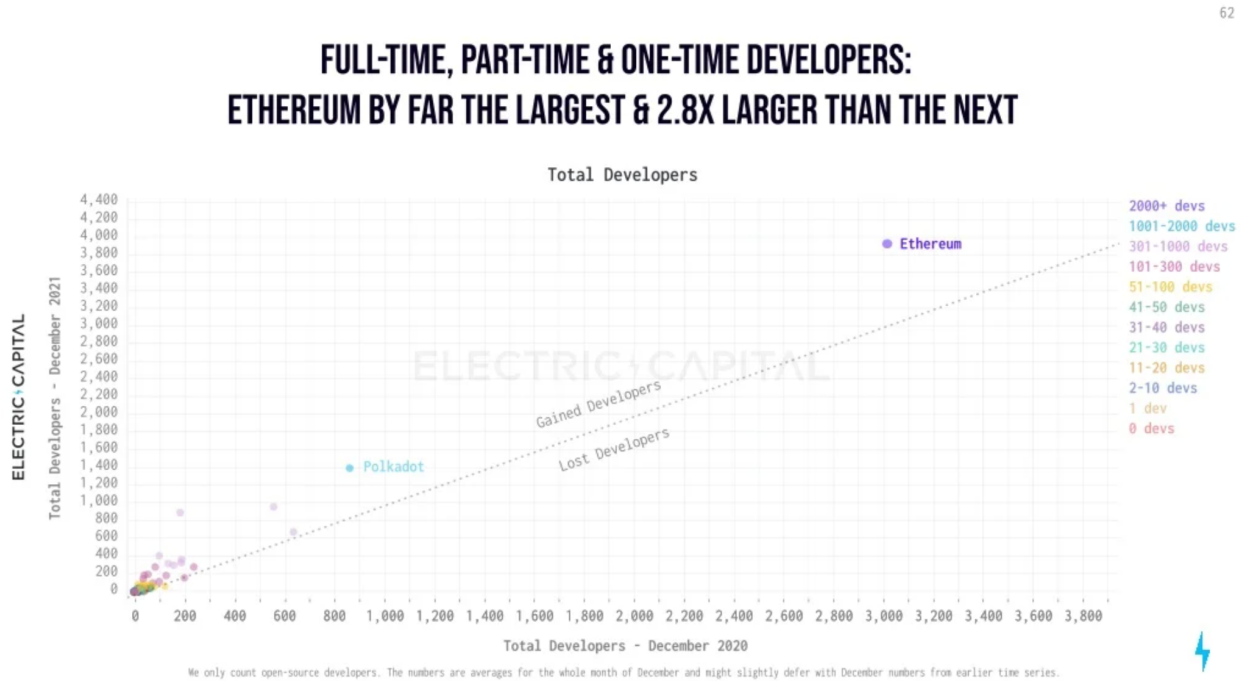
The Ethereum DeFi ecosystem has been a market leader since the very conception of the sector. This is, at least in part, due to the incredible first-mover advantage that Ethereum was able to capitalize on simply because Ethereum essentially launched smart contracts into the wider crypto ecosystem. **Given the fact that all early DeFi developers were working exclusively on Ethereum, it is no surprise that some of the biggest projects in DeFi are based on the chain.** What this also means is that there is a **significant degree of composability and interoperability between many of these projects**, Instadapp being a significant example of this. Maker, Aave and Compound - three of the original DeFi 1.0 projects, are also great examples of how these characteristics helped each project grow larger than it may have otherwise. Curve and Convex are also clear examples of how symbiotic relationships can be created in DeFi due to interoperability and help turbo-charge growth. With this internal linkage in place across Ethereum's DeFi ecosystem, as well as the variety of dapps that are available to be used, **users (if not constrained by gas fees) can spend all of their DeFi-dedicated time in the ecosystem, with no reason to venture onto other chains.**

A notable aspect that might be overlooked by the casual observer is the **amount of value that can be accrued if a DeFi application integrates with a wallet**. Two notable examples here are the **Uniswap integration with MetaMask and Lido's integration with the Ledger wallet**. While it is difficult to isolate the effect of the integrations on user growth because of the large number of potentially confounding variables, a simple look at the numbers can help us get an idea of the scale we are talking about. **MetaMask reported upwards of 30m monthly active users in March[18], while Ledger reports over 4m customers[19]**. This compares to **~3.9m total cumulative users for Uniswap[20] and 117,100 unique stakers on Lido[21].** Hopefully the implications here are clear, but just to add some extra consideration, we can further reference the earlier mentioned podcast with Vasiliy from Lido where he comments that "**integration with wallets will absolutely make you a king**" when referencing the significant growth experienced by Lido following their integration with Ledger. Perhaps something important to note for developers working on other chains.

One other angle we can seek to evaluate is the **developer activity within the Ethereum ecosystem.** It's no secret that Ethereum has a materially larger amount of monthly active developers than other competing chains - what isn't so obvious is the scale. Electric Capital's

latest Developer Report[22] tells us that **Ethereum consistently draws 20-25% of developers coming to Web3 and is over 2.8x larger than the next biggest project (Polkadot), with over 4,000 monthly active developers.** The connection between a higher number of active developers working on an ecosystem and its dapps gaining traction is hopefully one that does not need to be explained, however, what we can think about is why this is the case. One major reason is the **significant network effects that can be experienced when working on the Ethereum ecosystem**, when compared to competing chains. A higher number of developers means that there is more collaboration, more open-source code to inspire or utilize in your own product and a higher level of innovation overall. The resulting cycle that arises from more developers creating more and better products, which further leads to more developers, becomes somewhat of a self-fulfilling prophecy in some sense. This ensures that growth in the ecosystem is strong and continues into the future.

Figure 5: Developer Count by Chain

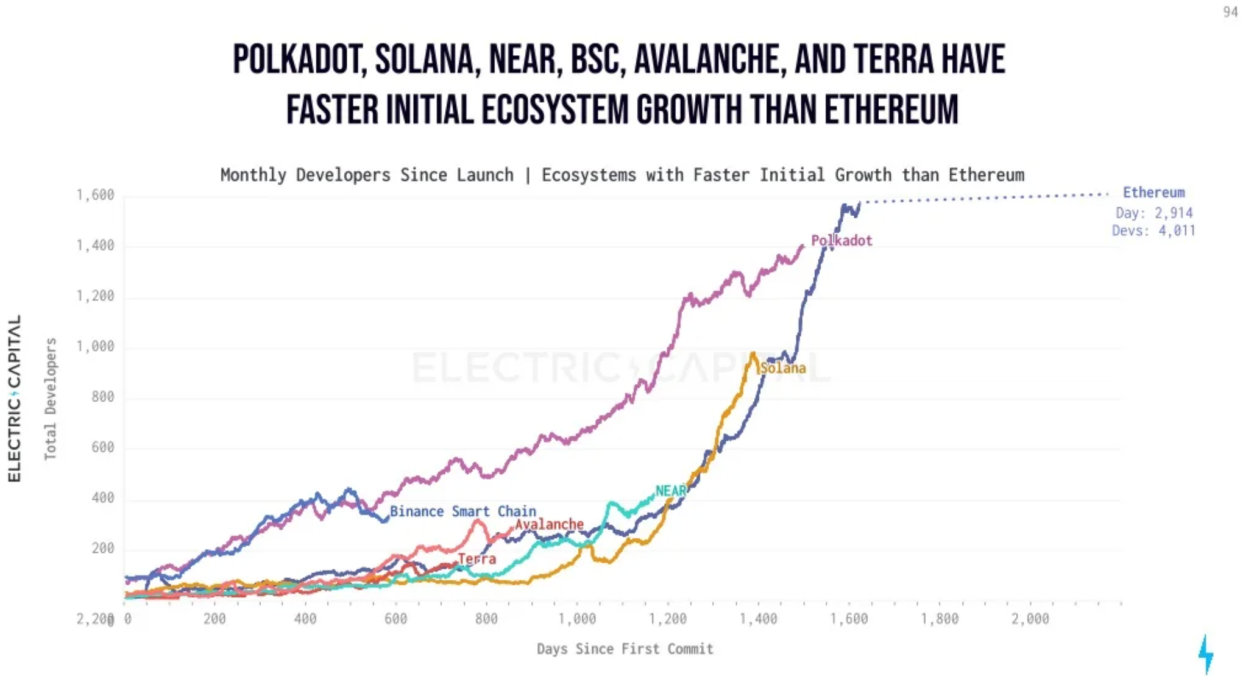


Source: Electric Capital

However, if we consider alternative ecosystems, it is interesting to see that **Polkadot, Solana, NEAR, BNB Chain, Avalanche, and Terra are growing faster than Ethereum did at similar points in its history** i.e. they have faster initial ecosystem growth (although we might have to discount Terra here following the recent events that unfolded in their ecosystem). This is not surprising given Ethereum's position as a pioneer of the industry and the fact that alt-layer 1s can benefit and learn from its experience. While Ethereum still holds a significant lead, this

does mean that we might see a different picture going forward and **competing chains can undoubtedly catch up if they continue to execute at a high standard.** We should note that **while this is not DeFi specific, it is clear that some large portion of this is relevant** i.e. the report further adds that **over 2,500+ developers are working on the sector, with 76% growth across last year** - not trivial numbers at all.

Figure 6: Developer Growth for Top Chains



Source: Electric Capital

One last point we can make here relates to the **importance of EVM-compatibility** in developer choice. Electric Capital further add that **30% of all developers are working on EVM-compatible layer 1s, with developer numbers growing for these chains by 120% in 2021 (higher than the 42% for Ethereum itself!).** Judging by this, it would seem that bootstrapping a new ecosystem in this manner can be an effective strategy. In fact, recent discussions with developers working on non-EVM-compatible chains have further confirmed this view, with **many groups of developers expressing that they regret not being EMV-compatible to some extent.** While this may not be representative of the wider developer group, it's definitely worth noting given the importance of community and word-of-mouth in the industry.

Where are the gaps? What can other chains do?

The importance of gas fees has become significantly more apparent in the last 18 months or so as the Ethereum ecosystem has grown and DeFi and NFTs in particular have taken on a somewhat mainstream role. While many proponents argue that this is temporary and lower fees and improved scaling are on the horizon, this is somewhat irrelevant as **accessibility via affordable transaction costs is the only real way to get the masses onboarded into crypto and this has to happen now, not at the point where Ethereum finally "completes" its roadmap.**

This brings in our first idea for what other chains can and for the most part, have, been focusing on - lower gas fees. Looking at the top chains by TVL, outside Ethereum, we see BNB Chain, Avalanche, Solana and Tron making up the rest of the top five. Gas fees on these chains are usually an order of magnitude lower than on Ethereum and we have seen some migration of users and developers to these alternative chains for this particular reason. **However, excluding BNB chain, the TVL in the others is in low single digit billions, so are these ecosystems really comparable to what Ethereum has produced?** Moreover, we've seen a number of occasions where gas on the Avalanche and Solana chains spikes on the release of a new protocol and the same conversations about network congestion and lack of scaling become commonplace. So the question always becomes - does anyone really have the system in place to maintain smooth and affordable transactions during periods of hype on their chain? At this point, we're not really sure.

One solution that Ethereum has made use of here is layer 2 scaling protocols. **Projects like Polygon, Arbitrum, Optimism and many more, have been gaining more and more traction in recent months and many commentators think we are approaching a "Layer 2 summer" or what is commonly being dubbed as L222.** These solutions have been efficient at reducing gas fees (at least for those protocols that have integrated with them) and this forms part of the reason why many in the community believe that individual users will eventually migrate completely to layer 2, while Ethereum becomes a settlement layer for businesses and institutions. While this could turn out to be true, at this stage, layer 2 solutions don't have complete widespread usage and spiking transaction costs are still a regular feature of the Ethereum ecosystem. **The recent Otherside land sale by Yuga Labs[23] is a pertinent recent example of this.** The opportunity that other chains have here is one of speed. **The more protocols on alternative chains that integrate with layer 2 solutions and thus become more accessible to users, across DeFi but also particular in GameFi (which is a sector rampant**

with micro-transactions that quickly add up in cost), the more opportunity they will have to siphon market share from Ethereum. The importance of maintaining affordable gas fees, especially in times of hype, cannot be understated and could very well lead to the next major onboarding of users into the crypto ecosystem.

We are actually witnessing the early stages of alternative chains adopting protocols to achieve their scaling goals. **Avalanche's Subnets[24] and BNB Chain's BSC Application Sidechains (BAS)[25] are two relevant examples, with Polygon's Supernets[26] also being very closely related.** While these protocols have their nuances, ultimately they aim to scale the base chains and provide app-specific scaling solutions. Avalanche has launched two Subnets thus far; the GameFi project DeFi Kingdoms' DFK chain and a dedicated gaming chain called Swimmer Network. On the BNB Chain side, three partners (NodeReal, Ankr and Celer) have launched the BAS testnet, with a mainnet launch expected imminently, while Polygon's Supernets appear to be in a slightly earlier stage of development. The level of developer and builder engagement that these ecosystems can get on these scaling solutions will be an interesting story to follow and may very well contribute to larger DeFi TVL. On a slightly separate note, the **recent implosion of the Terra ecosystem has led to a favorable situation for many alternative ecosystems who suddenly have a strong selection of developers and builders they can convince to join their own chains after leaving Terra.** BNB Chain, NEAR, Fantom and VeChain are some of the notable names who have publicly offered support for Terra developers to migrate, with some projects already having made the jump to other chains. Taking advantage of idiosyncratic situations like this is also important for alternative chains, as **even successfully migrating one or two strong projects can kickstart network effects and improve DeFi market share much faster than might be the case otherwise.**

Given our discussion on developer count earlier, one other area of focus we can look at for alternative chains is **programming language**. As many will know, **Ethereum's preference is for Solidity**; a language that developers have to learn and doesn't necessarily become easier if you are a developer with a Web2 background. Saying that, it's certainly not something out of reach and there are many courses out there that can help you pick this up in a few months. We can compare this to **Solana, who utilize Rust, which is widely seen as more complex and difficult to grasp than Solidity,** with the team having chosen this to allow developers to build custom and more complex dapps. Without passing any judgment upon the choices made by different chains, we would like to draw attention to an interesting choice made by the founders of the **NEAR Protocol**. When looking at Ethereum and its coding, the team found it quite unintuitive for traditional developers. Given a key goal for them was to have a developer-first approach to the project, the team used WebAssembly to allow for the utilization of standard programming languages when writing code on NEAR[27]. **NEAR can now support any language that complies with WebAssembly, including Java, Rust, Python, Go, C/C++ and many**

more. This means that Web2 developers can start deploying code and working on dapps much quicker and more easily than would be the case if they had to learn something very specific like Solidity or Rust. In fact, it would appear that **NEAR is leveraging the best of all worlds, given developers can utilize their Web2 skills via WebAssembly, build on Rust (which is their preferred language) if they aim to build complex and powerful customized dapps for NEAR, and also port dapps over from Ethereum because of NEAR's EVM-compatibility.** NEAR accomplishes this in a fairly unique manner via its Aurora chain (which is technically a smart contract, but essentially functions as a network), and without going into technical specifics, allows a level of flexibility that other chains have not been able to achieve, with regards to running the EVM. Once again, while difficult to isolate the effect of this on the growth of the chain, it certainly is not hurting them and is reflected very positively in the earlier referenced Electric Capital Developer Report, which confirms NEAR as one of the largest ecosystems by developer count and one that is growing at a strong pace (stronger than Ethereum at a similar point in its history). Given the importance of high quality developers in building a strong ecosystem, making the transition from Web2 to Web3 easier and more smooth for them is definitely something to consider for others.

Conclusion

Ethereum has been responsible for a significant amount of innovation in the DeFi space and most of the projects which continue to drive the sector forward are Ethereum-based. Ethereum has achieved this through a **mixture of first-mover advantage, a larger and more dedicated developer count and some significant integrations between dapps and wallets.** These factors, among others, have allowed Ethereum to maintain a leadership position in terms of DeFi TVL and remain as the chain of choice for many first time developers. Nonetheless, **transaction costs have continued to spike and layer 2 scaling solutions are yet to gain the widespread market usage that would lead to a systemic change in fees**. Other **blockchains have an opportunity to capitalize** here, particularly through **aggressive execution on scaling solutions, alongside other strategies, including the leveraging of EVM-compatibility or an easier choice of programming language.** Ethereum's DeFi market share has eroded over the last 18 months and might very well continue to trend in this direction, depending on how quickly competing chains capitalize. **For now, with markets deeply in the red and with uncertainty the only sure thing, we continue to BUIDL.**

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