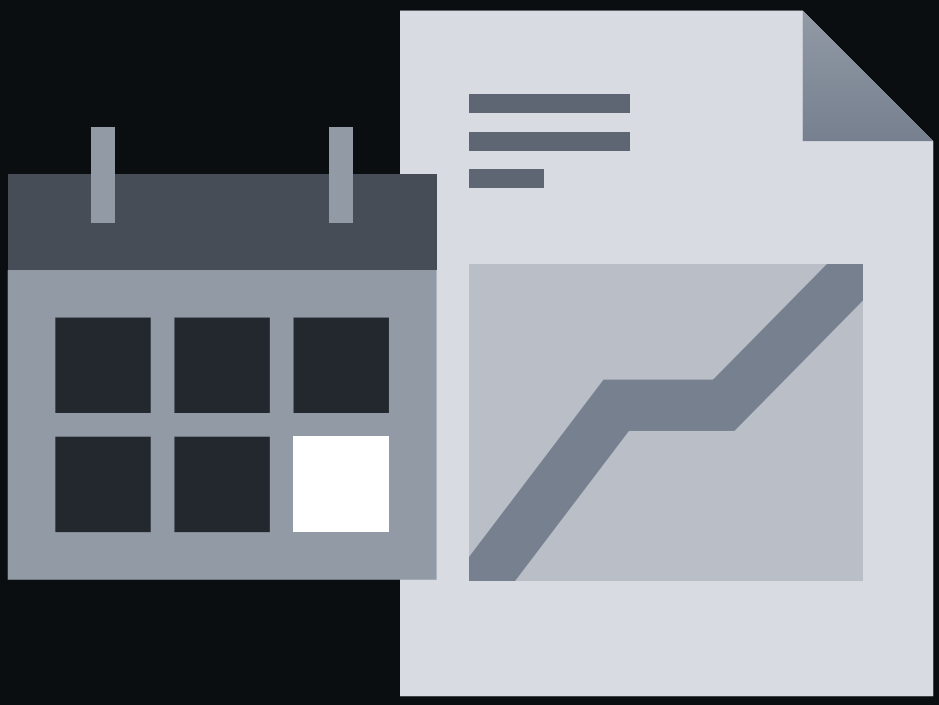
BINANCE RESEARCH

Half-Year Report 2024

JULY 2024



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1 Key Takeaways

- Following a strong 2023, total crypto market capitalization continued its climb in the first half of 2024, ending the period at about US$2.27T, representing a 37.3% growth year-to-date. The gains were front-loaded in the first quarter of the year, which saw a significant 60.2% increase. The second quarter was relatively more challenging, as the crypto market reversed some of the gains and fell by 14.3%.

- Layer-1s ("L1s") have had a strong start to the year, with Bitcoin continuing to gain market dominance following the fourth Bitcoin Halving, the launch of the Runes Protocol, and the approval of the U.S. spot ETFs (which have attracted over US$14B of inflows so far). Ethereum saw a restaking explosion and the EIP-4844 update, BNB Chain continued work on opBNB and Greenfield, while Solana excelled in the memecoin space and launched blockchain links ("blinks").

- The first half of 2024 has been the season of airdrops in the Layer-2 ("L2") world, especially for the zero knowledge ("zk") projects. The promise of incentives has brought large inflows of capital onto the L2 chains, bringing the total value locked in L2s to US$43B. This represents a 90% increase in total value locked ("TVL") within just the first 6 months.

- 2024 has seen a substantial influx of capital into Decentralized Finance ("DeFi"), driving the TVL up 72.8% year-to-date ("YTD") to US$94.1B, from US$54.4B at the year's start. This boost has benefited nearly every DeFi sector, across both major and niche markets, leading to the emergence of protocols that are making previously inaccessible financial primitives available on-chain.

- The stablecoins market has staged a notable turnaround, and we are now just 14.5% shy of the peak in April 2022, just before the crash of TerraUSD (UST). As of June 30, 2024, stablecoins market capitalization was US$161B, representing a 2-year high. While Tether's USDT continues to dominate, Circle's USDC and Ethena's USDe have seen increases in market share.

- NFT markets had a turbulent first half, with sales volumes declining and major projects experiencing 50%+ declines in floor price. Blur continued its dominance, spurred on by the Blast token airdrop, while Pudgy Penguins saw some success with their physical toys. Bitcoin NFTs also continued to shine.

- SocialFi continued to see development, with Lens Protocol announcing their upcoming zk chain, Lens Network. Farcaster saw continued user growth

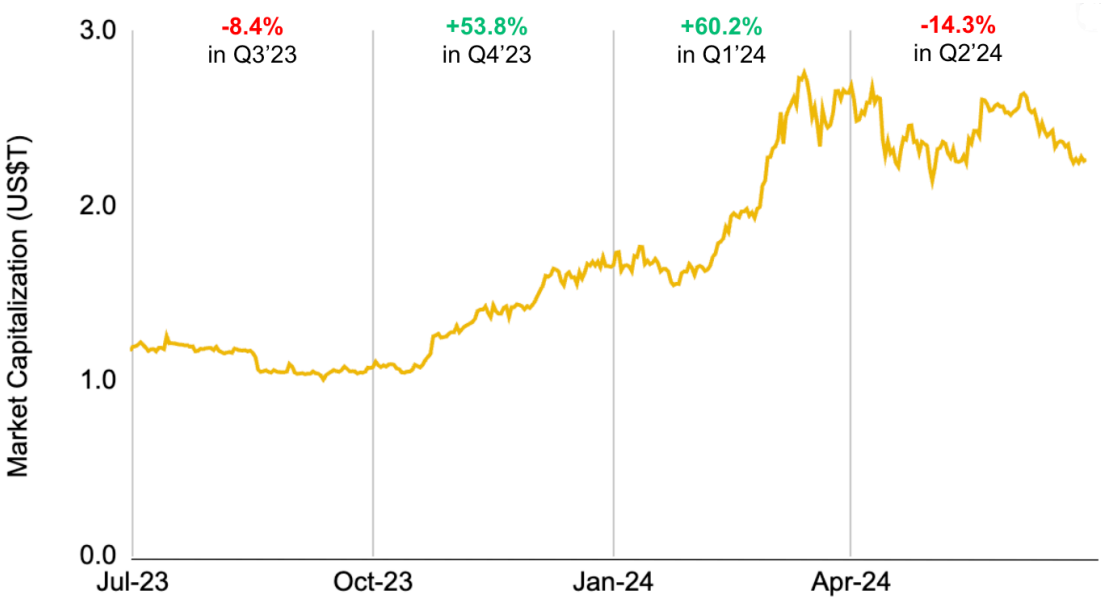
following the launch of Frames, while friend.tech released their token and v2. The Fantasy.top trading card game was also a notable highlight.

- The Web3 gaming sector had a strong Q1, but Q2 saw gaming project tokens drop significantly in market capitalization alongside the rest of the altcoin market. In contrast to falling prices however, user growth metrics have been healthier than ever with projects like Pixels and Hamster Kombat managing to attract large numbers of players with the promise of token airdrops.
- Other notable areas include memecoins, artificial intelligence ("AI") and decentralized physical infrastructure networks ("DePIN"). These sectors have continued to see strong interest from investors and the broader community in the first half of 2024.
- Moving into the second half of 2024, six key themes are particularly exciting to us, and we anticipate significant progress in these areas throughout the year. These themes span various narratives and sectors, such as those related to the macro environment, Bitcoin ecosystem, ownership economy applications, real-world assets ("RWAs"), and more.

2 Overview

Following a notable 109% surge in 2023, crypto markets experienced a continued rise in the first half of 2024, with total market capitalization up by 37.3%. This growth was largely driven by a 60.2% gain in the first quarter of the year, while the second quarter reversed some of these gains as market capitalization declined by 14.3%.

Figure 1: Total crypto market capitalization rose by 37.3% year-to-date



Source: Coinmarketcap, Binance Research, as of June 30, 2024

The successful launch of spot BTC exchange-traded funds ("ETFs") in the U.S. in January marked a pivotal moment for the industry and ushered in a period of bullish sentiment and positive flows. While the initial price reaction was muted, the following months saw strong gains as the market digested the impact of the ETFs on attracting new capital, increasing accessibility to a greater pool of investors, and reinforcing the growing acceptance of crypto as a mainstream investment.

Notably, the first half of the year saw several narratives gain momentum—points meta, restaking hype, memecoins frenzy, and airdrop seasons, among several others. While some of these narratives may have died down, they have undoubtedly been strong contributors to on-chain activity and transactions in the first half of the year.

Looking ahead, we are keeping a close eye on the Fed's interest rate policies, the approval and traction of the spot ETH ETFs, and the emergence or resurgence of crypto-specific narratives by monitoring on-chain metrics. We are cognizant of the structural overhang of a large amount of upcoming unlocks in the coming months and years, and we urge investors to do their own research. On the bright side, valuations for many tokens have retraced somewhat in the past few months to more reasonable levels.

3 The Layer-1 Landscape

3.1 Bitcoin

Bitcoin activity has continued to accelerate on all fronts. Metrics continue to improve, while the **Ordinals-driven new era of Bitcoin progresses in both the fungible and non-fungible token ("NFT")** directions. **Layer-2s ("L2s") and scalability** have become a much bigger topic, while the **Bitcoin DeFi** world continues to develop. We also saw another supply shock, with Bitcoin's mining block reward halving to 3.125 Bitcoin per block, following the **4th Bitcoin Halving in April 2024**. All of this, while **Bitcoin spot ETFs** successfully got approved in the U.S., paving the way for **over US$ 14.7B in net inflows**[1]. Overall, Bitcoin has had a positive start in 2024.

Figure 2: Bitcoin market dominance has continued to rise this year and is now over 53%

Source: CoinMarketCap, Binance Research, as of June 30, 2024

In this section, we explore some key Bitcoin metrics and how they have evolved this year. We then examine some of the primary narratives and developments that have underpinned these metrics and what we can expect as we head further into 2024.

Metrics

Figure 3: Bitcoin's metrics have been progressing well, mostly demonstrating sizeable gains on a 1-year comparison

	31-Dec-22	30-Jun-23	31-Dec-23	30-Jun-24	% change (1Y)
Financial					
Market Cap (US$B)	321.3	602.9	827.8	1,221	102.5%
Trading Volume (US$B, 7DMA)	14.0	15.9	22.8	24.4	53.5%
Network					
Transactions (7DMA)	246.1K	389.2K	557.0K	540.0K	38.7%
Active Addresses (7DMA)	879.1K	972.8K	800.1K	710.3K	-27.0%
Average Tx Fee (US$, 7DMA)	1.2	2.9	18.4	2.1	-27.6%
Lightning Network Capacity (US$M)	87.8	170.3	217.9	330.5	94.1%
Mining					
Hash Rate (EH/s, 7DMA)	253.1	356.5	508.8	553.2	55.2%
Mining Difficulty (T)	35.4	52.1	72.0	83.7	60.7%

Source: CoinMarketCap, The Block Data, Blockchain.com, Binance Research
7DMA = 7-day moving average

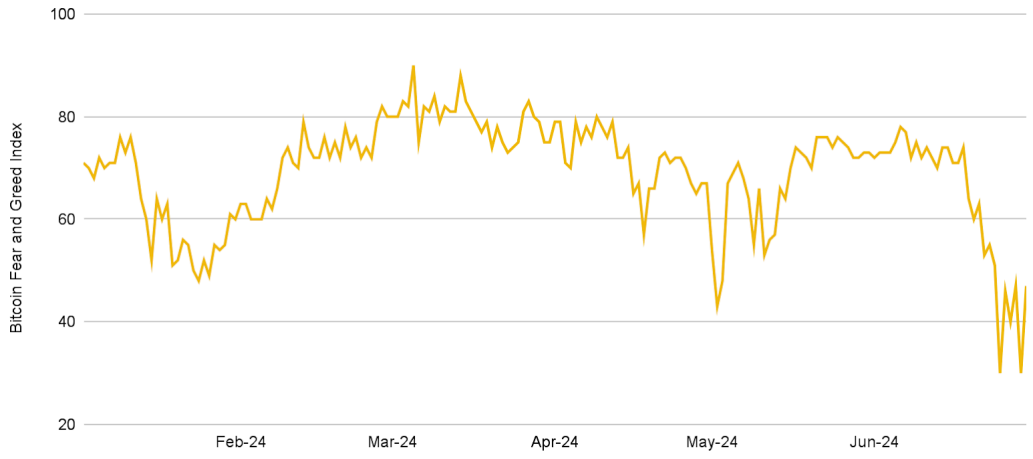
Bitcoin has seen increases in many key metrics when considering both year-to-date performance and performance over one year. Other than the significant market cap increase, the rise in transactions is also of note. The **continued increase in Lightning Network capacity is encouraging** considering its important use case, while the **consistent rise in hash rate and mining difficulty are a positive indicator of the growing robustness of the Bitcoin blockchain**. It is important to note that both hash rate and mining difficulty are key indicators of security, and higher values indicate a greater amount of computing power is required to attack the network. Thus, the growing numbers here indicate that Bitcoin's attack resistance properties continue to be strong and rising.

Sentiment Analysis

We can also consider Bitcoin sentiment analysis, which can offer valuable insights into the collective sentiment expressed by both market participants and the wider public towards Bitcoin. One relevant metric is the **Bitcoin Fear & Greed Index**, a widely-cited sentiment indicator that assesses market attitudes and investor psychology surrounding Bitcoin. **Ranging from 0 to 100, values below 50 indicate periods of 'fear,' while values above 50 indicate 'greed.'** The index derives its values from various factors such as market dominance, trading volume, Google trends, social media sentiment, and price volatility, among others.

As we can see in Figure 4, this metric has exhibited fluctuations over H1, but has recently dropped off significantly. **While the index has spent a large part of the year in the 'greed' zone, perhaps spurred on by the U.S. spot Bitcoin ETF approvals, it has dropped firmly into 'fear' territory over the last month.** While not a comprehensive measure, this suggests that traders and the market have become more conservative over recent weeks. This has likely been influenced by recent news, including potential selling pressure from the German government offloading Bitcoin and the start of repayment distributions by defunct exchange Mt. Gox[2].

Figure 4: The Bitcoin Fear & Greed Index has recently dropped into the Fear zone

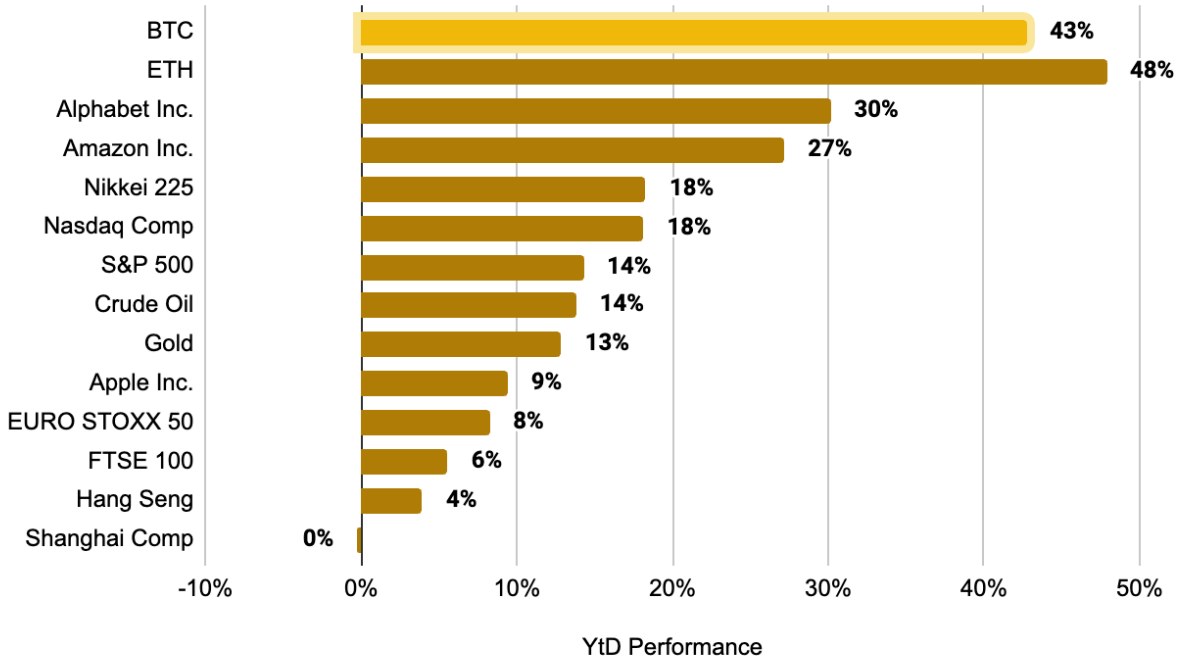


Source: Alternative.me, Binance Research, as of June 30, 2024

Performance Versus Traditional Assets

Comparing Bitcoin's performance to other TradFi investments, Ethereum and Bitcoin come out on top with their 48%, and 43% returns, respectively, year-to-date. Alphabet and Amazon's equities are the only other investments in our comparison group that are up over 25% this year. The major stock market indexes are much further behind, with many displaying single-digit returns. **Gold, the commonly touted Bitcoin alternative, rose only 13%, while crude oil is up around ~14% this year.** This chart further helps illustrate Bitcoin's potential diversification benefits and strong performance compared to a purely TradFi portfolio.

Figure 5: Bitcoin and Ethereum rank the top performers among a group of popular TradFi benchmarks



Source: Yahoo Finance, Binance Research, as of June 28, 2024

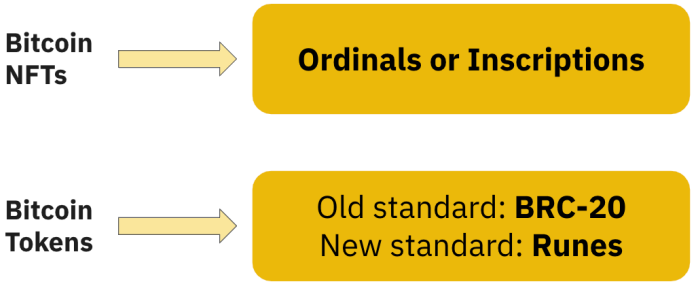
Ordinals, Inscriptions, BRC-20s, and Runes

The Bitcoin fungible token and NFT markets continue to expand, having gone from strength to strength since the initial launch of Ordinals in December 2022. As a brief reminder, Casey Rodarmor's "Ordinal Theory" enabled the **tracking of individual Satoshis (the smallest unit of Bitcoin), and ascribed a unique identifier to every single one. These individual Satoshis were then able to be "inscribed" with arbitrary content, e.g., text, images, videos, etc.** This created an "Inscription" or what soon became known as a Bitcoin NFT. Learn more about Ordinals and Inscriptions in our report, A New Era for Bitcoin?.

Following the initial excitement around Inscriptions in January - February 2023, we soon saw a significant upsurge in activity after the release of **BRC-20 tokens** in March 2023. **BRC-20 enabled the deployment, minting, and transferring of Ordinal-linked fungible tokens on Bitcoin.** Activity around Inscriptions and BRC-20s continued through the spring, before it started reaching new highs through Q4 of 2023. Activity also remained high into the April 2024 Bitcoin halving. The Halving also coincided with the launch of the **Runes Protocol**. Runes are **another method of putting fungible tokens on Bitcoin**, and are the brainchild of the same developer behind the initial Ordinals release (Casey Rodarmor). While BRC-20s are built on top of Ordinal Theory (and thus inherit some of its complexity), Runes are unrelated and simply extend Bitcoin's UTXO model to carry arbitrary balances of fungible tokens. This has meant that Runes are more efficient than BRC-20s.

To learn more about BRC-20s, check out BRC-20 Tokens: a Primer. To learn more about Runes, check out The Future of Bitcoin #2: Tokens.

Figure 6: A quick terminology reminder

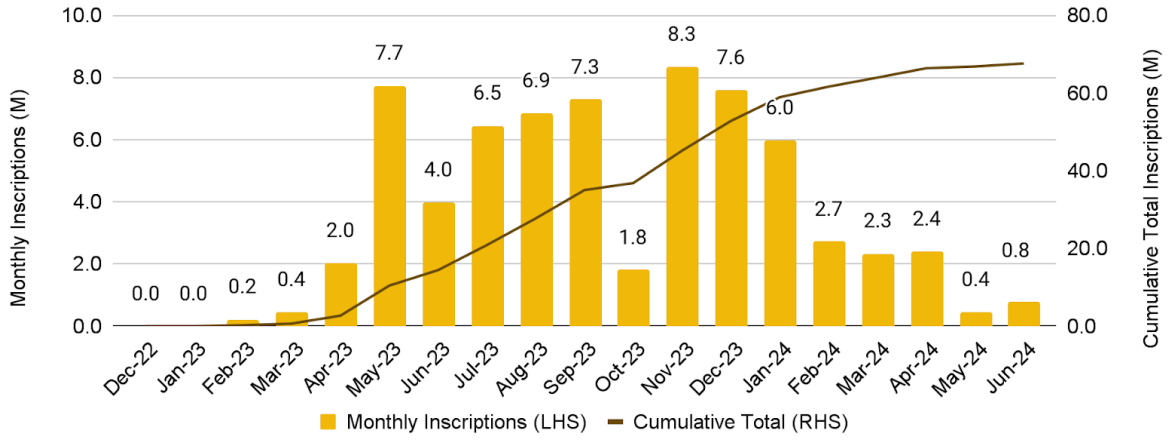


Source: Binance Research

Metrics

Since the initial December 2022 launch, we have seen over **67M Inscriptions** minted on the Bitcoin blockchain, **generating over 6,875 Bitcoin (~US$414M) in fees**.[3]

Figure 7: Monthly Bitcoin Inscriptions have been declining this year, perhaps partly due to the introduction of Runes

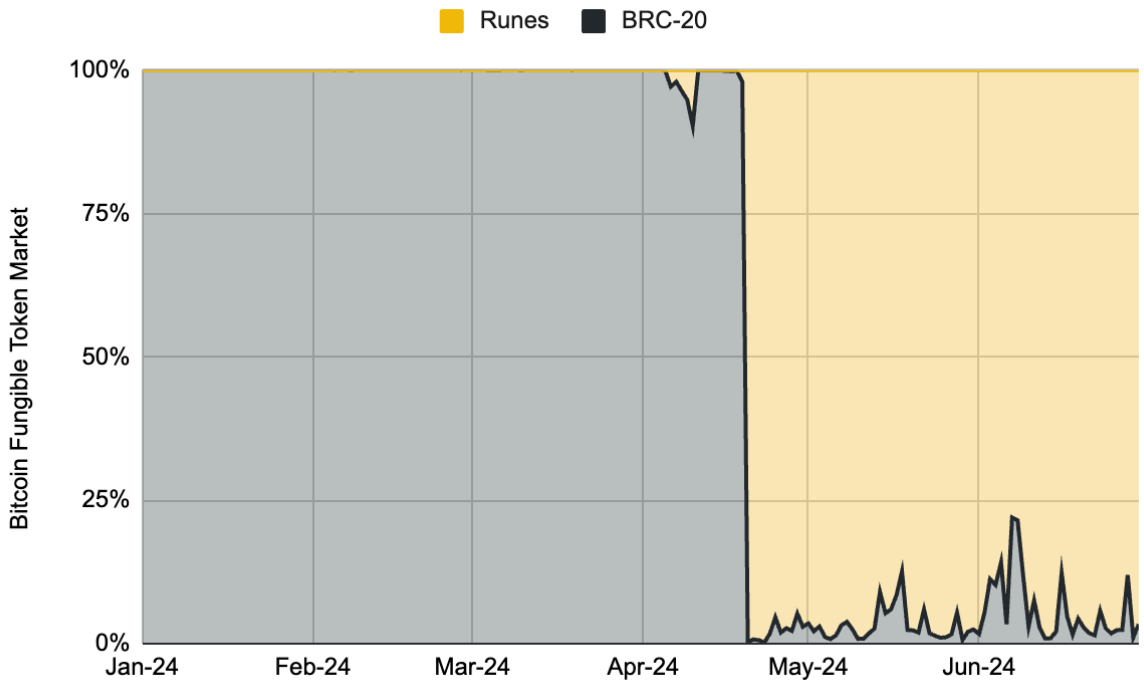


Source: Dune Analytics (@dgtl_assets), Binance Research, as of June 30, 2024

On the BRC-20 side, the **combined market cap is around US$1.3B, down approximately 50% since January**. $ORDI, the first BRC-20 token contract to be deployed, remains the most successful and popular token, with listings on several major exchanges. **$ORDI's market cap of over US$600M represents over 50% of the combined BRC-20 market.** We should also note that the majority of Inscriptions have been text-based (i.e., BRC-20 tokens) for over a year.

However, metrics show that since the launch of Runes on April 20, they have significantly eaten into the BRC-20 market share. In fact, **Runes have represented over 95% of the Bitcoin fungible token market[4], on average, since their launch.**

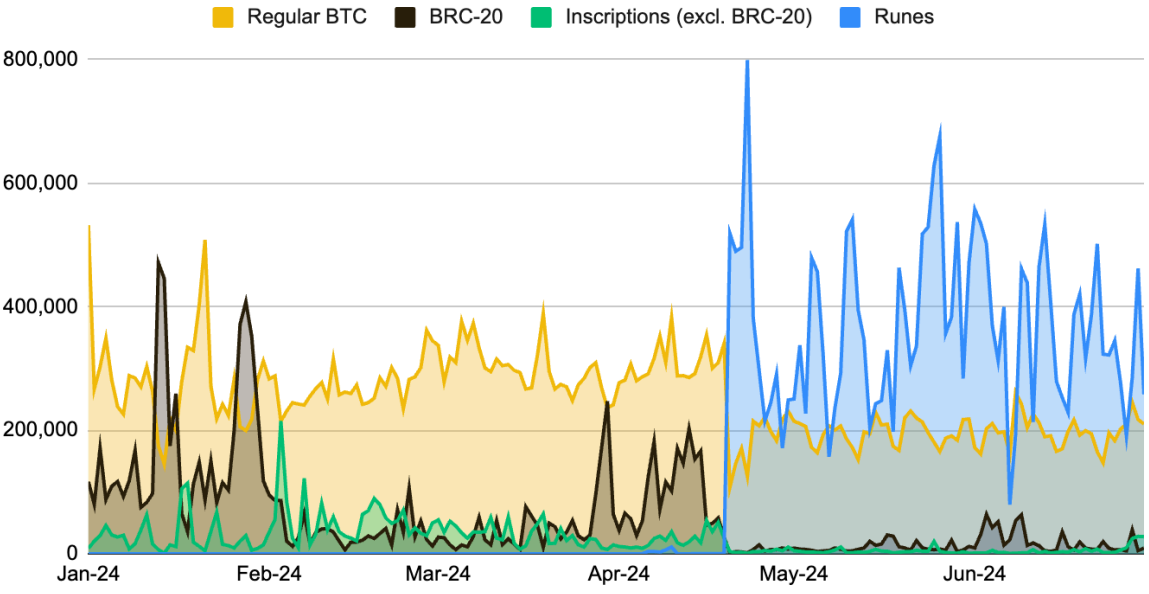
Figure 8: Runes have largely taken over the Bitcoin fungible token market



Source: Dune Analytics (@murchandamus), Binance Research, as of June 30, 2024

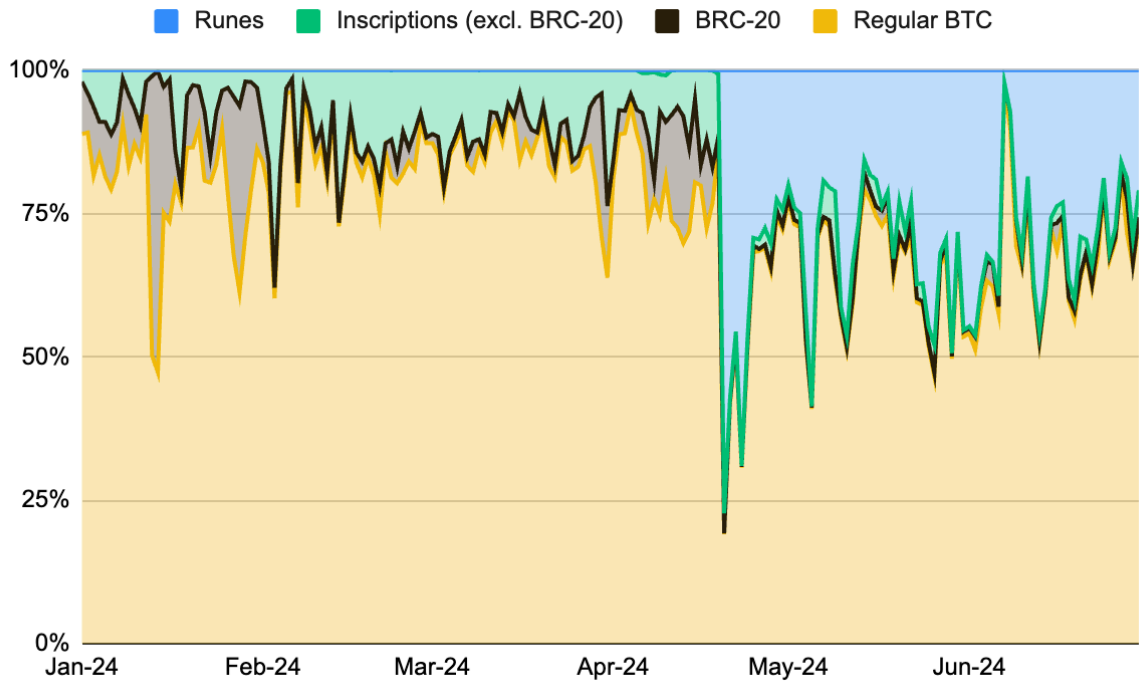
Looking at all Bitcoin transactions, Runes transactions have represented over 60%, on average, since their launch. It is encouraging to note that while standard Bitcoin transactions still dominate, the various new Bitcoin markets have also added new sources of activity and fee revenue.

Figure 9: Runes have represented 61% of all Bitcoin transactions, on average, since their launch in April



Source: Dune Analytics (@murchandamus), Binance Research, as of June 30, 2024

Figure 10: Runes have generated over 2,500 Bitcoin in fees so far (~US$145M)



Source: Dune Analytics (@murchandamus), Binance Research, as of June 30, 2024

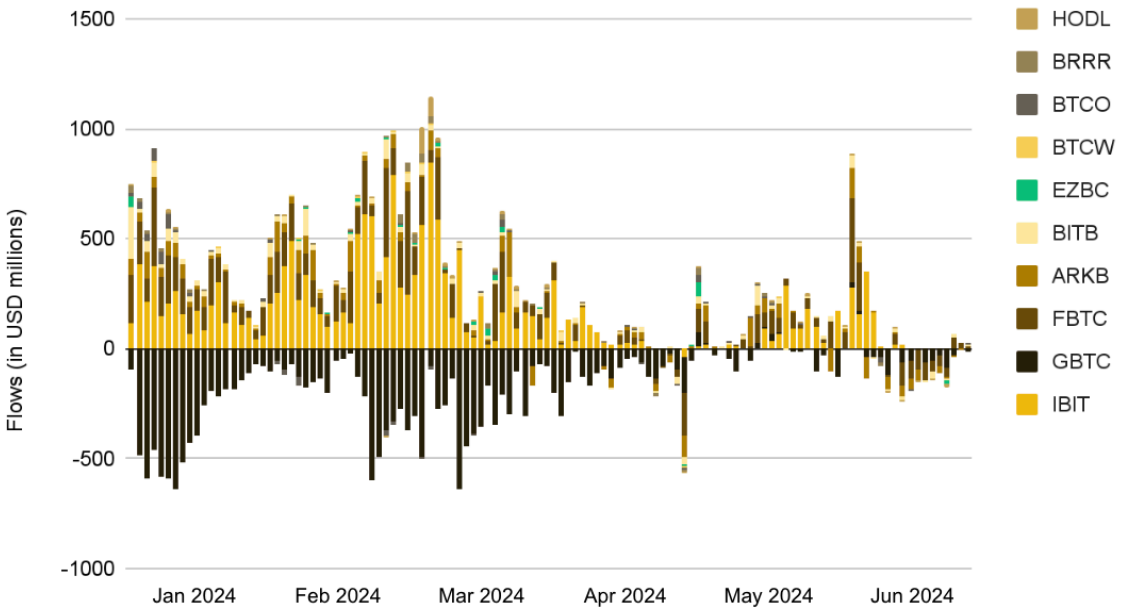
While not a game changer, the **additional 4,000+ Bitcoin (~US$233M) in fees that Inscriptions, BRC-20s, and Runes have generated this year are surely welcome.** This is especially true considering we have just had a Bitcoin halving. As a reminder, Bitcoin miners are compensated in two different ways: block rewards and transaction fees, with the block rewards halving every four years. The April 2024 halving reduced this from 6.25 BTC to 3.125 BTC. Thus, an increase in transaction fees is required in order to sustain the miners, given the block reward will eventually reduce to zero.
To learn more about the halving, check out The Future of Bitcoin #1: The Halving & What's Next.

Spot ETF Approval

One of the defining narratives of the first half of this year has been the approval of spot BTC ETFs in the U.S. in January. These have helped to add a **new source of institutional demand to the Bitcoin market, a factor that enhances the diversity and depth of investment interest compared to previous cycles.** Now, all sorts of U.S-based institutional investors, from hedge funds to pension funds, have a very direct, straightforward, and easy-to-understand way to get exposure to the crypto markets. The ETF wrapper is something that institutional investors understand very well and are comfortable with, thus it is a great way to introduce some of the more conservative investor base to the crypto markets.

To date, there have been **over US$14.7B in cumulative inflows to the ETFs, with total holdings of over 865K BTC** (~US$52B)[5].

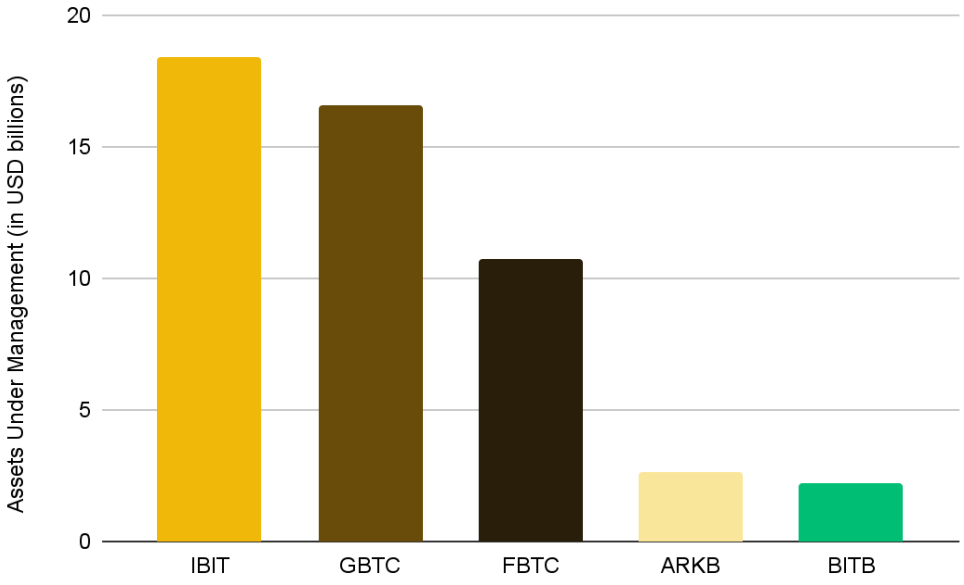
Figure 11: The new spot BTC ETFs have seen over US$14B in inflows, with US$122M of inflows per day, on average



Source: farside.co.uk, Binance Research, as of June 30, 2024

While this institutional interest is largely limited to Bitcoin for now, there is growing anticipation that it will expand to include Ethereum in the near future (more on this later). In terms of the leading ETF providers, **BlackRock has dominated, with over US$17.7B in inflows. Grayscale and Fidelity have also done quite well**, with the three firms having over 80% of the market[6].

Figure 12: BlackRock, Grayscale, and Fidelity command the majority of the U.S. spot BTC ETF market



Source: farside.co.uk, Binance Research, as of June 30, 2024

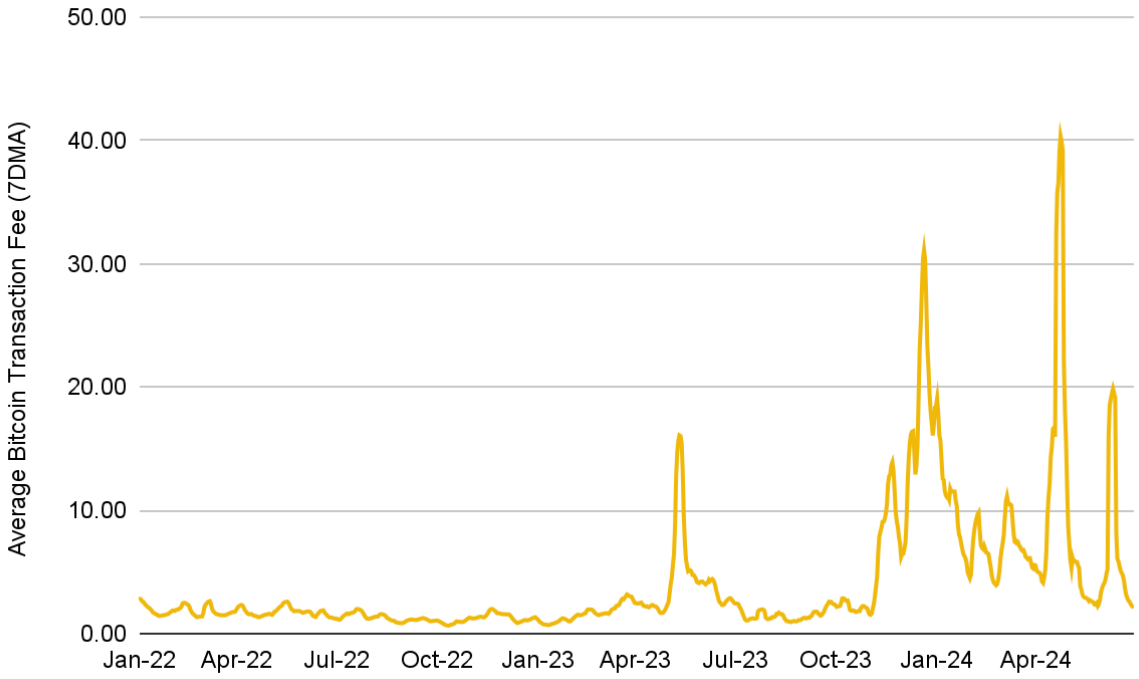
Interest has also spilled over to other nations, including **Hong Kong who approved spot Bitcoin and spot Ether ETFs** in April. Although volumes have been relatively limited[7] compared to the U.S counterparts, this is a move in the right direction. European ETPs, which are essentially the same product as the U.S. spot ETFs, and have been available since 2015 are also seeing significant growth. Total **European crypto ETP AUM[8] is up ~130% from ~US$5.3B in July 2023 to over US$12B this year**.

SEC filings show that the **top holders of the U.S. spot BTC ETFs are split between hedge funds, asset managers, and banks**. While it is encouraging to see the likes of **Morgan Stanley** in the top 10 holder list, it is notable that many of the others are **hedge funds, which often focus on shorter-term strategies, rather than HODL-ing.** Nonetheless, we should also note the presence of traditional institutional investors, such as the **State of Wisconsin**. It will be interesting to see what sort of investors these products can attract over the second half of the year.

What Do We Expect Going Forward?

1. **Bitcoin L2s:** Owing to the various innovations taking place within the Bitcoin world, the effect on transaction fees has been notable (as we previously highlighted). In fact, as we can see in Figure 13, **Bitcoin's yearly average transaction fees rose 175% between 2022 and 2023, from US$1.5 to US$4.2. This pattern has continued, with the 2024 average Bitcoin transaction fee upwards of US$8.8.** This continues to help make the case for Bitcoin scalability and L2s, in order to reduce congestion on the Bitcoin L1 and provide users a venue for cheaper Bitcoin transactions.

Figure 13: Bitcoin yearly average transaction fee rose from US$1.5 in 2022, to US$4.2 in 2023, and is US$8.8 in 2024 so far



Source: The Block Data, Binance Research, as of June 30, 2024

Even if someone believes that **Bitcoin should only be used for currency transactional purposes, there is still a need for L2s**. 152 million transactions[9] occurred on Bitcoin last year. **For further context, Bitcoin only recently crossed the 1 billion transaction mark. If users are already complaining about a congested L1 and rising fees with such a relatively low amount of transactions, then clearly there is an issue.** If true global mass adoption really is the goal for Bitcoin, then it should be clear that at least a few Bitcoin scalability solutions would be necessary.

Various teams are working on solutions, including **OGs such as Lightning Network, Stacks, and RGB**. Newer teams are also emerging with innovative solutions, including **Citrea and**

Merlin's Bitcoin zk-rollups. We recently covered this emerging landscape in our report, The Future of Bitcoin #3: Scaling Bitcoin. Check it out to learn more.

2. **More Bitcoin dApps coming to market:** The indirect effect of the Ordinals & Inscriptions has been the ushering in of a new **renaissance for Bitcoin expressivity**. Numerous **new Bitcoin projects have either launched in the last year, or are currently being funded and developed**. These include all sorts of projects, from Bitcoin money markets, to Bitcoin staking & restaking. We are likely to see this activity continue in the second half of this year.

   Also worth mentioning is the December 2023 introduction of **BitVM**. **BitVM's goal is to scale the Bitcoin network through introducing smart contract capabilities, without requiring significant changes to Bitcoin's existing infrastructure**. BitVM operates somewhat similarly to how we understand optimistic rollups on other L1 chains. Development around this protocol may help expand Bitcoin's capabilities far ahead of where they are now, and also help create a more secure way to bridge BTC to secondary layers. Although it is relatively early in BitVM's history to see where it will go, this is an important area to keep up with.

3. **ETF dynamics:**
   a. **Potential size vs gold:** Given Bitcoin has often been cited as "digital gold", it is fair to look at the gold ETF market as a potential comparable for how large the Bitcoin ETFs may get. The gold ETF market is ~US$105-110B[10] at the time of writing. The U.S. spot BTC ETF market is around ~US$52B i.e, roughly half of the gold ETF market.

   b. **TradFi is slow:** Traditional finance institutions often take a cautious and measured approach, particularly when it comes to newer markets and technologies like crypto. Thus, while the spot ETFs were approved in January, that does not mean that all of the various financial advisors and asset managers were ready to invest at that point. The education and marketing process may take many more months, and some funds might be waiting to see how others perform, etc. Thus, it would be **fair to assume that we will continue to see more onboarding in the following months and years**, and may potentially see stronger flows build up as more traditional investors get more comfortable with Bitcoin.

"...while the spot ETFs were approved in January, that does not mean that all of the various financial advisors and asset managers were ready to invest at that point. The education and marketing process may take many more months, and some funds might be

waiting to see how others perform…"

c. **Indirect effects:** Arguably, the largest effect of the U.S spot BTC ETF approval is the **increased recognition and validation that it brings to the crypto industry within traditional financial markets**. For some of these players, the **spot ETF is just the entry point to the broader crypto ecosystem**, and their next step might be Ethereum, BNB Chain, Solana, DeFi, NFTs, Gaming, etc. For others, the approval and **endorsement of the largest asset manager in the world (BlackRock) might give them the encouragement to finally dabble with Bitcoin**. For many TradFi x tech professionals, a new development path has been opened up, with some backing from the largest players in the market. These effects and their ultimate impact down the line is perhaps the most exciting and important part of the U.S. spot ETFs, and we are likely to see these manifest in the coming months and years.

3.2 The Other L1s

Overview

Figure 14: A summary of where things stand for the major L1s (as of HY 2024)

	Ethereum	BNB Chain	Solana	Tron	Avalanche
Financial					
Market Cap (US$B)	412.6	85.9	67.8	10.9	11.6
Trading Volume (US$M, 7DMA)	12,525	1,624	2,221	250.3	309.7
2024 Revenue (US$M)	1,417	11.8	129.9	816.3	11.2
Network					
2024 Total Txs (M)	222.4	739.6	4,350	1,100	62.3
Monthly Active Addresses (M)	2.1	3.3	3.8	5.5	0.2
Average Tx Fee (US$)	1.21	0.09	0.005	0.69	0.17
Ecosystem					
Staking Ratio	27.2%	20.7%	65.6%	51.1%	57.6%
Total Developers (as of Dec 31, 2023)	7,864	1,650	1,615	93	1,485
DeFi TVL (US$B)	51.6	4.3	4.2	7.3	0.7

Source: CoinMarketCap, Token Terminal Block Explorers, stakingrewards.com, Electric Capital, DeFi Llama, Binance Research. Data as of June 30, 2024.
30DMA = 30-day moving average

When looking at the high-level metrics, it is clear that Ethereum remains in a position of strength and leads on numerous fronts including market cap, average trading volume, yearly revenue, DeFi TVL, and total developers. BNB Chain holds a firm second place in metrics such as market cap and total developers, while also ranking second lowest for

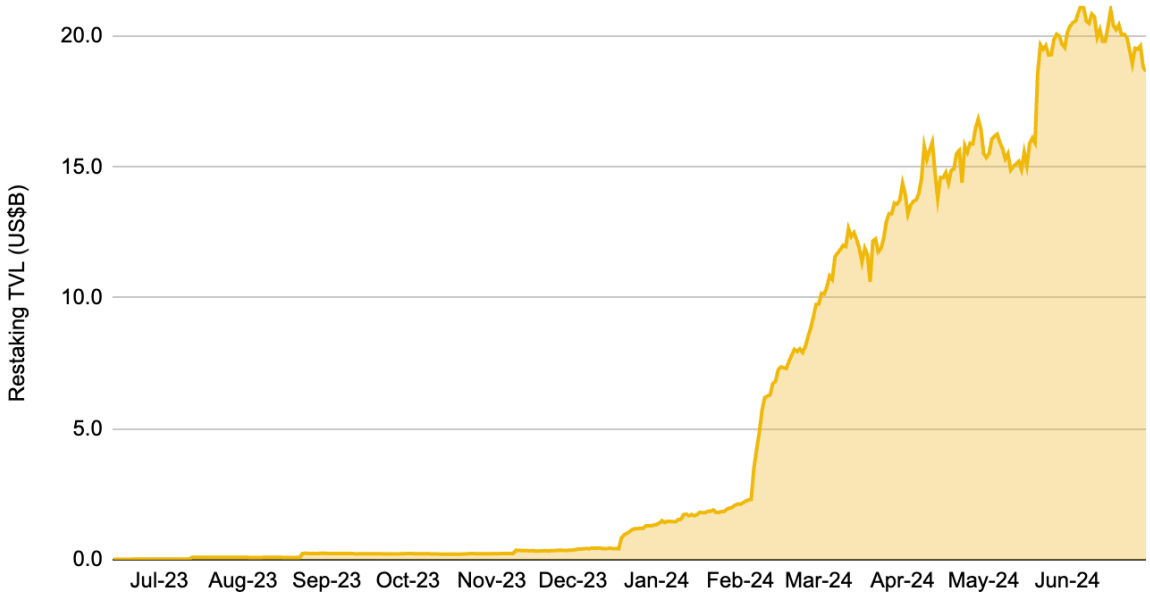
average transaction fees. Developer numbers are interesting to note, with Ethereum leading by a large margin, with BNB Chain, Solana, and Avalanche with comparable numbers, while Tron's developer community remains smaller.

Ethereum

Ethereum continues to progress well, leading other L1s on many key metrics as we saw above. Key narratives in H1 have revolved around restaking & its various related markets, EIP-4844, a growing DeFi sector, as well as the U.S. spot ETH ETF.

- **Restaking dominates the headlines:** Restaking, which allows users to repurpose their already staked tokens in order to provide security to other applications, has been a dominant Ethereum narrative over the past six months.
  - EigenLayer, the largest and one of the first projects in the sector, has driven the narrative and commands the majority of TVL in the market. EigenLayer currently has US$14B in TVL[11], over 85% of the overall market.

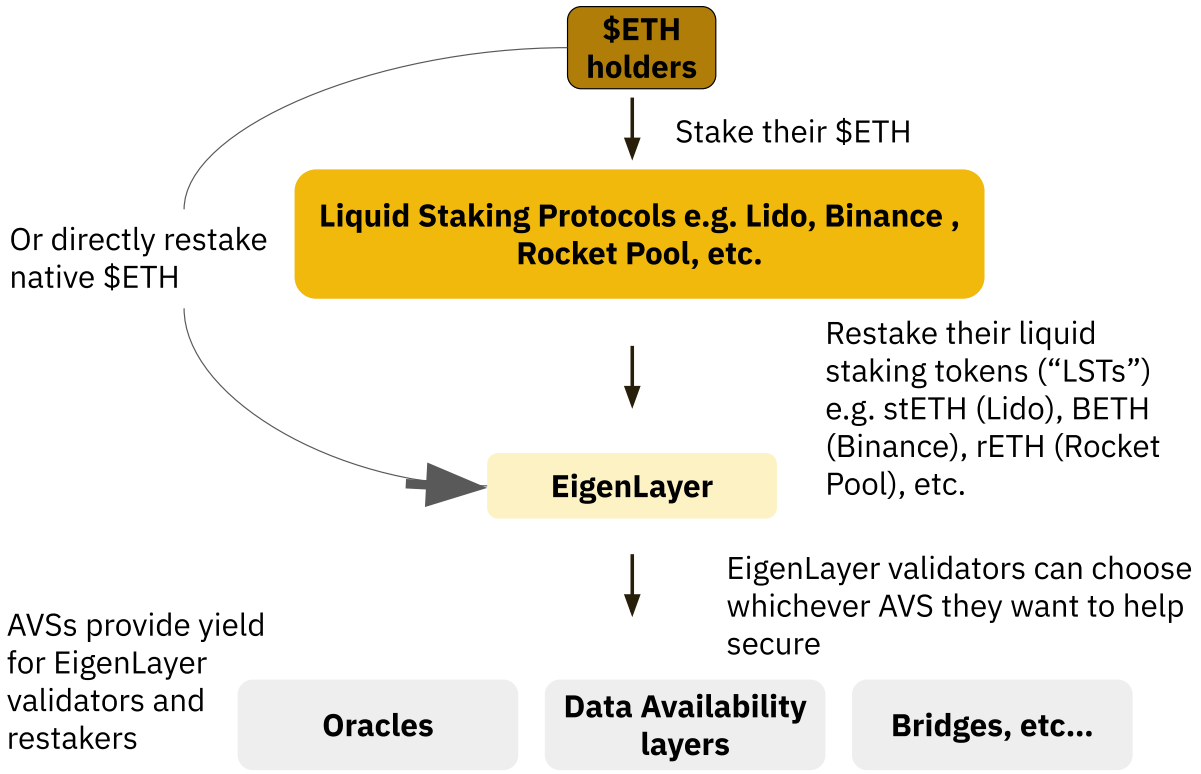
Figure 15: Restaking TVL has exploded since this year, currently at over US$16B



Source: defillama.com, Binance Research, as of June 30, 2024

- As a brief refresher, EigenLayer allows Ethereum stakers to repurpose their staked ETH to secure other applications (called actively validated services ("AVS")). Stakers can choose these services and earn a yield from doing so. In return, they agree to grant EigenLayer additional slashing rights on their staked ETH.

Figure 16: A simple illustration of how EigenLayer works



Source: Binance Research

- EigenLayer announced their mainnet in April, alongside the launch of the first AVS, EigenDA - a DA layer.

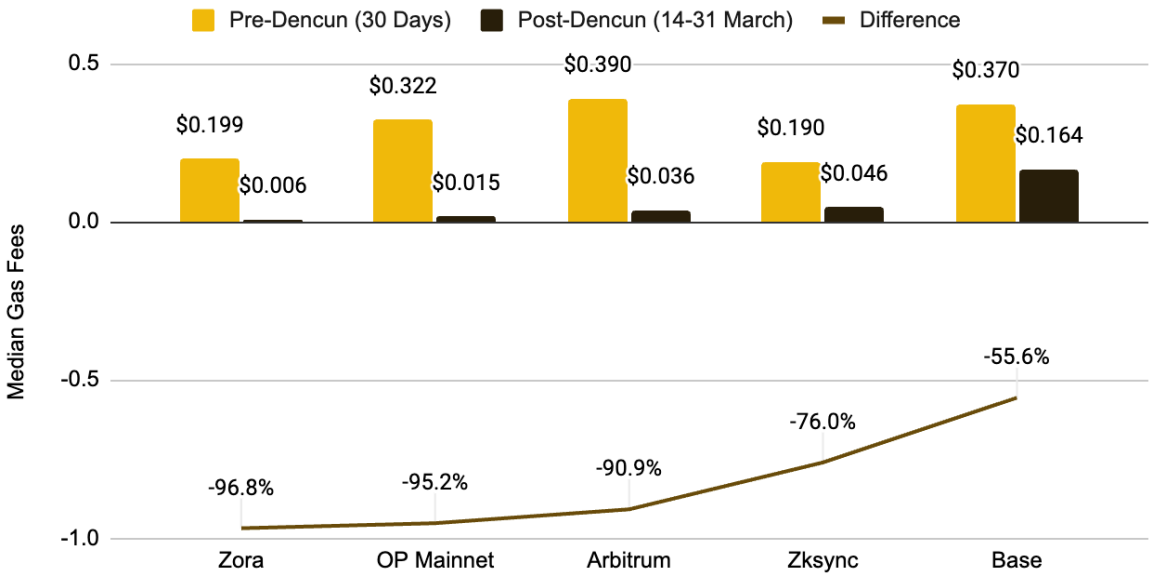
- Other notable platforms that have entered the restaking market include, **Karak** and **Symbiotic**. Karak focuses on **multi-chain restaking** and also features support for Arbitrum, Mantle, BNB Chain, Karak Network, alongside Ethereum. Symbiotic focuses on Ethereum, but casts a broad net with the different ERC-20 tokens they can accept for restaking.

  - **Key Report:** The Hitchhiker's Guide to Restaking

- **Dencun Upgrade & EIP-4844:** Ethereum's Dencun hard fork went live in March, introducing nine changes to the network. The most anticipated was **EIP-4844 (a.k.a. proto-danksharding**), **allowing users to benefit from lower gas fees on L2 transactions.** This was a major milestone for Ethereum's road to scalability and lays the groundwork for full danksharding in the future.

  - EIP-4844 introduced "**blobs**," which provide **L2s with a more gas-efficient way to post transaction data**. Blobs store the bulk of data off-chain and employ a pricing mechanism called "blob gas" that operates independently from Ethereum's gas market. Additionally, data is stored temporarily for around two weeks rather than permanently.

Figure 17: Many L2 transaction fees declined by over 90% post-Dencun



Source: Dune Analytics (@21co), Binance Research, as of 30 June, 2024

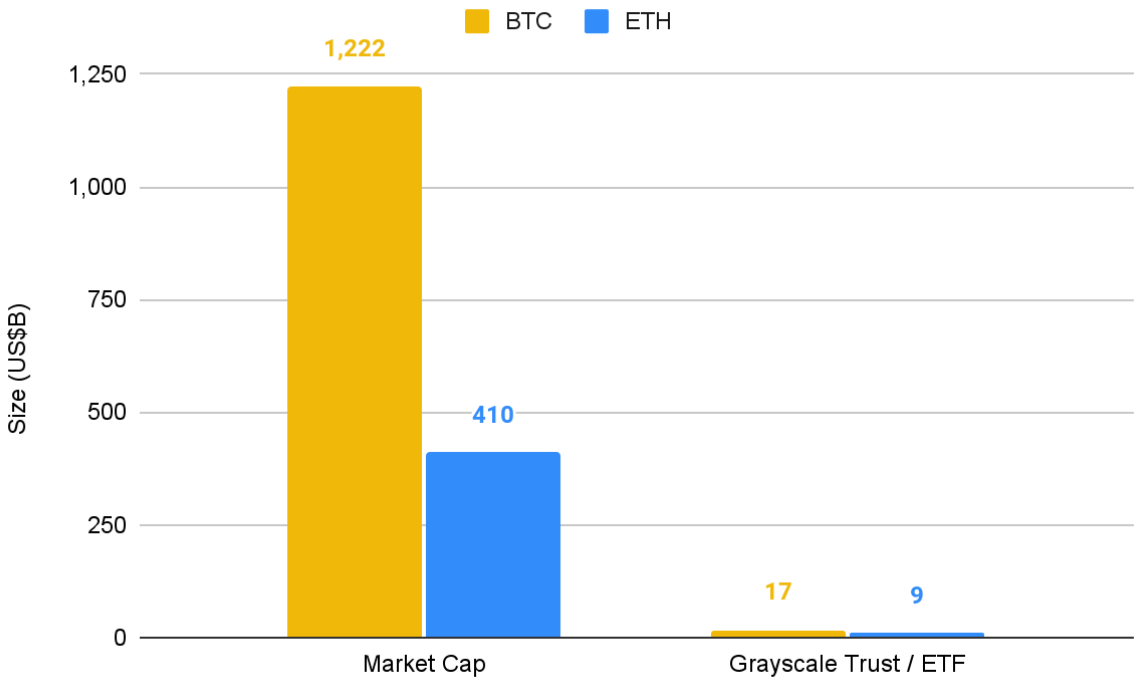
- Following the rollout of the EIP-4844, L2 transaction fees have fallen significantly across the board. As we can see above, median gas fees have fallen by over 90% post-Dencun for major L2s. The cost of sending ETH is now less than US$0.01 for most major L2 networks, while the cost of swapping tokens is also often less than US$0.1[(12)].

- **Spot ETH ETF:** Following the approval of the U.S. spot BTC ETFs in January, many in the market speculated about how long it would take for the spot ETH ETF approval. By the time we got to May, most people thought the likelihood of approval before summer was unlikely. However, in a somewhat surprising turn, at the end of May, the **U.S. SEC approved the listing of several spot ETH ETFs**.

  - As things stand, the issuers and the SEC are in communication about the details of the ETFs, and they are expected to go live for trading in the next few weeks.

  - While some expect flows to match those of the BTC ETFs, others expect a more muted reception. Two comparables we can use to create a more accurate project are (i) **Ethereum's market cap, which is ~32% of Bitcoin's,** and **(ii) the Ethereum Grayscale Trust, which is ~58% the size of the Grayscale Bitcoin ETF** (previously converted from their Bitcoin Trust)

Figure 18: Ethereum's comparables are between 30-60% as large as Bitcoin's - what might this mean for ETF flows?



Source: Dune Analytics (@21co), Binance Research, as of 30 June, 2024

- **What's coming up?:**
  - **Pectra Upgrade**: Scheduled for Q1 2025, Pectra is set to be Ethereum's next major upgrade and will include a set of different updates to both the execution and consensus layer.
    - Key additions include, EIP-7002 (enabling greater flexibility around restaking and staking pools), **EIP-7251 (increasing the maximum effective balance for Ethereum validators from 32 ETH to 2048 ETH**, helping to reduce system complexity), EIP-7594 (introducing peer data availability sampling to further optimize L2s), **EIP-7702 (improving account abstraction capabilities)**, etc. A full list of EIPs set to be included is linked here.

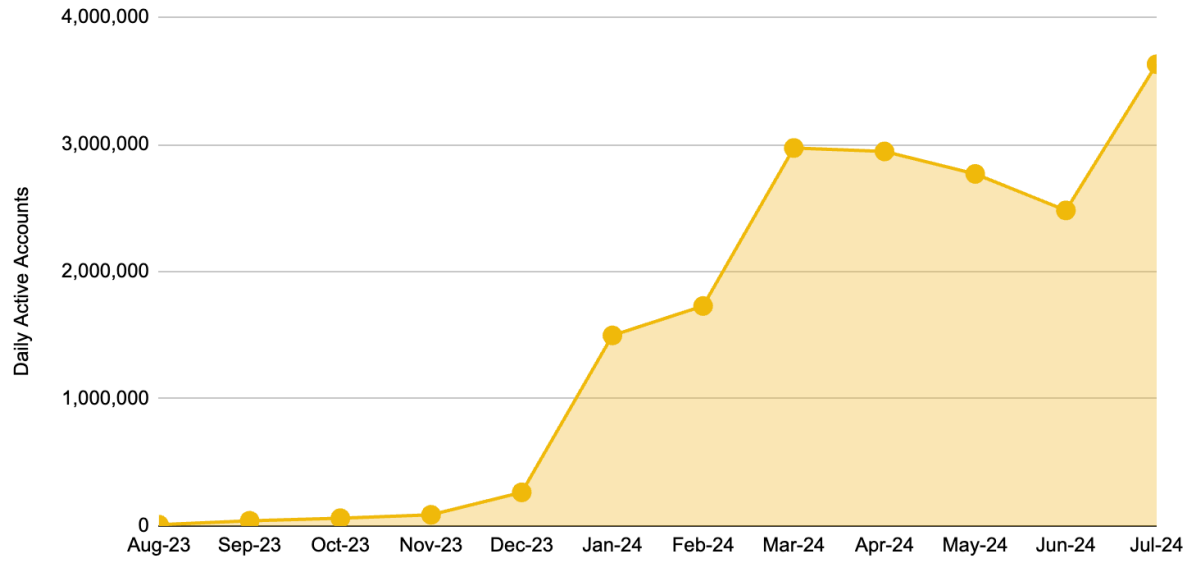
BNB Chain

BNB Chain **maintains its position as a leading L1** and continues to progress in a number of directions. Some of the leading developments in H1 include **opBNB progress**, growing its **decentralized data storage capacity with BNB Greenfield**, alongside a focus around memecoins. BNB Chain's position in **DeFi also remains strong**, with over US$7B in TVL firmly placing it as the third-largest DeFi chain. **PancakeSwap** remains the leading DeFi dApp with ~US$1.5B in TVL, with **Venus** close behind at US$1.4B TVL.

- **opBNB progressing well:** opBNB is a **BNB Chain optimistic rollup** L2 solution based on the OP Stack. opBNB is **EVM-compatible**, capable of **up to 5K transactions per second ("TPS")**, and has an **average gas fee of ~0.001 gwei (which is <US$0.001)**. In fact, average gas fees were further reduced by up to 90%, with the recent Haber hard fork, which implemented blobs (similar to Ethereum's EIP-4844). opBNB also features **native account abstraction ("AA") support**, and optimization for AA transactions. This combination of factors means that opBNB is attractive to developers working on applications that require high-frequency microtransactions, e.g., gaming.

    - Since going live last September, opBNB has recorded **over 1.1B transactions across ~3.5M daily active accounts**. Leading dApps include derivatives platforms, KiloEx and APX Finance, as well as, PancakeSwap.

Figure 19: opBNB's daily active accounts have been growing steadily and are upwards of 3.5M at the time of writing

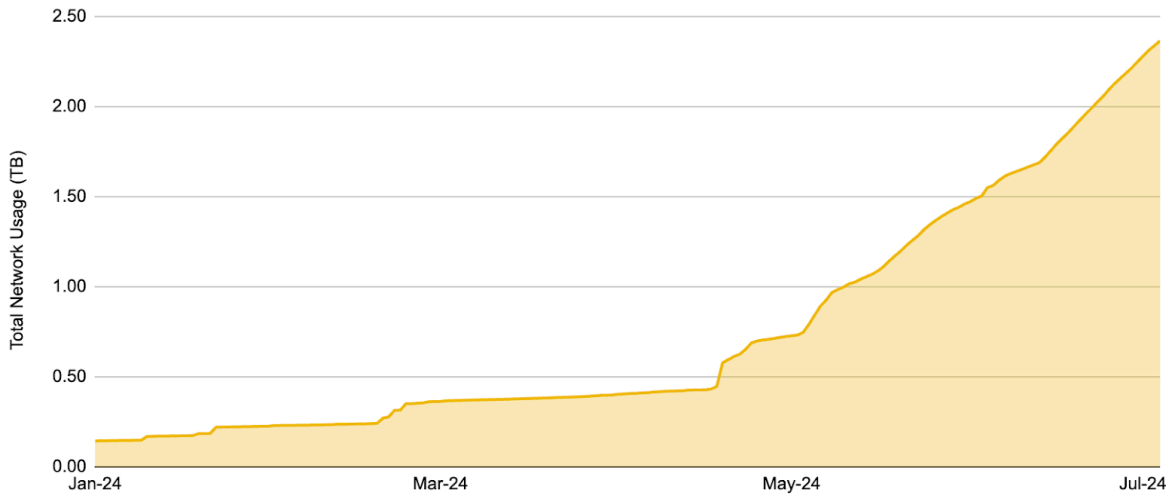


Source: opbnbscan.com, Binance Research, as of June 30, 2024

- **Update on BNB Greenfield:** BNB Greenfield provides decentralized data storage infrastructure within the broader BNB Chain ecosystem. It is a **storage-oriented blockchain where users can create, store, and exchange data that they fully own.** With the use of a native cross-chain bridge, all of the data stored in BNB Greenfield can easily be transferred to BNB Smart Chain, where it can be used by BNB Chain dApps and any new BNB Greenfield dApps. **Use cases include website hosting, cloud storage, blockchain data storage, publishing, personal data markets,** etc. More details can be found on the official website here.

- Since launching their mainnet in Q4 2023, BNB Greenfield has seen **~2.15 TB of storage**, 6.8M transactions across ~35K total addresses. Notable players include infrastructure players CodexField, Aggregata, and Rido. Top Greenfield users can be found here.

Figure 20: BNB Greenfield's network usage has been rising, with strong gains in the second half of H1



Source: greenfieldscan.com, Binance Research, as of June 30, 2024

- **Memecoins and Airdrops:** BNB Chain has launched a number of community initiatives in the last few months, including a focus on the hot trend of memecoins and airdrops.
  - **Meme Innovation Battle**: BNB Chain has **committed US$1M through this campaign to accelerate memecoin innovation within the ecosystem**. Phase one saw US$100K distributed, with Phase two set to distribute the remaining US$900K. The funds will be used for liquidity pool support to develop and grow the most promising meme projects on BNB Chain.
  - **Airdrop Alliance:** This program sees BNB Chain team up with **high-quality projects that are yet to release tokens and airdrop to retroactive BNB Chain and opBNB users**. BNB Chain recently launched Chapter Three of its program, which has over 8M tokens set to be distributed.
  - BNB Incubation Alliance: This is an incubator launched in collaboration with Binance Labs that aims to **support and expedite the growth of early-stage blockchain projects through a series of global events.** Winning projects can be fast-tracked into the **Most Valuable Builder ("MVB") program**, receive BNB Chain grants, and access **BNB Chain's Launch-as-a-Service ("LaaS") package**. The initial series of events is set for EthCC in Brussels, Bitcoin

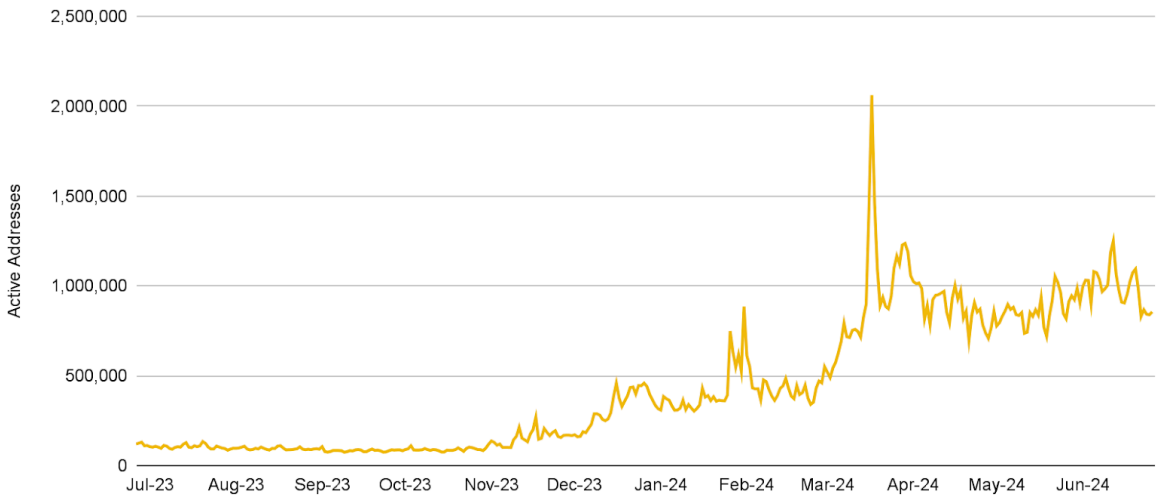
2024 in Nashville, Token 2049 in Singapore, Binance Blockchain Week in Dubai, and DevCon / EthGlobal in Bangkok.

- **What's coming up?:**
  - **A new node client:** The BNB Chain team has been collaborating with Paradigm to evaluate, test, and improve Reth (as a Rust-based Ethereum and BSC node client). This is **set to be the third client, in addition to the other two existing BNB node clients**. BNB Chain also has ambitions to build the next generation of high-performance node clients based on this.
  - **Focus on gasless infrastructure:** BNB Chain is set to introduce support to enable dApps to connect users without gas tokens, including a smart contract-based paymaster.

Solana

Solana has performed well in 2024, and has seen rising on-chain activity and increasing market attention.

Figure 21: Solana's active addresses have seen significant positive momentum over the last year



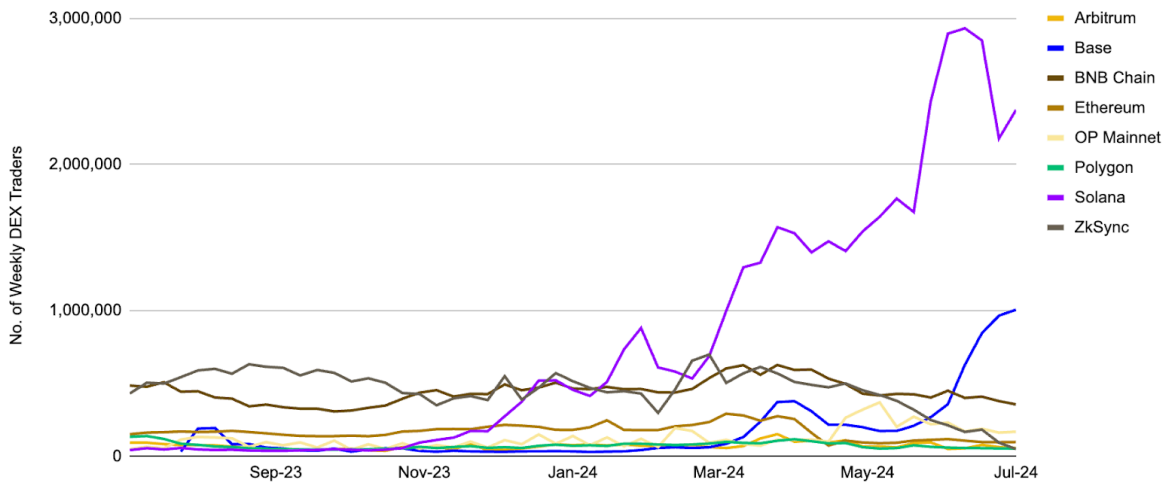
Source: Dune Analytics (@21co), Binance Research, as of June 26, 2024

- **Home of memecoins:** One of the major narratives of the last six months has been memecoins. As we will see later in this report, **memecoins have been the top performing sub-sector this year**, with a year-to-date return of over 279%.
  - Solana has been central to the growth of the memecoin markets, with many traders choosing it as their blockchain of choice when trading memes. There are multiple factors at play here, with the **relatively cheap transaction fees** and the **cohesive and unfragmented product suite**, being key highlights.

Solana has also generated some organic memecoin activity through **airdropping the BONK memecoin to Solana Saga Mobile owners**, which has gone on to become one of the leading memecoins of this cycle.

- As we can see in Figure 22, the weekly DEX traders figures for Solana have seen significant growth relative to the rest of the market. While not completely attributable to memecoin trading, this has undoubtedly been a key growth driver.

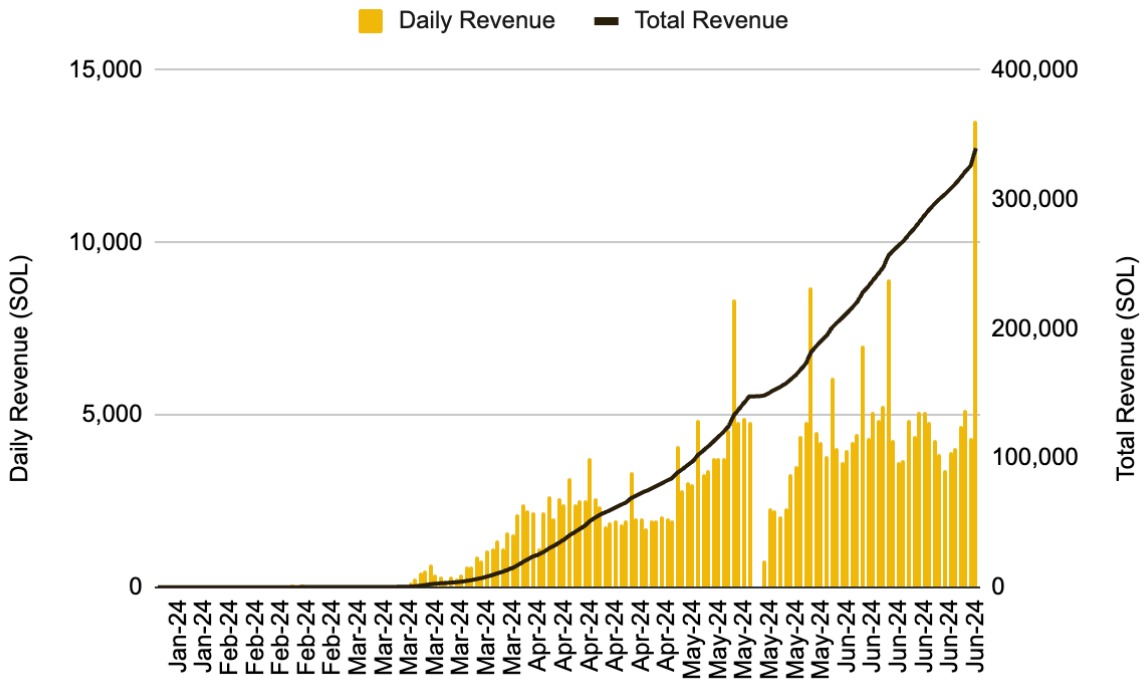
Figure 22: Weekly DEX traders have surged for Solana



Source: Dune Analytics (@ilemi), Binance Research, as of June 30, 2024

- The launch and growth of pump.fun has also been important to the Solana memecoin story. **Pump.fun is a simple platform dedicated to the creation and trading of memecoins**. It addresses the classic issues of unfair distribution and rug pulls by ensuring that each token is a fair launch, with no pre-sale and no team allocations. Given users can create and deploy a new memecoin in around 2 minutes for 0.02 SOL, this platform has really helped grow Solana's memecoin trading market. Over 1.1M new memecoins have been deployed via pump.fun, while the platform has generated over 308K SOL in revenue (~US$42M).

Figure 23: Pump.fun has generated over US$42M in revenue since their launch



Source: Dune Analytics (@hashed_official, Binance Research, as of June 30, 2024

- **DePIN:** Decentralized Physical Infrastructure Networks ("DePIN") remain one of the most interesting innovations in the crypto world and something to keep a close eye on. **DePIN projects are typically infrastructure projects that use blockchain technology and crypto-economics to incentivize individuals to allocate capital or rent out their resources to create a transparent, decentralized, and verifiable infrastructure network.** Examples include Hivemapper, a community-powered decentralized mapping service, and Helium, a crypto-powered 5G cellular network.

  - DePin forms part of the class of dApps that have been seen as "only possible on Solana", owing to its localized fee markets and high throughput (relative to other major networks, which are largely EVM-based and may not be ideal for the intensive use cases seen on Solana). **Thus, Solana has been integral in hosting key DePin projects, including Helium, Render, and Hivemapper.** There are also a whole host of new projects, like Ambient and Natix, who are both focused on collective environmental and geographic data, and have recently raised funds to continue building their products.

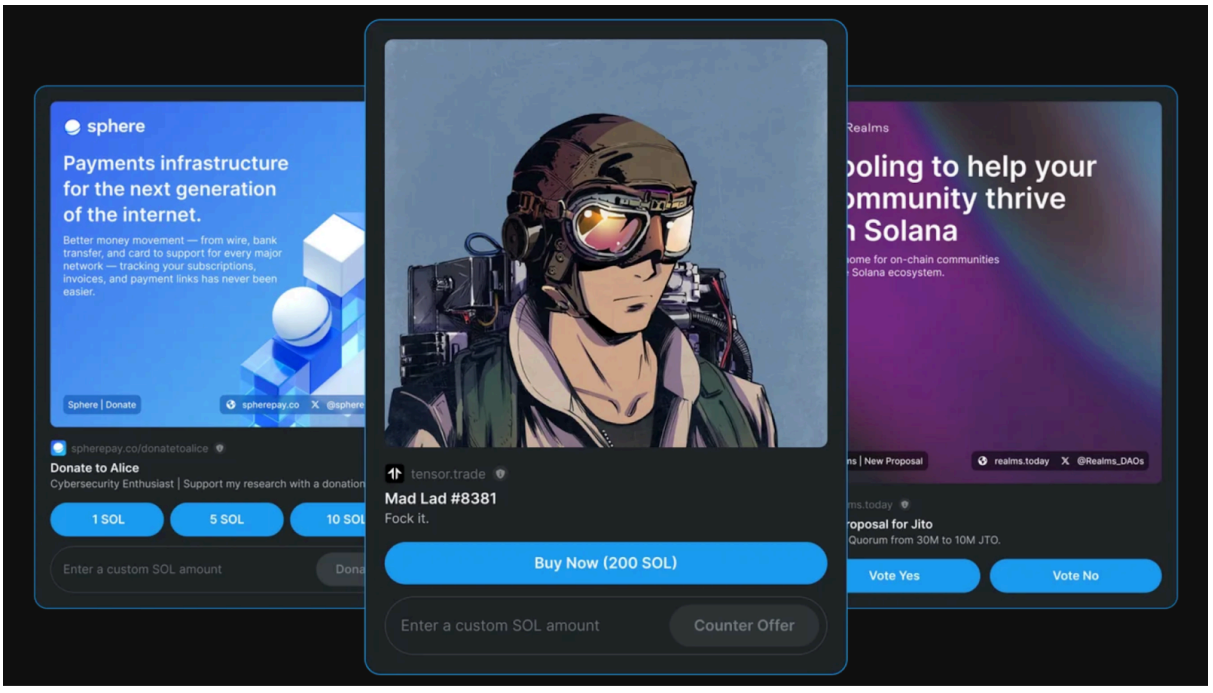
  - Progress has been going well. For example **Hivemapper** has already **mapped over 20% of the global road network[13],** while Helium's mobile hotspot coverage is also progressing well across North America, Europe and East Asia. It will interesting to watch how these projects develop, and how the newer protocols perform. This is especially important as other chains, including the likes of Polygon and Arbitrum, have also been stepping into the

DePIN sector and might start to provide more competition to Solana. We also cover DePIN later in this report.

➢ **Key Report:** DePIN: An Emerging Narrative

❖ **Solana Actions and Blinks:** Recently, Solana also announced the launch of **Solana Blinks (shorthand for blockchain links)**. Actions are APIs that return transactions on the Solana chain, while blinks turn any Solana Action into a shareable link. This means that **anywhere you can share a link, you can trigger an on-chain action**. In practice, this means that users can mint an NFT, vote on a proposal, donate, swap tokens, etc., without ever leaving their X timeline. Essentially, blinks allow users to execute blockchain transactions from anywhere the blink has been shared, making Solana dApps accessible from any platform that can host a link.

Figure 24: Users can do all sorts of on-chain activities from directly interacting with the blink and never leaving the website they were on



Source: Solana website

➢ We have already seen a number of leading Solana protocols integrate blinks. **Drift Protocol** is set to allow its users to long/short tokens directly on X, while **Meteora allows for memecoin trading on the timeline**. Users can mint Tensor NFTs, vote on Helium proposals, liquid stake with Sanctum, swap tokens on Jupiter - all while scrolling their X timeline. It is early days for this new primitive, but we look forward to seeing how it develops and what sort of innovations we see emerge from Actions and blinks.

❖ **What's coming up?:**

- **Firedancer:** The release of Solana's new, independent validator client has been hotly anticipated, with estimates of release later this year or early next year.
  - Solana currently has two clients, the original Solana Labs client, and a second client created by Jito Labs. However, Jito Labs forked the original Solana Labs client, so if a bug takes down one of these clients, it is likely that it is present in both. Firedancer, on the other hand, is completely independent, and even written in a different language (C++ vs Rust for the original client).
  - The key benefit of Firedancer is **increased network reliability and resiliency**, i.e., if a bug takes down the other clients, the network can remain running on Firedancer. Additionally, Firedancer aims to **significantly bolster Solana's scalability,** with Firedancer having processed 1M+ TPS in tests[14] - significantly higher than Solana's current average of ~3-4K[15]. Firedancer will also help reduce latency times, which should help give Solana dApps a performance boost. Together, these aspects should make for a more robust blockchain, with interesting possibilities for high throughput dApps.
- **Saga Chapter 2**: Solana's Saga **mobile phone**, which is tightly integrated with the chain and provides users with an easy way to manage their digital assets, saw strong demand at the end of 2023 and sold out. This is **partially due to the rise of memecoins, BONK in particular, which was airdropped to Saga owners**, with many allocations ending up being worth more than the price of the phone[16].
  - Solana has since opened up pre-orders for their **second device, Saga Chapter 2**. The phone is expected to be released in 2025, and users who pre-ordered have already received two airdrops.
- **Scalability:** Recently, Light Protocol announced that they had teamed up with another Solana development company, Helius Labs, to work on **ZK compression for Solana**. This is a **scaling technique designed to further reduce on-chain computation costs**, and uses ZK proofs and calldata (somewhat similar to how Ethereum L2s work). Their solution is currently in testnet. We also recently saw **Sonic, a Solana L2 focused on gaming, raise a US$12M round**. Sonic is currently in devnet with five gaming studios already building on it. Mainnet and a token are expected in Q3.

Others

- **Avalanche:** Avalanche saw the release of **Teleporter** in March, which is a **communication protocol designed to improve interconnectivity between its subnets**. Teleporter facilitates tokens, NFT, and message transfers across subnets, of which there are now ~125 (although less than 50 of these have any validators).
  - Gaming continued to be a focus, with the announcement[17] of a **MapleStory Universe subnet** the most notable news.
  - The Avalanche Foundation also continues to support the ecosystem, with a **US$100M Culture Catalyst**[18] **fund** (aimed at Avalanche-based memecoins) and a **US$50M Vista fund**[19] (aimed at Avalanche-based tokenized assets i.e. RWAs).
- **Cosmos:** the Cosmos ecosystem is **centered around the Cosmos Hub, which is an appchain secured by the $ATOM token**. A number of other appchains, referred to as "**Zones**," are connected to the Cosmos Hub and use the **Inter-Blockchain Communication** ("IBC") protocol to communicate and transfer data between one another. A "Hub" is essentially a Zone that facilitates communication with multiple other Zones. The Cosmos Hub was the first such Hub, however, many other Hubs exceed it in terms of activity[20]. Other leading Hubs include **Osmosis, Celestia, Axelar, and Noble**. At the time of writing this report, there are **80 active IBC-enabled Zones** in the Cosmos ecosystem, with a **market cap of over ~US$31B**[21].

Figure 25: On-chain activity of the top five Cosmos appchains from the last 30 days

Logo	Name	IBC Volumes (US$M)	Total Txs (M)	Monthly Active Users (K)
	Osmosis	429	5.2	144.5
	Noble	387	0.2	10.2
	dYdX Protocol	265	11.4	9.7
	Celestia	224	1.4	254.6
	Neutron	186	0.7	68.4

Source: mapofzones.com, as of July 8, 2024

- **Replicated and Mesh Security:** Last year we saw Cosmos focus on **shared security**, with the launch of replicated security and announcement of mesh security. However, other than Neutron and Stride (appchains who decided to use replicated security), we are yet to hear many more recent updates on either of these developments.

    - We covered replicated security in detail in our recent report: Modular Blockchains: The Race to Become the Top Security Provider

- **Babylon Chain coming:** Babylon is a Cosmos project that aims to **leverage the security of Bitcoin to enhance the security of Cosmos appchains and other PoS chains**. Babylon has already integrated with 50 chains on their testnet, with a total market cap of over US$9.8B[22]. These include the majority of top Cosmos appchains, such as Osmosis, Injective, Akash, Sei, Stride, Evmos, and many more.

    - Given the hybrid model of Babylon, which combines PoS and PoW and then adds IBC for communication, we can view it as seeking to **leverage the best parts of Ethereum, Bitcoin, and Cosmos**. It is a promising new approach to blockchain design and we look forward to following it closely as we approach mainnet.

- **Tron:** Tron continues to excel as a stablecoin settlement chain and **remains host to over 50% of all issued USDT**[23]. Tron also remains the **second-highest network by DeFi TVL**, although this is only composed of ~34 protocols, compared to over 1K for Ethereum and over 770 for BNB Chain.[24] JustLend and JustStables are among the leading protocols on the chain. Additionally, earlier in the year, Justin Sun also announced[25] that Tron is working on a Bitcoin L2 solution.

- **TON:** TON has gone through significant growth, both in popularity and narrative mindshare, over the last year. Market cap is up from around US$8B in January to over US$18B as of the end of June, while TON volume and address counts also continue to rise[26]. The integrations between the TON network and the Telegram messaging app (which has over 800 monthly active users) are perhaps the most interesting aspect of the story. Telegram games like Hamster Kombat (which is set to airdrop a token[27] on TON) and Notcoin have been notable recent highlights.

- **Fantom:** Fantom has been making some noise and the Fantom Foundation recently announced their new **upcoming L1, Sonic. Sonic will have a native L2 bridge to Ethereum**, and will reportedly be able to process **2,000 transactions per second** ("TPS"). They also recently announced a US$10M fund raise, and a **200M $FTM allocation** towards migrating dApps and partners to Sonic.

- **Berachain:** One of the more interesting new L1s to enter the scene over the last few months. Berachain uses a **novel proof-of-liquidity consensus mechanism** that focuses on **building systemic liquidity** within the Berachain ecosystem of dApps and **aligning all stakeholders via a three-token model**. Berachain recently launched v2 of their testnet and will seek to launch mainnet in the next few months.

- **Cardano:** Cardano's deFi TVL saw a new high in H1, exceeding US$500M in March, though it has since come down. Cardano is also getting ready for its upcoming Chang hard fork (expected at the end of July), which is set to fully decentralize its governance.

- **NEAR Protocol** has been active with particular focus in the AI x Crypto subsector. They also have the upcoming release of their data availability ("DA") solution, NEAR DA.

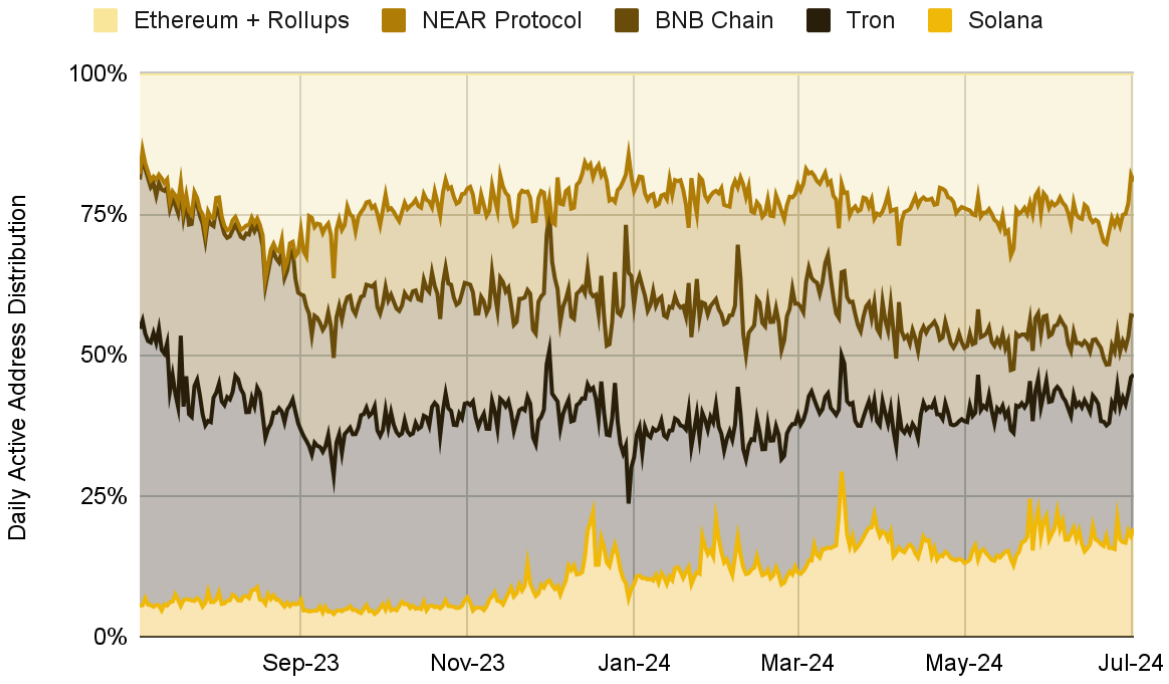
4 The Layer-2 World

4.1 Market Overview

Blockchain modularity has taken on a life of its own. The growth of Layer-2's (L2s) we saw in 2023 has continued well into 2024, **bringing the total value locked ("TVL") in Layer-2's to US$43B**. This represents a **90% increase in TVL within just the first 6 months**[28] of 2024. The Layer-2 world shows no signs of slowing down either. The release of EIP-4844, the Ethereum Dencun upgrade, has made roll-ups cheaper than ever before to use with L2 **transaction fees declining by as much as 96.8%**[29] post hardfork.

Layer 2's have played a significant role in **keeping the Ethereum ecosystem firmly relevant in terms of user activity**, even when compared to the most active alternative L1s like Solana and Tron. The combined **daily active addresses across the Ethereum mainnet and all its L2s currently sits at ~2.1 million**. This is equal to that of the leading chain in this metric, TRON, and ahead of second place's Solana whose daily active addresses comes in at 1.6 million.[30]

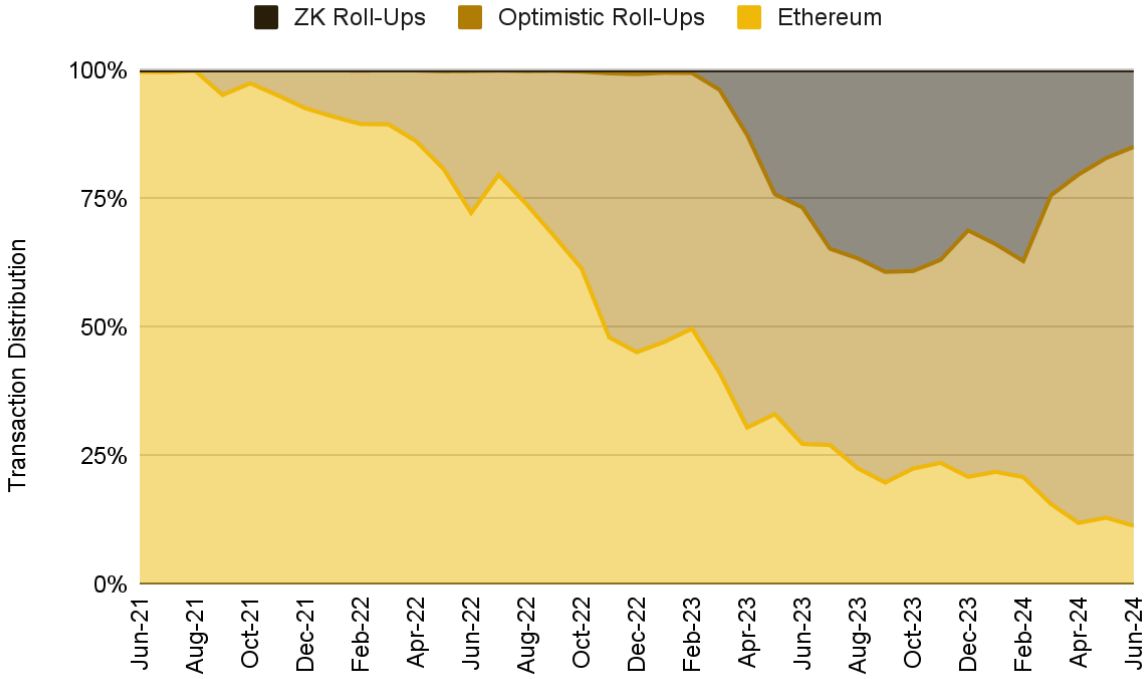
Figure 26: Layer2's have allowed the Ethereum ecosystem to remain competitive with the most popular alternative L1s in terms of daily active addresses



Source: Artemis, Binance Research, as of June 30, 2024

In terms of competition within Ethereum's Layer 2 world itself, the **launch of the Blast L2** in February 2024, alongside the **rapid growth of Arbitrum and Base** which occurred around the same time, has **kept optimistic roll-ups firmly in the lead** when compared to their ZK counterpart in terms of market share. Before the launch of Blast, ZK-rollups had been steadily gaining market share since the launch of zkSync Era in March 2023.

Figure 27: February growth in Arbitrum, Blast, and Base activity keeps optimistic roll-ups firmly in the lead compared to ZK roll-ups in terms of transaction activity



Source: Artemis, Binance Research, as of June 30, 2024

Due to the high growth of Arbitrum and Base, as well as the launch of Blast in 2024, **Optimistic roll-ups have retained a dominant market share** over their zero-knowledge counterparts.

Figure 28: Optimistic roll-ups retain a dominant market share in terms of TVL, totalling around 80%

Logo	Name	Type	Market Share (%)	Max Daily TPS	TVL (US$B)
	Arbitrum One	Optimistic	39.25	40.55 *(Jun 2024)*	16.96
	Base	Optimistic	17.20	42.15 *(Jun 2024)*	7.43
	OP Mainnet	Optimistic	14.81	11.29 *(Mar 2024)*	6.4

	Blast	Optimistic	6.72	12.87 *(Jun 2024)*	2.9
	zkSync Era	Zero-Knowledge	3.07	25.75 *(Feb 2024)*	1.32
	Linea	Zero-Knowledge	2.99	55.70 *(Mar 2024)*	1.29
	Mantle	Optimium	2.88	8.65 *(Jun 2024)*	1.24
	Scroll	Zero-Knowledge	2.22	6.50 *(May 2024)*	0.96
	StarkNet	Zero-Knowledge	1.71	12.39 *(Feb 2024)*	0.74
	Manta Pacific	Optimium	1.49	1.37 *(Mar 2024)*	0.65
	Mode Network	Optimistic	1.33	6.03 *(May 2024)*	0.57
	Metis Andromeda	Optimium	0.93	9.37 *(Jan 2024)*	0.40
	dYdX v3	Zero-Knowledge	0.93	11.45 *(Feb 2024)*	0.30
	Taiko	Based	0.36	25.38 *(Jun 2024)*	0.15
	ImmutableX	Validium	0.32	7.36 *(Mar 2024)*	0.14
	Ethereum	Base Layer	N/A	22.37 *(Dec 2022)*	N/A

Source: l2beat, Binance Research, as of June 30, 2024

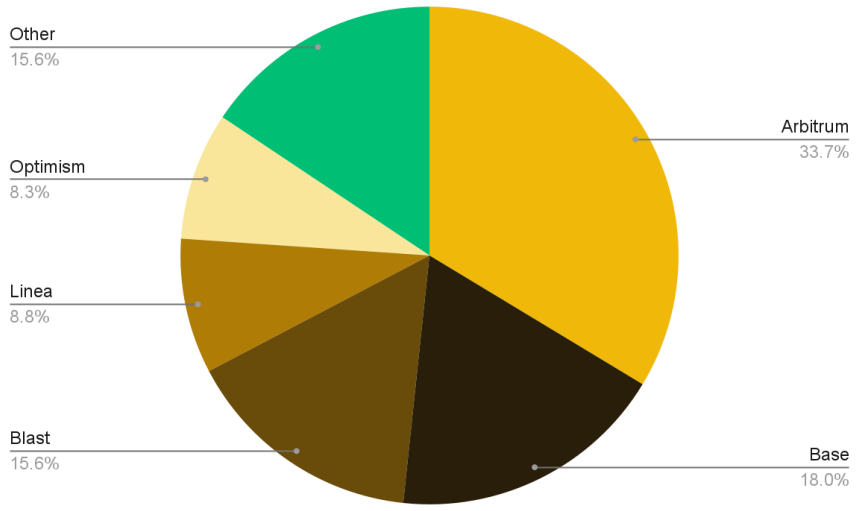
4.2 Optimistic Landscape

Arbitrum

While the **Arbitrum chain has retained its number one spot among L2s** in 2024, **its ecosystem has lagged behind Optimism's** due to the rapid growth of Base and the launch of Blast, both of which leverage the OP tech stack. However, several new projects plan to use the Arbitrum Orbit stack for a new generation of L3 chains, including ApeChain and Animechain by the Bored Ape Yacht Club and Azuki teams respectively. The competitiveness of Arbitrum against Optimism's OP stack moving forward could hinge on the success of these prominent upcoming chains.

The Arbitrum chain itself continues to boast the highest TVL amongst its fellow L2s, **maintaining a significant ~33.7% of the L2 market share**. The combined TVL across all L2s currently sits at ~$US8.3B.[31]

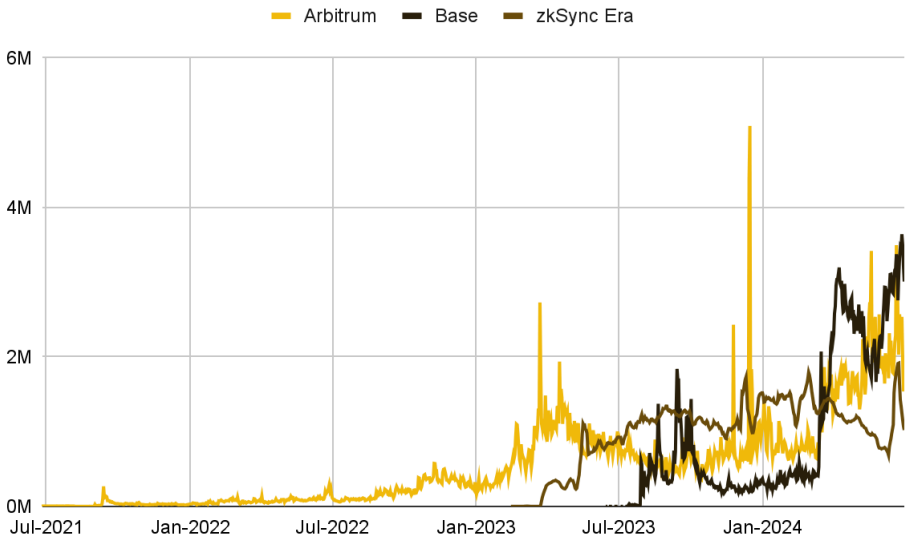
Figure 29: Arbitrum remains convincingly in the lead in terms of TVL compared to the other Layer 2s with 33.7% of the market share



Source: Artemis, Binance Research, as of June 30, 2024

However, 2024 saw **Arbitrum falling behind to the Base in terms of daily transactions**. Base, which recently hit its all time high daily transactions of 3.5 million on 28 June, also overtook the former second place zkSync Era in terms of daily transactions in 2024.

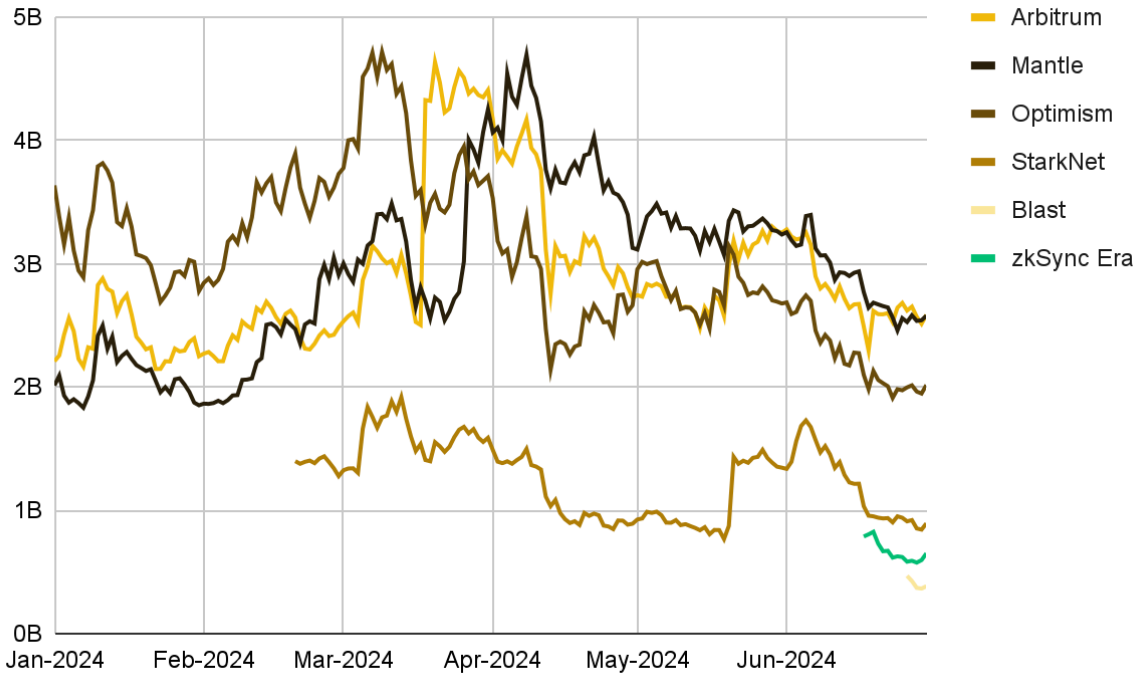
Figure 30: Arbitrum's daily transactions falls behind that of Base, but remains in second place ahead of ZK-rollups



Source: Artemis, Binance Research, as of June 30, 2024

- **ARB token vesting:** Despite its lead in terms of TVL over the other L2s, the **$ARB token's market capitalization remains on par with the rest of its optimistic brethren**, coming in at ~US$2.3B at the time of writing. This places it just about on par with Mantle's $MNT token, and slightly above Optimism's OP token which currently sits at ~US$1.8B.[32]

Figure 31: ARB token market cap remains in tight competition with the other L2 governance tokens



Source: Artemis, Binance Research, as of June 30, 2024

The $ARB token Investor and Team unlocks began on March 16, which coincided with the beginning of its price decline. From **March 16 onwards, 92.65M ARB tokens** (~US$75M worth at the time of writing) will be unlocked on the 16th of each month according to the Team's and Investors' vesting schedules. The final unlock will occur on March 16, 2027, at which point the full supply of 10B $ARB tokens will be unlocked and in circulation.[33] **These vesting unlocks could create sustained downward pressure on token price moving forward.**

- **Arbitrum brings gaming and NFTs into its Orbit: Arbitrum Orbit facilitates the permissionless creation of L3s**, granting developers more autonomy. Building upon this, developers engaged with Orbit gain **full access to the Arbitrum Nitro stack**. 2024 has been an exciting year for Arbitrum Orbit so far. A number of prominent teams within the Gaming and NFT space announced that their upcoming 'Layer 3' (L3) chains will make use of the Orbit stack:

1. The team behind Arbitrum itself, Offchain Labs, launched its XAI gaming chain. After its **node sale held in December 2023 which raised over 13,000 ETH (~US$40M at the time)**,[34] the XAI chain went live in March 2024. The XAI token market cap currently stands at US$130M. More on XAI in the section on gaming below.

2. In February, the Bored Ape Yacht Club's Apecoin DAO voted to make use of Arbitrum Orbit's tech stack to launch their **gaming-focused "ApeChain"**.[35]

3. The community drive "$degen" memecoin project which spun out of a channel on Farcaster launched the "DEGEN chain". DEGEN chain is built as an Arbitrum Orbit chain, which settles on Base and uses AnyTrust for data availability.[36]

4. Proof-of-play, the team behind **Pirate Nation**, launches its "Multi-chain" using the Orbit tech stack. The studio said that Arbitrum's technology enables games to run fully on-chain without unnecessary delays or hitches.

5. **Rarible Foundation's Rari chain** launched as an Abitrum L3 using Arbitrum Odyssey. Rari Chain is an Ethereum Virtual Machine (EVM)-compatible layer-3 that embeds NFT royalties on the sequencer level.

6. Team behind the prominent **NFT project, Azuki**, announced the development of AnimeChain, which aims to bring all of the Web3 anime scene together into one chain. The network will include original and third-party anime content, games, merchandise, and NFTs.

7. Kinto launched its mainnet in May 2024. Kinto is a KYC'ed blockchain capable of supporting both financial institutions and decentralized protocols. It had previously launched its testnet using the OP stack in May 2023, but migrated to use Arbitrum Orbit in Q4 2023.

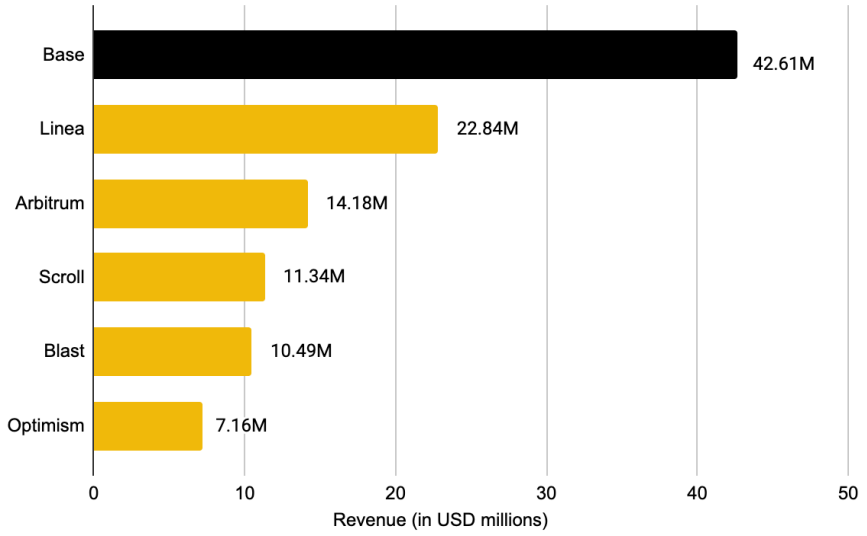
   With numerous new L3 chains coming to the Arbitrum Orbit ecosystem, watching how these develop will be key to measuring the Orbit stack's competitiveness against the already blooming OP ecosystem.

Base

Base grew significantly in 2024, **overtaking the OP Mainnet as the second most popular** Ethereum L2 behind Arbitrum. The Base chain is Coinbase's native L2 solution, built using the OP stack, and launched in August 2023. Its sustained growth in the early half of 2024 is indicative of the chain's staying power above and even beyond the initially popular friend.tech application. Just about a year after its mainnet launch, **Base already boasts a TVL of over US$1.5B**,[37] and a blossoming on-chain ecosystem of over 200 dApps, many of which are native to the L2 chain.

- **The L2 with the highest revenue:** Year-to-date ("YTD"), Base comes in as the highest earning L2 chain, clocking US$42.6M in the first half of 2024. This puts Base at almost double YTD the revenue of second place's Linea.

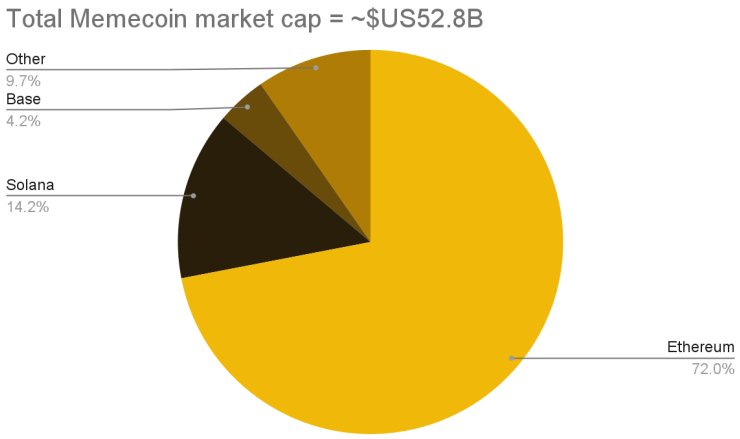
Figure 32: Base out-earned all other rollups, making $42.6M in revenue so far in 2024



Source: Artemis, Binance Research, as of June 30, 2024

- **A worthy competitor to Solana's memecoin dominance:** The memecoin ecosystem on Base has been growing. The total market capitalization of memecoins currently sits at ~US$52B, of which **memecoins on Base currently make up ~4%.**[38] This puts Base memecoins in third place behind Solana memecoins, which make up 14%.[39] Ethereum remains home to the greatest memecoin value, with Ethereum-native memecoins boasting a combined market cap of ~US$38B at the time of writing.

Figure 33: Base chain comes in just behind Solana in terms of total native memecoin valuation market share



Source: Coingecko, Binance Research, as of June 30, 2024

The **Base-native $BRETT memecoin found particular success in 2024**. Having just launched on 29 February, it has already made its way into the **top 100 out of all crypto tokens** and currently sits at a market capitalization of over US$1B.[40]

- **The home of Coinbase's new Smart Wallets:** In June, Coinbase announced the launch of their Smart Wallets. **The Smart Wallet product aims to transform the on-chain experience by simplifying onboarding, eliminating network fees, and removing the need for recovery phrases**.[41] Users can create new wallets within seconds, making blockchain access more user-friendly.

  The Smart Wallet tech stack also allows developers to sponsor transactions for users, covering network fees and enhancing dApp interactions. This approach lowers cost barriers and encourages wider blockchain adoption.

  To remove the need for active seed phrase management, **Coinbase securely stores private keys using offline storage and advanced encryption**. Additionally, multi-party computation **(MPC) technology further secures private keys** by splitting them into parts stored in different locations, ensuring robust protection even if one part is compromised.

OP Mainnet

Despite OP Mainnet losing ground in terms of activity and TVL to the new and dynamic Base and Blast L2 chains, the rapid ascent of these newcomers signifies **substantial growth in the adoption of the broader OP stack and Superchain** ecosystem. While Arbitrum still leads as the L2 chain with the highest TVL, boasting approximately US$2.8 billion locked in on-chain smart contracts, the combined TVL of the most popular Optimism ecosystem L2s (OP Mainnet, Blast, Base) has surpassed that of the Arbitrum ecosystem, now reaching around US$3.7 billion.[42] As cross-L2 **interoperability advances through Optimism's Superchain and Arbitrum's Orbit initiatives**, assessing the competition between the two may increasingly require comparing combined metrics for all projects utilizing these technology stacks, rather than evaluating each individual L2 chain.

Business model and revenue-wise, the Optimism Collective, bolstered by the exponential growth of Base, has performed well in 2024. According to ongoing agreement between Base, which utilizes the OP stack, and the Optimism Collective, **Base will pay the Optimism Collective the greater of either 2.5% of Base revenue or 15% of Base's on-chain profits**.[43] In return, Base will receive up to 118 million OP tokens, valued at $175 million, over a period of six years.

Based on this arrangement, with Base earning an estimated US$35M in profit so far this year, the **Optimism collective can book an additional US$5.25M** in revenue for the first half of this year **on top of the ~US$13M in profit earned by OP Mainnet** itself.[44]

In order to assess the progress of the OP Superchain going forward, it will be crucial to observe **whether other Layer 2 solutions using the open-source OP stack embrace the Optimism Superchain thesis as strongly as Base appears to have.** Base's endorsement, bolstered by its backing from Coinbase, adds significant credibility to the potential success of the Superchain. However, not all projects may share this perspective; some might choose to utilize the open-source OP stack without contributing to the broader OP vision.

- **Fault proofs:** When a user submits a transaction to a rollup network, **it is bundled with transactions from other users before being forwarded to Ethereum**. These bundles are then recorded on Ethereum's transaction ledger collectively, **enabling faster transactions and significantly lower fees for users**.

  In theory, rollup transactions are secured by "proofs," which are cryptographic methods allowing observers on Ethereum to verify the accuracy of recorded transaction details. This is particularly important for withdrawals, as it enables users to rely on Ethereum—rather than the rollup network—to withdraw their funds from the layer-2 chain.

  Without fault proofs, users who deposited funds into Optimism **had to trust the rollup's "security council" to return their funds**, a system prone to potential human error or bias. **With the introduction of fault proofs, users only need to trust Ethereum**, enhancing the security and reliability of their transactions.[45]

  With fault proofs now being deployed on Optimism's mainnet, other chains utilizing Optimism's OP Stack, like **Base and Blast, will also gain access to this technology**.

- **The Optimism Superchain continues to grow:** The Superchain has become home to some of the most popular L2s. As defined in the Optimism Documentation, the Superchain is **a "decentralized blockchain platform which consists of many chains that share security and a technology stack (OP Stack)**. The interoperability and standardization enables individual chains to be treated identically by tools and wallets."

In order to achieve the Superchain vision, the Optimism Collective aims to steer Optimism towards having the following properties:

Figure 34: Properties of a Superchain

Property	Purpose
Shared L1 blockchain	General-Provides a total ordering of transactions across all OP Chains
Shared bridge for all OP Chains	Enables OP Chains to have standardized security properties.
Cheap OP Chain deployment	Enables deploying and transacting on OP Chains without the high fees of transacting on L1
Configuration options for OP Chains	Enables OP Chains to configure their data availability provider, sequencer address, etc.
Secure transactions and cross-chain messages	Enables users to safely migrate state between OP Chains

Source: Optimism, Binance Research

The increasing number of chains actively utilizing the OP stack can be viewed as setting the stage for the ambitious Superchain vision. It will be important to watch for **new cross-chain dApps that leverage multiple OP chains** for liquidity while **abstracting away the bridging process for end users**. This approach would lower the learning curve needed to navigate the Superchain and its associated dApps, which is crucial for achieving mass adoption.

Figure 35: A growing number of chains are building on OP Stack, collectively accumulating impressive metrics in both transactions and unique addresses

Logo	Name	Type	Cumulative Transactions (M)	Cumulative Unique Addresses (M)
	OP Mainnet	General-Purpose	294.2	150
	Base	General-Purpose	396	86.4
	Blast	General-Purpose	78.1	1.95
	CELO	Mobile-First DeFi	387	14.7
	Zora Network	NFT	54.0	3.6
	Public Goods Network	General-Purpose / Public Goods	16.7	1.2
	Mode (Developer Mainnet)	General Purpose	34	0.5
	DeBank Chain (Testnet)	SocialFi	5.7	0.18
	Ancient8 Chain	Gaming	9.5	1.6

Source: Block explorers, Binance Research, as of June 30, 2024

- **CELO moves to Optimism:** In May, the CELO community voted to migrate its L1 chain over to the Ethereum ecosystem as an L2, making use of the OP stack. **"The OP Stack largely provides what is needed to deploy an L2**. Minimal changes are needed to support Celo's unique features," the proposal which passed in May reads. "It is battle-tested with multiple chains in production and compatible with other stacks, such as Polygon's Type 1 ZK Solution."[46]

  CELO is a mobile-first, carbon-negative blockchain platform designed to bridge the gap between decentralized finance (DeFi) and the real world. It enables fast, secure, and low-cost global payments accessible to anyone with a smartphone, driving financial inclusion and empowering individuals in emerging markets.

- **Ancient8 goes live:** After 10 months of testnet, which began in September 2023, Ancient8 Mainnet went live in February. **Ancient8 is a gaming-focused L2 that integrates the robust OP Stack and uses Celestia as its data availability layer**. It aims to address scalability and adoption challenges in fully on-chain games and consumer DApps.

  So far, Ancient8 has partnered with five gaming titles:

- Onchain Clash: A fully on-chain game that seamlessly blends territorial claims and expansion dynamics, drawing inspiration from Pixel War, Go Game, and Paperio.
- Omnizone: A fully on-chain game that combines tactical role-playing elements with a high-stakes battle royale format, operating on an omnichain.
- MasterDuel: An online gaming platform designed to create an environment where players can connect, duel, and earn real rewards while playing.
- Wee Pepe: A fully on-chain game featuring Pepe The Frog, where players must save the endangered planet Pepe by building a city on the moon.
- DeWorld: The world's first fully on-chain game that allows players to cultivate and enhance their own farms using NFTs.

Blast

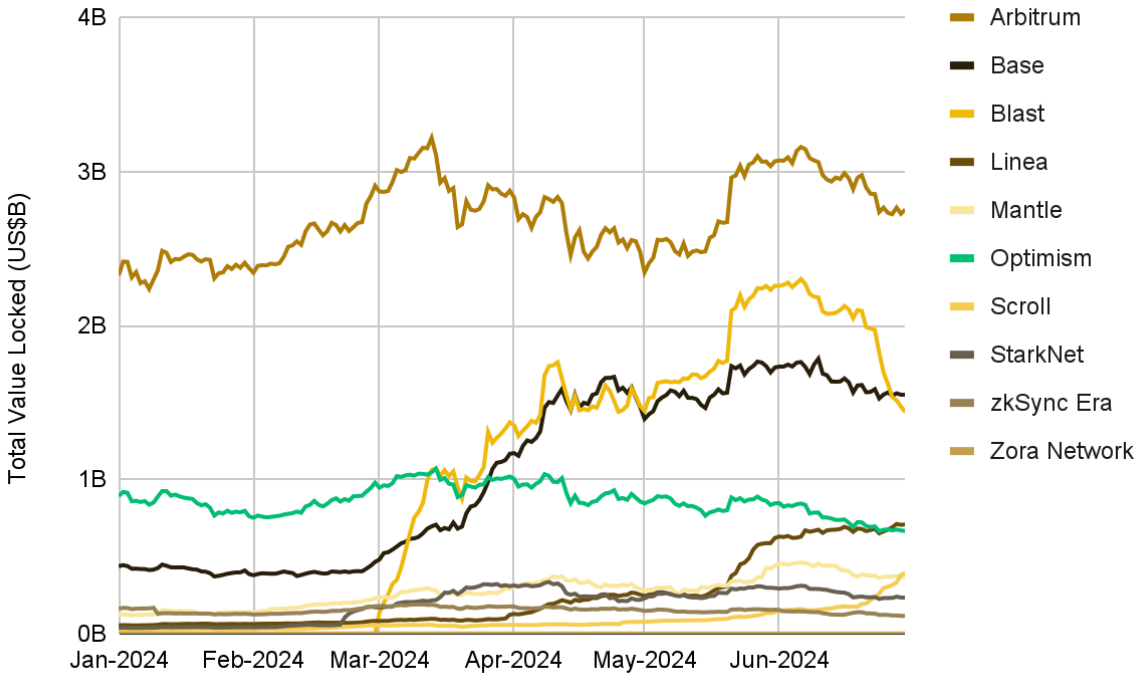
In Q4 2023, Pacman, the anonymous crypto-X developer behind the Blur NFT marketplace, announced the upcoming launch of the Blast L2. Shortly thereafter, the Blur team enabled users to deposit ETH into the Blast bridge, with the promise of a future airdrop following the launch of the Blast Mainnet. **This airdrop incentive attracted over US$2 billion** worth of assets to the Blast bridge even before the Mainnet's debut.[47] The marketing and airdrop campaign, coupled with the Blur NFT team's strong reputation for building reliable products and the backing of prominent VC firm Paradigm, created the perfect conditions for Blast to become **one of the most highly anticipated L2 launches to date**.

The Blast L2 is constructed using the OP stack and boasts the key feature of **automatically generating yield for users holding either ETH or USDB** (Blast's native stablecoin) in their wallets. For ETH holders, **yield is produced through L1 staking**, initially via Lido, and is automatically transferred to users through rebasing ETH on the Blast L2. Users who bridge stablecoins receive USDB, Blast's auto-rebasing stablecoin. The **yield for USDB is derived from MakerDAO's on-chain T-Bill protocol**. When bridging back to Ethereum L1, USDB can be redeemed for DAI.[48]

After its Mainnet launch on February 29, Blast announced the continuation of its airdrop/points campaign, giving users a potential chance to increase their allocations by

interacting with dApps on-chain. The campaign was a big success, with **Blast mainnet rocketing to second place in terms of TVL** amongst the Ethereum roll-ups in June.

Figure 36: Blast TVL rockets to 2nd place amongst the Ethereum L2s in May/June

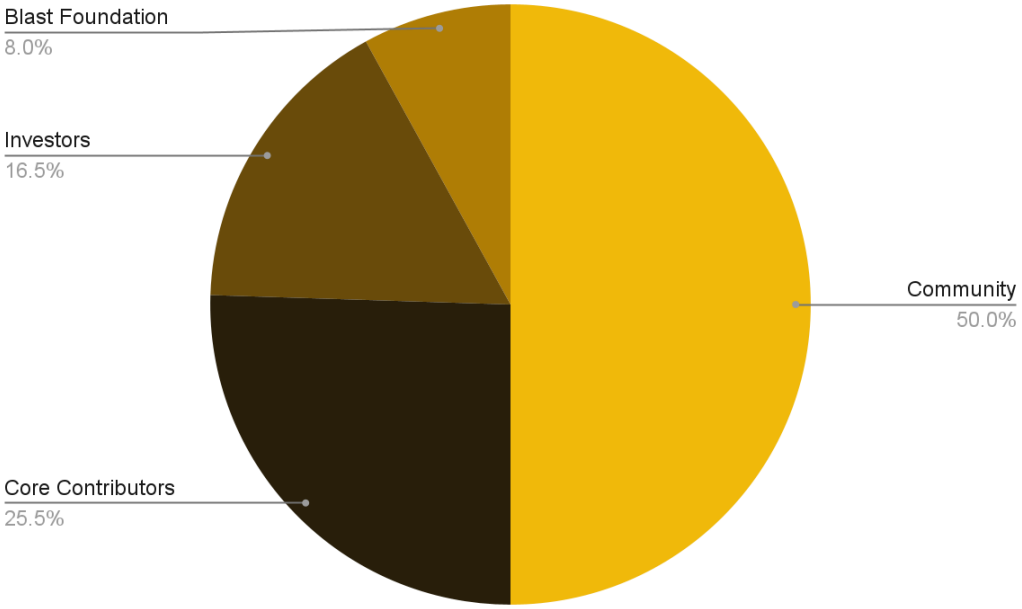


Source: Artemis, Binance Research, as of June 30, 2024

Post-airdrop however, has seen **Blast's TVL begin to drop below that of Base's again**. Watching to see if Blast is able to retain its TVL and activity post-airdrop throughout the rest of the year will give**indication of the stickiness of its initial user base**.

- **Blast airdrop:** The $BLAST tokens airdrop tokens were made claimable to early users of the Blast L2 on 26 June. 7% of the total supply went to users who bridged funds over to Blast, and 7% went to users who interacted with Blast dApps. The initial airdrop is **worth ~US$190.5M at today's token price** of ~US$0.014 per token. The remaining 36% of the supply allocated to Community will be distributed through future incentive campaigns. At the time of writing, the circulating market capitalization of $BLAST sits at US$238M, with a fully diluted valuation of US$1.36B.[49]

Figure 37: Blast token distribution



Source: Blast, Binance Research, as of June 30, 2024

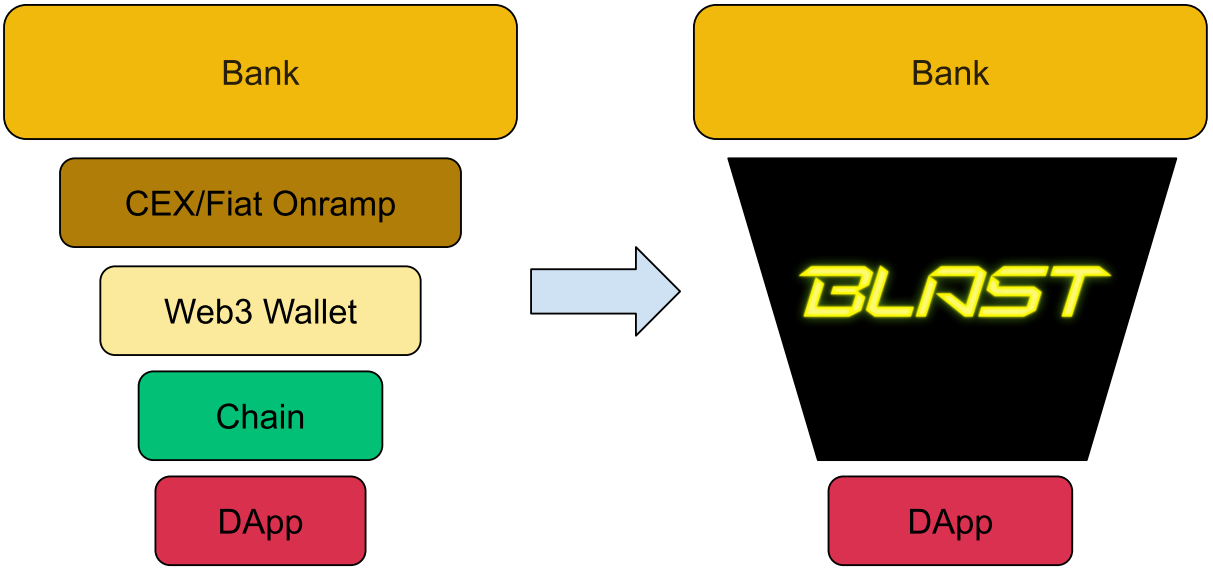
- **Blast Phase 2:** The distribution of $BLAST tokens on 26 June marked the end of Blast's Phase 1. In Phase 2, the Blast Foundation has stated their intention to work with the community to create a desktop and mobile wallet, specifically for cryptonatives.

  In their vision blog post, the Blast team draws parallels between the way existing chains have approached development and the Android OS approach, stating:

  *"Each chain focuses on optimizing the chain itself, while **relying on third parties for the rest of the stack**. This approach is effectively the Android approach, where they optimize the operating system, and rely on third parties for the rest. The Android approach has worked for chains so far, but it **has resulted in an ecosystem that is fragmented and filled with friction**."*

  Blast intends to take the fullstack approach and build everything from the software to the hardware, optimizing across the entire stack. They liken this approach to Apple's.

Figure 38: Phase 2 of Blast will see it building out a fullstack blockchain solution



Source: Blast, Binance Research

In the coming months, be on the lookout for Blast-native dApps that give users an Apple-like polished experience.

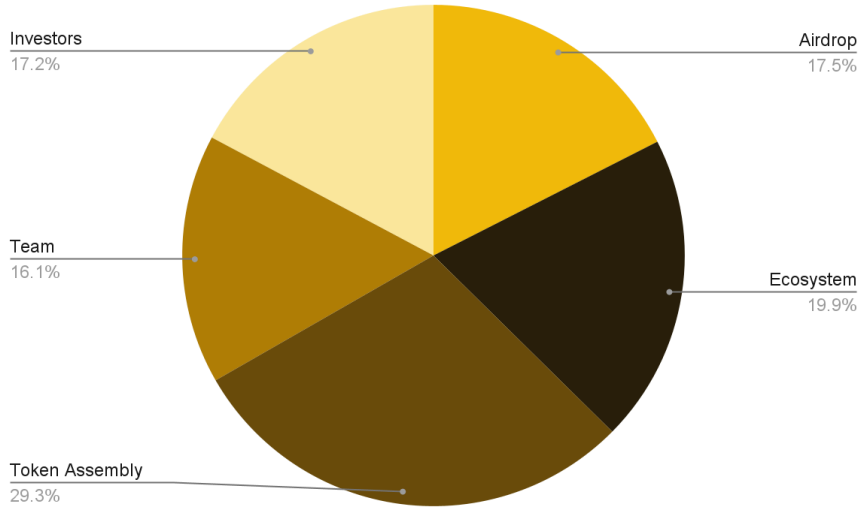
4.3 ZK Landscape

zkSync Era

Although the ZK-rollups continue to trail behind those of the optimistic variety in terms of on-chain metrics, zkSync Era, along with the other ZK-rollups have had an eventful first half of 2024 in their own right.

- **ZK token Airdrop:** On June 17, 2024, zkSync distributed its airdrop of $ZK tokens to early users of the L2 chain. The token launched at an **initial circulating market capitalization of US$800M**, and a fully diluted market capitalization of US$4.5B. Since its launch, the token has stabilized at a price of $0.15-0.18, at a **circulating market capitalization of ~US$670M**.[50] This places it just below the circulating market capitalization of zk-rollup competitor Starknet's $STRK token, which currently sits just below US$900M. Starknet also airdropped their $STRK in February earlier this year.

Figure 39: ZK token distribution



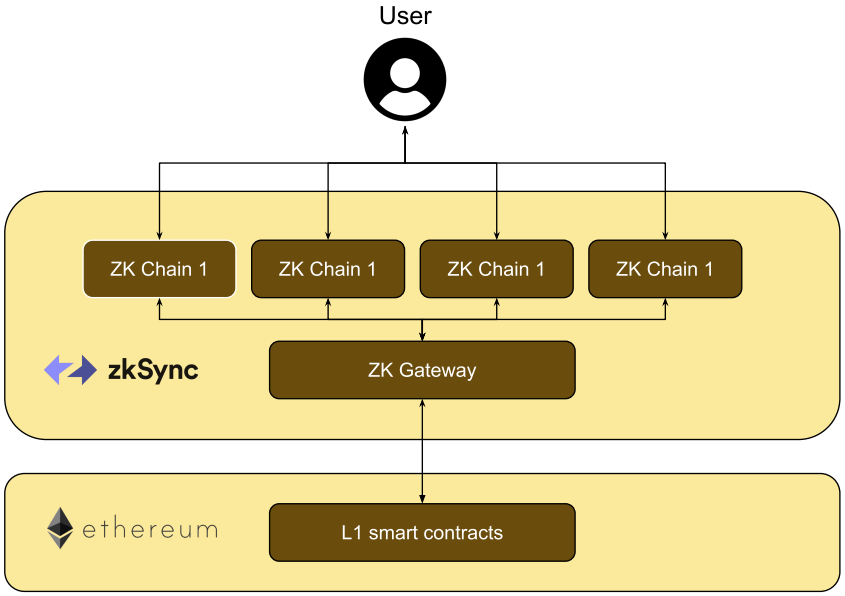
Source: ZKsync, Binance Research, as of June 30, 2024

*Token Assembly is one of the three on-chain governing bodies that make up ZKsync's governance system, called ZK Nation. The other two being the Security Council and the Guardians. **It proposes, deliberates and ratifies initiatives** that govern the ZKsync protocol, token and governance systems, fostering a collaborative decision-making process.[51]

- **Elastic Chain:** Matter Labs, the primary developer behind the ZKsync layer-2 network, has unveiled its new 'Elastic Chain' concept as part of a new roadmap dubbed ZKsync 3.0. The "Elastic Chain" that **bears some resemblance to Polygon's AggLayer**, which was launched earlier this year.

  In 2023, Matter Labs introduced the ZK Stack, a toolkit empowering developers to create their own blockchains using ZKsync's technology. These custom chains will be interconnected through the Elastic Chain, aiming to **deliver a seamless user experience akin to operating on a single chain**.

Figure 40: ZKsync's Elastic Chain

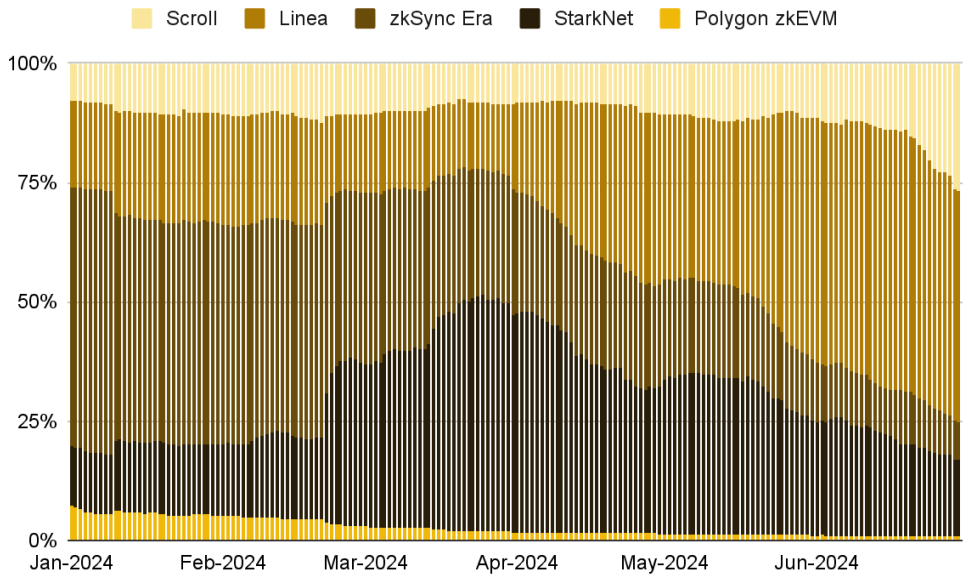


Source: ZKsync, Binance Research

Scroll

The Scroll zkEVM L2, which launched in October 2023, has seen substantial growth in its TVL this year. Much of this growth in TVL can be attributed to the commencement of "Scroll Sessions", the L2's **points campaign which began in May**. The campaign rewards users with points in the form of Scroll Marks for bridging assets to the L2, and for interacting with Scroll dApps. **Scroll's TVL now sits at ~US$430M**, coming in second place behind Linea, which also saw significant growth in TVL after the start of its own Linea Surge points and airdrop campaign. Scroll now captures over 30% of the total TVL across all ZK-rollup L2s.[52]

Figure 41: Scroll's TVL grows to US$420M, capturing over 30% of the ZK market share



Source: Artemis, Binance Research, as of June 30, 2024

Keep an eye out for more details on the anticipated Scroll airdrop, which may take place this year. Amidst the numerous token launches by ZK-rollup projects in 2024, Scroll's airdrop promises to be a noteworthy event deserving of attention.

Linea

The Linea zkEVM L2 chain was **launched in August of 2023 by Consensys**. Linea is a cutting-edge Layer 2 zk roll-up blockchain solution designed to **dramatically enhance the speed, scalability, and cost-efficiency of transactions** on the Ethereum network. Since its launch last year, Linea has seen significant growth in adoption, largely fueled by its points campaign that began in May.

- **The Linea points campaign Surges:** The Linea Surge campaign is a points-based program that rewards users with LXP-L tokens for holding assets on the Linea platform.

  The initial phase, Volt 1, concluded on June 16, 2024, showcasing significant growth in both Total Value Locked (TVL) and daily trading volume. Since its inception on May 17, 2024, the network has experienced:[53]

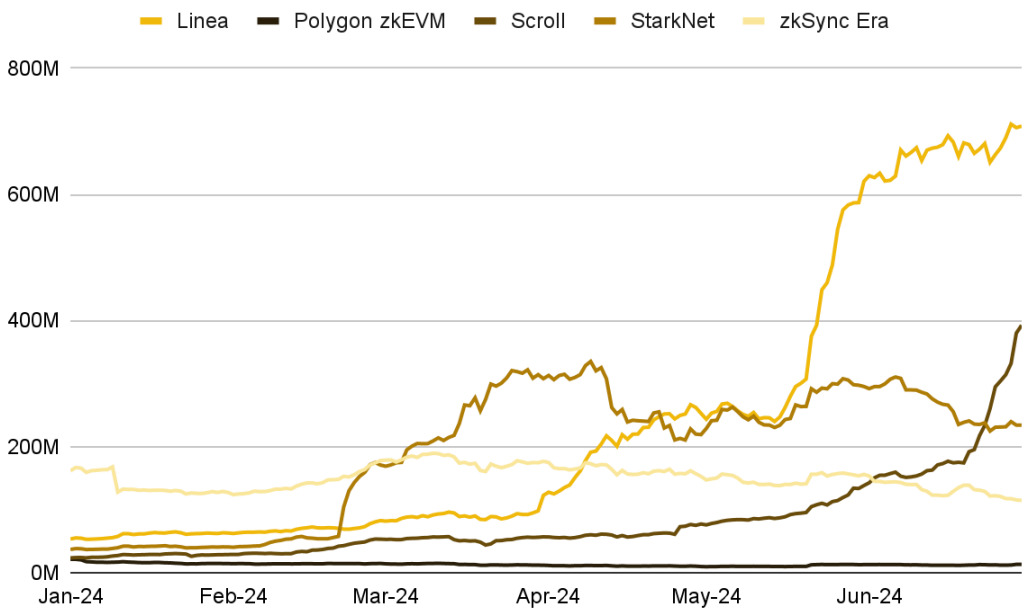
  - TVL Growth: An **increase of $416 million**, reflecting a 52% rise.
  - Active TVL Growth: A **surge of $383 million**, marking a 130% increase.
  - Average Daily Volume: A **66.19% boost** compared to the previous month.
  - Peak Daily Volume: Hitting **$93 million** on May 20, 2024.

The second phase, Volt 2, introduces several important updates aimed at enhancing user engagement and rewards:

- **Stablecoin Boost**: Liquidity Provider ("LP") pairs involving stablecoins will receive an additional enhancement. This adjustment is intended to increase stablecoin liquidity on the network, offering users more LXP-L rewards for their stablecoin holdings.
- **Reduction in LXP-L**: The total LXP-L collected by users will be reduced by 10%. This change aims to maximize rewards for early adopters, with each subsequent Volt phase decreasing the total LXP-L generated by an additional 10%.
- **Decrease in Early Adopter Modifier**: The Early Adopter (EA) Modifier boost will decrease from 1.5x to 1.3x, still providing extra rewards for initial participants but at a slightly lower rate.
- **Veteran Points Remain Active**: Veteran Points will continue to offer a small boost to DeFi groups that have contributed to the Surge's success from the beginning.

Linea's Surge points campaign has **been a resounding success so far**. Shortly after the commencement of Volt 1 in May, its TVL more than doubled in value, shooting past its other zk-rollup competitors. Since the beginning of 2024, **Linea's TVL has increased by more than 12x**, going from ~US$55M to where it sits today at over US$700M.[54] Linea's TVL growth has significantly outpaced that of Scroll, which also announced the start of its points campaign earlier this year.

Figure 42: Linea's TVL shoots ahead of the other zk-rollups in the midst of its Surge campaign



Source: Artemis, Binance Research, as of June 30, 2024

Taiko

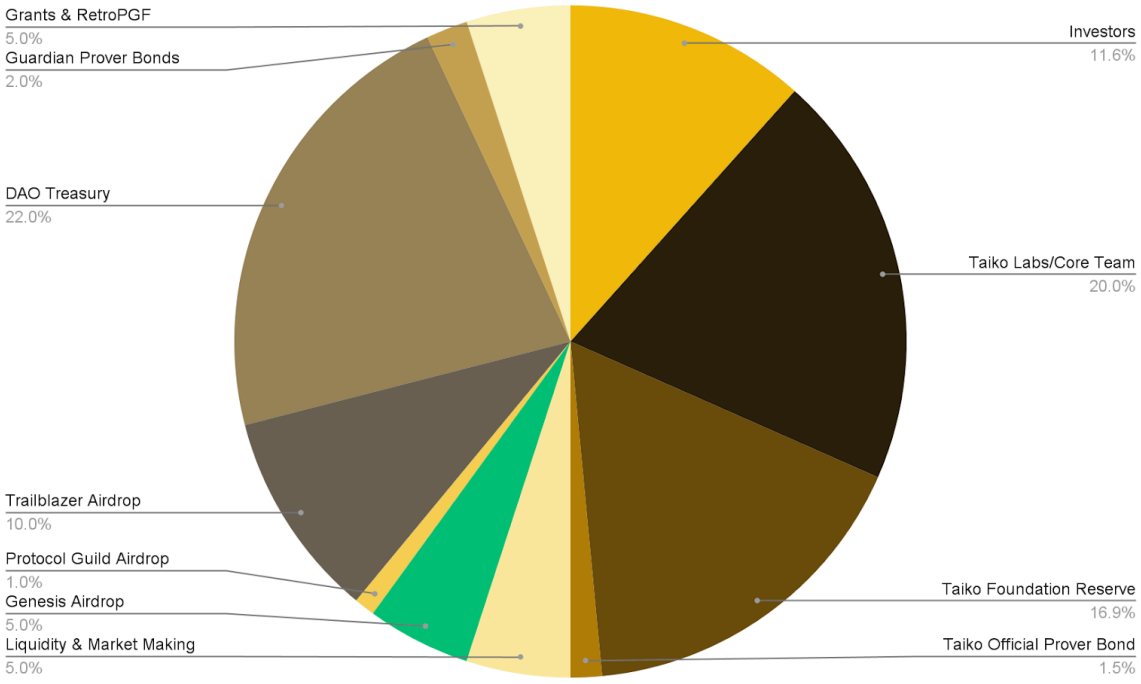
After nearly two years of development and seven testnets, Taiko **officially launched its mainnet chain on May 27** this year. In its initial phase, Taiko's rollup protocol contracts on Ethereum are managed through a multisig configuration. At launch, the protocol will require SGX proofs, with **plans to transition to utilizing ZK proofs for 50% of blocks** in the long term to enhance scaling and security.

Taiko features a type-1 zero-knowledge virtual machine designed to emulate the Ethereum architecture. It also **includes a multi-proof proving system**, which boosts security by allowing the submission and contestation of various proof types.

One of Taiko's key differentiators is its operation as a based rollup, with sequencing driven by the base Layer 1 ("L1"). Unlike other rollups, **Taiko has no centralized sequencer**; instead, **the Ethereum L1 validator handles the sequencing role**.

- **Genesis airdrop:** In May, Taiko announced its "Genesis Airdrop" plan to **distribute 5% of its 1 billion token supply** to those who engaged with the Taiko testnet, block proposers and provers, contributors to specific GitHub repositories, and participants in the Ethereum ICO.[55]

Figure 43: Taiko token distribution



Source: Taiko, Binance Research, as of June 30, 2024

The **TAIKO token Genesis Airdrop occurred on 5 June,** launching at an initial circulating market capitalization of ~US$110M, and a fully diluted market capitalization of US$2.1B. The token currently sits at a price of $2.30, at a **circulating market capitalization of ~US$145M**.[56]

- **Taiko Trailblazers get rewarded:** 10% of the TAIKO token supply has been allocated to participants in **The Trailblazers: Call of Taiko** airdrop campaign. To qualify, users will need to participate in on-chain activities on Taiko Mainnet. At the time of writing, the **campaign is currently on its '3rd trail'** which is set to last for two weeks and **will reward users for playing on-chain games on Taiko**. The second week or '2nd trail' which lasted from 17-23 June rewarded users for bridging liquidity to Taiko mainnet.

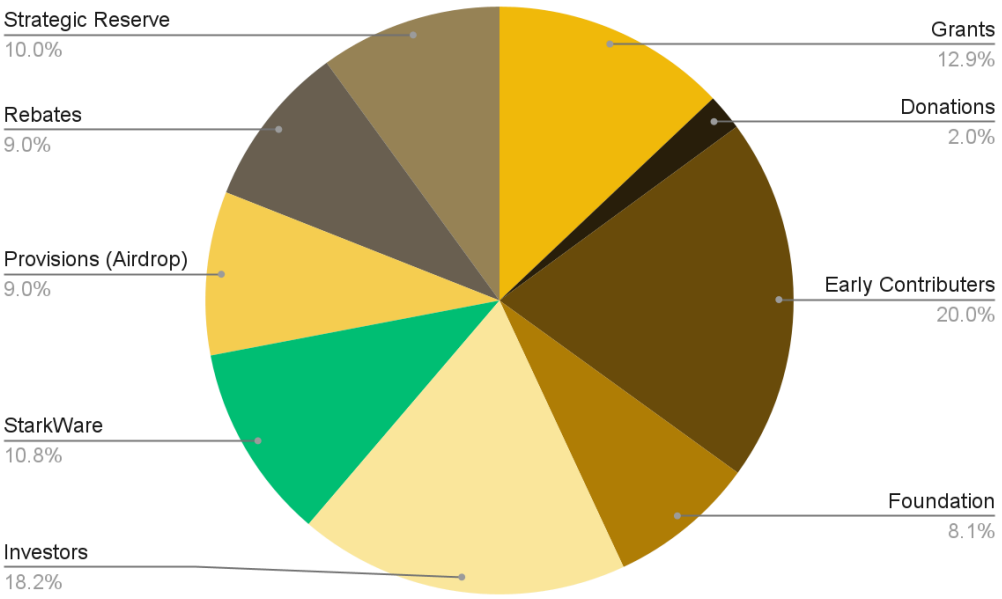
- **Off to an explosive start:** Within its first month of launch, Taiko has garnered **over US$150M in value**, placing it in **14th place out of all the Ethereum roll-up chains**. It is worth noting that over 80% of this on-chain value is accounted for by TAIKO tokens held in Taiko accounts.[57]

StarkNet

StarkNet is a permissionless ZK-Rollup on Ethereum that uses the **Cairo programming language and Cairo Virtual Machine**, both **optimized for STARK proofs**; a design that has the StarkWare team betting on StarkNet becoming the most performant ZK-Rollup.

- **STRK token airdrop:** Starknet airdropped its $STRK token on 20 February 2024, making it the first ZK-Rollup to launch a token (not including Polygon's $MATIC, which began as an Ethereum sidechain in 2017). The token launched at an **initial circulating market capitalization of ~US$1.4B**, and a fully diluted market capitalization of US$10.95B. The token currently sits at a price of $0.68, at a circulating market capitalization of ~US$894M.[58]

Figure 44: STRK token distribution



Source: Starknet, Binance Research, as of June 30, 2024

- **Preparing for parallel execution:** In March, the Starknet team revealed its plans to **implement parallel transactions** as part of its 2024 roadmap. According to Eli Ben-Sasson, CEO of StarkWare, Starknet's sequencer will be getting parallel execution capabilities. A sequencer is a component of a layer-2 network that bundles transactions conducted on the network and relays them to the main Ethereum network for settlement.

  Parallel execution can **significantly enhance the efficiency and scalability of a blockchain network**. This development aims to position Starknet as a high-performance L2 solution, **much like how the high-performance L1 Solana leverages its parallel transaction capability** to handle a high throughput of transactions. Solana's architecture allows multiple transactions to be processed simultaneously, which boosts its transaction speeds and scalability. By adopting comparable parallel execution techniques, **Starknet could achieve similar levels of efficiency and throughput**, making it a competitive option for developers seeking robust and scalable Ethereum-based solutions.[59]

Polygon zkEVM

In January 2024, the Polygon team announced their Agglayer (aggregated layer) thesis and initiative. The team **likens Agglayer to the invention of TCP/IP**, which created a seamlessly unified Internet. Similarly, the aggregation layer, or AggLayer, **unites a divided blockchain landscape** into a web of ZK-secured L1 and L2 chains, making it feel like a single chain. The AggLayer is a decentralized protocol that accomplishes two key functions: (1) it aggregates ZK proofs from all connected chains, and (2) it ensures safety for near-instant [atomic] cross-chain transactions.[60]

The Polygon zkEVM chain itself, currently **sitting at approximately US$14M** in TVL,[61] is the first chain making up the Agglayer. In March, **Astar, a leading Polkadot-native project, launched its zkEVM chain**, leveraging Polygon's Chain Development Kit (CDK) — a modular open-source toolkit for building Layer 2 networks using zero-knowledge (ZK) proofs. Astar zkEVM is the first third-party network to integrate with Polygon's AggLayer, and the second project to join the Agglayer after Polygon's own zkEVM. The **Astar zkEVM L2 chain currently sits at ~US$5M** in TVL.[62]

5 Decentralized Finance

5.1 The Big Picture

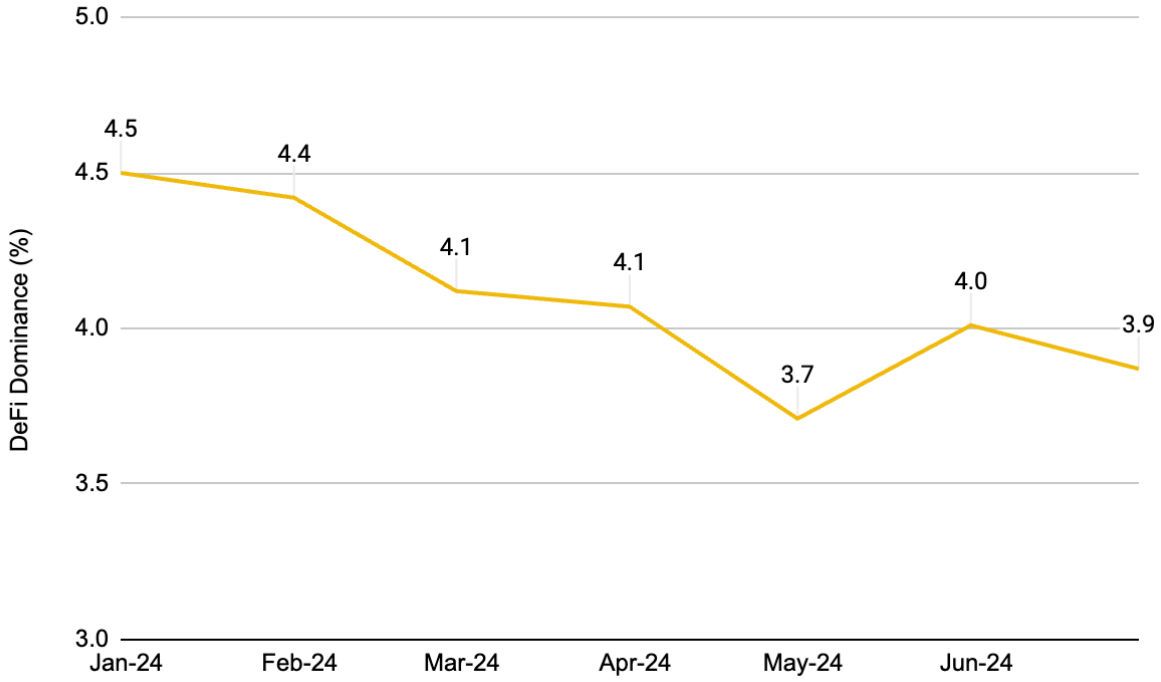
Following a year of modest growth in 2023, the first half of 2024 has witnessed a significant market resurgence, bringing with it positive tailwinds for decentralized finance ("DeFi"). **The broad market rally has ushered in a substantial influx of capital into DeFi**, driving the total value locked ("TVL") to US$94.1B this year, up from US$54.4B at the start of the year, representing a strong 72.8% year-to-date ("YTD") growth.

Figure 45: DeFi TVL has experienced a 72.8% increase this year, reaching US$94.1B

Source: DefiLlama, Binance Research, as of June 30, 2024

Interestingly, when considering DeFi Dominance, which measures the DeFi market cap as a percentage of the global crypto market cap, the same trend cannot be ascertained. In the figure below, we observe that **DeFi's market dominance experienced a decline during the first half of this year, currently sitting at 3.9%**. This suggests that while DeFi has captured more on-chain liquidity, the sector's public market valuations have yet to catch-up with the wider crypto market.

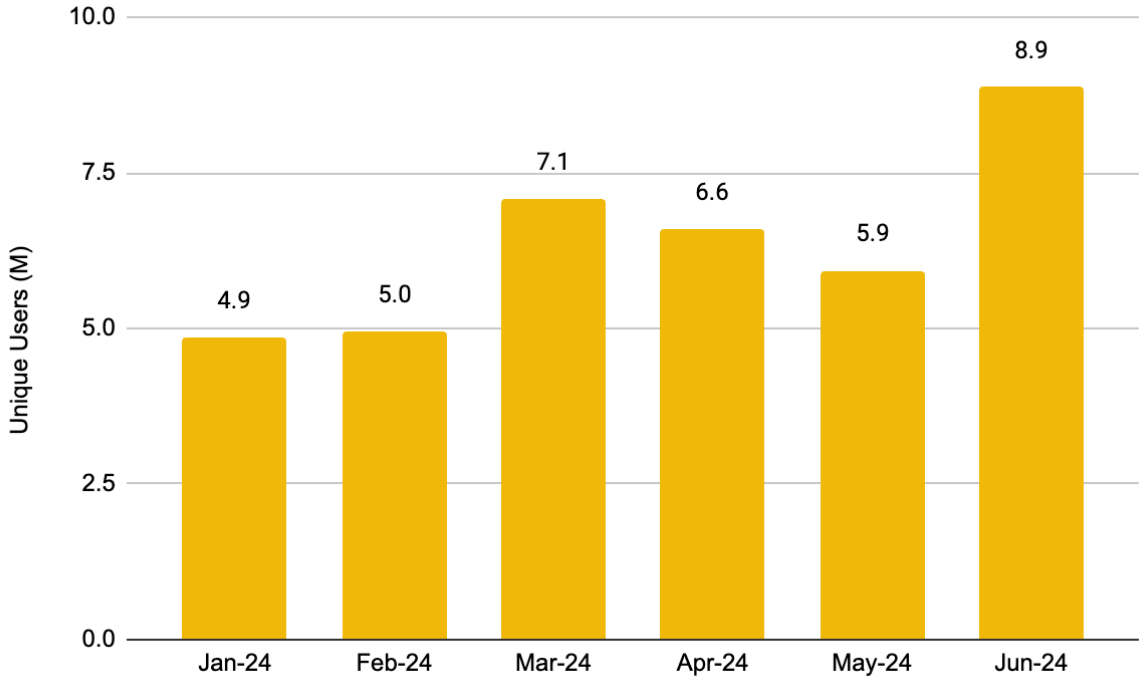
Figure 46: DeFi dominance saw a modest decline of 0.6% (absolute terms) in 2024



Source: The Block, Binance Research, as of June 30, 2024

While this trend is likely spurred by accelerated catalysts in other sectors, the continued commitment of substantial capital into various DeFi protocols, totaling billions of dollars, nonetheless underscores the sector's resilience. Complementing the influx of capital, **DeFi has also successfully drawn more users, with engagement levels rebounding to those seen in the previous bull market**. Impressively, the average number of unique monthly users has grown from 4.9M to a new high of 8.9M this year.

Figure 47: Unique monthly users across DeFi protocols increased by 82.8% this year

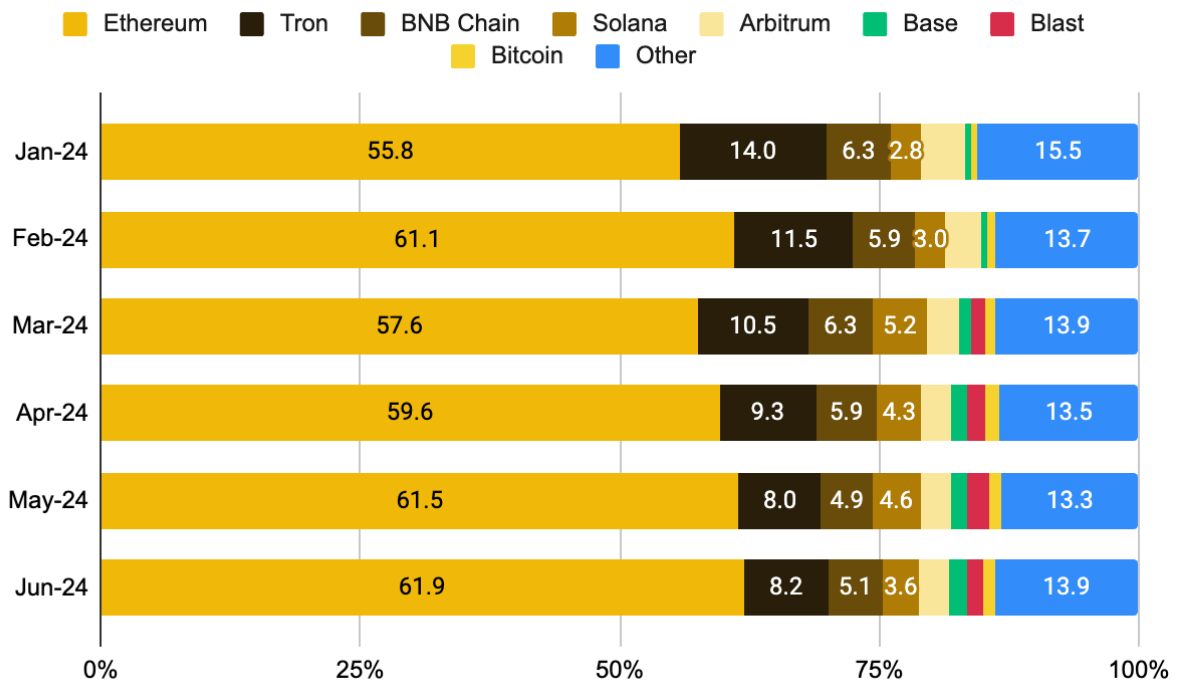


Source: Dune Analytics (@rchen8), Binance Research, as of June 30, 2024

Reviewing the distribution of TVL across chains, **Ethereum unsurprisingly remains the dominant network, accounting for US$58.2B of the total US$94.1B in the sector**. In the first half of the year, Ethereum's dominance increased from 55.8% to 61.9%, with most of this growth seemingly cannibalized from alternative ("alt") layer 1s ("L1s"). While alt-L1s like Solana saw gains, Avalanche, Polygon, and Tron all lost market share, with the latter experiencing a notable decline from 14.0% to 8.2%.

Concurrently, newer layer 2s ("L2s") such as Blast also gained ground, indicating the growing competition within the L2 space as market share redistributes from larger players like Arbitrum and OP Mainnet. With Ethereum's dencun upgrade, reducing rollup transaction fees, now behind us, we can anticipate DeFi activity may gradually accrue on L2s going forward. Additionally, Bitcoin saw significant inflows, alongside its growing L2 ecosystem, with TVL now exceeding US$1B.

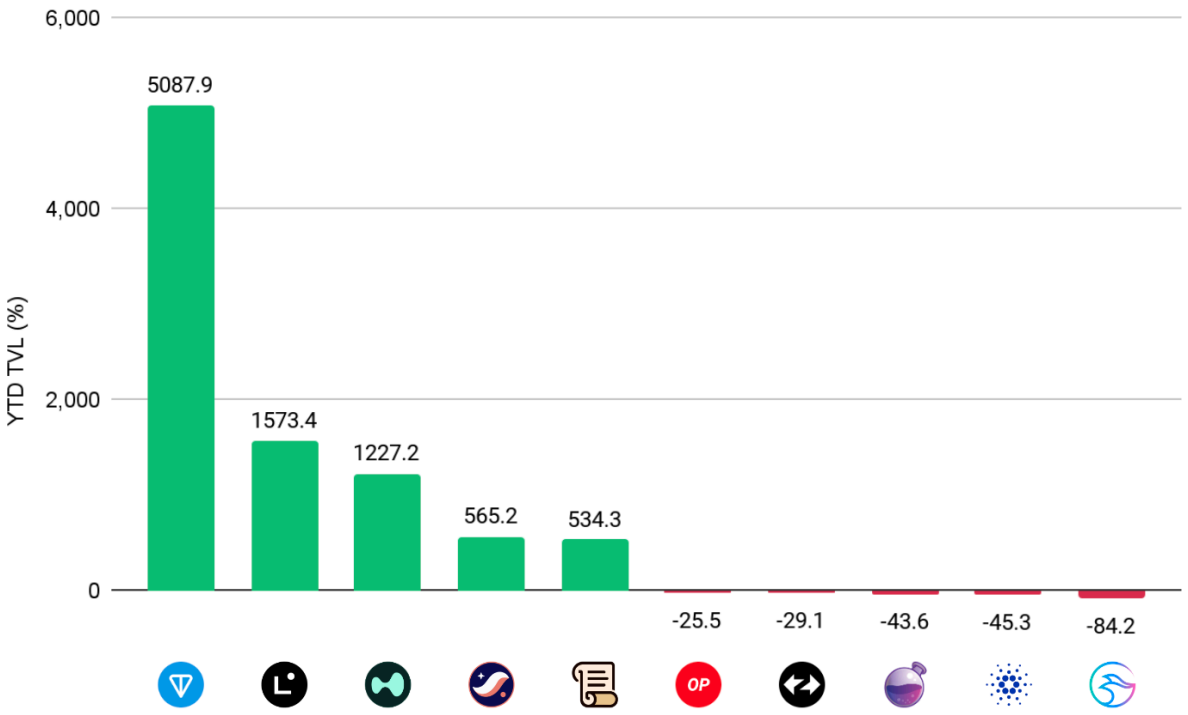
Figure 48: Capturing 61.9% of DeFi TVL, Ethereum continues to maintain a stronghold in the DeFi sector



Source: DeFiLlama, Binance Research, as of June 30, 2024

Zooming into the most significant net TVL changes, **The Open Network ("TON") recorded the largest growth since the year began, driven by its expanding array of native DeFi decentralized applications ("dApps")**[63]. Other notable gainers included L2s and dedicated app chains such as Hyperliquid's L1. On the flip side, although generally smaller in percentage terms, Manta Pacific experienced the largest outflows following the conclusion of its new paradigm campaign.

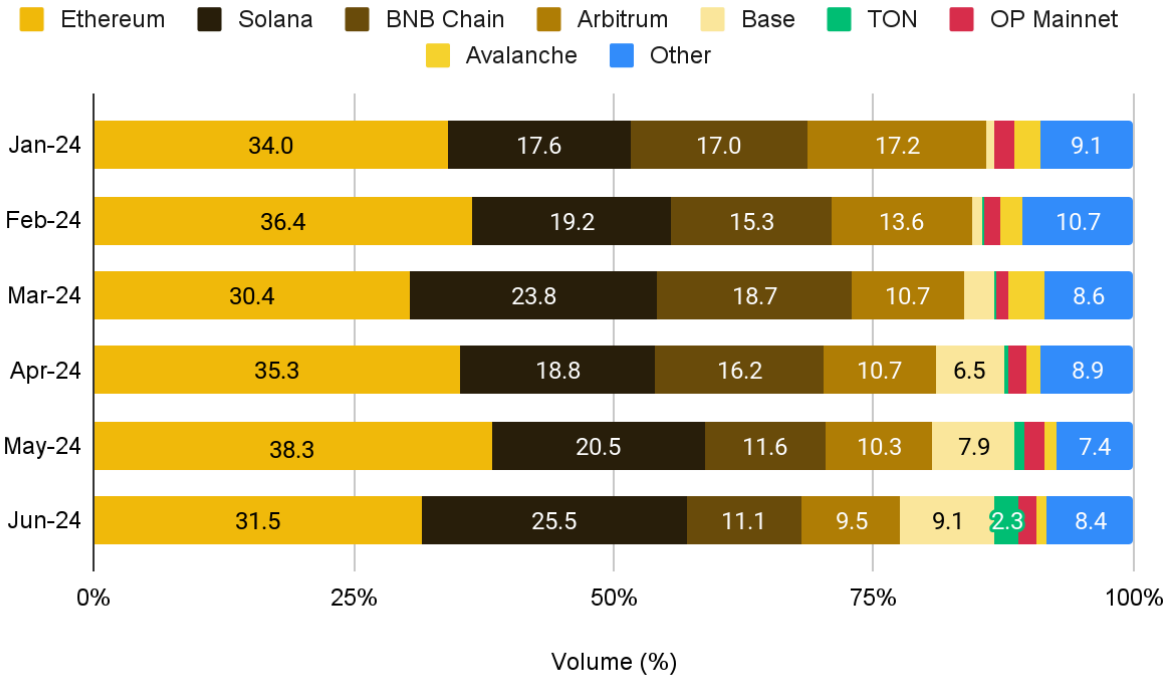
Figure 49: TON was the largest gainer in DeFi TVL this year, growing by 5087.9% YTD



Please note: Only chains active as of January 1, and with a TVL > US$100M during the period are considered
Source: DeFiLlama, Binance Research, as of 30 June, 2024

Beyond the amount of liquidity locked on-chain, analyzing the distribution of trading volumes on decentralized exchanges ("DEXes") gives insight into activity levels across different networks. Since the beginning of the year, **Solana and Base have stood out, with their respective market shares increasing by 7.9% and 8.4% in absolute terms**[64]. This growth is largely attributed to the rising adoption of their native DEXes - Jupiter and Aerodrome - especially as avenues for trading memecoins. Simultaneously, **TON has not only experienced significant capital inflows but also an uptick in trading activity, now representing 2.3% of total DEX trading volumes**. In contrast, Arbitrum experienced the most significant drop, with its market share plummeting from 17.2% to 9.5%. With such major shifts in on-chain trading activity, it remains to be seen whether these market dynamics will persist into the second half of the year.

Figure 50: Solana, Base, and TON now represent a larger share of total on-chain trading volumes



Source: Artemis, Binance Research, as of 30 June, 2024

5.2 Sub-Sector Spotlight

Liquid Staking is the largest DeFi sub-sector, holding over US$52.1B in TVL, followed by Lending, Bridge, and DEXes. Notably, **this year's capital influx has impacted more than just the traditionally dominant sub-sectors**. An analysis of capital distribution reveals significant growth across nearly all DeFi sub-sectors, with particularly large YTD increases in emerging markets.

This broadening of the market base serves as a strong moat and has spurred positive developments in various areas, from **new narratives like restaking, innovative derivatives, and basis trading models to the resurgence of previously underperforming markets**. The most compelling outcome of this trend is the **emergence of protocols that unlock new financial primitives**, allowing users to maximize the value they derive from DeFi. Among newer markets, the liquid restaking sub-sector saw the largest TVL growth, followed by basis trading - primarily through Ethena - and restaking. From markets that have been present longer, Yield experienced the most growth, driven largely by Pendle.

In terms of sub-sector diversity, **DEXes boast the highest number of protocols**, underscoring their crucial role in DeFi markets, whereas **derivatives exhibit the lowest top project dominance**. Most other sub-sectors have also witnessed an increase in the number

of protocols, which is beneficial since, although TVL tends to concentrate among a few top protocols, the competitive pressures foster more efficient markets. Newer and emerging sub-sectors like restaking and basis trading are yet to echo this trend, with both seeing over 90% of their TVL concentrated in their top project. Though, this high concentration is likely driven by the relative nascency of these markets.

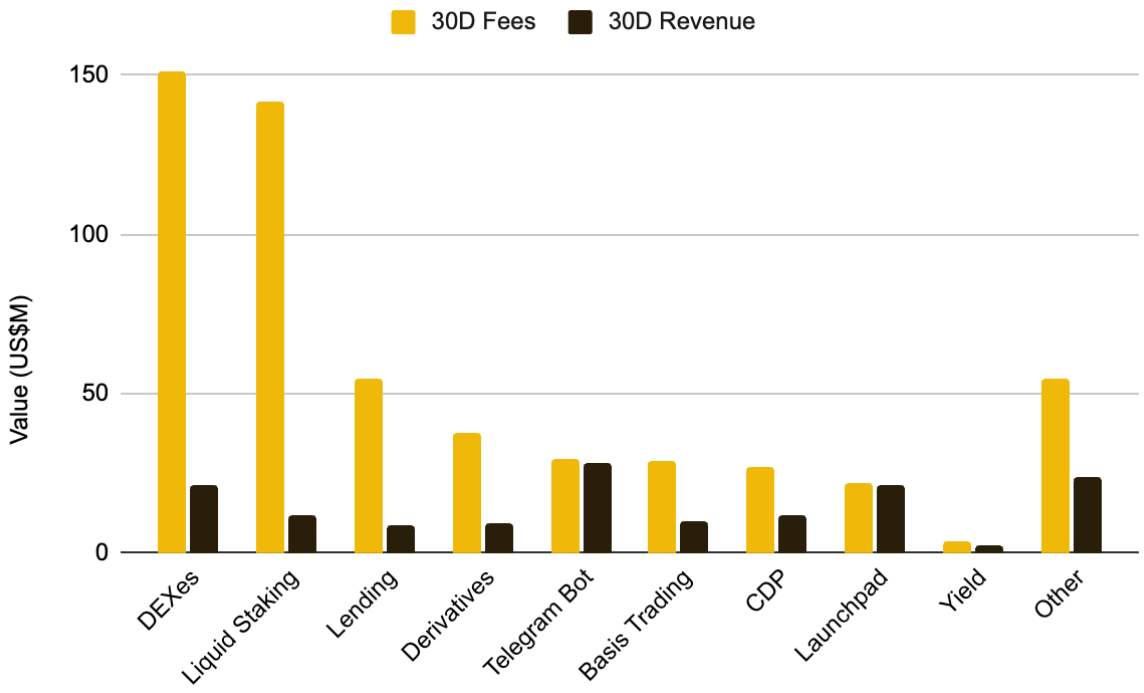
Figure 51: Nearly every DeFi sub-sector has experienced a notable influx of capital in 2024

Sub-sector	Liquidity		Diversity	
	TVL (US$B)	YTD (%)	Project Count	Top Project Dominance (%)
Liquid Staking	52.1	59.8	175	63.2 *Lido*
Lending	33.7	51.7	428	36.6 *Aave*
Bridge	23.2	64.1	74	40.3 *WBTC*
Restaking	18.6	1288.8	9	**92.2** *EigenLayer*
Decentralized Exchange (“DEX”)	18.5	33.9	1362	30.3 *Uniswap*
Liquid Restaking	13.9	4822.8	19	44.9 *Etherfi*
Collateralized Debt Position (“CDP”)	9.6	0.5	146	59.5 *MakerDAO*
Yield	7.4	102.1	493	49.2 *Pendle*
Basis Trading	3.8	4338.3	5	**94.0** *Ethena*
Real-World Asset (“RWA”)	3.7	-34.9	50	52.0 *Maker RWA*
Derivatives	3.4	88.0	252	15.1 *GMX*
Prediction Market	0.07	108.1	47	55.6 *Polymarket*

Please note: The above table does not comprise of an exhaustive list of DeFi sub-sectors
Source: DefiLlama, Binance Research, as of June 30, 2024

Over the past 30 days, DeFi projects have accumulated over US$946M in fees and US$312.8M in revenue. **Traditional sub-sectors such as DEXes lead in fee generation, contributing over US$150M, with liquid staking, lending, and derivatives following closely**. Notably, sub-sectors like telegram bots, basis trading, and launchpad have started to generate significant fees, with substantial contributions to the latter two from Ethena and Pump.fun. As the year progresses, the distribution of fees may evolve as these emerging sub-sectors gain traction, including more protocols launching onto mainnet, and as more public data becomes available.

Figure 52: In the past 30 days, DEXes generated the highest fees, followed by liquid staking, lending, and derivatives

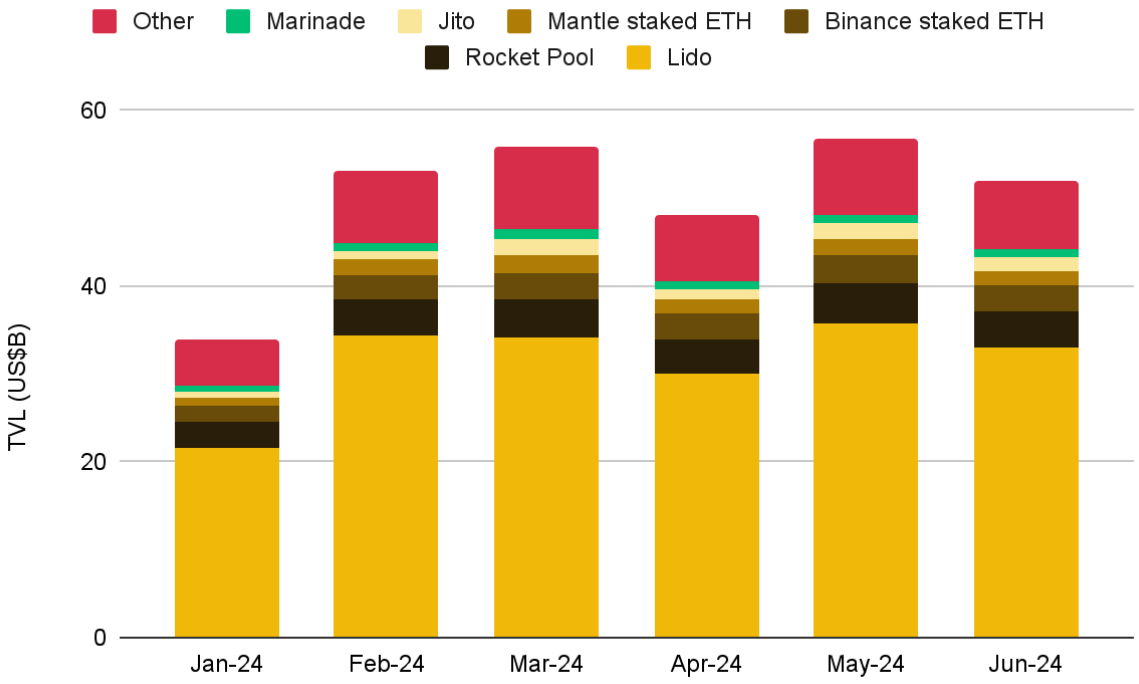


Please note: The chart only includes projects with data publicly available on DeFiLlama
Source: DefiLlama, Binance Research, as of July 4, 2024

Liquid Staking

Liquid staking remains the dominant sub-sector, though its market composition has seen some changes this year. **Lido continues as the leading player**, but the market has welcomed several new entrants, particularly on other networks such as Solana. Notably, Jito has risen to become the fifth largest player, capitalizing on the opportunity created by Lido's withdrawal from Solana[65] - a decision driven by operational revenues failing to cover the associated development and marketing costs.

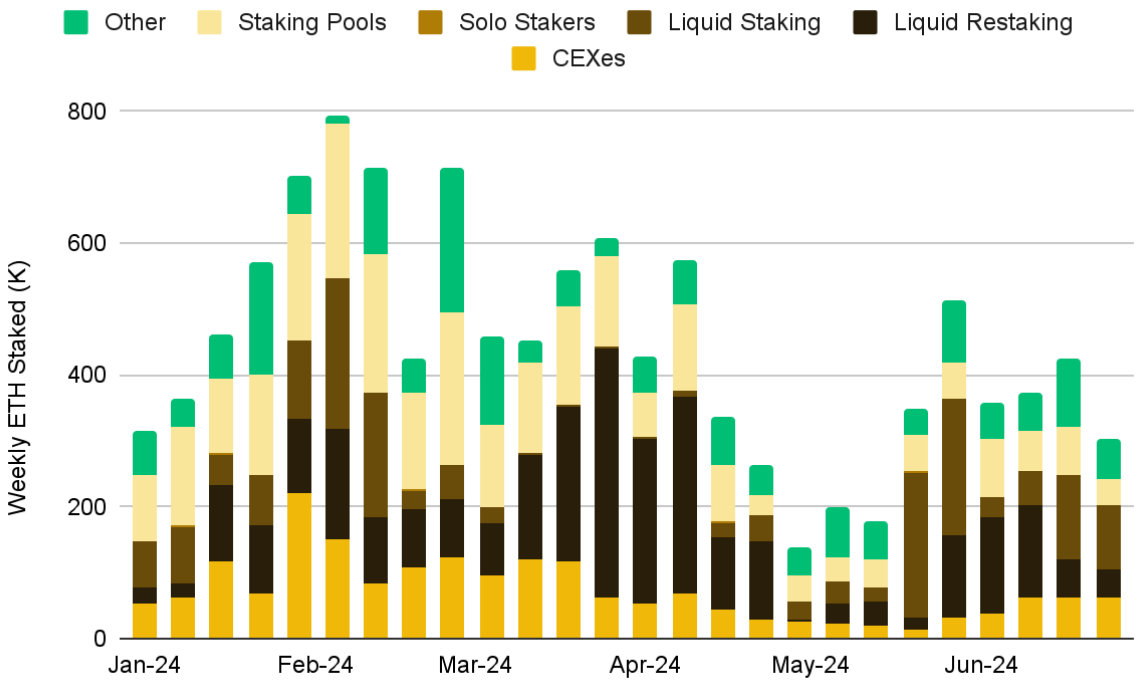
Figure 53: Although liquid staking has seen growth from protocols on networks beyond Ethereum, Lido continues to be the dominant force in this sub-sector



Source: DefiLlama, Binance Research, as of June 30, 2024

One of the main talking points for the first half of the year has been the relative stagnation in growth within the Ethereum liquid staking market compared to last year. Such trends are not unusual, as the explosive initial growth rates seen when liquid staking first emerged are typically difficult to sustain. More significantly, **Lido has encountered competition from protocols within the emerging sub-sectors of restaking and liquid restaking**. This shift has resulted in **a considerable portion of ETH staked now being managed by these newer liquid restaking protocols**.

Figure 54: Liquid restaking has emerged as another competing source for staking ETH



Source: Dune Analytics (@hildobby), Binance Research, as of June 30, 2024

The emergence of this new competitive source presents a significant challenge for liquid staking protocols; users now have direct access to various layers of Ethereum's staking market through the liquid restaking front-end, including the potential for higher yields. Additionally, with the Ethereum Foundation actively discussing[66] reductions in network staking incentives, these developments collectively impact the economic proposition for liquid staking protocols like Lido. Therefore, the pressing question is how liquid staking protocols will adapt to these ever-changing market conditions.

Reviewing Lido's strategy reveals their commitment to maintaining stETH as a liquid staking token ("LST") rather than transforming it into a liquid restaking token ("LRT"). **Lido's objective is to continue expanding on stETH's utility by developing additional products on top of it**, strategically positioning stETH to capture value from newer markets. In the context of liquid restaking, **a key target is to establish stETH as a dominant collateral asset for restaking**.

To successfully achieve this target, **Lido launched the Lido Alliance**[67] - a coalition of partners and protocols committed to reinforcing stETH's role in Ethereum's DeFi ecosystem. Notable strides have already emerged in pursuit of this strategy. For instance, Lido recently partnered with Mellow Finance, which allows users to generate yields through restaking vaults, and Symbiotic, a permissionless restaking protocol also backed by Lido's founders. Under these new partnerships, users will gain access to restaking tools that could help bring Lido stETH back to the forefront. **Lido's indirect push**[68] **into restaking**

effectively highlights its importance in maintaining a competitive edge in the market share of staked ETH.

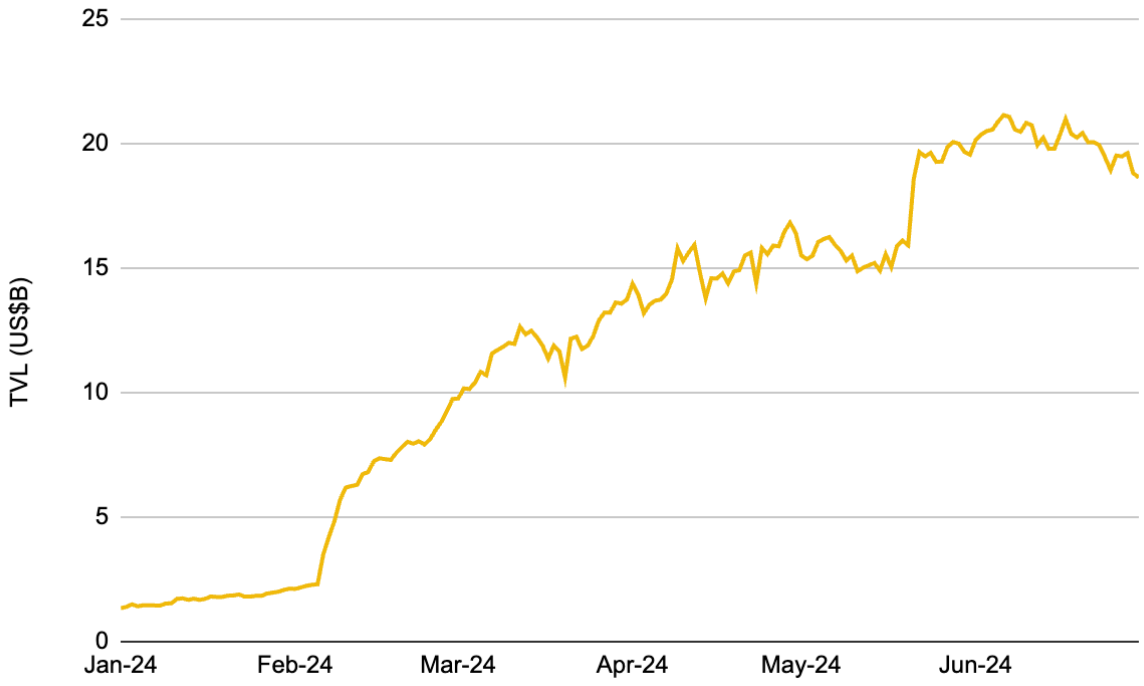
Furthermore, **maintaining their LST strategy also supports Lido's next target market: institutions**. With the potential approval of a spot ETH ETF and an influx of institutional capital, liquid staking is likely to attract more marginal institutional investment than liquid restaking. The higher risk and actively managed nature of liquid restaking may not align with the initial risk appetite of institutions. While liquid restaked assets offer higher yields and resemble ETH-denominated mutual funds or tokenized deposits in the lending market, liquid staked assets are viewed as safer and more standardized on-chain yields.

This underscores the importance of maintaining decentralized liquid staking protocols within Ethereum's staking layer, as they do not accumulate the additional risks associated with liquid restaking protocols. It will be interesting to observe how the dynamics between liquid staking and liquid restaking evolve as the year progresses.

Restaking

The restaking market has emerged as the most discussed topic in DeFi for 2024, rapidly evolving from an emerging narrative to an innovative reality. With explosive growth in the first half of the year, it now commands an impressive US$18.6B in capital, ranking as the **fourth largest DeFi sub-sector**. If this growth trajectory persists, restaking is poised to continue its expansion in the latter half of the year, rivaling traditional sectors like DEXes and Lending in terms of dominance.

Figure 55: Restaking TVL has skyrocketed since the start of the year, now exceeding US$18.6B



Source: DefiLlama, Binance Research, as of June 30, 2024

Restaking on Ethereum has been particularly dominant thus far, largely driven by EigenLayer, the originator of this sub-sector, which focuses predominantly on Ethereum. As the most advanced project in its restaking roadmap, EigenLayer accounts for the majority of the TVL in the restaking market. Its impressive growth this year has positioned it as the **second largest DeFi protocol by TVL**[69]. However, a point of ongoing contention is EigenLayer's dominance, controlling 92.2% of a market fundamentally linked to sharing Ethereum's security.

While alternative restaking protocols have been under development for some time, the mixed reactions[70] to EigenLayer's airdrop have begun diverting some interest towards other competitors. This increase in competition is welcomed as it introduces fresh perspectives to the market and **sets the stage for potential 'restaking wars'**[71] in the second half of 2024. With the **recent growth of Karak** and the **introduction of Paradigm-backed Symbiotic**, there are now **three notable restaking protocols on Ethereum**. Furthermore, the concept of shared crypto-economic security has spilled over to other chains, with projects working on restaking or restaking-adjacent projects. These include the likes of Solayer (Solana restaking) and Babylon (Bitcoin staking), among others.

Figure 56: While EigenLayer has dominated the restaking space, several new protocols have started to emerge, including on other networks

Protocol	TVL (US$B)	Blockchain
EigenLayer	17.19	Ethereum
Karak	0.87	Ethereum, BNB Chain, Arbitrum, Mantle, Karak Network
BounceBit	0.35	Bitcoin
Symbiotic	0.31	Ethereum
Solayer	0.07	Solana
Picasso	0.04	Solana
Babylon	-	Bitcoin

Source: DeFiLlama, bbscan.io, picasso.network, Binance Research, as of June 30, 2024

The market has placed high value on the restaking sub-sector, as evidenced by the significant capital it has attracted; however, **it is important to note that this space is still relatively young**. For example, many restaking projects are not yet operational. EigenLayer only recently launched on its mainnet in April[72], and currently, only a few Actively Validated Services ("AVS") are live[73]. AVSs are crucial as they leverage the shared security model, playing a central role in value accrual within the restaking landscape.

As competition intensifies, **the ability of each protocol to secure notable partnerships may become increasingly important**. For instance, Symbiotic's close integration with Lido[74], which issues stETH, the largest non-L1 DeFi asset, could provide a notable competitive edge. **Other factors such as incentives, yield distribution, multi-asset support, customizability, and risk profiles will also be critical** in differentiating between protocols. Despite this, EigenLayer's considerable first-mover advantage means that competitors like Karak and Symbiotic may need to work hard to gain ground in this fast-moving sub-sector.

At the same time, several developments are yet to unfold, and as with any new primitive, numerous risks need to be considered. We explore these risks and more in greater detail in our earlier report, The Hitchhiker's Guide to Restaking.

Liquid Restaking

From staking to liquid staking, and now to liquid restaking, 2024 marks the emergence of a third layer in Ethereum's expanding staking market. With restaking experiencing rapid growth, the liquid restaking sub-sector is another important area to monitor. Although it is part of the broader restaking landscape, the remarkable expansion of liquid restaking by 4822.8% to US$13.9B in TVL justifies its classification as its own sub-sector.

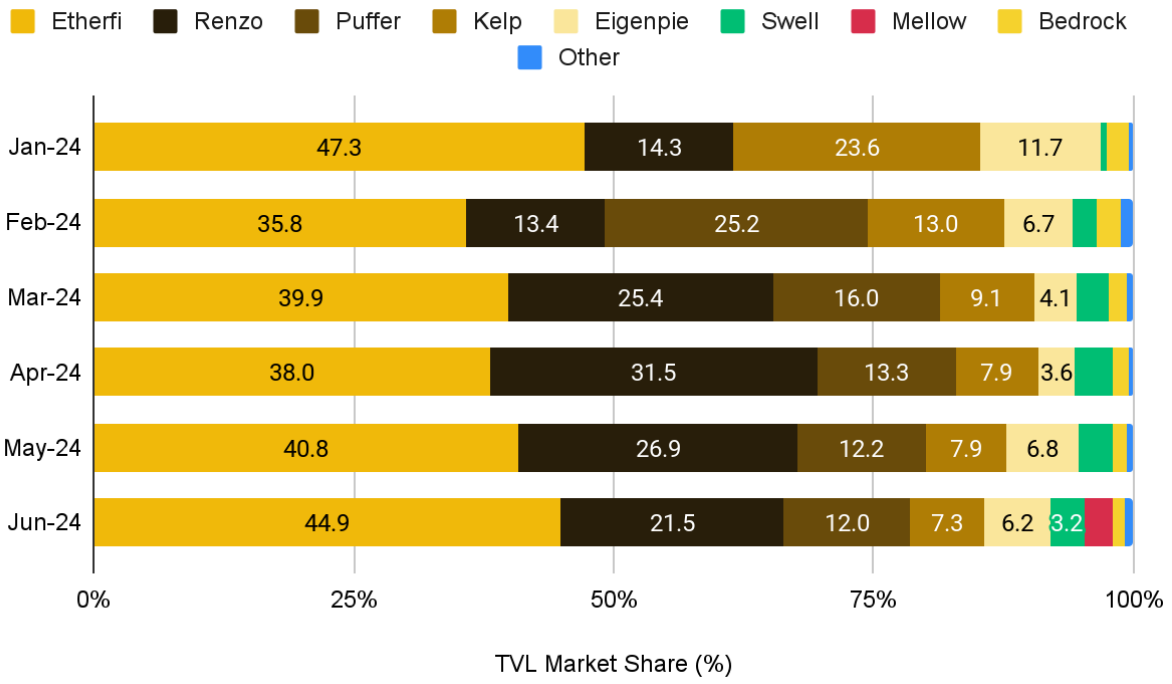
Figure 57: The three layers of the swiftly expanding Ethereum staking market

Source: Binance Research

A notable distinction between liquid staking and liquid restaking is the more equitable distribution of capital in the latter. The largest protocol, Etherfi, commands a 44.9% market share, compared to Lido's 63.2% in liquid staking. The rest of the liquid restaking space is occupied by protocols like Puffer Finance, Kelp DAO, Renzo, and Swell Network, which mainly operate on EigenLayer and Ethereum, though expansions to other chains, particularly L2s, are occuring. Moreover, new entrants are starting to appear, driven by the restaking layers developed by Karak and Symbiotic.

Given that **points and airdrops currently catalyze much of the user activity and liquidity rather than the intrinsic value of the products themselves**, it's uncertain whether this diverse market composition will persist. Moving forward, the key factors determining the success of liquid restaking protocols will include their **competitive yield offerings**, **asset and chain support**, **user experiences**, and their **integrations with other DeFi protocols**.

Figure 58: Etherfi is the leading liquid restaking protocol, holding 44.9% of total TVL



Source: DeFiLlama, Binance Research, as of June 30, 2024

An additional factor to consider is the concept of **AVS selection**. As various AVSs begin to go live throughout the year, each with potentially different slashing conditions, it becomes crucial to make informed choices about where to restake. **Liquid restaking protocols will likely play a crucial role in guiding users**, helping to discern which yields might be overly optimistic and which projects are robust enough to support.

Additionally, because liquid restaking protocols manage significant amounts of $ETH (or LSTs) and can allocate these to different validators, they play a **pivotal role in shaping Ethereum's decentralization**. Initiatives such as **Etherfi's Operation Solo Staker**[75] are particularly interesting and can have material impacts on Ethereum's decentralization. The fact that **distributed validator technology ("DVT")** is being promoted within this initiative is also noteworthy, especially as this topic gains importance in the upcoming months.

Lending

Lending remains an integral sub-sector within the DeFi landscape and has registered notable growth this year, with on-chain TVL climbing 51.7% to exceed US$33.7B, a high not observed since May 2022. This growth aligns with the broader market's upswing, funneling additional liquidity into on-chain money markets. **Increased trading activity and rising on-chain yields have reinvigorated user interest in lending protocols**, as they seek greater market opportunities and leverage.

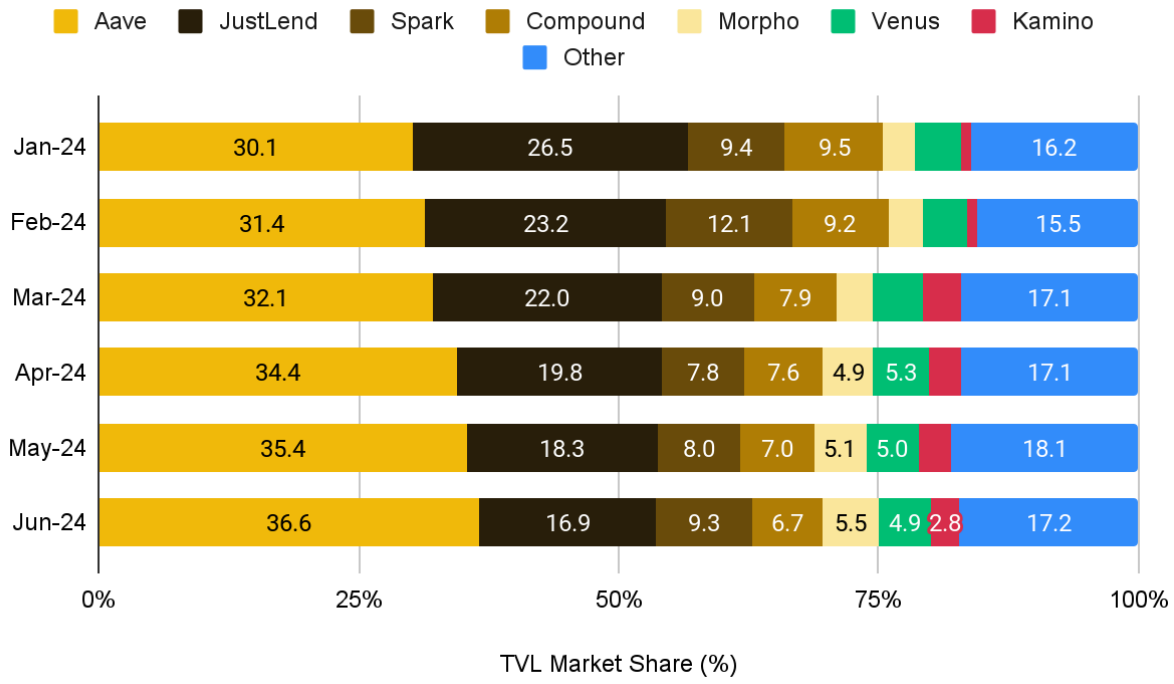
Figure 59: Money market protocols have experienced notable growth in TVL, rising by 51.7% to reach US$33.7B

Source: DefiLlama, Binance Research, as of June 30, 2024

The lending market continues to be shaped by four prominent players: Aave, JustLend, Compound Finance, and MakerDAO's SparkLend. Aave has reasserted its dominance, capturing 36.6% of the market after overtaking JustLend, which had briefly led at the end of 2023. Although SparkLend's TVL increased this year, and JustLend and Compound maintained stable TVLs, all three have lost market share, with JustLend notably suffering a significant drop of over 9% in absolute terms. This indicates that these **traditionally dominant protocols, outside of Aave, have not gained as much from this year's liquidity growth**.

While Aave has captured some of this market share, the most significant growth has occurred outside these familiar names. **Morpho has emerged as a standout, rising to become the fifth largest on-chain lending protocol** with a 5.5% market share and beginning to contest the dominance of established players. Additionally, **lending protocols on non-EVM chains like Solana are also making strides**; Kamino now holds 2.8% of the total lending TVL.

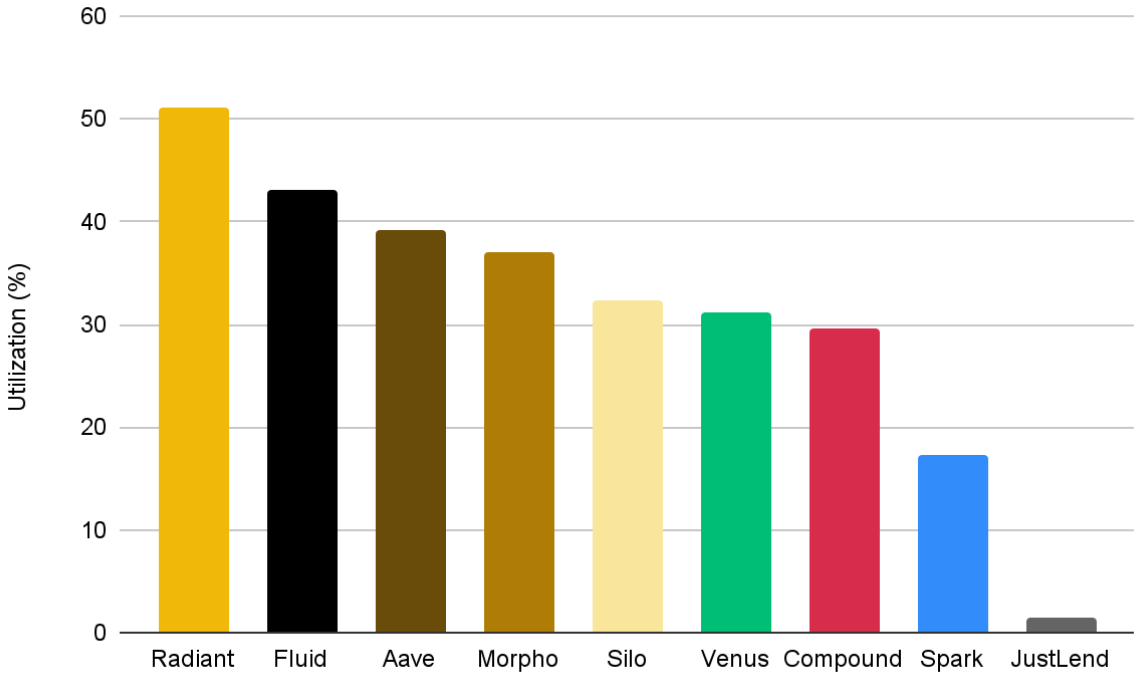
Figure 60: Aave reinforced its dominance while JustLend, Spark, and Compound saw declines in market share, partly due to emerging players like Morpho gaining increased influence



Source: DeFiLlama, Binance Research, as of June 30, 2024

To understand which lending protocols effectively utilize their capital, it's useful to examine lending utilization rates. Lending utilization measures the proportion of TVL that is actively lent out. Interestingly, **smaller and emerging protocols such as Radiant, Fluid, and Morpho often demonstrate greater efficiency** compared to their larger counterparts, with Aave being a notable exception. In contrast, JustLend exhibits a particularly low utilization rate, under 1.5%.

Figure 61: Radiant and Fluid lead with the highest lending utilization rates, followed by Aave and Morpho, while the majority of JustLend's TVL remains inactive

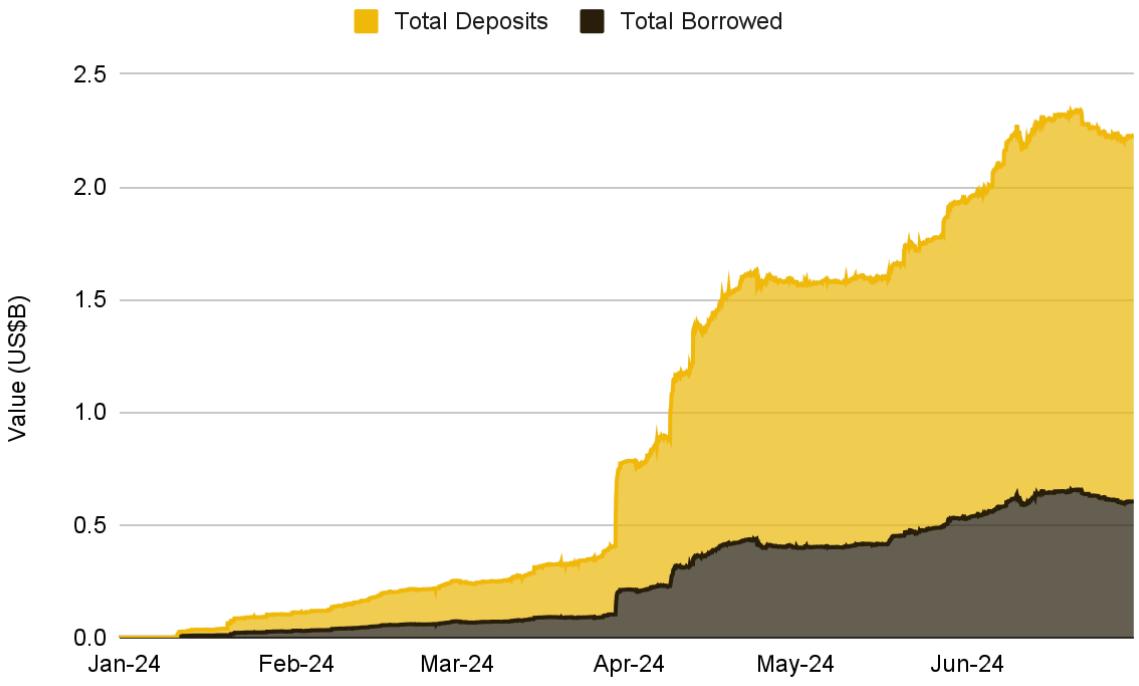


Source: DefiLlama, Binance Research, as of June 30, 2024

These trends in market share and utilization rates are part of an emerging shift challenging the on-chain lending status quo. **There's a rising demand for using a broader range of long-tail assets as collateral, a need that traditional lending platforms find difficult to accommodate**. Their existing models and the substantial liquidity they manage mean that incorporating new assets can elevate risk levels in their multi-asset pools. Addressing these risks requires stringent measures such as supply and borrow caps, strict liquidation penalties, and conservative loan-to-value ("LTV") ratios, which impose limitations on efficiency and scalability. Simultaneously, while isolated lending pools offer greater flexibility, they often face issues of liquidity fragmentation and capital inefficiency.

Morpho has effectively exploited this market gap as a modular lending protocol[(76)]. These new primitives **merge the user-friendly experience and aggregated liquidity of multi-asset lending pools with the efficiency and flexibility of isolated markets**. As a result, protocols like Morpho can accommodate a broader range of assets and provide users with customizable risk exposure options. Morpho's strong performance underscores the high value on-chain money markets hold for this new type of primitive. Since launching its Morpho Blue product in January, it has attracted US$1.6B in deposits, with over US$600M in outstanding loans.

Figure 62: In just a few months, Morpho Blue has attracted US$1.6B in deposits, of which over US$600M are outstanding loans



Source: Dune Analytics (@morpho), Binance Research, as of June 30, 2024

Morpho's modular design offers clear benefits in flexibility and capital efficiency, yet these protocols have some way to go before they can surpass traditional lending platforms in liquidity growth and utilization. Nevertheless, the presence of Morpho, along with modular products like Silo and Ajna, is ramping up competition and preventing established players like Aave from becoming complacent. Of particular note is the **upcoming Aave v4**[77]**, which is expected to significantly influence market dynamics**. This update appears to align more closely with its competitors' models by introducing new features that address gaps exploited by the growing competition.

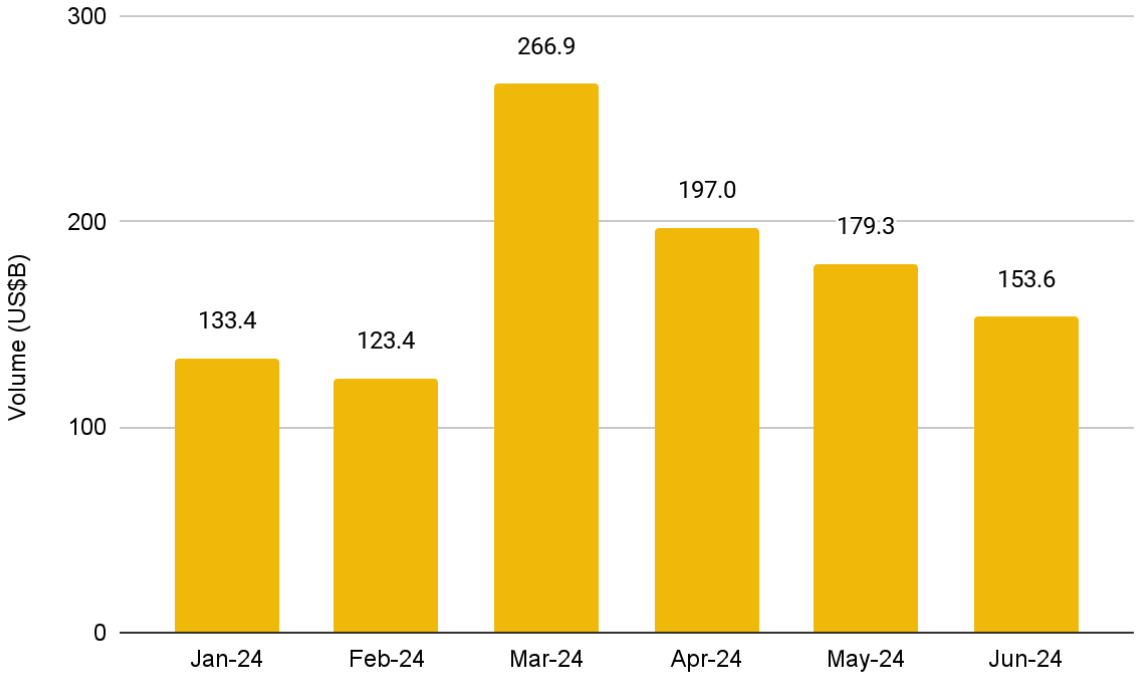
These features include a **unified liquidity layer** that allows Aave to seamlessly integrate new borrowing modules and phase out older ones without needing a major upgrade or liquidity migration. **Improvements in risk management** are also expected, such as **dynamic configuration mechanisms** that permit multiple adjustments of risk parameters per asset. Additional improvements are **flexible liquidation mechanisms**, **reduced governance involvement**, and **increased utility for its GHO stablecoin**.

With the final release of Aave v4 not expected until sometime in 2025, the upcoming months will be intriguing as we observe whether emerging lending protocols can draw more liquidity and user interest. Mechanism design, business development initiatives, and token incentives will all play crucial roles in this phase.

Decentralized Exchange ("DEX")

DEX volumes have experienced a resurgence this year, reaching a peak of US$266.9B in March.

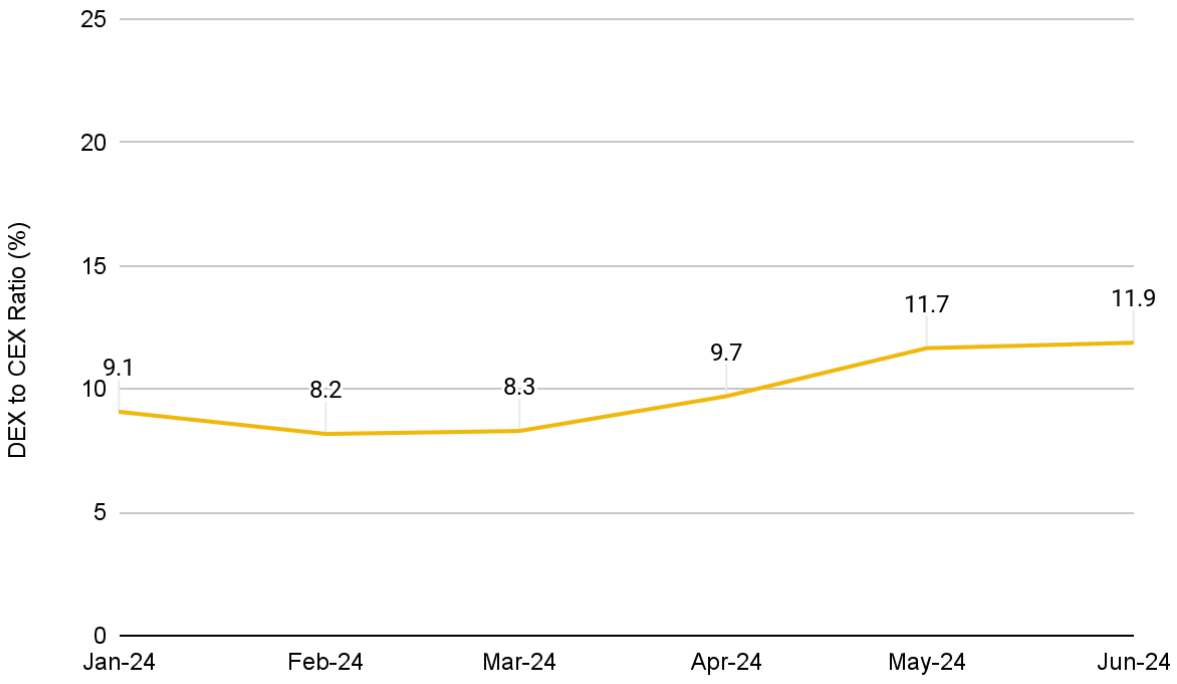
Figure 63: DEXes have traded nearly US$1.1T so far this year, already surpassing the total volumes of 2023



Source: DefiLlama, Binance Research, as of June 30, 2024

Diving deeper, although DEX volumes have risen, **Centralized Exchanges ("CEXes") still dominate the bulk of trading activity**. The DEX/CEX ratio, which compares DEX trading volumes to those of CEXes, rose in June to 11.9%, although it remains to be seen whether this level can be sustained. For most of the year, the ratio has achieved only modest gains, averaging 9.1%, still below the 2023 average of 13.7% - though this average was skewed by a peak of 21.3% in May 2023. This suggests that, apart from June, CEXes have largely benefited from the uptick in trading activity spurred by this year's market upswing.

Figure 64: Although May and June saw a significant uptick, the DEX/CEX ratio has averaged around 9.1% this year, remaining below the peaks observed last year

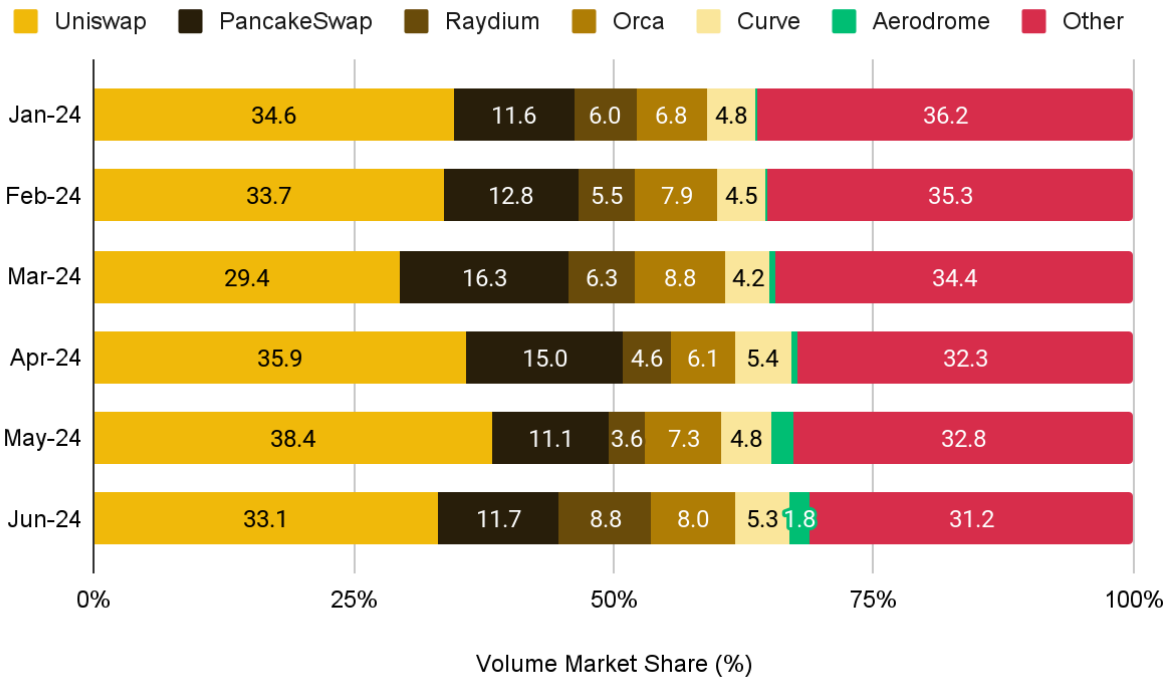


Source: The Block, Binance Research, as of June 30, 2024

Switching to the competitive landscape, **Uniswap retains its position as the largest DEX by trading volume**, with a 33.1% market share, followed by PancakeSwap, which has maintained a stable 11.7% this year. Moreover, a significant portion of the market share, 31.2%, is distributed among numerous smaller players. This diversity is typical given that DEXes have the largest number of projects in any DeFi sub-sector, nearing 1.4K, and each blockchain network typically hosts its own native DEX to meet basic user needs.

Interestingly, **Uniswap's market share has been gradually decreasing, now far away from its high of over 50% last year**. Part of this decline may be attributed to an **increase in its swapping fee from 0.15% to 0.25%**, now generating over US$300K daily in June[(78)]. However, a more significant factor appears to be the **rising trading volumes on competing non-Ethereum DEXes like Orca and Raydium on Solana, and Aerodrome on Base**. This diversification of demand across various DEX protocols and blockchains marks a significant maturation within the sub-sector.

Figure 65: While Uniswap maintains its leading position with a 33.1% market share, both Raydium and Orca have experienced notable growth, now holding 8.8% and 8.0% of the market, respectively

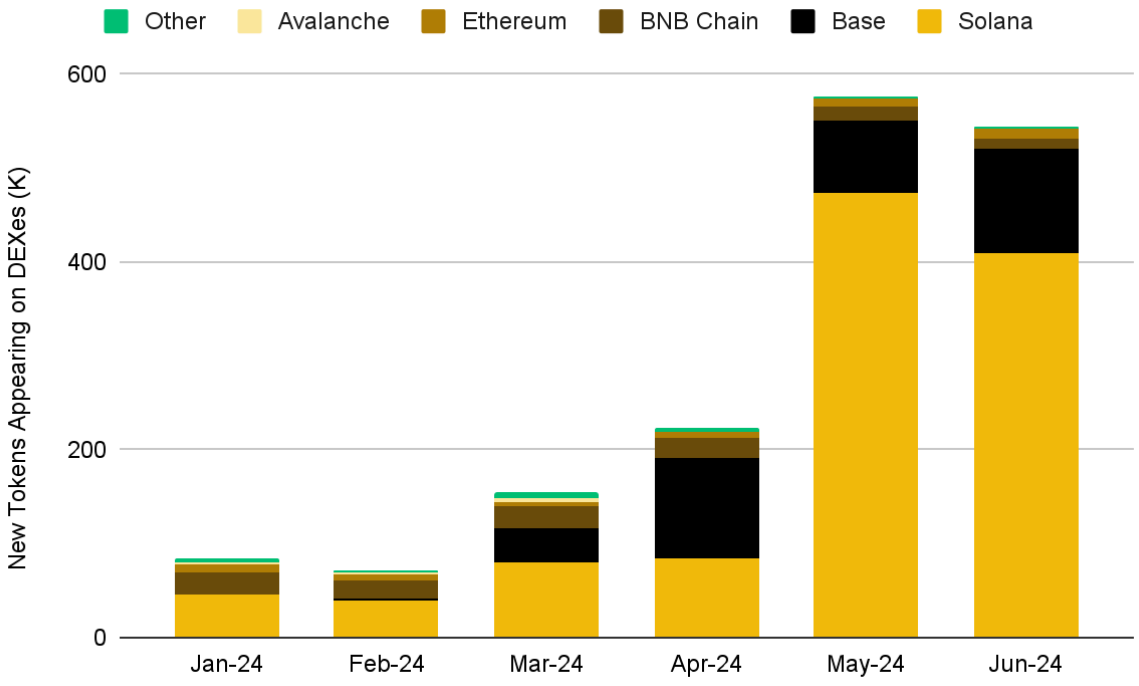


Source: DeFiLlama, Binance Research as of June 30, 2024

In the first half of 2024, DEXes on Base and particularly on Solana have risen to prominence by **filling a niche for traders of memecoins**, offering the necessary traits such as **high speed**, a **diverse range of tokens**, and **user-friendly interfaces**. This trend is underscored by the explosion of new tokens on these platforms, with Solana leading significantly; it saw 409.3K new tokens introduced on its DEXes in June alone.

Solana's DEX aggregator, Jupiter, has been instrumental in driving much of the chain's volumes by offering materially better trading routes, thereby reducing transaction fees for its users. The introduction of its **Dollar Cost Averaging ("DCA") feature**[79], which enables easier access to tokens with lower liquidity, has proven popular among users. Moving forward, DEXes that continue to offer the most efficient trading routes, while minimizing user experience complexities and fees, are poised to secure a notable competitive advantage.

Figure 66: Capitalizing on the memecoin trend, Solana's DEXes have seen the highest number of new token appearances this year

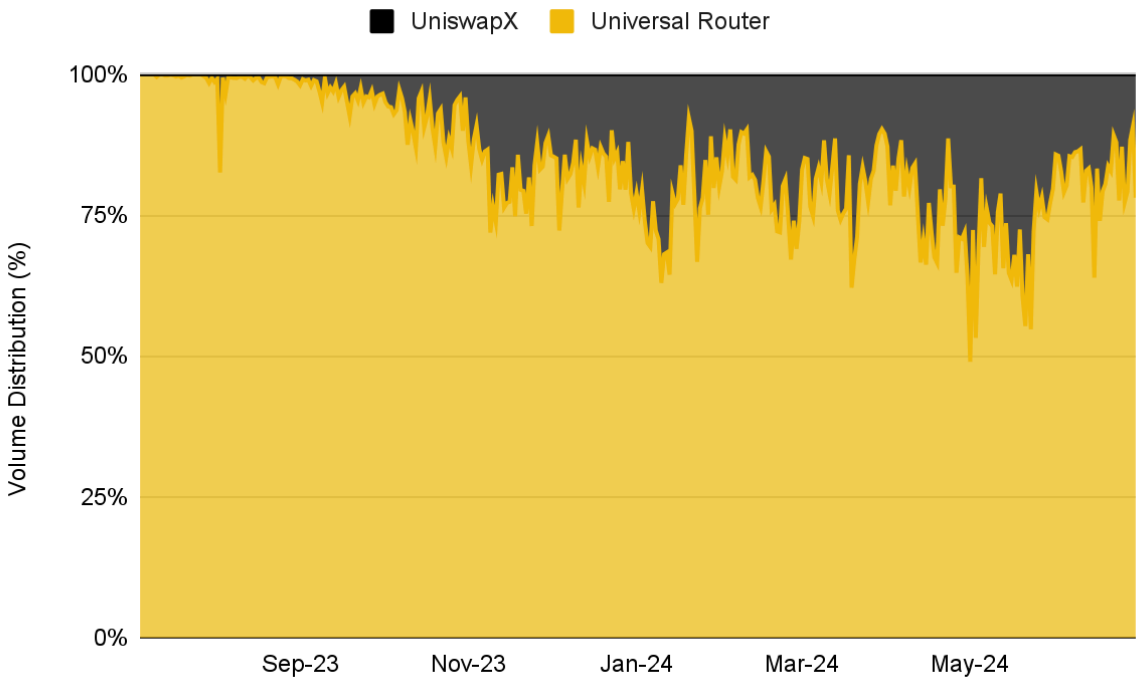


Source: Dune Analytics (@ilemi), Binance Research as of June 30, 2024

With blue chip DeFi dApps on non-Ethereum chains attracting significant liquidity, Uniswap is likely to face stiffer competition as we move into the latter half of 2024. The **anticipated launch of Uniswap v4**[80] in Q3 will be crucial to watch, particularly if it draws a diverse group of traders. Uniswap v4 aims to introduce a **more modular architecture through 'hooks'**, which are smart contracts that enhance liquidity pool customization by enabling features like dynamic fees, on-chain limit orders, and flexible on-chain oracles. This adaptability could enable project teams to build upon Uniswap's secure and liquid base, potentially transforming it into a foundational layer for future automated market makers ("AMMs").

With the expansion of Uniswap's extensive ecosystem of hooks, the need for more sophisticated routing solutions may become increasingly pronounced. An example of this is the **intent-based trading architectures like UniswapX**[81], where off-chain fillers compete to settle taker volume. **UniswapX has been progressively important in handling Uniswap trades**, as evidenced by its growing portion of transaction settlements this year. UniswapX and similar platforms have demonstrated significant potential, and their development will be important to monitor as the market evolves. As we explored in our previous report, Demystifying the Intent-Centric Thesis, intent-based DEXes - characterized by off-chain execution and on-chain settlement - are poised to play a pivotal role in shaping the future of this sub-sector.

Figure 67: UniswapX is starting to fill a larger proportion of Uniswap trades this year, hitting a notable daily peak of 51.0% in May 2024



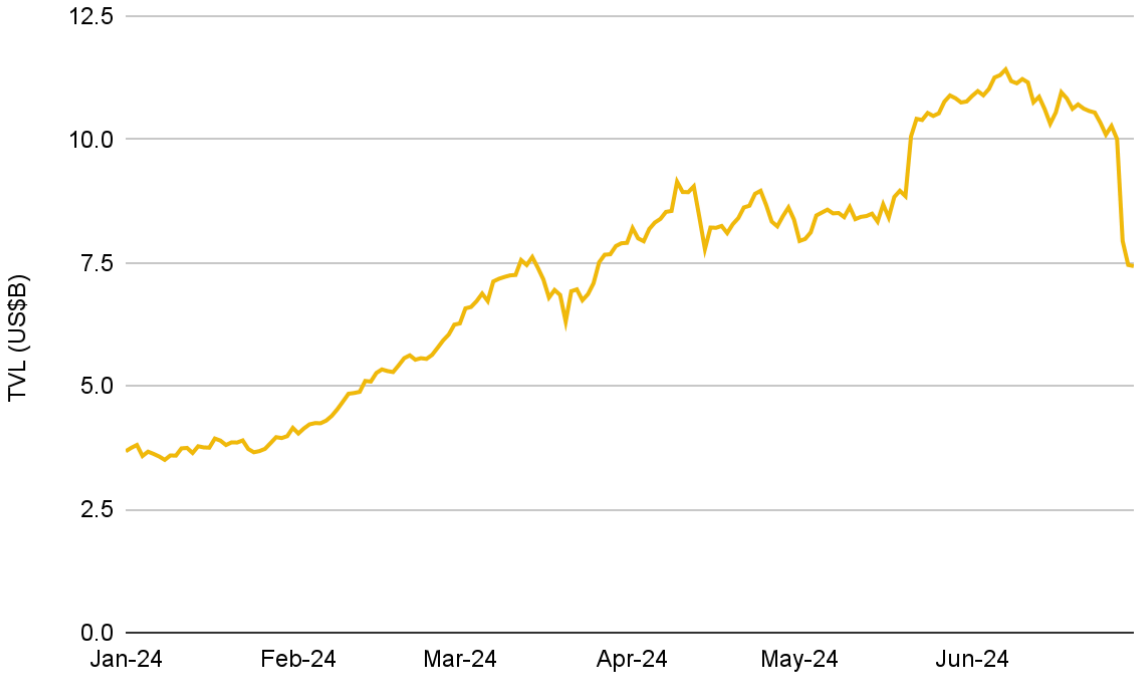
Source: Dune Analytics (@flashbots), Binance Research as of June 30, 2024

Yield

The yield market has emerged as a major DeFi sub-sector this year, expanding by 102.1% to reach a TVL of US$7.4B, making it the eighth largest. For much of the year, it performed even better, peaking at US$11.4B, although its TVL declined towards the end of the first half of 2024. This decline, depicted in the figure below, is primarily due to the maturation of certain liquid restaking markets on June 27.

On a broader scale, the growth of this sub-sector has been positively welcomed, as **yield trading enhances market depth** and **offers traders a broader selection of strategies to express their market views**. The increasing prominence of these markets in DeFi is not surprising, especially considering their crucial role in traditional finance ("TradFi"), where interest rate derivatives, a comparable market, exceed US$400T in notional value.

Figure 68: After growing by 102.1% to US$7.4B this year, Yield is now the eighth largest DeFi market by TVL

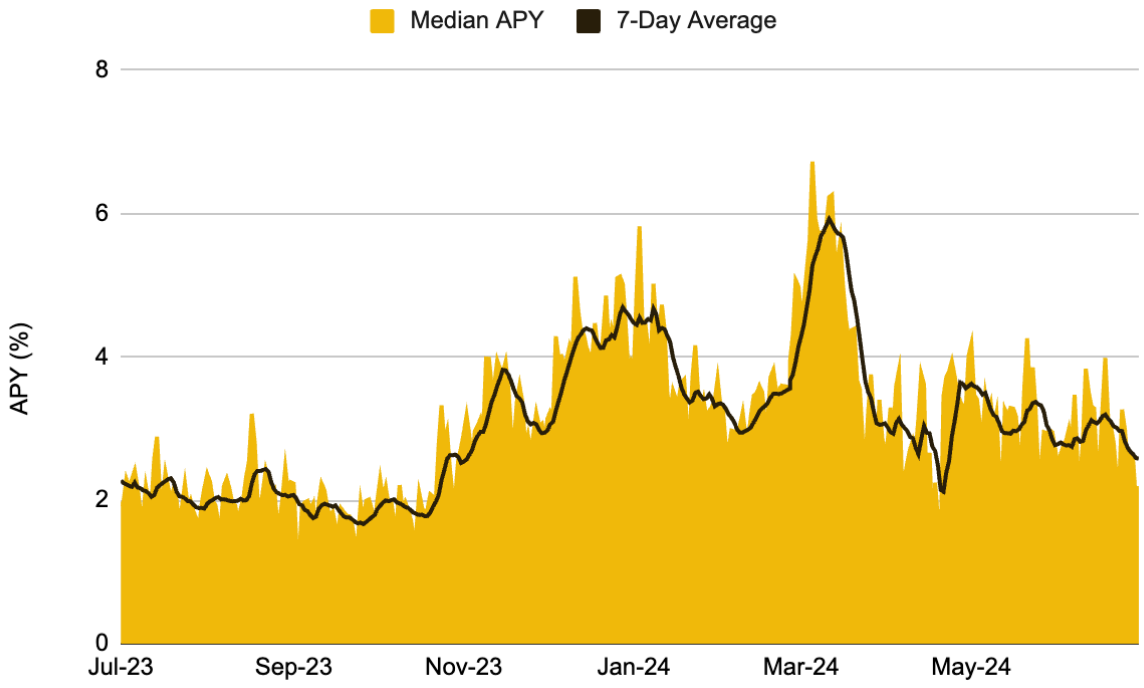


Source: DefiLlama, Binance Research, as of June 30, 2024

In the current cycle, two trends with strong product-market fit have emerged: **demand for leverage and yield**. The market upswing has provided further impetus to these trends through **increased yield volatility**, **more diverse yield sources**, and **greater market participation**, all of which have created a **larger market space for yield markets to flourish**. Specifically, the growth of on-chain yield-bearing assets and their inherent volatility have played a significant role in the development of these markets.

These markets **benefit from the synergies created by an influx of yield-bearing products**. As more sophisticated yield-bearing products and strategies enter the crypto markets, yield trading protocols can build on these use cases. This is particularly evident with the emergence of new sources of on-chain yield, such as the tokenization of RWAs and liquid restaking. Simultaneously, the shift toward higher yields in lending protocols and from yield-bearing stablecoin providers is fueling increased interest in trading yields within on-chain money markets.

Figure 69: The past year has seen on-chain median interest rates rise, bringing with them increased rate volatility

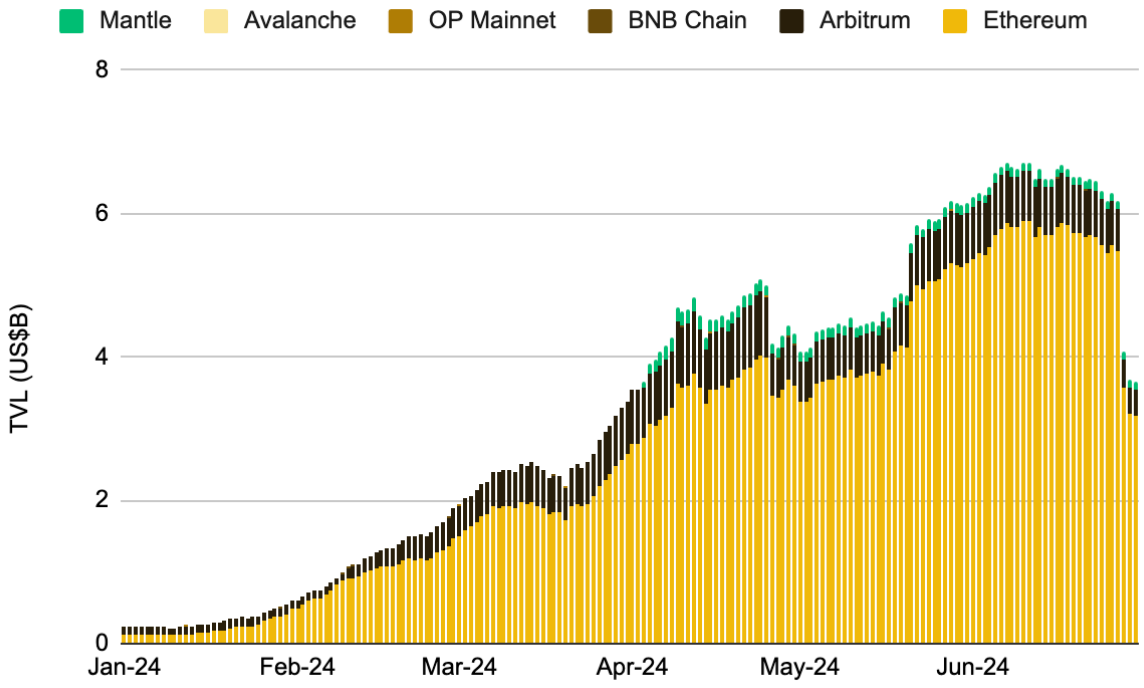


Source: DefiLlama, Binance Research, as of June 30, 2024

Referred to as the **'Uniswap of the interest rate market'**, Pendle stands out as a dominant force in on-chain yield trading, spearheading the development of interest rate derivatives in DeFi. Pendle **democratizes access to yield markets**[82], enabling users to speculate, arbitrage, hedge, or implement advanced strategies to earn fixed yields, leverage the yield of an underlying asset, or combine these approaches.

While experiencing a dip towards the end of H1 2024, Pendle's TVL showcased impressive growth this year, with a 1464% increase YTD to reach US$3.7B. This growth not only cements Pendle as the top yield trading protocol but impressively also positions it as the **ninth largest DeFi project by TVL**. Although **Pendle's primary success stems from its presence on the Ethereum network**, its expansion to other chains such as Arbitrum and Mantle has also played a crucial role in its growth, enriching its yield trading capabilities and fostering synergies across various DeFi ecosystems.

Figure 70: Since the start of the year, Pendle's TVL has skyrocketed by 1464% to US$3.7B, firmly establishing it as the leader in the yield market



Source: DefiLlama, Binance Research, as of June 30, 2024

Pendle's ability to adapt to market changes has allowed it to effectively capitalize on prevailing trends. A prime example is its entry into the LRT space with an incentivized pool for Etherfi earlier this year, which quickly led to Etherfi's eETH becoming the largest pool[83] on Pendle within a week of launching. This growth not only demonstrated the market's appetite for LRT yield but also solidified Pendle's role as a key liquidity hub for LRTs. **Engaging with LRTs has been a major catalyst for yield markets**, bringing in a new segment of users interested in airdrop speculation while boosting liquidity and trading volumes through support for LRTs' points programs.

The growth trajectory of yield markets is also **closely intertwined with developments in other market sectors**, underscoring its reliance on the broader DeFi landscape. Although LRTs offer considerable growth opportunities for Pendle, especially with the rollout of AVSs, the potential for a **negative demand shock looms as the speculative interest from points and airdrop campaigns diminishes**. A recent instance was the significant liquidity shock on June 27, following the **maturation of certain liquid restaking markets**[84]**,** which led to Pendle's TVL plummeting by over 40%, from approximately US$6.2B to US$3.7B. Hence, a **key consideration for Pendle will be to broaden its scope** and attract comparable levels of liquidity beyond LRTs and points. Looking ahead, the upcoming release of Pendle V3, slated for the end of 2024, is a notable development to watch in the latter half of the year, although specific details are still pending.

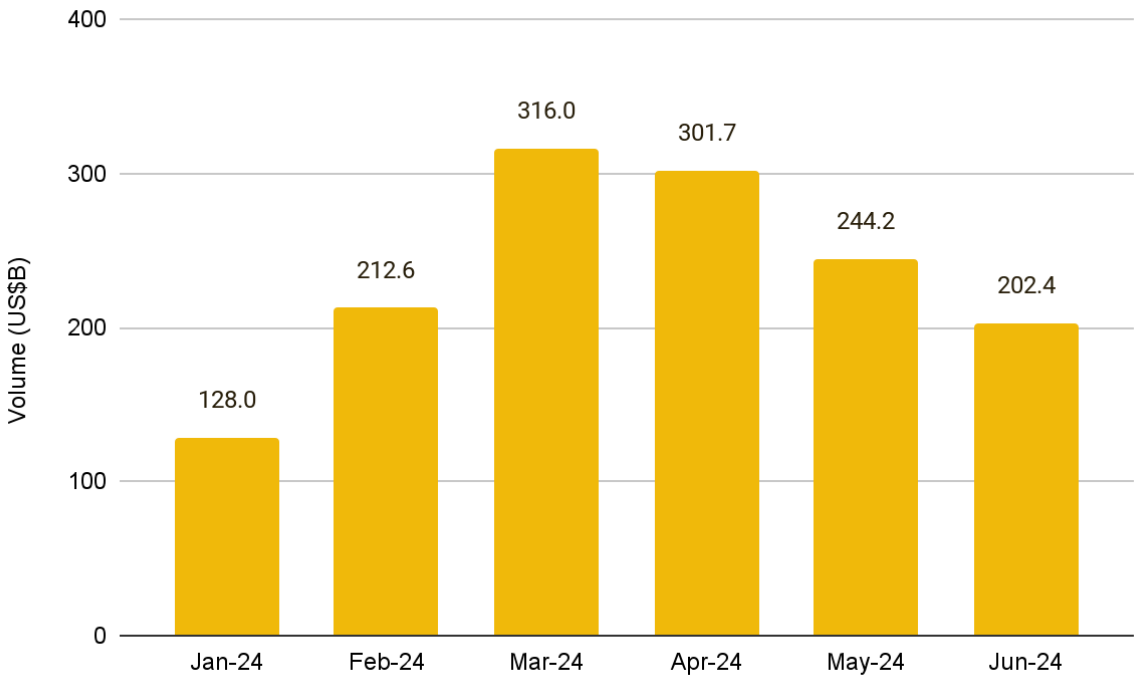
Ultimately, Pendle showcases the extensive potential within the yield sub-sector, capable of tapping into a broad spectrum of yield types. As the market develops further and new

use cases emerge, there is a significant opportunity for integration with other DeFi protocols and blockchains. Moving forward, we may see **increased productization of the various yields available**. Protocols that can capitalize on new yield types while providing innovative ways for users to engage, such as through interest rate swaps, will be well-positioned in this growing market.

Derivatives

Since the start of the year, **on-chain derivatives adoption has seen significant acceleration**, with average daily volumes climbing from US$1.8B last year to US$5.0B this year. The first half of the year not only witnessed increased volumes but also brought forth new innovations such as pre-market offerings and exotic pairs, further advancing the on-chain derivatives space. This upward trend is expected to persist, fueled by the **growing demand for sophisticated trading strategies within DeFi**.

Figure 71: A significant resurgence in on-chain derivatives activity has driven average monthly volumes up to US$234.2B this year, a substantial increase from US$57.0B last year



Source: DeFiLlama, Binance Research, as of June 30, 2024

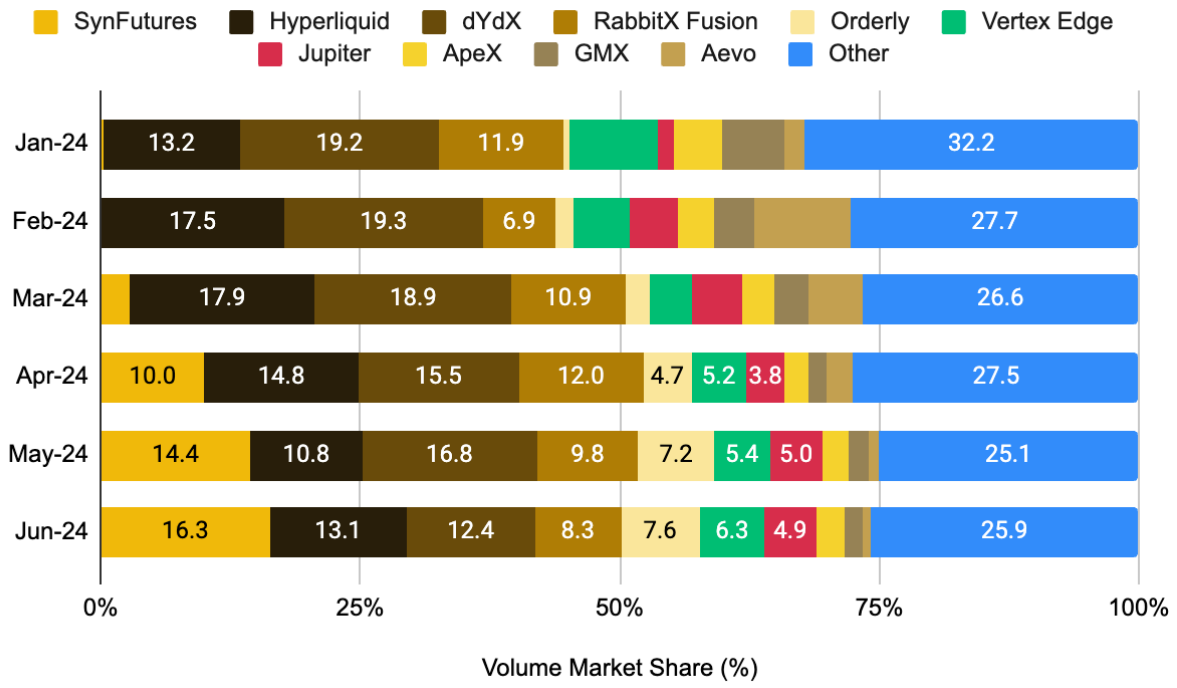
This year's growth in on-chain derivatives has been fueled by **intensifying competition from newer entrants** and a **resurgence in volume among established players**. While dYdX has led for much of the year, it has faced robust competition from emerging protocols such as SynFutures, Hyperliquid, and RabbitX. These newer protocols have gained substantial traction, benefiting from the **absence of a native token**.

Blast-based protocols have effectively leveraged the airdrop meta, with points incentives drawing numerous users and boosting volumes on their native derivatives protocols. Alongside SynFutures, RabbitX[85] and Vertex[86] have also capitalized on this trend, expanding their derivatives infrastructure to support protocols like Blast Futures and Blitz Exchange on the Blast network. The **impact of forthcoming airdrops on the market share of all new entrants will be key to watch**, especially given the substantial dip in Aevo's volumes post-airdrop.

In this evolving market, Hyperliquid, an L1 order book-based perpetual futures DEX, has been particularly impressive, maintaining strong volumes throughout the first half of 2024. With daily volumes frequently surpassing US$1B, Hyperliquid has positioned itself as a leading player, often outperforming established rivals like dYdX. Its competitive edge lies in **matching the performance of CEXes** with **competitive fees** and **fully on-chain operations**.

Moreover, the **growth of blue-chip derivatives projects like Jupiter on non-Ethereum Virtual Machine ("EVM") blockchains** marks significant progress for the sub-sector. These developments, collectively, have reshaped the market composition, resulting in noticeable shifts in trading volume market share during the first half of 2024.

Figure 72: This year, dYdX has faced stiff competition due to the emergence of several newer entrants, including SynFutures, Hyperliquid, RabbitX, and others



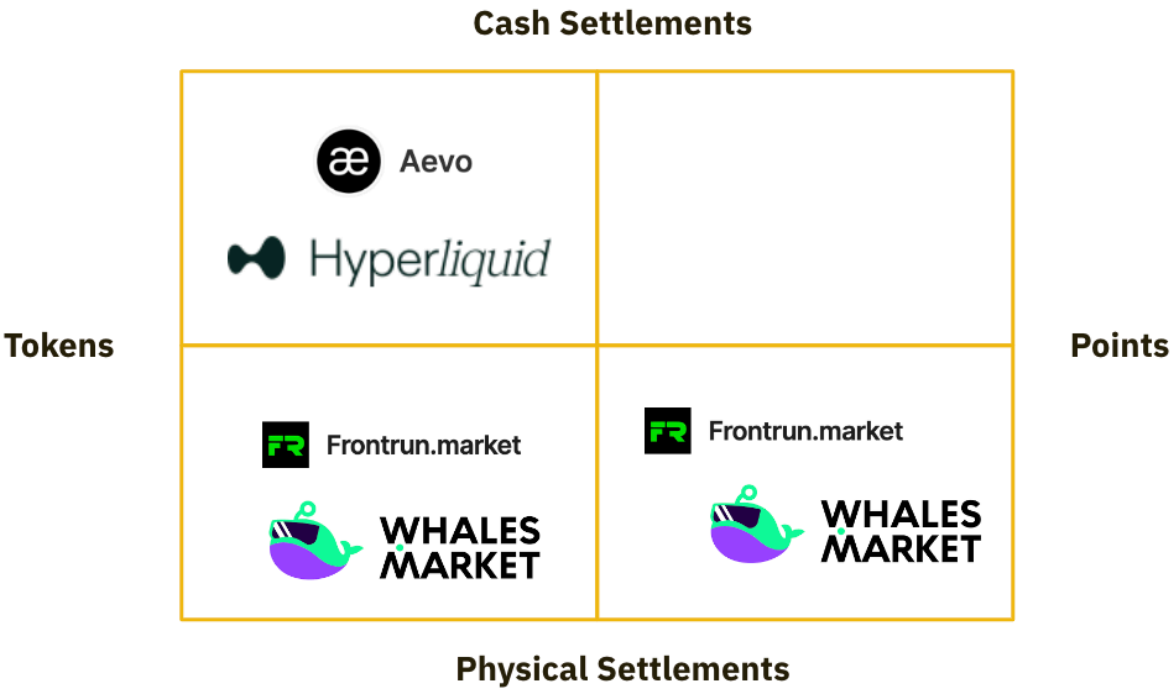
Source: DeFiLlama, Binance Research, as of June 30, 2024

An interesting trend in the on-chain derivatives space this year has been the introduction of pre-market offerings. Driven by a surge in airdrop campaigns that have captured significant attention and liquidity, **a new market type has emerged: perpetual futures products for**

unlisted tokens. Although this market remains unpredictable, it shows promise as a **potential barometer for initial market reactions and investor sentiment**[87] towards newly launched projects. As these markets mature and achieve sufficient liquidity for efficient price discovery, pre-market offerings have the potential to become a valuable DeFi primitive, providing investors with new insights and trading strategies.

This development opens the door for a market leader in pre-market offerings to emerge - one that can effectively aggregate the demand and supply for pre-market tokens. With **trading features like high leverage and low spreads becoming commoditized**, DEXes that innovate with products such as pre-market offerings will be better positioned to distinguish themselves.

Figure 73: Market landscape of decentralized pre-market offerings



Source: Project Documentations, Binance Research

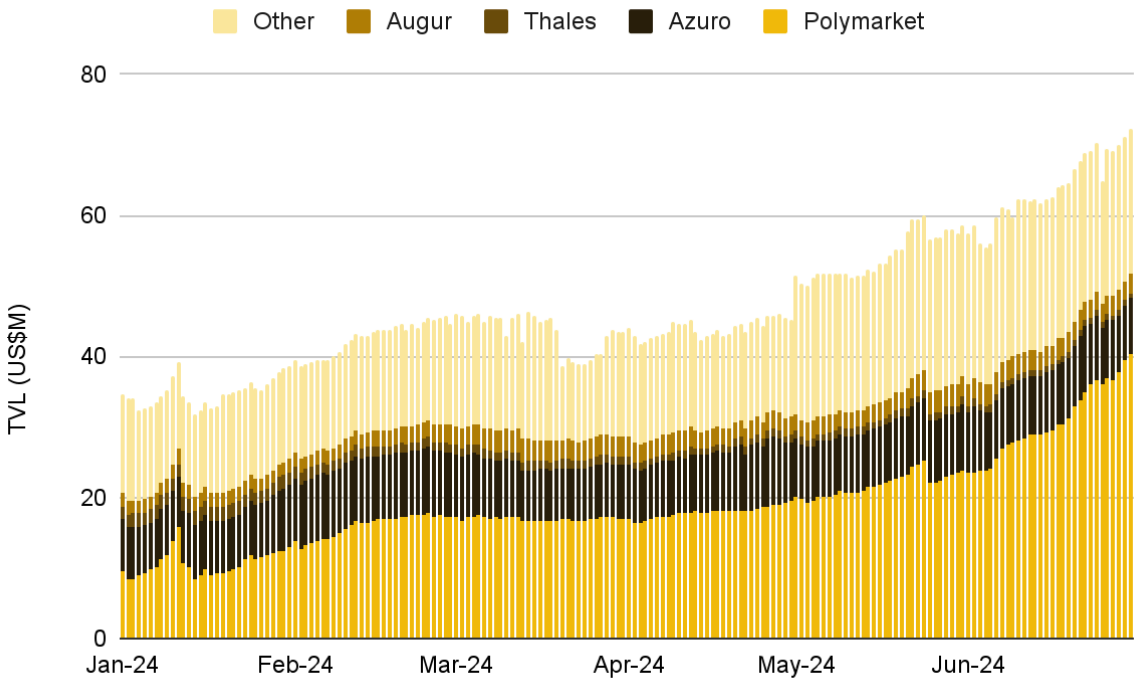
As on-chain derivatives continue to roll out innovative products and features, we find ourselves at a critical juncture with significant opportunities for growth in this sub-sector. Currently, **DEXes account for only a small fraction of total crypto market volumes**, with **on-chain derivatives making up an even smaller portion**. This disparity primarily stems from the **easier onboarding**, **cheaper fees**, and **superior user experience** offered by CEXes. However, recent developments have begun to bridge these gaps, setting the stage for increased adoption of on-chain derivatives in the latter half of the year. Perpetual futures DEXes, in particular, are poised to lead this shift.

Prediction Market

While prediction markets have not attracted the same level of capital or volume as other DeFi sub-sectors over the past few years, the start of 2024 has marked a resurgence.

These markets have reached **new all-time highs across several metrics**[88], suggesting they may be one of DeFi's breakthrough sectors this year. Notably, there has been a 108.1% increase in TVL since the beginning of the year, with net deposits exceeding US$70M for the first time ever.

Figure 74: Prediction markets have reached a record high in net deposits, topping US$70M after a 108.1% YTD increase

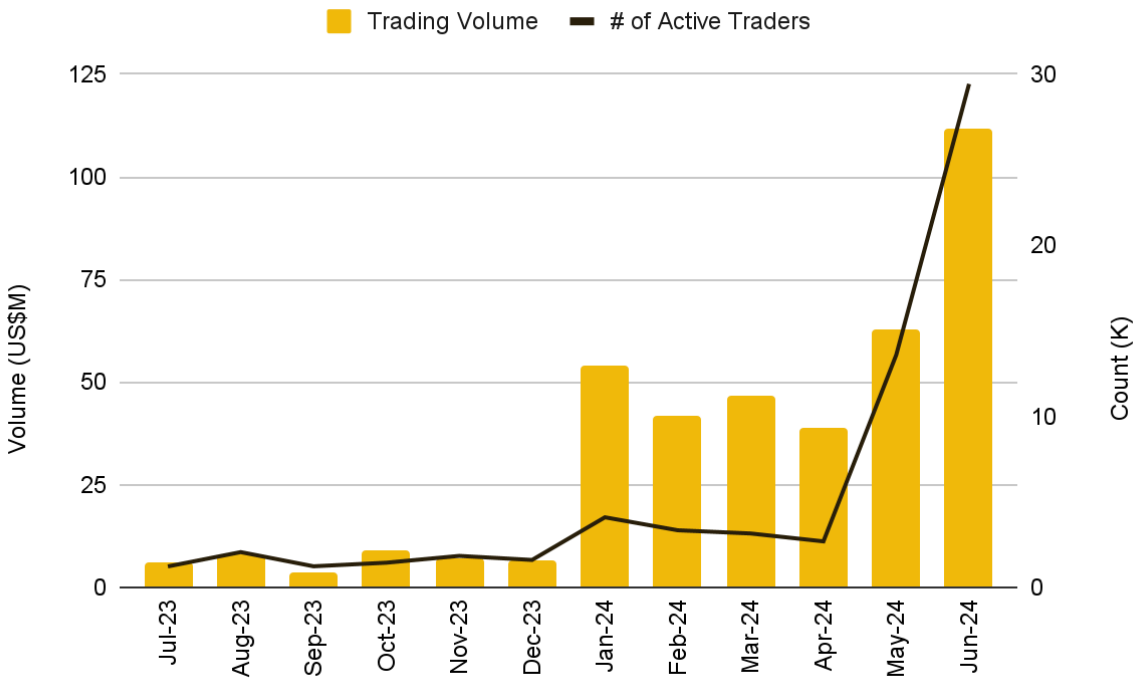


Source: DeFi Llama, Binance Research, as of June 30, 2024

As platforms that speculate on the outcomes of specific events through contracts, prediction markets naturally flourish during notable events. **Historically, political events, such as elections, have spurred interest and activity in these markets**[89]. This trend has continued into this year, particularly with elections occurring in eight of the ten most populous nations[90], including the highly anticipated U.S. election, which has significantly driven market activity.

While the resurgence has positively impacted protocols across the board, **Polymarket remains at the forefront with a 55.6% market dominance**. It has emerged as a major beneficiary of this growth[91], as reflected by its activity metrics: average monthly volumes have soared by 1575.6% to US$111.6M, and monthly active users have increased by 1734.9% to 29.4K since December 2023. With over four months remaining until the election, prediction markets may experience further growth as the election draws closer.

Figure 75: Polymarket has experienced a significant resurgence in activity this year, with its monthly volumes surpassing US$100M for the first time



Source: Dune Analytics (@rchen8), Binance Research, as of June 30, 2024

For prediction markets to take the next step, **maintaining high activity levels and attracting more liquidity, especially outside of election cycles**, is crucial. These markets require robust liquidity to enable users to place trades efficiently without drastically skewing the odds. Historically, prediction markets have sometimes struggled to secure large and consistent liquidity sources. Typically, **most liquidity is concentrated around a few popular prediction categories**, which leaves smaller, niche markets under-resourced. This scarcity not only affects the adoption and trading activity but also impairs their function as accurate information markets.

As we look ahead, the success of prediction markets will hinge on their ability to effectively manage and concentrate liquidity. The **integration of Artificial Intelligence ("AI") participants** may also play a transformative role[92]. AI has the potential to enhance these markets by **generating content**, **recommending events**, **optimizing liquidity allocation**, and **aggregating information**, which could profoundly influence market efficiency and accuracy. Observing how these developments unfold post-November will be interesting to monitor.

To gain further insights into the various DeFi markets, we recommend referring to our earlier report, Breakthrough DeFi Markets.

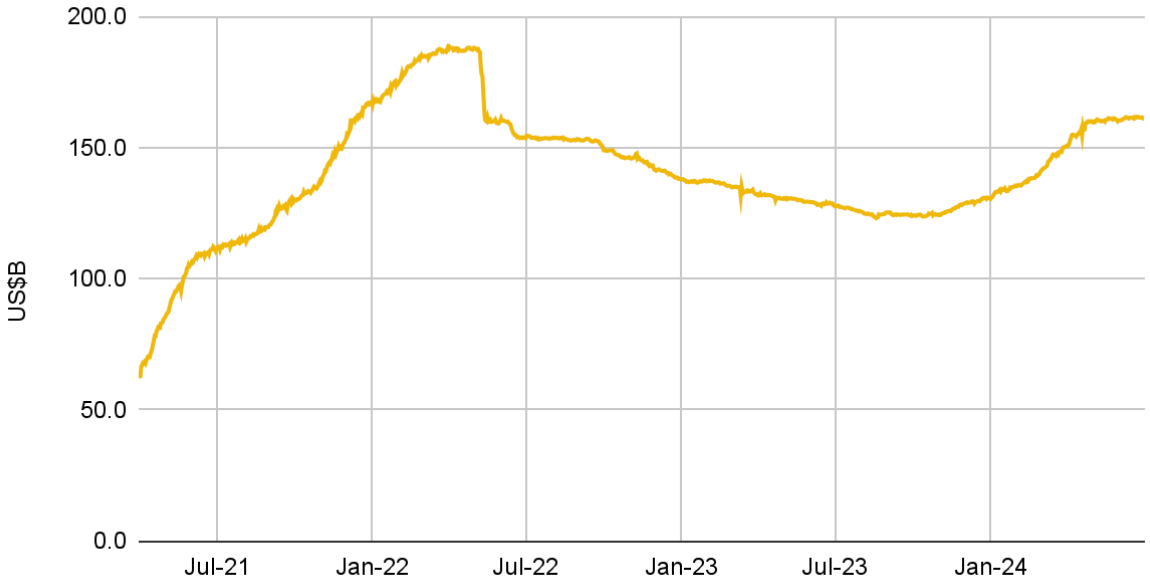
6 Stablecoins

6.1 Overview

Following a prolonged period of contraction since its peak in May 2022, the stablecoin market has experienced a steady recovery in the first half of 2024. Stablecoins, primarily functioning as a source of dollar liquidity for financing crypto exposure, are often indicative of the broader health and dynamics of crypto markets. The recovery is reflective of what we have observed in the broader crypto industry, where growth has been relatively broad-based, thereby driving more liquidity into the market.

Compared to the start of the year, **stablecoins market capitalization has increased by 23.3%.** Stablecoins market capitalization is US$161B, representing a 2-year high. The market has staged a notable turnaround and we are now just 14.5% shy of the peak in April 2022 just before the crash of TerraUSD ("UST").

Figure 76: Stablecoins market capitalization has been on the rise in 2024



Source: DeFi Llama, as of June 30, 2024

More opportunities in the stablecoin market has also contributed to the uptrend in stablecoins market capitalization. This includes the emergence of new stablecoins and higher yields in certain parts of the market.

Figure 77: USDe gained the most market share in the first half of 2024

Stablecoin	Market Cap (US$B)		Market Share (%)	
	Jun-24	YTD (%)	Jun-24	YTD (%, absolute)
USDT	112.6	+22.7	70.0	-0.5
USDC	31.9	+32.8	19.8	+1.4
DAI	5.1	-2.3	3.1	-0.9
USDe	3.6	+41.5	2.2	+2.1
FDUSD	1.8	+0.2	1.1	-0.3
USDD	0.7	+3.0	0.5	-
Others	5.3	-24.8	3.3	-2.2

Source: CoinMarketCap, DeFiLlama, Binance Research, as of June 30, 2024

6.2 The Duopoly

Currently, the stablecoin market is dominated by centralized players, with Tether's USDT and Circle's USDC capturing about 90% of the market share. Their success is largely due to their first-mover advantage, as well as their deep integration and composability with various markets, which generate strong liquidity network effects and create higher barriers to entry for new players. This shows that, despite its vast size, the stablecoin sector is far from perfectly competitive.

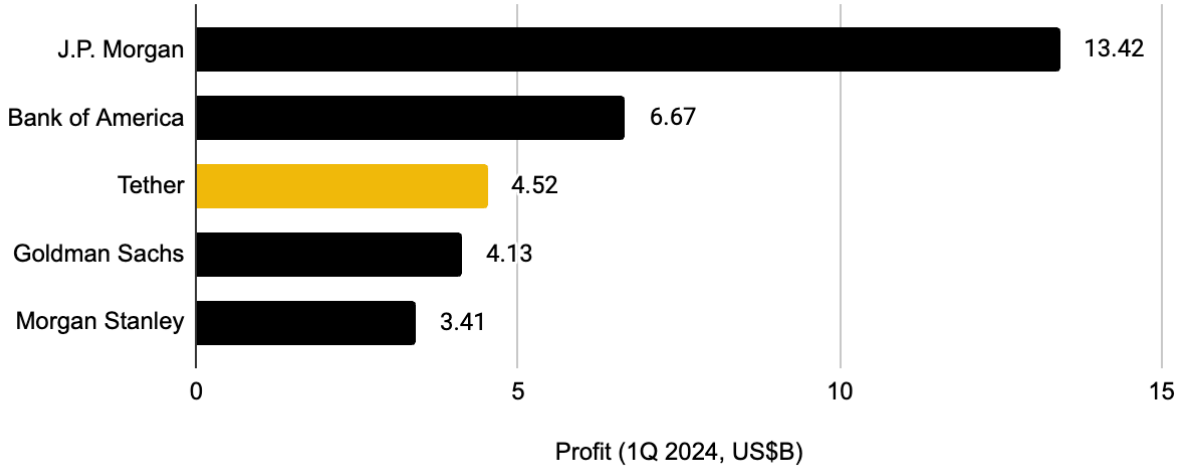
Tether's USDT

While USDT's market share has decreased slightly from 70.3% at the end of 2023 to 70.0% as of June 30, 2024, **it has continued to maintain its dominance** in the stablecoins market by a significant margin. Circulating supply of USDT has also increased from 91.7B to 112.6B, an increase of 22.7% year-to-date.

In a high interest rate environment, USDT's rising adoption has also been financially advantageous for Tether. Tether reported a record-breaking net profit of US$4.52B in the first quarter of 2024, with approximately US$1B contributed by its holdings in U.S. Treasury holdings[93]. This sets the stage for Tether to expand their reserves further, providing the foundation for their continued development and growth.

To put these numbers into perspective, Tether's 1Q profit puts it on par with some of the largest U.S. banks, many of which have been operating for decades.

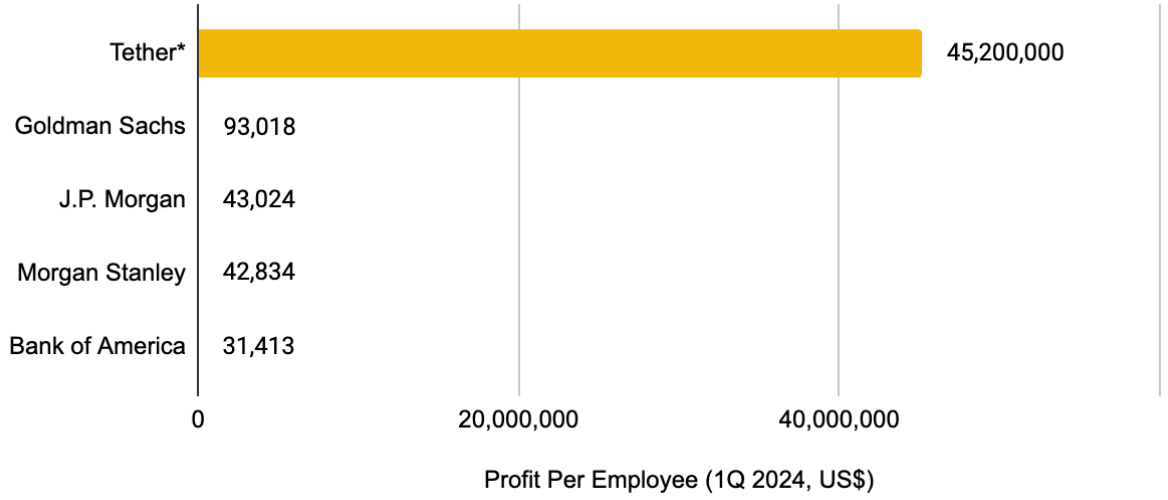
Figure 78: Tether earned as much as some of the U.S. banks in 1Q 2024



Source: Financial statements of respective companies, Binance Research, as of March 31, 2024

Even more impressively, when looking at the net profit per employee, Tether's productivity is unprecedented. Tether made about US$45.2M per employee in 1Q 2024, nearly 1,000 times more than other banks in this sample group. Note that this calculation is based on assumption and estimate that Tether has around 100 employees.

Figure 79: Tether made about US$45.2M in profit per employee in 1Q 2024



Source: Financial statements of respective companies, Binance Research, as of March 31, 2024
*Based on estimate of 100 employees for Tether

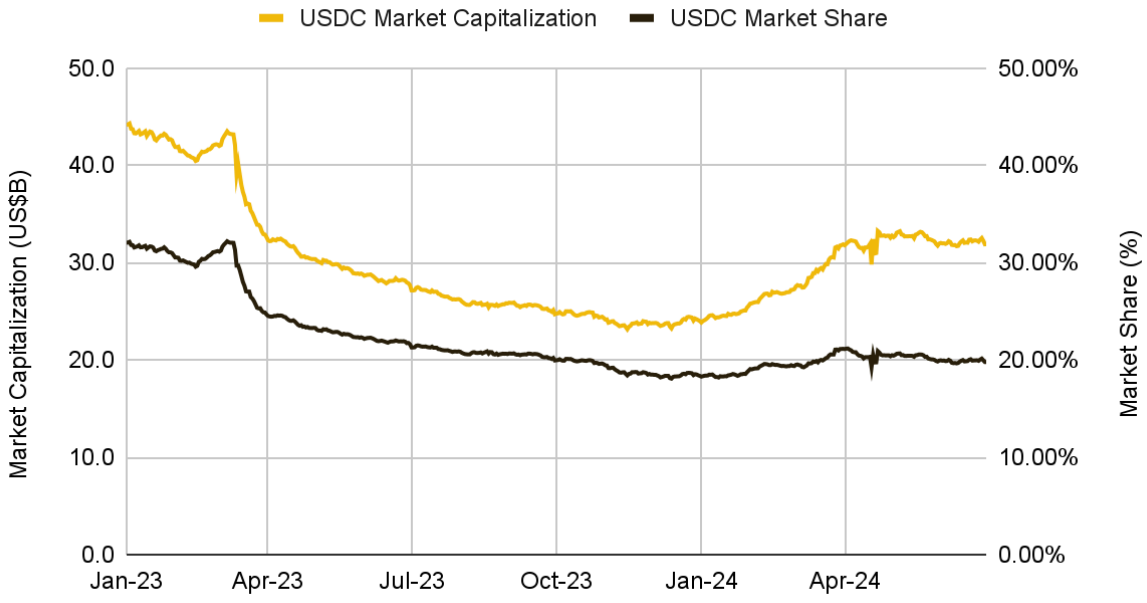
With an expansive reserve and high profitability, Tether has been able to expand its investments across a range of solutions. Tether announced in April that it would form four new business divisions: Data, Finance, Power, and Edu(cation), in alignment with its

expanded mission to deliver a variety of infrastructure solutions for a more inclusive world[94].

Circle's USDC

Following a challenging 2023 with a steady decline in circulating supply contributed by a temporary depegging event near the start of the year, Circle's USDC witnessed a slight recovery in the first half of 2024. Total USDC market capitalization rose by 32.8% from US$24.0B at the start of the year to US$31.9B at June 30, 2024. While USDC benefited from a broad growth in the stablecoin market, **it has also gained some grounds in terms of its competitiveness**. Market share recovered slightly from 18.4% to 19.8% in the same period.

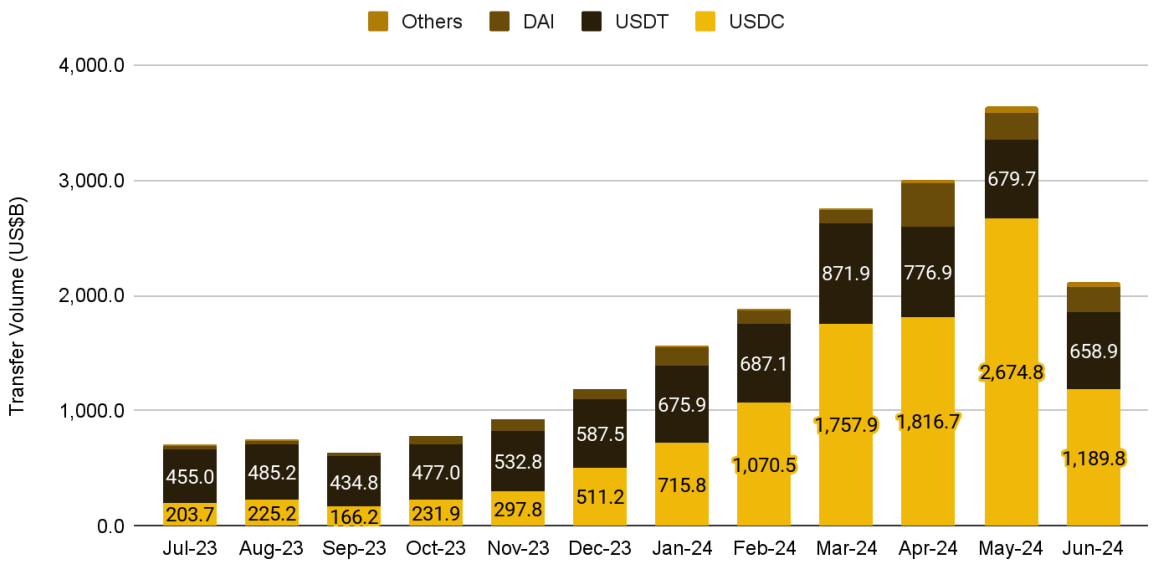
Figure 80: USDC's market capitalization and market share rose in 1H 2024



Source: DeFi Llama, as of June 30, 2024

A bright spot for USDC is its enduring prominence in on-chain activities. This is especially apparent in DEXes, CDP, and money market borrowings, where USDC continues to play a leading role. Transfer volume of USDC has been on a general upward trend and it has now overtaken USDT as the stablecoin with the highest transfer volume by a large margin, showcasing the widespread usage and adoption of USDC.

Figure 81: USDC has overtaken USDT in terms of transfer volumes



Source: Artemis, as of June 30, 2024

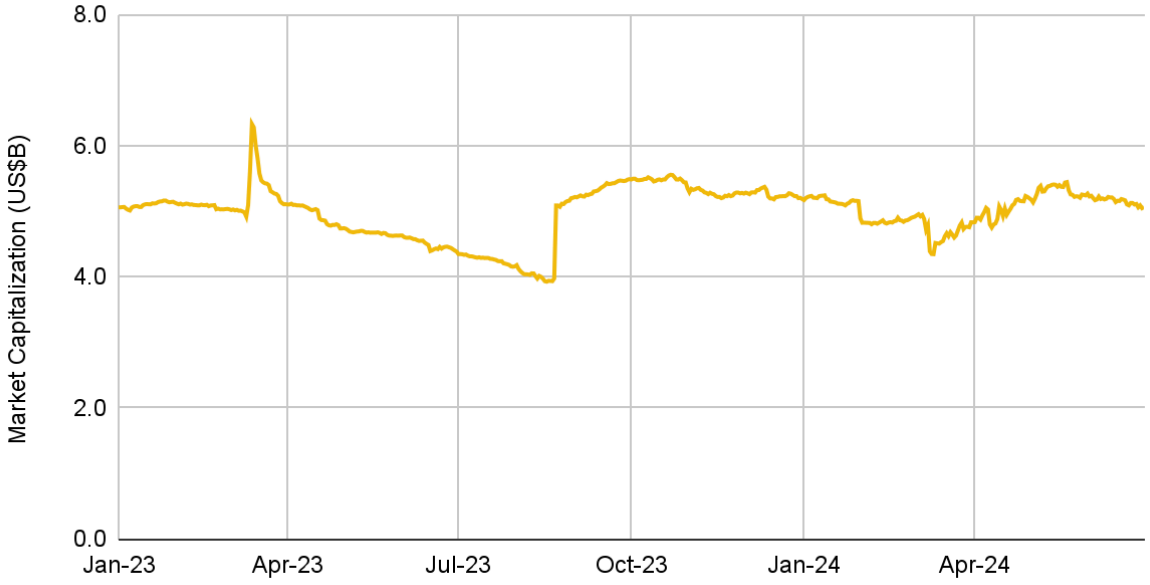
Circle has reportedly filed to list shares publicly with the U.S. Securities and Exchange Commission. Looking ahead, it will be worth watching to see if this eventually goes through, considering that regulation of stablecoins is still in its infancy and the impact on the industry could be profound.

6.2 Others

MakerDAO's DAI

Following a period of decline in market capitalization due to rising competition in the stablecoin space (in particular from Ethena's USDe), MakerDAO's DAI has grown rapidly since March, recovering by 16.6% from a low of US$4.3B to US$5.1B as of June 30, 2024. However, on a year-to-date basis, DAI's market capitalization has remained flat.

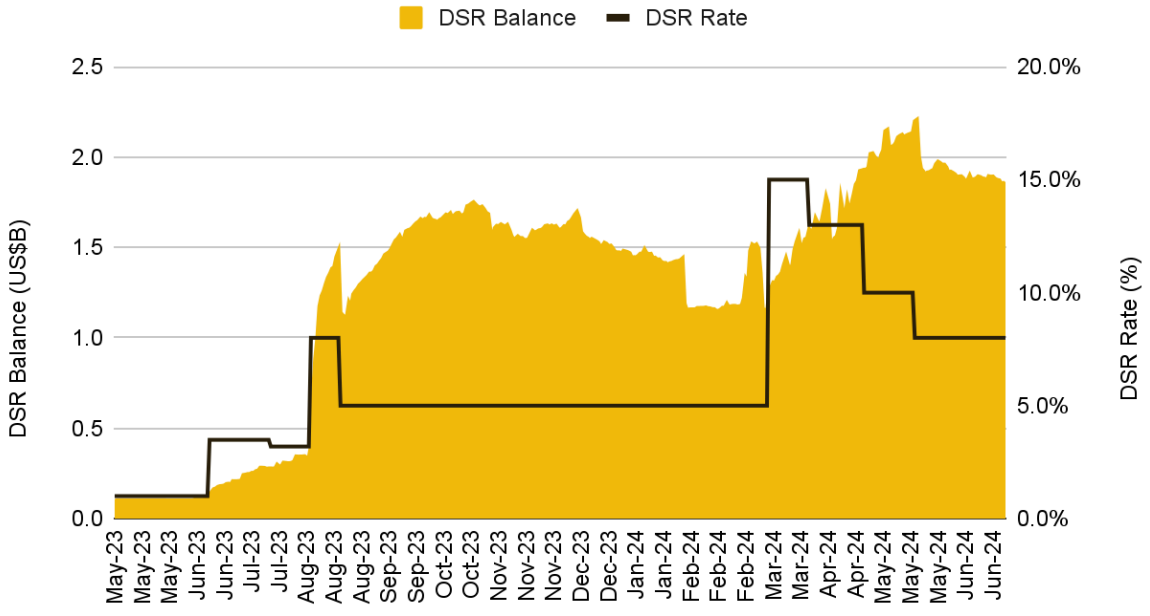
Figure 82: Circulating supply of MakerDAO's DAI has been relatively range bound



Source: DeFi Llama, as of June 30, 2024

DAI's swift recovery from its lows in March was driven by a governance proposal passed on March 8 to raise both the stability fees and the DAI Savings Rate ("DSR"). The DAI savings rate refers to the yield for staking DAI and is a tool to induce demand for DAI. Notably, the DSR was raised from 5% to 15%. This strategic move was **designed to cushion against potential DAI demand shocks arising from general market volatility and increasing competition** within the stablecoin sector.

Figure 83: DSR balance surged in March following a hike in the DSR rate



Source: Dune Analytics (@steakhouse), as of June 30, 2024

Following the DSR hike, DAI deposits have risen steadily, reaching a peak of US$2.2B, a growth of 91.5%, and more than offsetting the previous decline at the start of the year. Moreover, DAI saw unprecedented demand on SparkLend, its main lending protocol, after maxing out its 1.5B DAI debt ceiling. This led to a proposal to expand the debt ceiling to 2.5B DAI, enabling SparkLend to accommodate increased demand for DAI with further market growth[95].

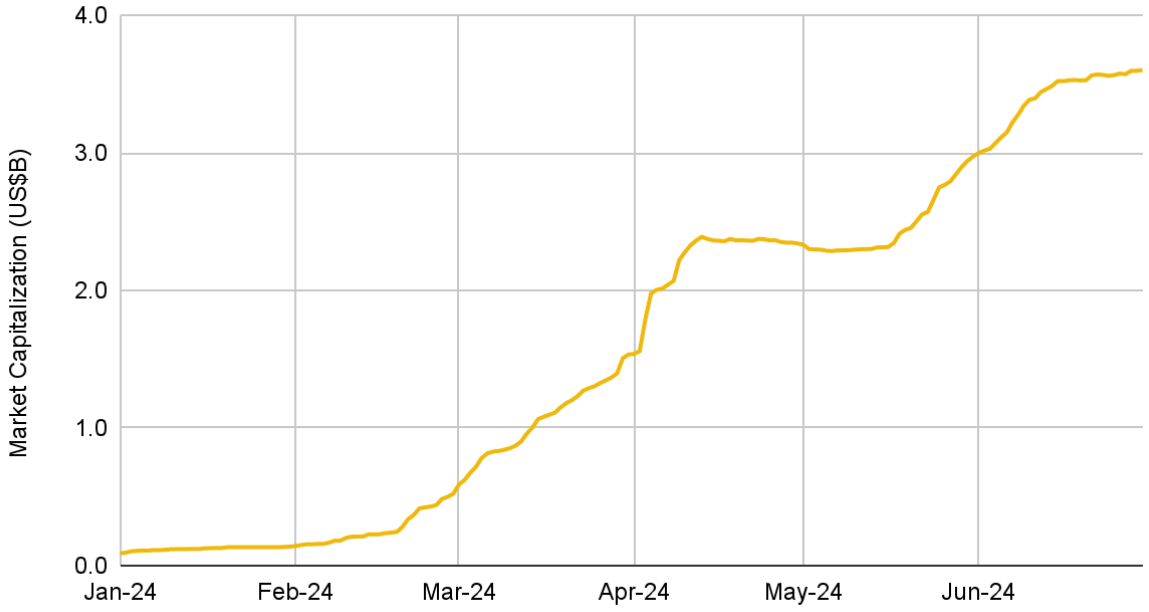
Amid these developments, MakerDAO is also in the process of reinventing itself. As part of its ambitious multi-year "Endgame" roadmap, Maker will introduce new infrastructure to its ecosystem with a comprehensive revamp of its tokenomics and governance mechanisms. While this transition may temporarily shift attention away from its stablecoin, it aims to enhance DAI's utility in the long run, placing it in a better position to compete with some of the larger centralized players. Some notable plans include[96]:

- **Transitioning DAI into two new stablecoins:** DAI will be replaced by PureDai and NewStable. PureDai will represent a fully decentralized version of DAI and will utilize only highly decentralized collateral (e.g., ETH). NewStable will be backed by RWAs and will have a freeze function, so as to allow DAI to scale in a regulatory-compliant manner.
- **New Governance Token:** Dubbed "NewGovToken" for now, MKR holders can convert MKR to NewGovToken at a rate of 1 MKR to 24,000 NewGovToken.
- **New Lockstake Engine:** MKR and NewGovToken holders will be able to lock their tokens, providing them with more incentive to participate in governance.
- **New SubDAOs:** Six new SubDAOs will be launched in the future to cater to different market segments such as RWA-focused or gaming-focused SubDAOs.
- **New Chain:** In the longer-term, a standalone L1 blockchain will be created for the Maker ecosystem. It is envisioned to be a hotspot for RWA, DeFi and inter-blockchain bridging.

Ethena's USDe

Ethena's stablecoin, USDe, has rapidly scaled its circulating market cap to over US$3.6B in just a few months, making it **one of the fastest-growing stablecoin assets**. Its success is directly related to its unique approach to stablecoins as a synthetic dollar protocol. By democratizing access to the delta-neutral trade, Ethena has been able to satisfy the market's strong demand for yield. At the time of writing, staked USDe ("sUSDe") is offering a yield of around 27.5%.

Figure 84: Market capitalization of USDe has surged rapidly, making it the 4th largest stablecoin in a short span of a few months



Source: DeFi Llama, as of June 30, 2024

A particular driver for Ethena has been the effective execution of its airdrop campaign. Employing a points system known as shards, Ethena incentivized liquidity provisioning for USDe. At the end of season one, 5% of its native token supply was distributed to shard holders. With the rebranding of shards to sats, season two is underway, continuing to incentivize users to provide liquidity on Ethena and interact with various on-chain money and yield markets. This strategy has helped Ethena maintain deep liquidity across the DeFi ecosystem[97].

Ethena's fundamental strategy involves taking advantage of the high funding rates in perpetual futures markets to create a fungible asset that is readily accessible to users[98]. Unlike conventional stablecoin models, Ethena's USDe is backed by a delta-neutral ETH position. This involves holding staked ETH ("wstETH") while counterbalancing it with a short position in ETH perpetual futures ("ETH-PERP"). For example, if the price of ETH decreases, the short ETH-PERP position offsets the downward price movement. Conversely, if the price of ETH increases, the long stETH position covers the upward price movement. Overall, this allows USDe to harness and pass on yields from staked ETH and perpetual futures funding rates to users.

Given its unique approach, Ethena carries fundamentally different risk profiles compared to other stablecoins. This distinction has led both Ethena and the market to label USDe as a synthetic dollar rather than a traditional stablecoin. This strategic categorization has allowed Ethena to leverage the network effects inherent in being an on-chain liquid monetary asset. At the same time, Ethena has been quite transparent about the associated risks. Below, we highlight some of these risks.

- **Negative Funding Rates**: A key risk is if funding rates were to turn negative. Perpetual funding rates in crypto markets have generally been long-biased, with negative rates occurring only 20.5% of the days over the past three years. However, since Ethena also uses stETH as collateral, it provides a margin of safety against negative rates. The protocol's yield only becomes negative if the combined yield from ETH staking and funding rates turns negative. This means that Ethena is concerned only when ETH funding is more negative than stETH yields, which has occurred approximately 10.8% of the time when considering the additional buffer from stETH yields[99].

- **Custodial Risk**: Ethena's operational framework relies on CEXes and off-exchange settlement ("OES") providers to manage the trading and custody of its perpetual positions and collateral, respectively. While the goals of these external parties generally align with Ethena's objectives, depending on them introduces counterparty risks. Ethena mitigates this risk by diversifying its counterparties and obtaining third-party attestations.

- **Collateral Risk**: While market volatility can affect the value of Ethena's collateral, particularly ETH and BTC, a larger risk arises from the portion of collateral held as LSTs. Less liquid LSTs could de-peg due to slashing events or liquidity shocks. That said, the LST would need to diverge considerably for the de-peg to significantly impact Ethena.

- **Smart Contract Risk**: Despite many of Ethena's operations occurring off-chain, the protocol is still vulnerable to smart contract exploits like other DeFi protocols. Ethena mitigates this risk through multiple audits and bug bounty programs.

- **Uncertain Territory**: Given Ethena's innovative and unique attributes, there is always an underlying risk associated with new models and technologies. Ethena is not immune to these uncertainties.

For more details on Ethena's mechanics and risks, check out our deep dive on "Breakthrough DeFi Markets."

First Digital's FDUSD

FDUSD, issued by FD121 Limited under the First Digital Labs brand in Hong Kong, entered the market in June 2023. Designed to be fully backed by cash and cash-equivalent assets, FDUSD has quickly gained traction amidst the shifting market landscape of centralized stablecoins. This rise was particularly evident following the phase-out of Binance's BUSD.

With zero trading fees on several trading pairs on Binance[100], and the ability to participate in Binance's Launchpad and Launchpool, FDUSD's utility goes beyond simple stablecoin transactions and yield. As of June 30, 2024, FDUSD's market capitalization is US$1.8B, an increase of 0.2% year-to-date, positioning it as the 5th largest stablecoin.

Looking ahead, the broader market adoption of FDUSD, including integration by other CEXes and its growing presence in the DeFi sector, remains a key aspect to watch.

Paypal's PYUSD

While the adoption and size of PayPal's PYUSD trail those of others mentioned in this section, its launch in August last year marked a significant move by a major fintech company, highlighting the rising importance of stablecoins in global payment networks. Issued by Paxos, PYUSD is fully backed by U.S. dollar deposits, Treasuries, and similar cash equivalents. With a circulating supply of 499M, it has quickly ascended to become the 7th largest stablecoin.

The decision of a fintech giant like PayPal to enter the stablecoin space is certainly interesting. At the time of writing, 30 days transaction volume of stablecoins have exceeded US$1.5T, with over 30M unique users[(101)], undoubtedly showcasing the importance of stablecoins in the financial landscape. This makes them increasingly hard to overlook. In high-interest rate environments, **stablecoins emerge as a highly attractive business proposition, allowing fintechs like PayPal to capitalize more effectively on their yield potential**. Unlike traditional PayPal balances, stablecoins are 'stickier' and offer more composable use cases across DeFi and payment systems. This encourages users to maintain larger collateral balances, which in turn leads to higher interest income for the issuer[(102)].

From a design perspective, PYUSD's model, mirroring other centralized stablecoins, provides little incentive for crypto natives to switch. Yet, PayPal's expansive reach, with over 427M active accounts globally[(103)], gives it a distinct advantage. If successfully leveraged, PYUSD could **onboard several non-crypto users**, creating a **trickle-down effect** on the industry.

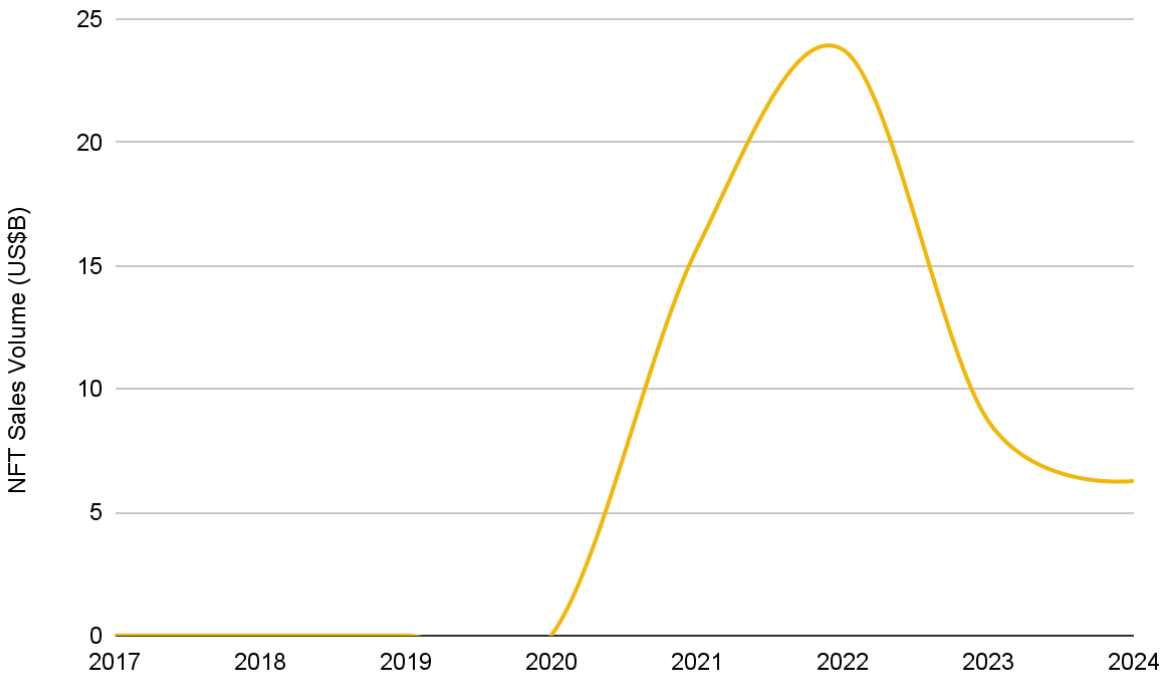
Notable developments so far this year include the expansion of PYUSD to Solana[(104)], as well as the partnership with Singapore-based payments firm Triple-A to add PYUSD to the list of tokens its customers can use to pay merchants[(105)].

7 Non-Fungible Tokens and Social

7.1 The NFT Landscape

The NFT market has had a difficult time in the last couple of years. **Sales figures have been on the decline after peaking at over US$23B in 2021**, while the top NFT collections continue to underperform. Even collections as iconic as **CryptoPunks are down from ~54 ETH to 28 ETH year-to-date**[106]. Many have **theorized that memecoins have provided users with a more liquid and easy-access method to speculate, somewhat replacing the role NFTs played for many traders.** At the same time, there have been some success stories, with brands like Pudgy Penguins building alternative IP with their plush toys. Bitcoin NFTs also continue to perform well, with some marketplaces capitalizing on their growth.

Figure 85: NFT sales are down 60-75% from their peak in 2021

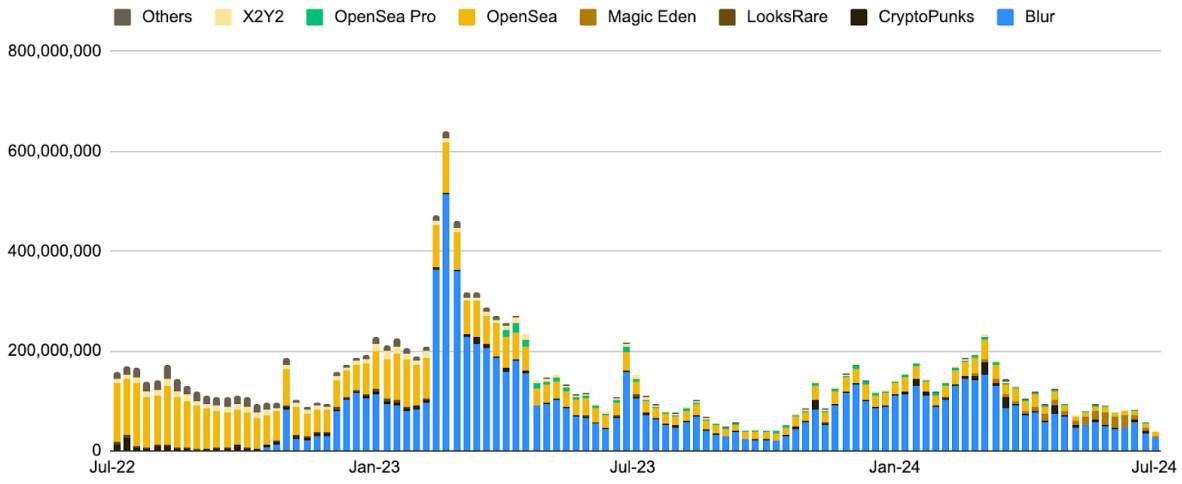


Source: CryptoSlam, Binance Research, as of June 30, 2024

NFT Marketplaces

2023 saw an extended period of **NFT marketplace wars** as the early leader of the sector, OpenSea, faced serious competition from Blur. Blur's trading and liquidity-focused strategy helped to redefine the NFT market, and 2024 has largely been a continuation of the status quo, with Blur maintaining their strength.

Figure 86: Blur has completely dominated Ethereum NFT volumes since their launch in late 2022

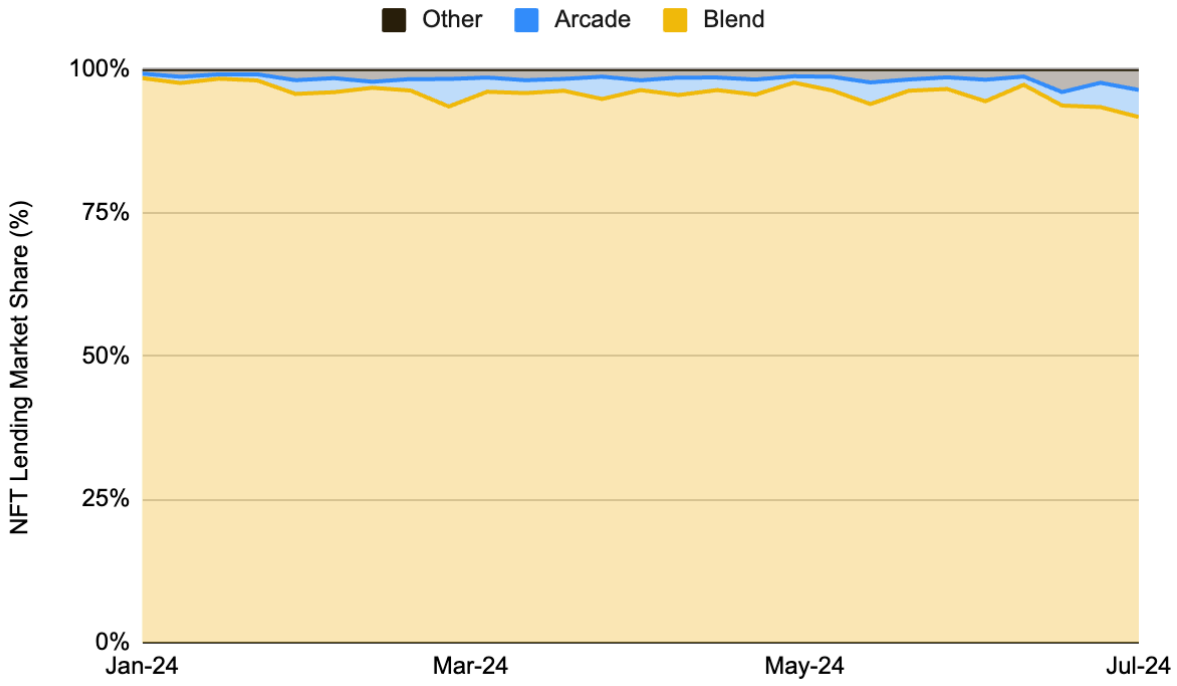


Source: Dune Analytics (@hildobby), Binance Research, as of June 30, 2024

- **Blur:**
  - **Seasons:** Blur runs a Seasons strategy, which spreads incentives and airdrops through multiple different rounds. This has been an **important factor in incentivizing traders to contribute to Blur's liquidity and growth as it keeps users motivated to continue using the platform**. Blur uses a Points system, where users can earn **Blur points** for trading and lending, and **Holder points** for holding the $BLUR token. Blur recently concluded Season 3, and announced the **start of Season 4** which is to continue to June 2025.
  - **Blast L2:** Ethereum L2 solution, Blast, is also built and run by the same team as Blur, with various integrations and synergies. The major update of H1 has been the l**aunch of the $BLAST token**, which launched on June 26 and included an **airdrop allocation for the Blur community (3%)**. 1% was distributed to Blur traders and $BLUR holders at the end of Season 3 recently. **0.5% has been reserved for Season 4 traders, while 0.5% has been reserved for future use. The remaining 1% has been earmarked for Season 4 $BLUR holders**. More details in threads here and here.
  - **Blend:** Launched in May 2023, Blend is Blur's peer-to-peer perpetual NFT lending protocol. Although this is not a huge market with an all-time borrow

volume of ~US$7.3B[107], Blend's domination is significant. As we can see below, Blend largely makes up this entire market, averaging over 96% of weekly borrow volume.

Figure 87: Blend has commanded 96% of the NFT lending, on average, since the start of the year



Source: Dune Analytics (@impossiblefinance), Binance Research, as of June 30, 2024

However, we should definitely note that **lending activity on Blend may be inflated by airdrop farming and, hence, is likely not 100% representative of organic demand**. As we mentioned above, users can earn Blur points for lending on Blend, which contribute to their eligibility for Blur's Seasonal airdrops. Nonetheless, it is notable how strong their dominance over this market is and we look forward to seeing how things evolve.

- **OpenSea:**
  - **OpenSea Pro / OpenSea Deals / OpenSea Studio:** OpenSea launched a number of **new products and initiatives through the course of 2023** in order to maintain pressure on Blur and keep competitive. Among these, we had **OpenSea Pro, an NFT marketplace aggregator** targeted towards the "power user community" and **OpenSea Deals for peer-to-peer NFT swapping**. They also launched **OpenSea Studio to give creators the ability to create, launch, and manage their own collections in a no-code environment**. Earlier this year, they also introduced a wallet feature where users could create a self-custodied wallet with just an email address. Although volume numbers do not indicate these initiatives have had

significant impact on OpenSea usage, it is encouraging to note that OpenSea continues to innovate and ship new updates and products.

- **Seaport:** Seaport introduced a **robust set of decentralized NFT marketplace smart contracts for safely and efficiently trading NFTs**. Initially launched in 2022, the protocol has been through some development, with the latest iteration being v1.6. Introduced in March, Seaport 1.6 features a new upgrade called **Seaport hooks** (made possible via the recent Ethereum Dencun upgrade). Seaport hooks **allow developers to extend the utility of NFTs**, functioning similar to "plugins". For example, **NFTs can be programmed to "react" to being traded e.g. changing their metadata as a reaction to sales volume**, and price oracles become easier to implement into NFTs, etc.

- **OpenSea 2.0:** In 2023, we saw OpenSea go through significant layoffs, followed by the announcement of their upcoming "OpenSea 2.0" revamp. A more tailored user experience, improved security measures, a better trading platform and an improvement to the "...**underlying technology, reliability, speed, quality, & experience.**" were some of the details mentioned.

Others

- **Magic Eden:** Magic Eden has done extremely well to capitalize on alternative NFT markets and is active across Ethereum, Bitcoin, Solana, Polygon, and Base NFTs.

    - Of note, they were one of the **first major marketplaces to add functionality for Bitcoin NFTs** (shortly after the initial Ordinals frenzy in 2023). Given how early they were to this market, it helped them onboard some of the newer Bitcoin NFT users. Magic Eden has been **similarly quick in adding functionality for Bitcoin's new Runes** tokens.

    - This is a key reason why Magic Eden are among the few NFT marketplaces other than Blur that have seen some level of activity this year. As we can see above in Figure 86 there are multiple weeks where Magic Eden has been the second most popular marketplace, overtaking OpenSea.

- **Tensor:** Tensor has had a great run through the end of 2023 and the first few months of 2024 and remains a leading Solana NFT marketplace. Their sleek trading-oriented interface, Points program, and native Tensorians collection, have done well to attract Solana NFT speculators. However, competition has been strong, and Magic Eden, who were the initial leaders in the Solana NFT

space, have started to gain their market share back after initially losing it to Tensor in 2023.

- **TNSR Token**: In April we saw the launch of the TNSR token. **TNSR is used for Tensor's governance proposals, and for trading fee discounts**. Token performance has been somewhat disappointing, having started trading around ~US$230M and fallen to ~US$73M by the end of June.

- **Tensor Seasons**: Similar to Blur, Tensor also employs a season model where users get points for trading-related activities. Users also get bonuses for "staking" their Tensorian NFTs. Tensor is currently in Season 4, which is set to end in December 2024.

Key Themes and What's Next?

- **Pure PFP collections are in a difficult phase:** Most top profile picture ("PFP") collections, from Bored Ape Yacht Club ("BAYC"), to CryptoPunks, have seen downward **momentum through the course of H1 2024**. CryptoPunks' floor price is down around 50% from 54 ETH to ~27ETH this year, while **BAYC are down from ~26 ETH to 9 ETH**. The majority of other major collections are down similarly or even worse this year so far. While current market conditions have impacted NFT valuations, the evolving landscape and continued innovation in the space present an opportunity for collectors and investors to reassess and strategize. Observing these developments in the coming months will provide more clarity on the market's future trajectory. How and if these major collections are able to come back from this will be interesting to monitor over the coming months.

- **Bitcoin NFTs continue to shine:** Bitcoin NFTs continue to be in strong demand and now sit in **third place in terms of most popular NFT chains** (after Ethereum and Solana). With the recent introduction of Runes tokens, in addition to various different forms of innovation occurring on Bitcoin, it is important to keep an eye on how the Bitcoin NFT market evolves.

Figure 88: Blockchains by NFT sales volume

Logo	Name	Sales (US$B)	Total Txs (M)
	Ethereum	43.9	48.7
	Solana	5.7	52.1
	Bitcoin	4.3	3.5
	Ronin	4.2	21.7
	Polygon	1.7	39.0

Source: cryptoslam.io,as of July 8, 2024

- **Building alternative forms of IP might be an interesting route:** One of the interesting stories of this year have been **Pudgy Penguins**. In terms of floor price, Pudgy Penguins are trading around the same price as they did at the start of the year (~10.4 ETH), although they are down 50% from the 20 ETH+ high reached in February. More notably, the **Pudgy Penguins line of physical soft toys has sold over 1M units over the last year** and are also now available in U.S. retail giant Target[108]. Their model also allows NFT holders to earn 5% royalties on net revenues from sales of their unique Pudgy Penguin. The company released their **Overpass** tool for NFT intellectual property ("IP") licensing.

- **NFT L2s:** This is an emerging topic, with the recent announcement of Abstract, a chain by the Pudgy Penguins team to focus on consumer crypto. Abstract is set to be built with the ZK Stack and integrated with EigenDA[109].

7.2 The Growth of Web3 Social

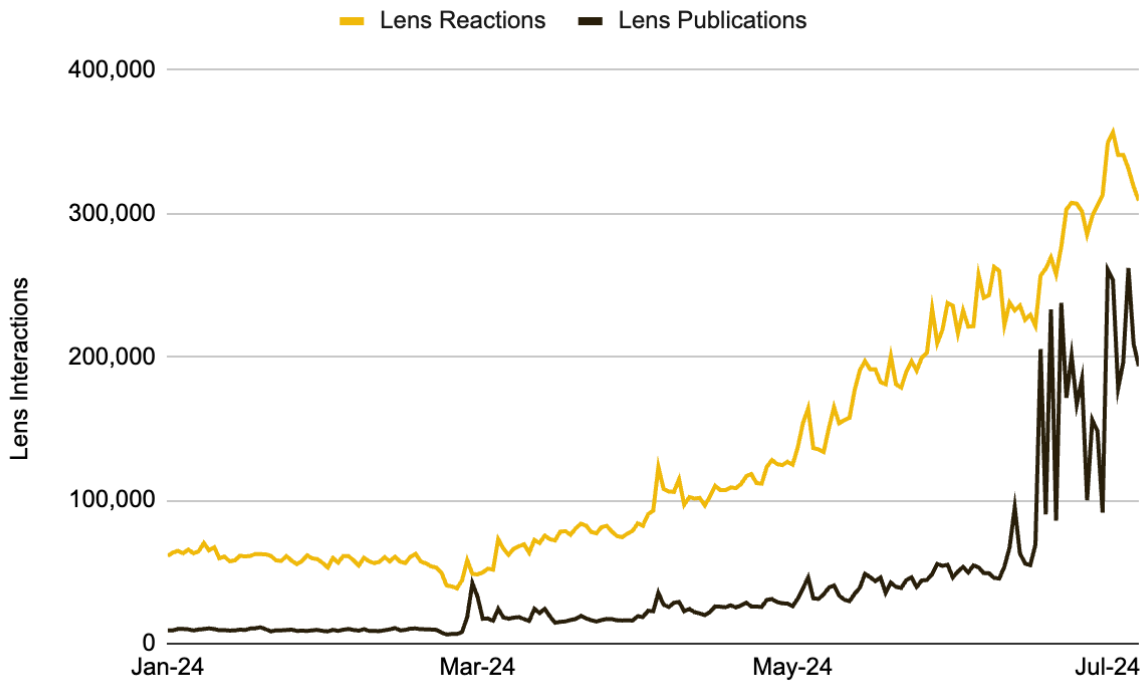
Social network applications have long been considered one of most interesting potential use cases for crypto and web3. The idea is that by leveraging blockchain technology, **web3 social dApps and SocialFi may help enable greater composability, ownership and censorship resistance** (among other things). Given how prevalent social networking is in our daily lives through traditional web2 companies like X, Instagram, Reddit, Discord, and more, web3 social has often been considered a potential golden egg.

Major Projects

- **Lens Protocol:** Lens Protocol is a **decentralized social graph** built on Polygon that **uses NFTs and smart contracts to create a permissionless and composable framework for applications to build social networks**. Launched by the same team as leading DeFi protocol, Aave, in 2022, Lens is one of the first movers in the web3 social space. Each interaction on Lens is executed as an on-chain transaction, which ensures transparency and openness. Lens also heavily utilizes NFTs, e.g. each new profile is minted as an NFT.

  - **Recent Growth:** Lens v2 went live last year, with one of the major updates being the integration of **ERC-6551, which allows profiles to act as wallets**. V2 also introduced **Open Actions**, which we'll discuss below. There have been a **total of 443K profiles created on Lens, with over 37K daily interactive users, and over 108K monthly interactive users.** There have been over 18M publications on Lens, with over nearly 50M total reactions. As we can see below, **activity has been steadily increasing over the year and interacting users is hitting new all-time highs.**

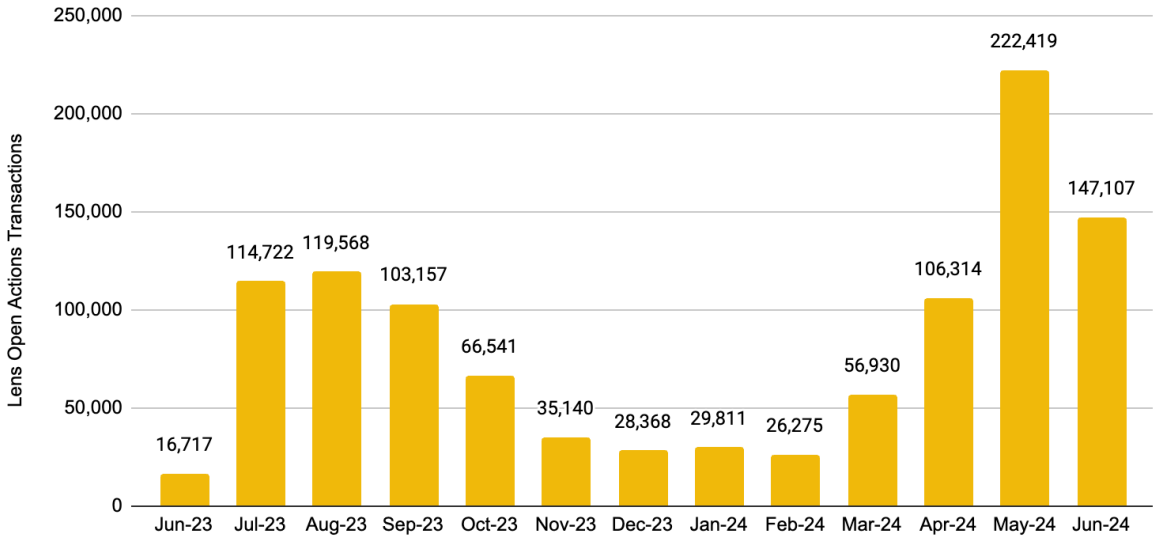
Figure 89: Lens Protocol's interactions have recently hit all-time highs



Source: Dune Analytics (@lens), Binance Research, as of July 7, 2024

- **Open Actions:** These enable the **execution of any external smart contract action directly from a Lens post.** These interactions can even be cross-chain when aided by an oracle. For example, users can collect a post, mint an NFT, purchase a token, vote on a poll, enter a raffle, all directly on a Lens post. Lens also recently announced **NFT Open Actions, which further allow Lens posts to store and execute any NFT interaction on any chain**, adding various degrees of integrations with leading NFT marketplaces.
    - As we can see below Open Action activity started off strong during last summer before cooling off in Q4 2023. It has been **steadily rising this year and saw a new high in May**.

Figure 90: Lens Protocol's Open Actions saw a new high in May



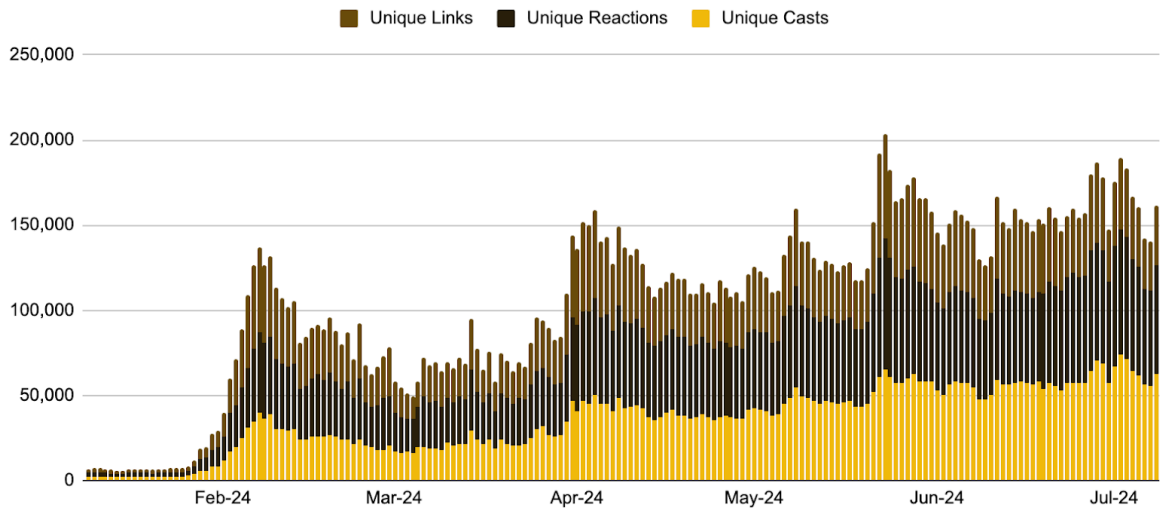
Source: Dune Analytics (@lens), Binance Research, as of June 30, 2024

- **Lens Network:** In May, Lens Protocol announced that they are building their **own chain, called Lens Network**. Lens Network will **initially launch as a** EVM-compatible **Validium chain on Ethereum**, eventually **converting** into a **Volition network built using zkSync's ZK Stack**.
    - A new version of Lens Protocol will be developed and launched on Lens Network and become the central hub for existing users. It will also function as a **cross-chain protocol, using interoperability technology like Chainlink's CCIP** to connect with other instances of Lens built on other networks. Lens Network will also offer **major UX improvements**, including gasless and signless transactions (using **Account Abstraction** techniques), with embedded wallet support.

- **Farcaster:** Farcaster is a **"sufficiently decentralized" protocol for building social networks** that operates on OP Mainnet**.** Clients (essentially applications) can build on top of Farcaster to provide the user interface for interacting on top of Farcaster. For example, **Warpcast**, which is similar to traditional social media like X and Facebook, is the most popular client built on top of Farcaster.
    - **User growth:** Farcaster has been steadily growing since opening up permissionless registrations in October 2023, and now has over **586K users, with over 65K daily active users**[110]. This is **up from around 1.5K daily active users in January, representing a significant ~43x growth**. However, while successful, we should keep in mind that there is a long way to go to compete with existing web2 social media platforms. For example, X has over 335M users worldwide.

- **Recent Performance:** Users can publish **five different kinds of messages** to the network. Users can **cast** (similar to posting or tweeting), **react** to other casts, post **links** to other accounts, add **profile data**, and **verify** ownership. This activity has also steadily ramped up this year, peaking in **May where we saw days with over 5M reactions, 1-2M links and casts**[111]. Although activity has cooled down since then, daily active users continue to slowly increase.

Figure 91: Farcaster's unique user activity has been on the rise this year



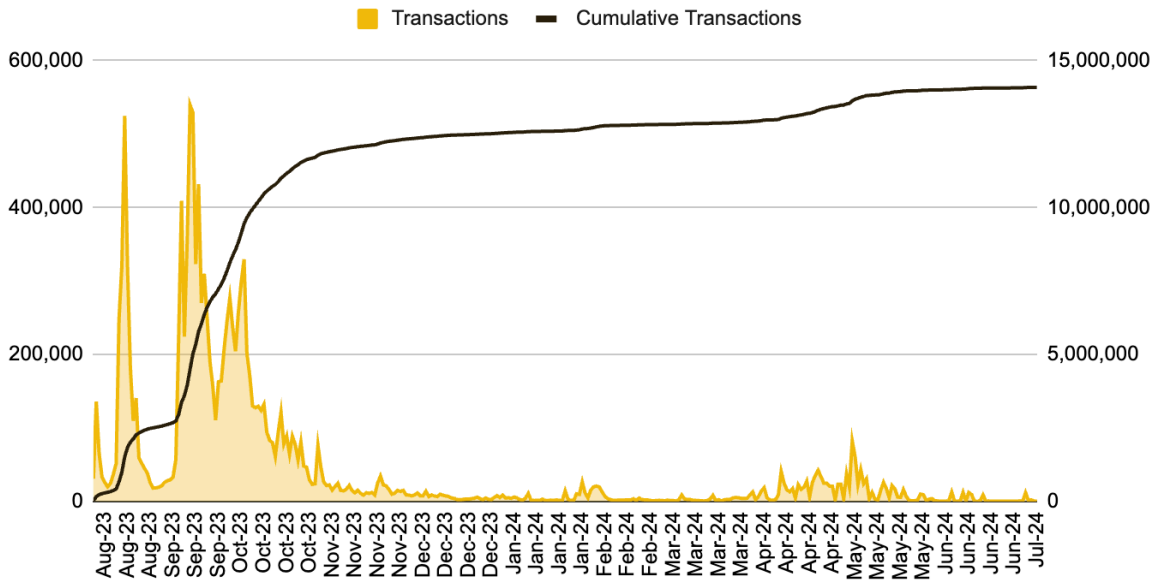
Source: Dune Analytics (@pixelhack), Binance Research, as of July 8, 2024

- **Farcaster Frames:** One of the most notable new features that Farcaster recently launched was Farcaster Frames. **Frames let users embed dynamic, interactive applications directly into posts on Farcaster (casts)**. For example, users can **create polls, live feeds, games, NFT mints**, all within a post. This is **similar to Solana's blinks**, which we covered earlier in the report, and also Lens' Open Actions, which we covered above.
    - The launch of Frames at the end of January was a significant driver of increased user activity on Farcaster. As things stand, **over 40K users have interacted with a Frame, with over 150K total interactions and ~1.7K unique Frame contracts**[112]**.**

- **Friend.tech:** Initially launched on Base in August 2023, friend.tech took the SocialFi world by storm, generating plenty of activity and hype. As a brief reminder, the **protocol allows users to buy "keys" of popular X creators, which grants key owners exclusive chats and content from the creator (called a "Subject").** At the time of launch, this was a novel idea, and also benefited from the hype around the recently launched Base L2. Friend.tech was also running a points program, which incentivized users to stay active on the platform in the hope of an eventual airdrop.

- **Performance:** **Initial performance was very strong**, with multiple days of 200-400K transactions in the first couple months of launch. However, **activity rapidly slowed down towards Q4 of 2023 and despite a small bump in May 2024, it remains relatively low**.

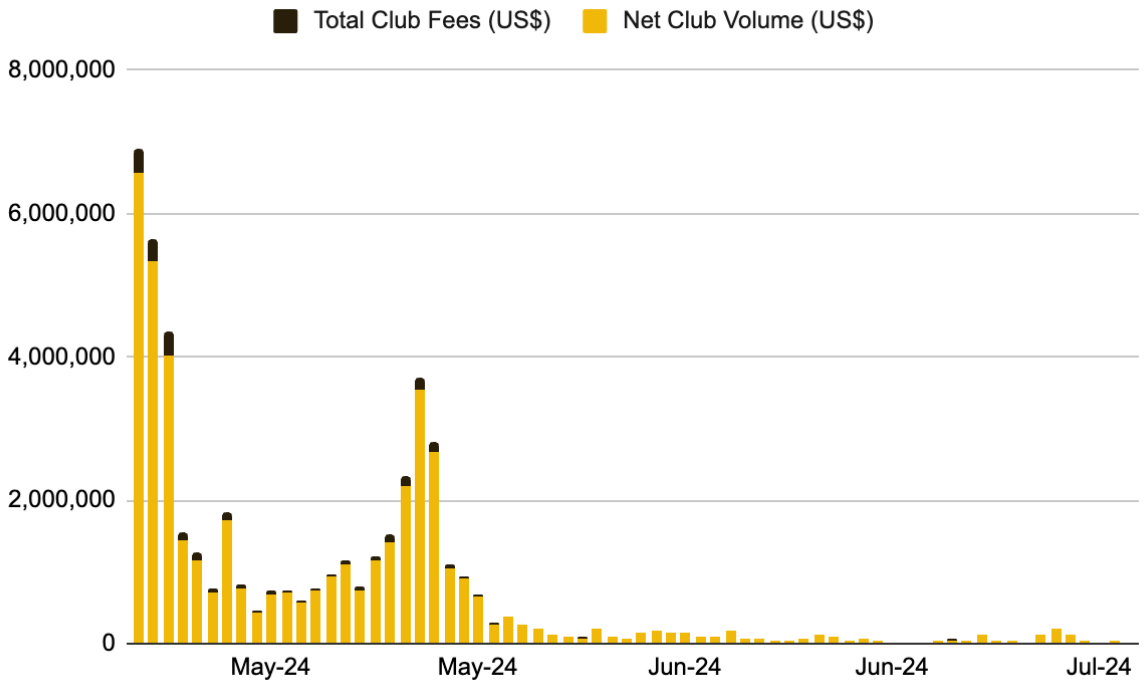
Figure 92: After a strong start, friend.tech's daily transactions have been mostly stagnant over the last nine months



Source: Dune Analytics (@cryptokoryo), Binance Research, as of July 7, 2024

- **friend.tech v2:** This was launched in May 2024 and introduced "**clubs**", which were a t**oken-gated group chat feature**. Users can buy keys for the clubs using their new $FRIEND token. Key holders can also vote for the club president, who is responsible for managing the club and selecting moderators. While initial club activity was very strong, this quickly slowed down and remains extremely low at the time of writing.

Figure 93: friend.tech v2's new clubs have seen very limited activity after the initial wave



Source: Dune Analytics (@whale_hunter), Binance Research, as of July 8, 2024

- **$FRIEND:** Launched alongside v2, $FRIEND was integrated into the club process and also provided an opportunity for LPs. **Users could provide liquidity into the FRIEND/ETH pool to earn fees**. While the team was praised for giving **100% of the tokens to the community, rather than investors, there were issues with claiming the airdrop, as well as trading**. Initially the token was not listed on any major exchanges and could only be traded on friend.tech's native BunnySwap DEX. As things stand, there are a few more exchange integrations, although not with any major exchange. This has perhaps been a key driver for the poor token performance, given that $FRIEND is down over 85% from its peak in early May.

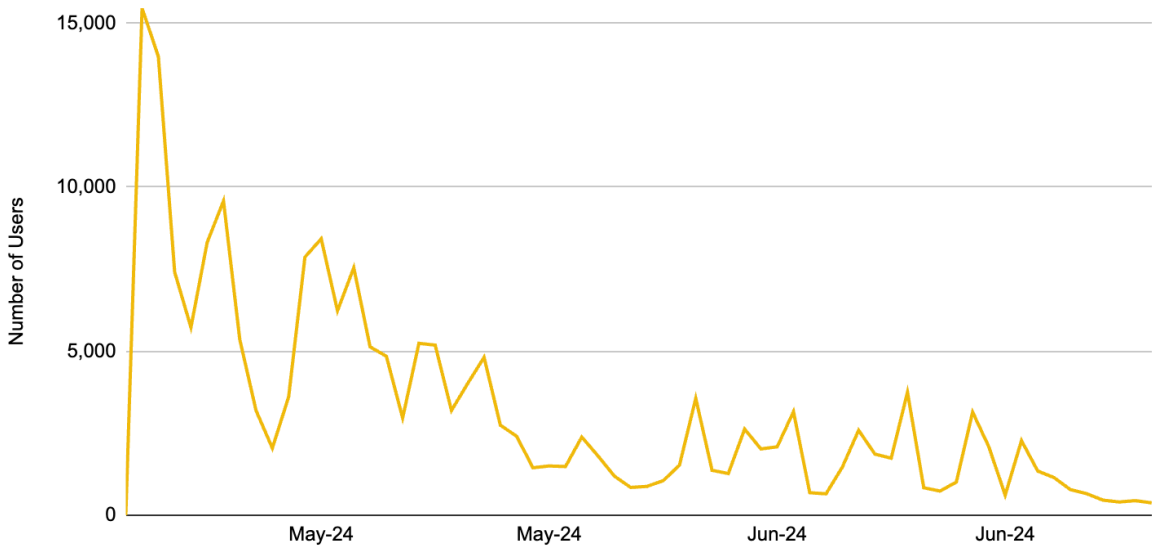
- **Friendchain:** One of interesting upcoming developments for friend.tech is the **development and launch of their own blockchain**. They have stated that they will look to integrate the chain with $FRIEND and grow their ecosystem. Examples of upcoming dApps include **Friendcard**, where **users can create crypto collectibles** for their audience and earn revenue from sales.

- **Fantasy.top:** Fantasy.top is a SocialFi **trading card game on Blast** that was launched earlier this year. Each **trading card represents a different X crypto personality (dubbed "Heroes") and users can buy different cards and create a deck**. They can register for tournaments and compete with others. The winners of

the tournament are those decks with the highest points, where points are given based on X activity and engagement for each Hero.

- **Why the hype?** Many users are already **very familiar with trading card games, and crypto-natives tend to spend a lot of time on X**. This puts fantasy.top at an interesting crossroads and is at least partially responsible for its early popularity.
    - There are also **plenty of incentives** i.e. Heroes get a **portion of trading fees** and also if their cards get chosen for a tournament. Players can win a range of prizes, including $ETH, packs of cards, points, etc.
    - Users have also been able to earn **Blast Gold**, which is a subsidy for Blast dApps and held claim to the recently airdropped $BLAST token. However, now that the first round of the airdrop is done and the token is live, it will be interesting to see how many users they can retain (although as we can see below, user activity is much lower than it initially was).
    - There is also a potential token incentive with rumors of a possible $FANTASY token in the future.
- **Performance:** Somewhat similarly to friend.tech, activity for fantasy.top was very strong at launch and in the initial weeks following it, but has substantially dropped off since then. **After peaking at over 15K in early May, daily users are now below 1K as of the end of June.**

Figure 94: Fantasy.top's user activity has been slowing in recent weeks



Source: flipsidecrypto, Binance Research, as of July 2, 2024

- **Sustainability:** The sustainability of individual SocialFi dApps is often an issue and **maintaining long-term engagement can be difficult**. Many users are simply farming rewards and jump as soon as there is a major reward distribution e.g. the $BLAST airdrop in the case of fantasy.top.
    - Fantasy.top is relatively new and although activity has dried up for now, it might very well bounce back if there is a catalyst. It will be interesting to see how fantasy.top manages the next few months and if they can manage to get back some of their users.

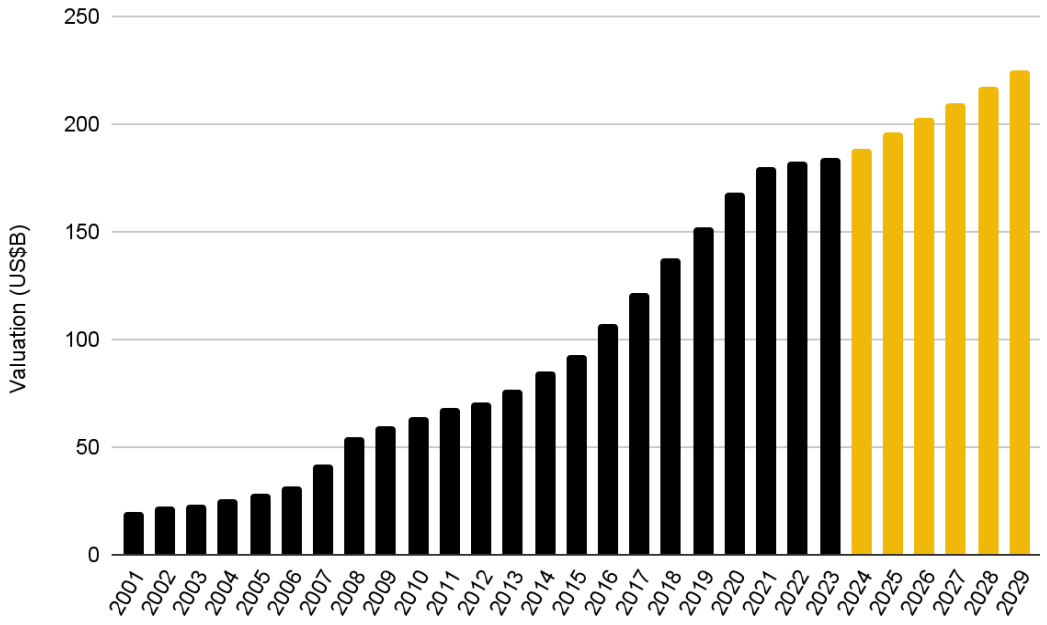
8 Gaming

8.1 Macro View

Crypto gaming projects have gained notable steam during the first half of 2024, with the total combined market capitalization of crypto gaming tokens **peaking at ~US$32B in March**. Since then, the sector has cooled-off along with the rest of the market, and now sits at a **combined market capitalization of ~US$17.8B**.[113]

Web3 gaming is clearly still in its infancy. At a total valuation of US$17.8B, the **entire Web3 gaming valuation accounts for just 0.7%** of the total crypto market capitalization, which is just about equal to the market capitalization of Dogecoin. This is about **9.4% of the total valuation of the Web2 gaming industry**, which is expected to reach a value of US$189B in 2024. The total Web2 gaming industry is projected to reach US$225B by 2029.[114]

Figure 95: Gaming is expected to be a $189B market in 2024, and hit $225B by 2029



Source: Konvoy, Binance Research

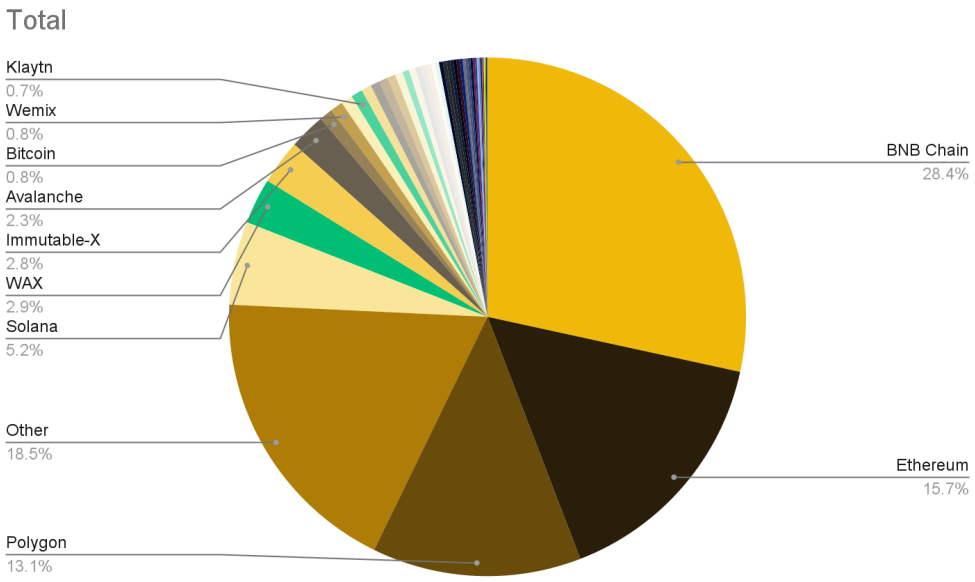
Despite its apparent nascency, VC investors have demonstrated significant appetite for Web3 gaming relative to Web2 gaming. According to Konvoy's Q1 2024 Gaming Industry Report, venture funding surged by 94% quarter-over-quarter, with the number of funding

rounds increasing by 28%. Tech, platforms, and **game studios utilizing Web3 technologies significantly contributed** to these figures.

Colleen Sullivan's "Good Game, Well Played" gives the following statistics: Among the largest gaming tech and platform VC deals, **seven out of the top 10 were Web3-related**, accounting for $56.4 million out of the $76.6 million total funding. Similarly, for game content VC deals, Web3 games made up seven out of the top 10 deals, **representing $203 million out of the $333 million total** funding.[115] The growing appetite investors have for gaming-related Web3 projects could be an early sign, at least in the eyes of VC investors, that "Web3 gaming" is becoming synonymous with "gaming" itself.

Looking on-chain, BNB, Ethereum, and Polygon remain the leading chains for gaming projects. Combined, **these three chains support over 50%** of the total number of gaming projects.[116]

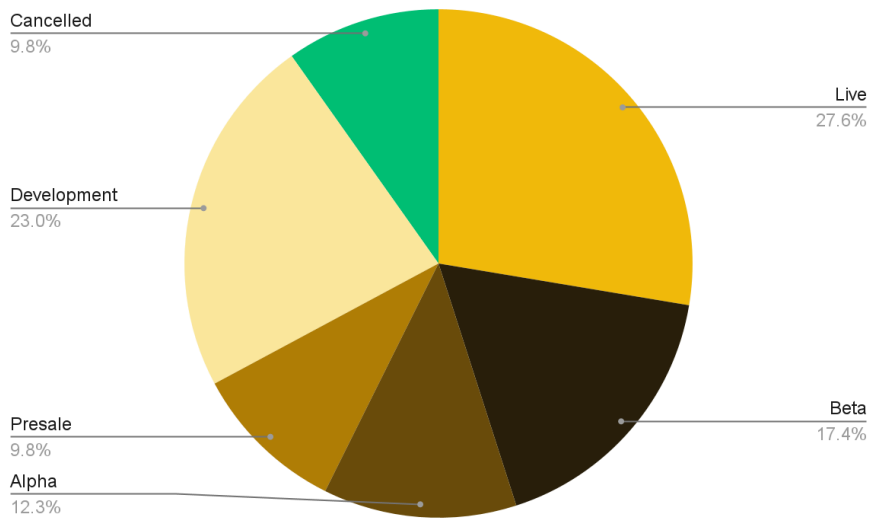
Figure 96: BNB Chain, Ethereum, and Polygon remain the leading chains for gaming



Source: Play to Earn, Binance Research, as of 30 June, 2024

As of 2024, the **total number of Web3 games sits at 2716**, supported across 51 different blockchains. 27.6% of these games are currently live, and 23% are currently in development. A combined total percentage of 29.7% are in their alpha or beta testing phase.

Figure 97: Game projects by status



Source: Play to Earn, Binance Research as of June 30, 2024

8.2 Gaming Infrastructure

Given the nascent stage of Web3 gaming, **infrastructure development is a critical area** that must be advanced for significant growth to occur. Creating a high-quality game is already a challenging task for development teams. Adding the complexities associated with blockchain integration can easily deter teams from incorporating Web3 elements into their games.

While the lion's share of gaming activity currently takes place on general-purpose chains like Ethereum, BNB, and Polygon, there's a **growing shift towards developing specialized gaming chains and infrastructure** that are cheaper, faster, and more scalable. Many of these projects are spearheaded by game developers aiming to create comprehensive tools for blockchain-enabled games. With this gaming-specific focus, it will be interesting to see if more gaming studios start partnering with these specialized chains in the coming years, potentially shifting away from the general-purpose chains that currently dominate the market.

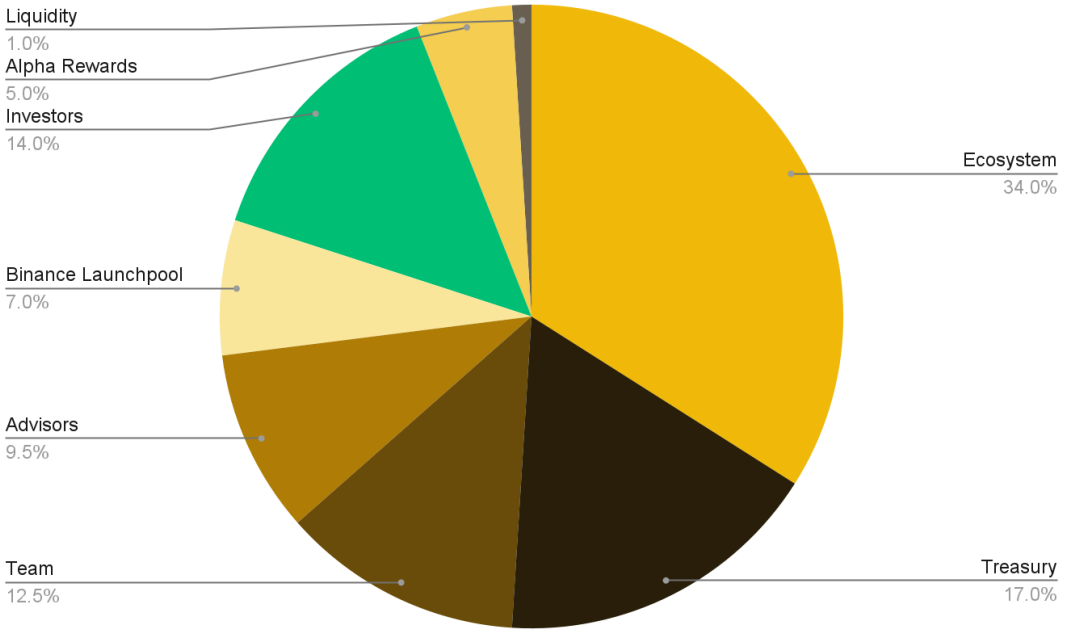
Ronin

Ronin is a **gaming-focused Ethereum sidechain** developed by Sky Mavis, and **home to their widely known Axie Infinity** blockchain game. The first half of 2024 has seen active addresses on Ronin skyrocket to new highs, surpassing the highs previously achieved during the peak Axie Infinity-induced fervor of 2021. It hit its peak daily active users on 4 June of 1.59M, **almost 50% more than its previous all time high** in November 2021 of 1.1M.[(117)]

This activity was driven in large part by the **success of the Pixels farming and social game**, which hit an impressive 1 million daily active users[118] in May of this year. Pixels initially launched on Polygon, but **migrated to the Ronin chain** in 2023, primarily because of the support offered by Sky Mavis, the company behind Ronin, as well as the engaged and active Ronin community. On the topic of its migration, Pixels founder Luke Barwikowski stated that "what Ronin had that Polygon didn't was **users that were actually already onboarded** into Web3 gaming".[119]

On February 19, 2024, the Pixels project awarded its early community of players with **an airdrop of 5% of the $PIXEL token** supply (termed "Alpha Rewards"). At its current circulating market capitalization of US$183M, the **airdropped amount is valued at ~US$59M** worth of tokens. The FDV of the $PIXEL token currently sits at US$1.19B.[120]

Figure 98: PIXEL token distribution



Source: Pixels, Binance Research, as of June 30, 2024

In addition to its expanding ecosystem of games, Ronin has **announced plans to enhance its product line with zkEVMs**, referred to as 'Enshrined ZK-EVMs.' This will extend the Ronin technology stack to provide ZK rollups as a service for third-party developers. The Ronin team envisions a future where successful gaming studios, catering to numerous users and generating high transaction volumes, may outgrow the blockspace on Ronin's main chain. These developers might require a **dedicated chain tailored to their game's and community's specific needs**. To address this, the Ronin team proposes integrating a ZK prover into Ronin, enabling validators to launch their own ZK rollup on the platform. This can make **setting up secure and scalable zkEVM L2 chains as easy as running a validator node**.[121]

As Ronin moves into the rollups as a service space, it will be interesting to observe how competition between it and Arbitrum Orbit develops. With the launch of the gaming-focused XAI Layer-3, the Arbitrum team seems to be keen on pursuing the gaming angle. It may be worth keeping an eye on whether **gaming projects gravitate towards Ronin with its zkEVM, or Orbit with its Optimistic roll-up** approach.

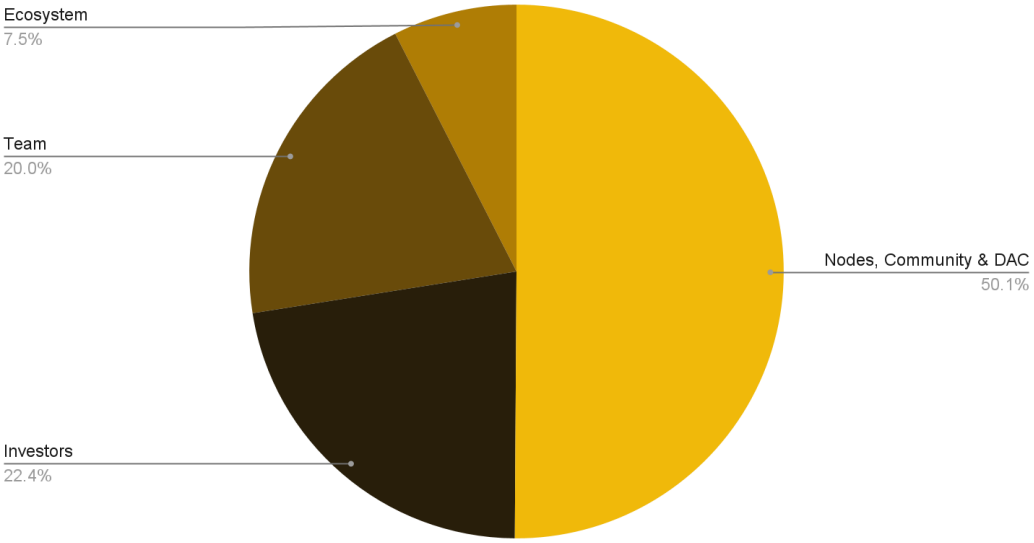
XAI

XAI is a Layer-3 chain custom-developed to **address the needs of web3 gaming at scale**, built using the Arbitrum Orbit technology stack. Tailored specifically for gaming, this blockchain offers traditional gamers an abstracted wallet and account experience, provides developers with increased gas and contract limits, and establishes a fully decentralized ecosystem that fosters trust and transparency for all participants.

The XAI project held a sale of its Sentry Nodes in December 2023 which **raised over 13k ETH**[122], around US$40M at today's prices. The XAI mainnet **went live in March 2024**. Sentry Nodes watches over the Xai rollup protocol and alerts others if it detects a wrong block, using any method chosen by the operator. Community members can run these nodes on their laptops, desktops, or cloud services. While the node is active, it has a chance to earn esXAI tokens through a probability algorithm. Operators can increase the likelihood of getting these rewards by staking esXAI tokens.

esXAI is a non-tradable, non-transferable token used for staking benefits within the Xai ecosystem. It can be burnt and redeemed for XAI, subject to the protocol's Redemption Process, which includes varying rates and waiting periods. **XAI is the gas fee token for the XAI chain and is fully transferable**. XAI can also be burnt and redeemed for esXAI at a 1:1 ratio.[123] The XAI token market cap currently stands at US$130M, with a FDV of ~US$380M.[124]

Figure 99: XAI token distribution



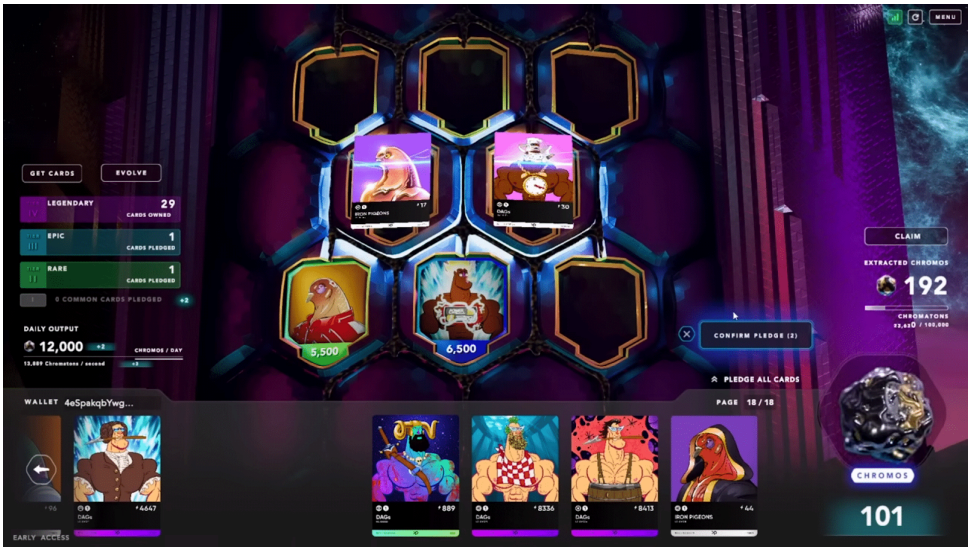
Source: XAI, Binance Research, as of June 30, 2024

*The Data Availability Committee (DAC) is a permissioned set of parties responsible for enforcing data availability in an Arbitrum AnyTrust Protocol chain.

The XAI project announced its **partnership with the gaming studio Ex Populus** in June 2023. As part of the partnership, the Xai foundation will also **act as the game publisher** for games deployed to the Xai Blockchain. This means funding opportunities and marketing support for Ex Populus', and other gaming studios' games. This will enable gaming studios like Ex Populus to focus on game development, while the **Xai Foundation focuses on game publishing, the blockchain, ecosystem and token**.[125]

Ex Populus is co-led by Mark Harris, a creative co-founder from Pixar, along with industry veterans from Ubisoft, Activision, Blizzard, Wargaming, and more. Their team is working on two upcoming titles: Final Form and LAMOverse. Final Form, a card collecting, deckbuilder roguelite, is set to launch later this year.

Figure 100: The deckbuilder roguelite, Final Form, is set to launch on XAI later this year



Source: Play to Earn

Figure 101: The action shooter, LAMOverse, is scheduled for early access early next year

Source: Ex Populus

At the time of writing XAI is topping the Ethereum roll-up leaderboard in terms of transactions per second (TPS), coming in at **an impressive ~100 TPS**. Its high transaction volume can likely be accredited to the XAI Vanguard: Genesis points campaign which began in June and rewards users for transacting and interacting with various dApps on-chain. Just 5 months after its mainnet launch, the chain already boasts **over 197M transactions and over 1.5M unique wallet addresses**.[126]

Figure 102: XAI is beating out other Ethereum roll-ups in terms of TPS at the time of writing

Logo	Network	TPS

XAI	107.6
Arbitrum	48.2
Base	35.9
Proof Of Play	35.2
Linea	18.2
Ethereum	14.4

Source: Rollup.wtf, Binance Research, as of June 30, 2024

The Proof of Play chain, coming in at 35.2 TPS in the above image, has also been making waves in the Web3 gaming space. More on Proof of Play and their fully on-chain game Pirate nation in the Fully On-Chain Games (FOCG) section below.

8.3 MMORPGs and Metaverses

Persistent, massively multiplayer virtual worlds make for one of the best environments in which demand for digital goods flourishes. This new age phenomenon is clearly demonstrated by the enormous revenues earned by metaverse games such as Fortnite and Roblox. Colleen Sullivan's "It's All a Game" published by Messari, lists these two surprising statistics:

1. **Fortnite has emerged as a giant** in the (digital) apparel sector, amassing roughly $20 billion in revenue over the past four years — primarily from the sale of virtual outfits that are purely cosmetic. This **astonishing figure surpasses the earnings of luxury fashion brands** like Prada and Dolce & Gabbana.
2. In a related trend, a 2022 study by Roblox and the Parsons School of Design revealed that over **11.5 million creators on Roblox crafted more than 62 million virtual clothing** and accessory items. This **number dwarfs the estimated count of fashion designers producing physical collections** in the United States by 200 times and is sixfold the estimated 1.8 million people employed across various sectors of the U.S. fashion industry, including manufacturing and textiles.[127]

Demand, especially amongst the youths, is quickly **shifting towards digital goods which exist in digital worlds**. What better way to display digital goods than as a verifiable,

transferable NFT on the blockchain, digitally represented in a crowded massively multiplayer digital world?

Big Time

Big Time stands out as one of the most exciting projects in the Web3 Massive Multiplayer Online Role-Playing Game (MMORPG) arena. Set in the imaginative world of 'Time's End,' players join forces in parties to undertake quests, confronting enemies and bosses in procedurally generated dungeons. **This free-to-play, multiplayer RPG seamlessly integrates fast-paced combat** with captivating adventures and dungeons.

Figure 103: A dungeon raid in Big Time

Source: r/PlayBigTime subreddit

In Q4 2023, they launched their $BIGTIME token to the public, which is **only obtainable through playing the game**, with no initial allocation to the team or investors. Rather than raising funding through a tokensale, Big Time reportedly **made over $100M in revenue** from various NFT sales held throughout 2022-2023.[128] $BIGTIME tokens are the center of the game's economy. They are used for various in-game transactions such as crafting and repairs. Players can earn these tokens by actively participating in the game, with rewards given for completing quests and defeating enemies.

When **$BIGTIME first hit the market in October 2023**, its circulating market capitalization hovered around US$20-25M, at a per token price of US$0.15-0.20. As of today, **its market capitalization sits at just over US$100M**, but its per token price has begun to stabilize around US$0.11.[129] While its market capitalization has increased fivefold, **inflationary emissions in accordance with the token vesting schedule** can be seen to have repressed the token price.

Big Time is poised to be an intriguing case to keep tabs on as the **first widely playable Web3 MMORPG**. A consistently declining token price would strongly suggest that the in-game economy is unsustainable, with players more focused on extracting value from the ecosystem. Conversely, a **stable or rising token price would indicate that players value the ecosystem and its digital assets**, demonstrating that the game has successfully created real entertainment (or potentially financial) value for its player base.

Nifty Island

Nifty Island is the latest addition to the Web3 metaverse scene, officially entering public beta in Q1 2024. The game debuted with an airdrop campaign, offering players $ISLAND tokens for participating in in-game activities. At its launch, Nifty Island garnered significant attention by **incorporating avatars from other well-known NFT projects, such as Bored Ape Yacht Club, Pudgy Penguins, Azuki.**

The game allows users to create personalized islands, enjoy games using their NFT avatars, and produce user-generated content backed by NFTs. This allows the game platform to prove tangible utility and immersive experiences, built on the back of NFT-enabled digital ownership. In doing so, Nifty Island aims to position itself as a game world driven by Web3 communities, **aiming to capture the spirit of an NFT-centric Roblox**.[130]

Figure 104: Nifty Island

Source: Decrypt.co

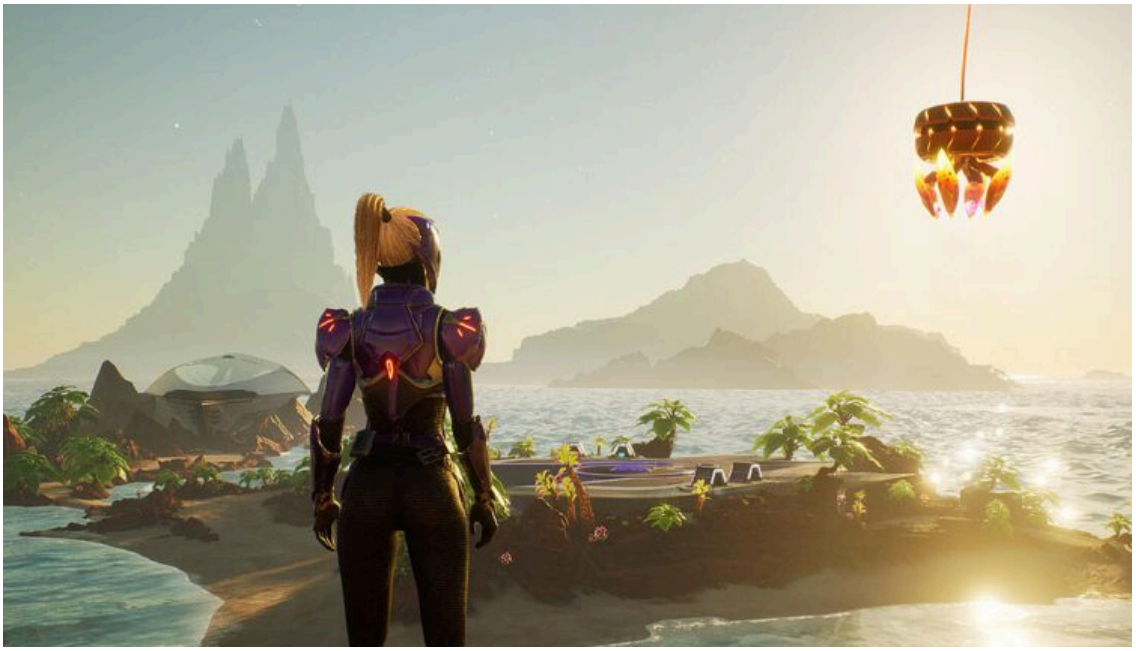
In June, the Nifty Island project announced the start of its third and final play-to-airdrop wave, with 40% of the token supply being allocated to the community.

Illuvium

Illuvium, one of the **first few AAA Web3 gaming titles** to be announced, is set to launch in July 2024 after three and a half years in development. The Illuvium universe comprises three unique yet interconnected games.

Illuvium: Overworld offers an open-world RPG experience where players become monster hunters, embarking on expansive explorations and captivating adventures.

Figure 105: Illuvium: Overworld



Source: Blockchaingamer

Illuvium: Arena is a competitive autobattler designed to test players' strategic prowess through exhilarating, tactical combat.

Figure 106: Illuvium: Arena

Source: Avocado Dao

Illuvium: Zero brings a mobile city-building experience, blending resource management with strategic development.

Figure 107: Illuvium: Zero

Source: Illuvium

Leading up to the coming July launch, Illuvium **began its play-to-airdrop campaign in April**, putting 210,000 $ILV tokens up to be earned by playing the game in its various beta

phases. At current prices, this amounts to US$14M worth of tokens, one of the largest gaming airdrops to date. Their open beta testnet began on 28 May, meaning **anyone can engage in their ongoing play-to-earn campaign** currently and earn a share of the 30,000 $ILV tokens set aside for beta participants. After their mainnet launch scheduled for 25 July, the airdrop campaign will continue for another five months, providing players with a final chance to earn a share of the remaining 180,000 $ILV tokens.[131]

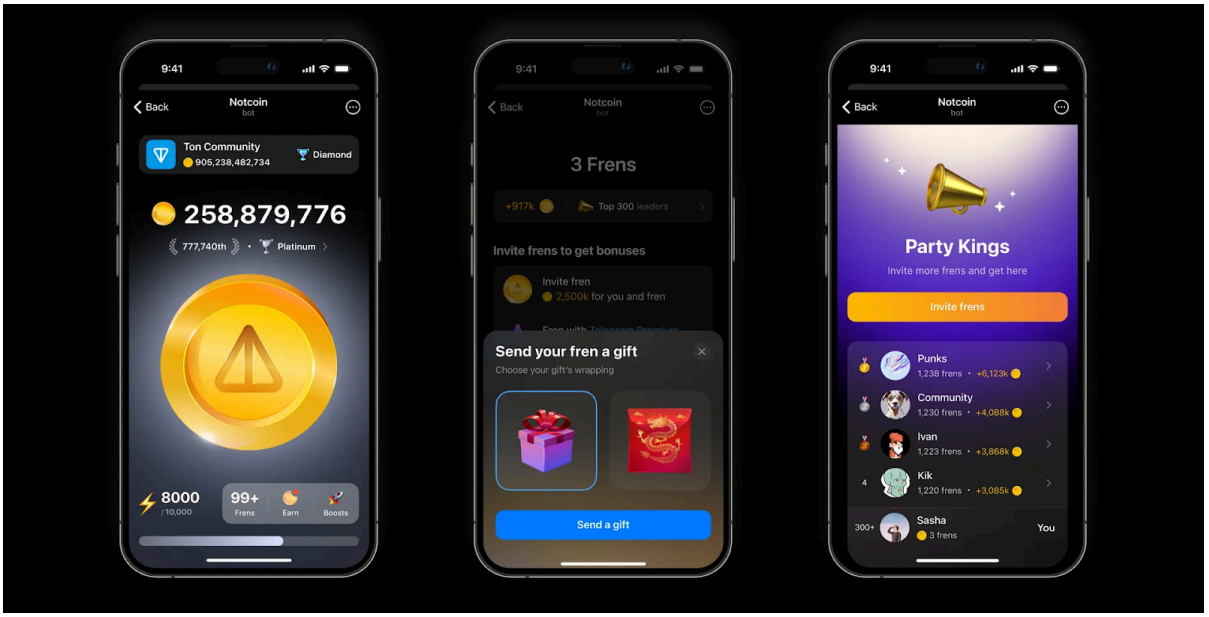
8.4 Trends to watch

The rise of Tap-to-Earn

The genre of 'hyper-casual' games began in 2013 with Flappy Bird. Since then, the genre has grown exponentially. The last 4 years are widely regarded as the **age of hyper-casual gaming**. In just a few short years, the genre went from being relatively unheard of to **taking 40% of the total share of voice for games**. Today, hyper-casual games still reach **1.7B installs per year and bring in $2-2.5B** in annual revenue.[132] Hyper-casual 'clicker' games have now taken the crypto gaming world by storm, fueling the recent tap-to-earn craze.

- **Probably Notcoin:** The viral Telegram Notcoin app, launched on January 1, 2024, marked a significant shift in the Web3 gaming community towards the hyper-casual. **Within 5 months, Notcoin amassed 35 million players** for its tap-to-earn game,[133] which operates on Telegram's newly launched The Open Network (TON) blockchain. This game follows the traditional 'clicker game' model, where players earn Notcoin cryptocurrency by clicking on an animated coin within a Telegram Mini App. **Telegram Mini Apps are small applications integrated into the Telegram messaging platform**, allowing users to interact with various services seamlessly without leaving the app. With no additional downloads required, this makes it easy for Mini Apps to **onboard new players from Telegram's 1.5B strong user base**. Initially, each click yields one Notcoin, but players can enhance their earning potential through various in-game upgrades.

Figure 108: The Notcoin Mini App

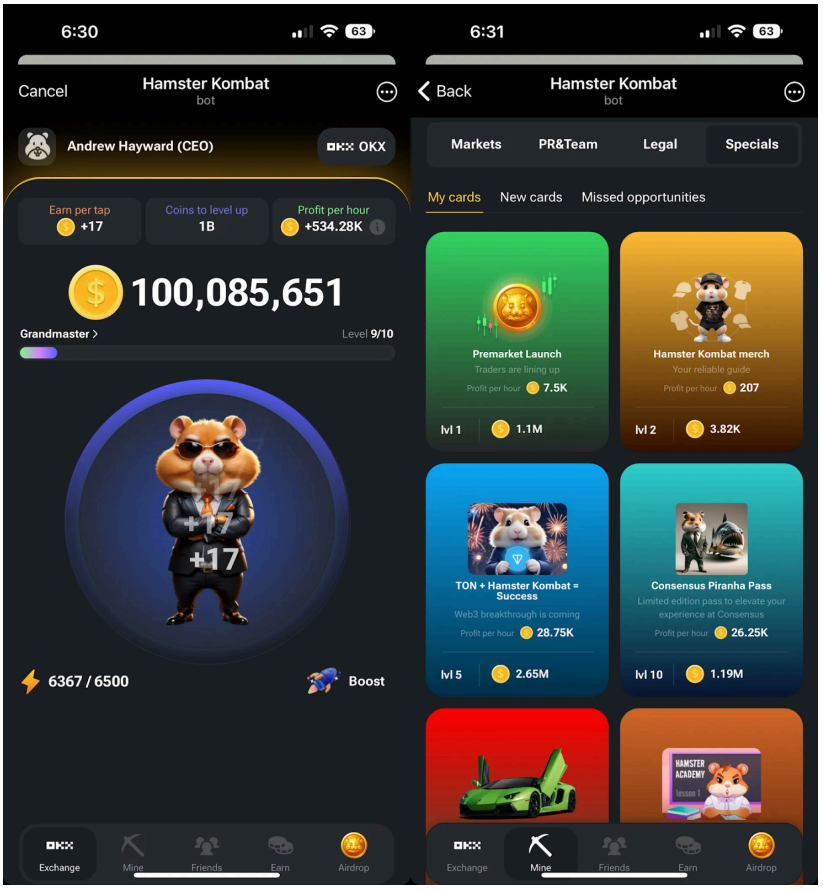


Source: Decrypt.co

On May 20, 2024 **Notcoin distributed over 72B $NOT tokens** to players, amounting to a total of ~US$480M at the time, or ~US$936M at today's prices of US$0.013 per token.[134] At the time of the airdrop, Notcoin had 35 million players and 6.3 million Telegram channel subscribers.

- **Hamsters have power:** The success of Notcoin set the stage for the rapid growth of Hamster Kombat, another Telegram Mini-App clicker game, which has quickly overtaken its predecessor. Launched on March 25, 2024, **Hamster Kombat has garnered 150 million users globally** by June 2024.[135] Their Telegram channel boasts an impressive 49 million subscribers, while their YouTube channel, boosted by offering users in-game coins in exchange for subscriptions, has reached 22 million subscribers.

Figure 109: The Hamster Kombat Mini App



Source: Decrypt.co

According to the Hamster Kombat site, the **token generation event ("TGE") is set for July 2024**. This will be an exciting one to watch and see how it compares to Notcoin's airdrop.

An additional trend to watch for is how quickly Web3 games will follow Web2's move from hyper casual to 'hybrid casual' games. **Hybrid-casual games combine the simplicity of hyper-casual games with the depth of mid-core or core gameplay**.[136] These games include progression systems, upgrades, and live ops events, which keep players engaged and coming back. They also feature social elements and leaderboards, enhancing competitiveness and player interaction. Successful examples of hybrid-casual games include Supercell's Clash Royale and Rovio's Angry Birds 2.

Compared to hyper-casual games, hybrid-casual games offer a more engaging and complex experience. They retain easy-to-learn mechanics while adding layers of depth, appealing to a broader audience. Some Web3 games such as Thetan Arena are already building such hybrid-casual games, but have yet to take off in the same way as Notcoin and Hamster Kombat.

Fully On-Chain Games (FOCG)

Fully on-chain games are those that store game logic and state on the blockchain. These games offer significant advantages, including immutability and permanence, composability and interoperability, true ownership of digital assets, and community governance.

According to Brian Gu, founder of Dark Forest which is one of the earliest implementations of a FOCG, a FOCG should possess the following characteristics[137]:

◆ The source of truth lies in the blockchain which is used as a shared state for all game updates.

◆ Game logic and rules are implemented via smart contracts.

◆ Game is based on open ecosystem principles.

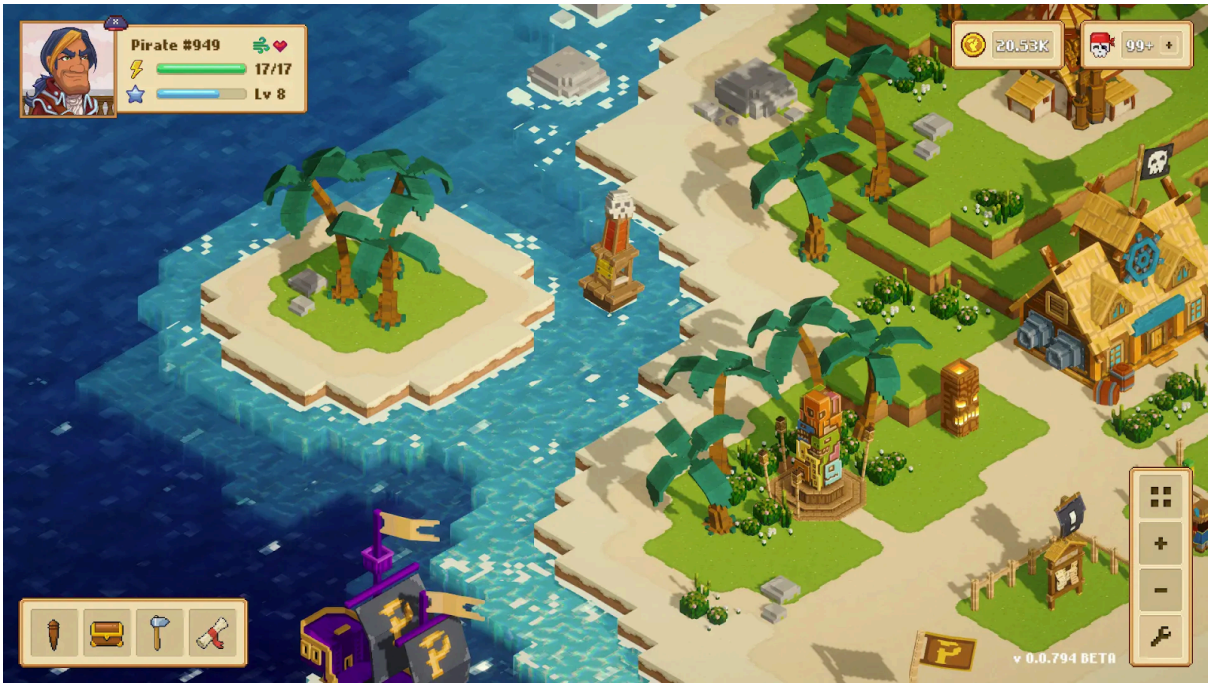
◆ Game is client agnostic.

◆ Games are interoperable with things we consider valuable.

- **Pirate Nation takes sail:** Proof of Play, the studio behind fully on-chain game Pirate Nation, has been making waves in the Web3 gaming space. Since their **a16z-led raise of a $33 million seed round** in September 2023, the team has been busy developing their first title, Pirate Nation, as well as FOCG-related infrastructure.

  In March, Proof of Play launched their flagship game, Pirate Nation. Pirate Nation is an RPG where players collect and send pirates on expeditions to gather crafting materials, treasures, and pirate gold. As pirates embark on these adventures, they earn experience points, allowing them to level up and enhance their abilities. Being fully on-chain, **the game ensures that players' progress and the entire game state are saved on the blockchain**. This guarantees permanence, interoperability, and composability, allowing the game to live on as long as the blockchain it is deployed on continues to run.

Figure 110: The fully on-chain Pirate Nation game

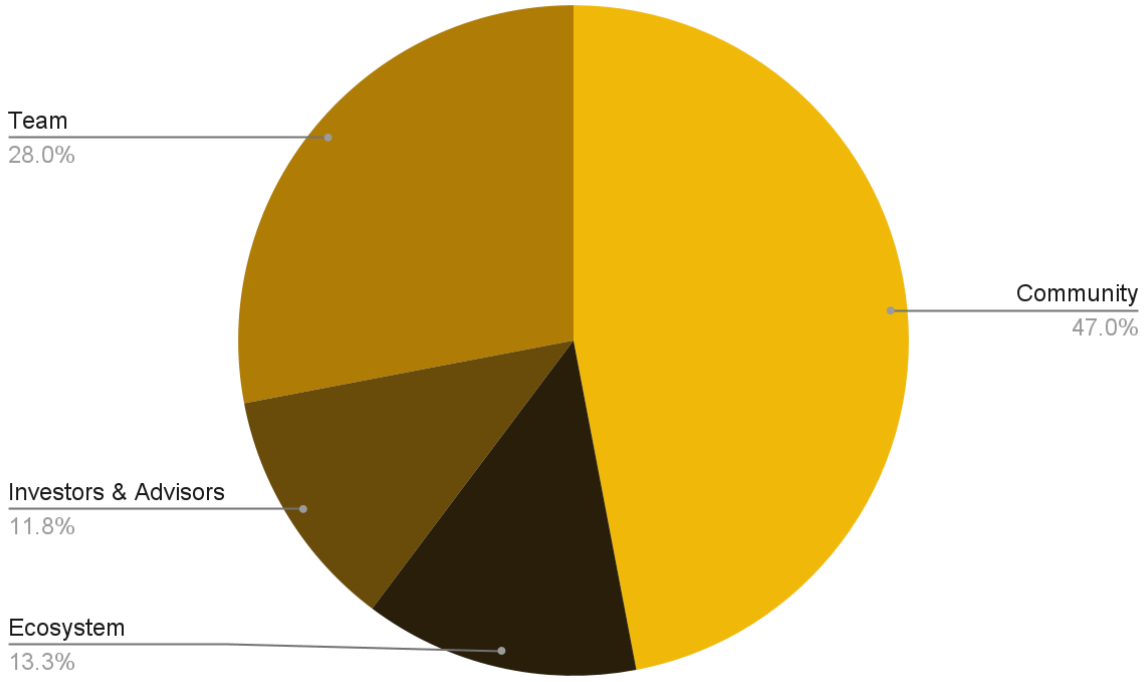


Source: GAM3S.gg

Alongside the launch of Pirate Nation, the Proof-of-Play team introduced **Apex, the first blockchain in their "Multichain" project** and the home of their flagship game. Designed to support millions of players, **this system transcends the limitations of a single chain**. Built on the Arbitrum Orbit technology stack and leveraging Proof-of-Play's proprietary on-chain gaming engine, the Multichain comprises interconnected chains optimized for on-chain gaming. **This network offers seamless composability and lightning-fast block times**, delivering an integrated player experience that surpasses traditional blockchain platforms.[138]

In June, the studio completed the airdrop of $PIRATE tokens to early collectors and players of the game. The airdrop accounted for 15% of the total token supply, which is **worth ~US$37.5M** at today's token price of US$0.25 per token.[139]

Figure 111: Pirate Nation token distribution

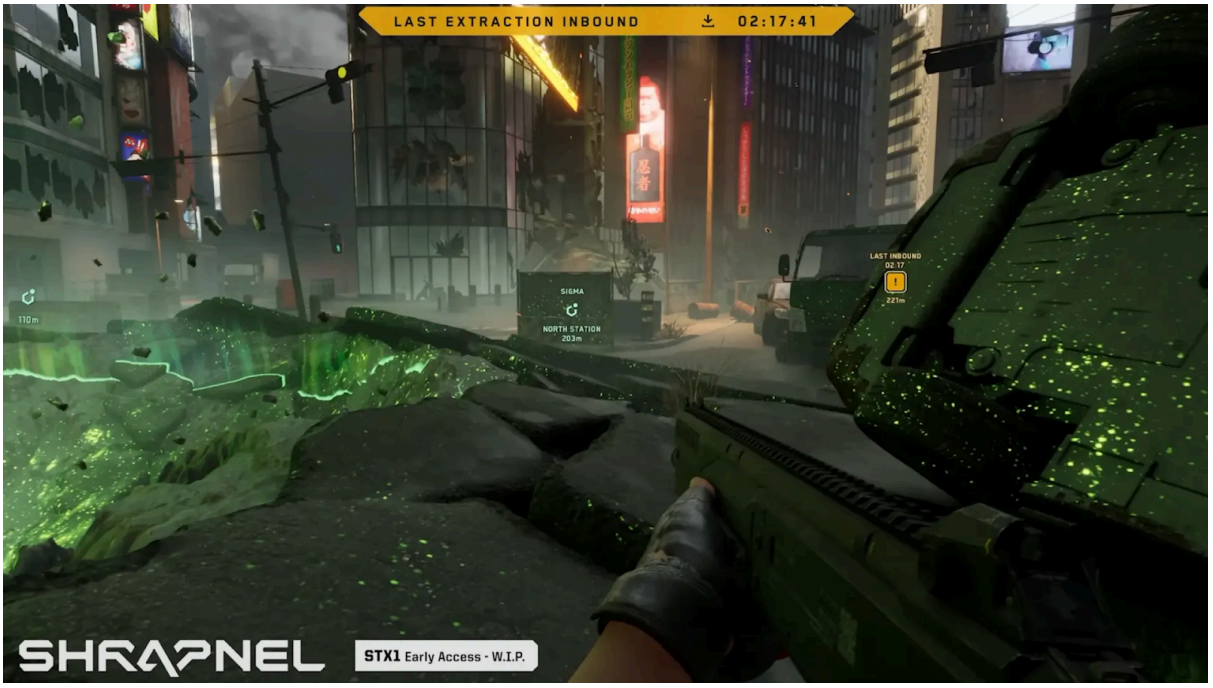


Source: Pirate Nation, Binance Research, as of June 30, 2024

The $PIRATE token will **serve as a utility token** for the Pirate Nation ecosystem. According to the Pirate Nation documentation, the token can be used for a variety of fun and functional activities within the game, enhancing the possibilities for players and guilds in crafting and customization. It also **provides access to exclusive tournaments, unique game modes, and special events**. When significant new features, items, or dynamics are introduced to the game—such as larger player islands that can accommodate new settlement buildings, or new types of bidding and special auction events for premier, unique game assets—$PIRATE may also serve as the required currency to enable these new dynamics.[140]

- **Shrapnel loads up:** Shrapnel, a Call of Duty-style first-person shooter, is **one of the first moddable AAA games that aims to be fully on-chain** according to their whitepaper. So far in 2024, the Shrapnel team has held multiple Early Access events, providing the early community with the opportunity to test out the gameplay and provide feedback. The team has **distributed over 2.3 million $SHRAP tokens**,[141] worth ~US$142K at today's token price of ~US$0.06,[142] as rewards to players who participated so far. The game launched its Early Access via the Epic Games store.

Figure 112: The upcoming AAA first-person shooter game, Shrapnel



Source: Decrypt.co

> Shrapnel also recently announced its **foray into the infrastructure space with the launch of Mercury.** Mercury is a digital asset platform designed for gaming, enabling developers to create new experiences that generate revenue while providing players and creators with true ownership, financial opportunities, and control over in-game content. It offers a **comprehensive suite of web3-powered capabilities**, including content, commerce, and community functions. Built and tested alongside the AAA FPS game Shrapnel, Mercury features advanced capabilities informed by a creative team with experience on popular games and developed by experts from major cloud and web3 companies.[143]
>
> For a deeper dive into on-chain gaming, check out our article A Primer on On-Chain Gaming.

An oft-cited quote from Vitalik is his account of his past experience with World of Warcraft:

"I happily played World of Warcraft during 2007-2010, but one day Blizzard removed the damage component from my beloved warlock;s Siphon Life spell. I cried myself to sleep, and on that day I realized what horrors centralized services can bring. I soon decided to quit."

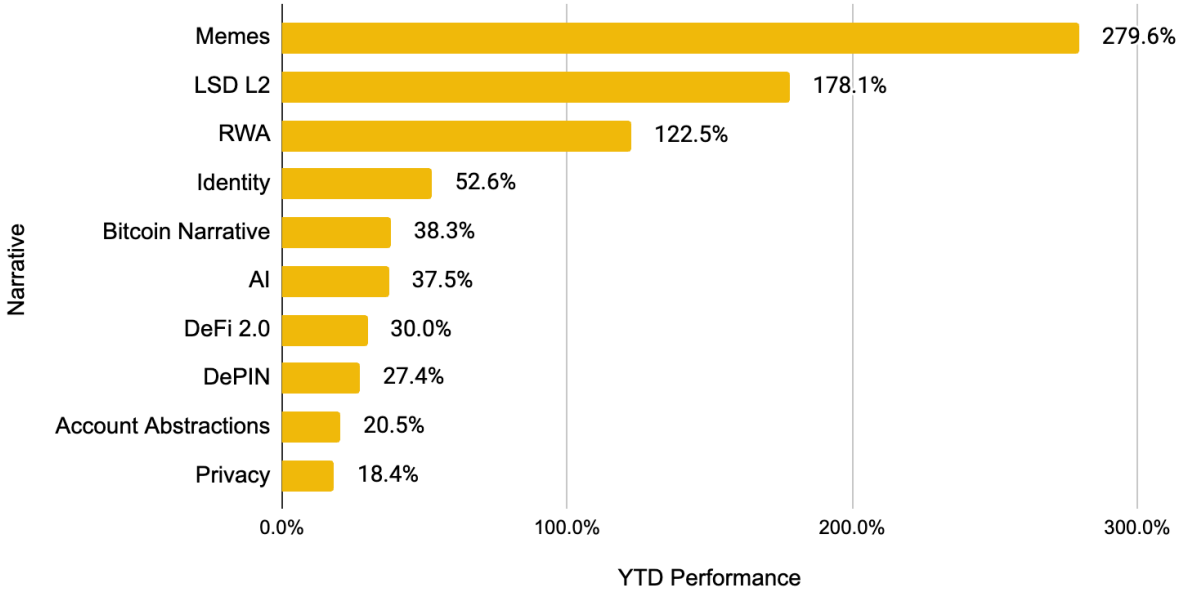
Fully on-chain gaming is the only way to prevent such misery from befalling future 16 year old gamers around the world, and as of the half year mark of 2024 we are probably inching closer to realizing this future than ever before.

9 Others

9.1 Memecoins

Memecoins have driven a significant amount of activity among traders and captured a notable amount of attention within the crypto community. Considering that memecoins have been the top performing sector year-to-date and have returned a staggering 279%, it is hardly surprising that it has been a sector that has garnered much interest.

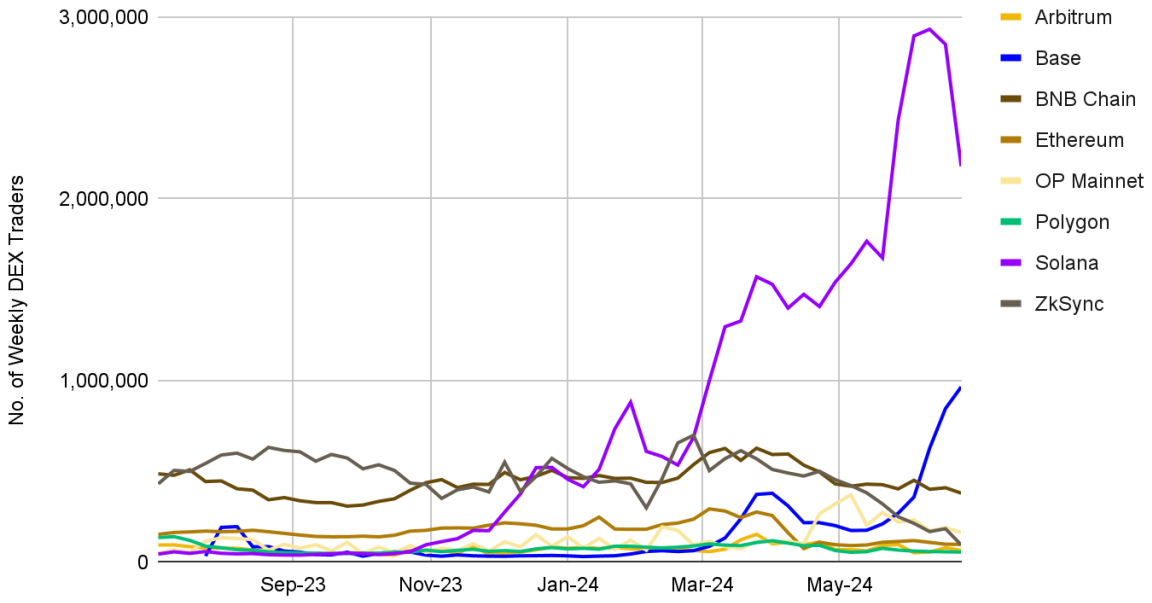
Figure 113: Memecoins are the top performing narrative this year



Source: Dune Analytics (@cryptokoryo), as of June 24, 2024

Chains such as Solana and Base have been popular avenues for memecoin trading, benefitting from heightened on-chain activity and rising daily active addresses. As seen in Figure 114, the number of weekly DEX traders on Solana has skyrocketed from around 455K to 2.9M at its peak in June, an increase of nearly six times. Base has also overtaken several other chains in this metric, and has about 963K weekly DEX traders as of June 24, 2024. While not all of this growth is attributable to memecoins, they have undoubtedly played an important role in driving increased activity on these chains.

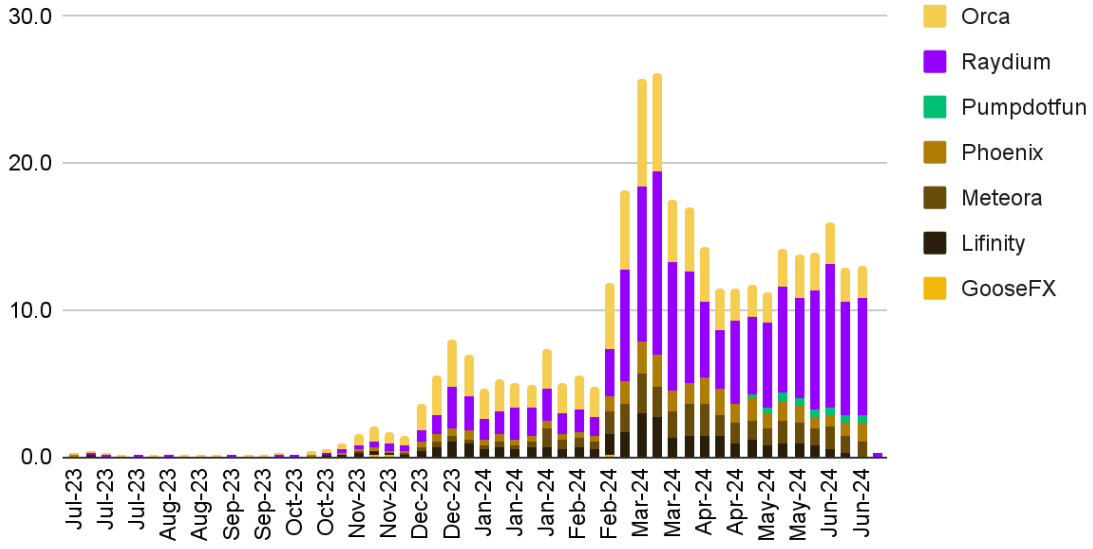
Figure 114: Weekly DEX traders have surged for Solana and Base



Source: Dune Analytics (@ilemi), Binance Research, as of June 24, 2024

Users are drawn to Solana's low transaction fees, cohesive product suite free from fragmentation, and improved trading tools, making it an attractive hub for meme coin trading. The network has benefited from the rallies of several notable memecoins, which have brought a wave of new users and liquidity into the Solana ecosystem by capturing the "attention economy." Additionally, the distribution of points and airdrops has generated recurring demand for the network, directly impacting DEX activity. This increased volume has been absorbed by Solana's growing list of top-tier DeFi protocols.

Figure 115: Solana's DEX volumes have remained elevated



Source: Dune Analytics (@ilemi), Binance Research, as of June 24, 2024

Apart from notable mindshare and strong speculative demand, the token supply structures of memecoins have also arguably contributed to the rally this year. Most meme coins have all their tokens unlocked and circulating at the TGE, which eliminates selling pressure from future dilutions. Many have MC/FDV ratios of 1 at launch, indicating that holders will not suffer from further dilutions due to token emissions. This structure has played a partial role in the appeal of meme coins, especially as awareness of the implications of significant token unlocks increases. Although the success of meme coins should not be exclusively attributed to a disdain for tokens with low floats, it is apparent that retail investors have shown significant interest in meme coins, even if the tokens may lack utility.

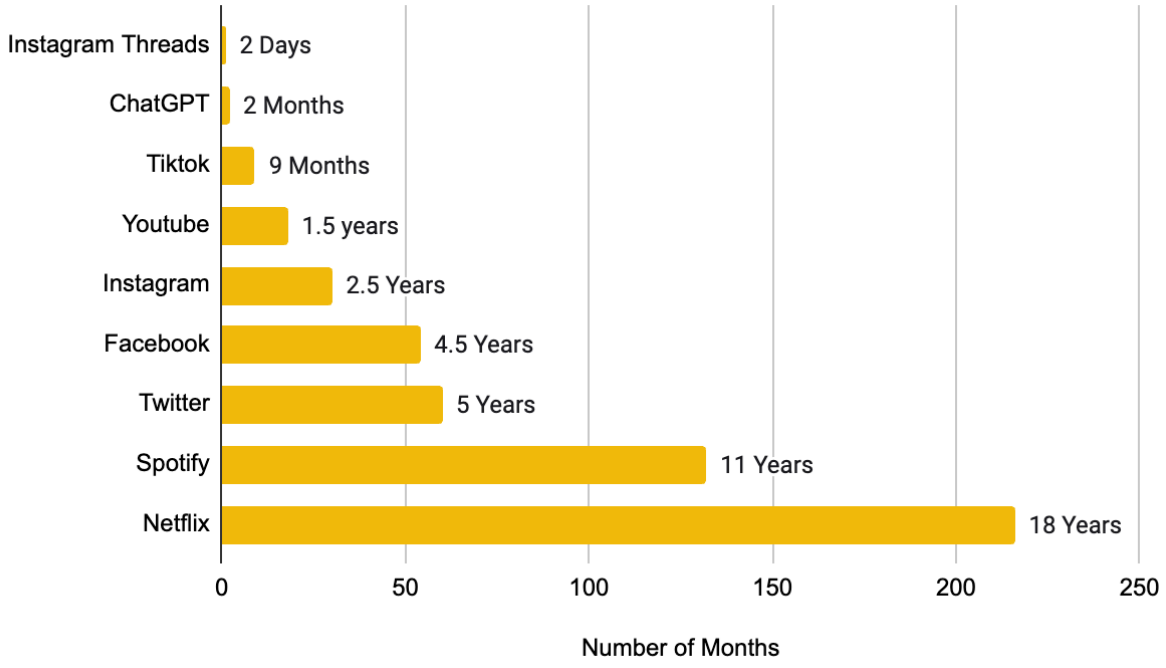
In a manner reminiscent of the well-known "GameStop short squeeze" event in the stock market, many retail investors perceive meme coins as a means to counter the institutional advantages gained from participation in private rounds. This is because meme coins are typically launched in a way that is accessible to anyone, with little opportunity for institutional participants to acquire tokens at a low cost ahead of time. Consequently, meme coins have emerged as a significant narrative in the current market, consistently drawing attention with their large trading volumes and strong price movements.

For more details, check out our report "Low Float & High FDV: How Did We Get Here?"

9.2 Artificial Intelligence

The past year has proved **monumental for artificial intelligence ("AI")**, as the transformative power of AI became more evident, notably with the **widespread use of AI chatbots** such as OpenAI's ChatGPT, Google's Gemini, Microsoft's Copilot, and others. ChatGPT, in particular, highlighted AI's potential by reaching the milestone of 100 million users in just two months - an achievement that outpaced major social media platforms like TikTok and YouTube. In just over a year since ChatGPT's initial release, **generative AI has emerged as one of the most influential narratives globally**.

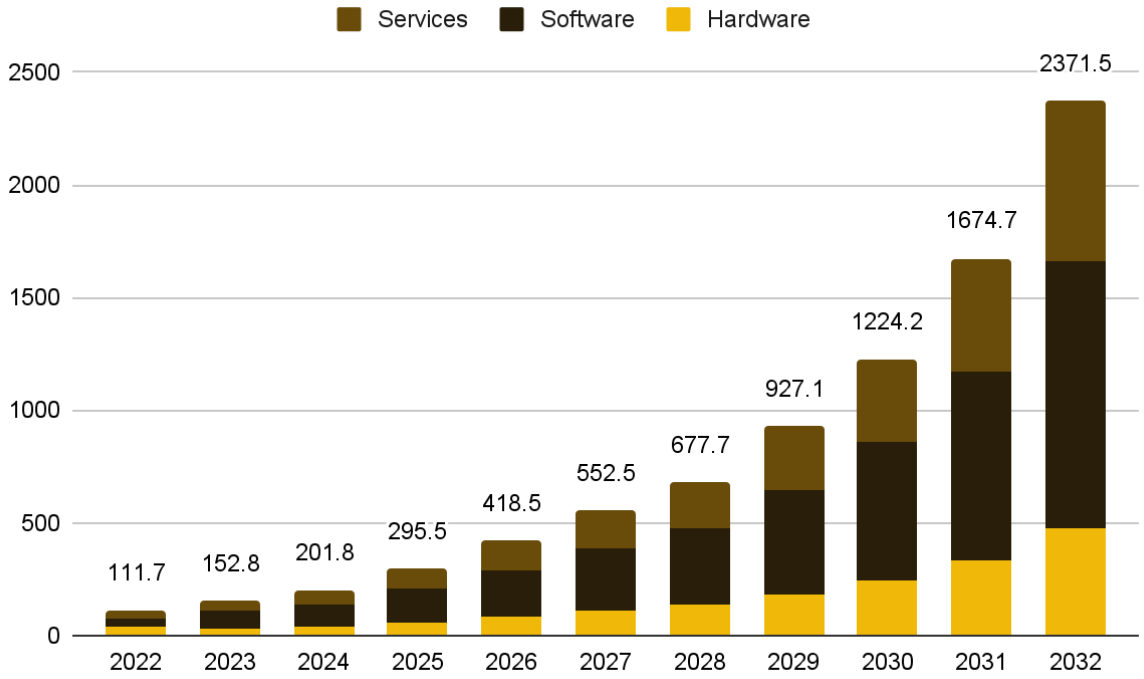
Figure 116: ChatGPT is one of the fastest-growing applications, achieving 100 million users just two months after its launch



Source: demandsage, Binance Research

As a poster child for powering artificial intelligence with its computer chips, **Nvidia briefly surpassed Microsoft to become the world's largest public company**[143]. Nvidia's US$3.2T market capitalization has almost single-handedly captured this narrative growth on the TradFi stock market. Tech giants like Google and Microsoft are driving Web2 to capture the AI narrative and transform the future of tech markets. Adding to this, Silicon Valley is continuing to push the vast majority of startup funding towards AI bets. Attracting billions in funding, the AI sector is forecasted to be a **multi-trillion-dollar market opportunity**.

Figure 117: AI is projected to reach a market value of approximately US$2.3T by 2032



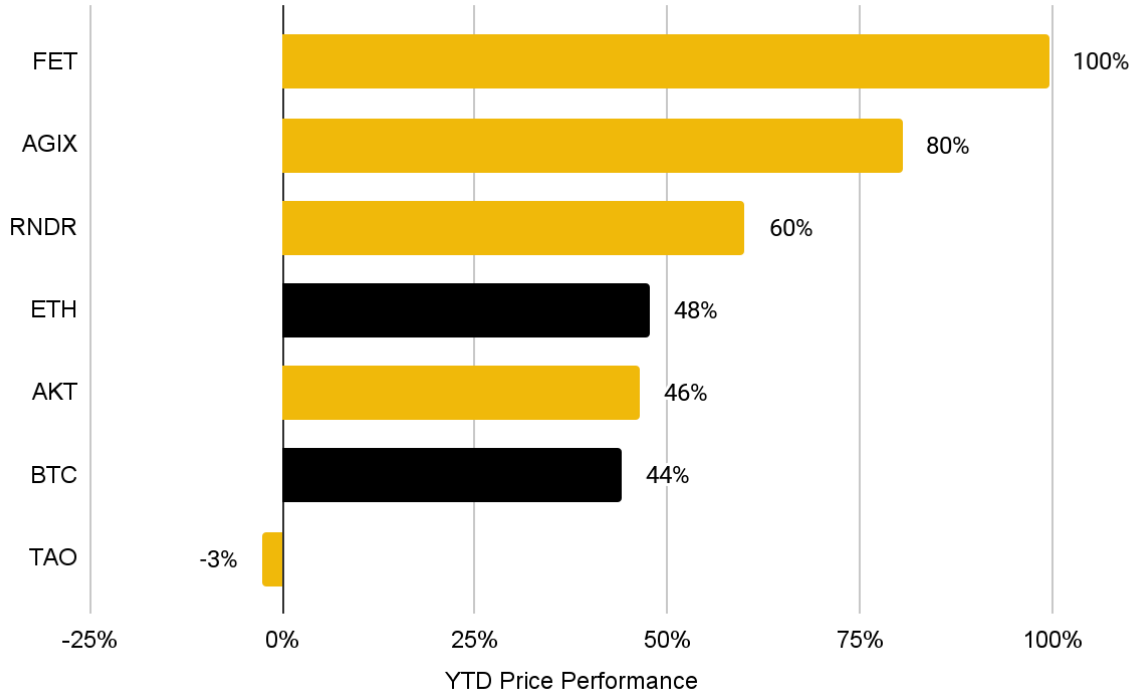
Source: marketresearch.biz, Binance Research

The conviction behind this trend has extended into the blockchain industry, with **AI x crypto emerging as a compelling narrative this cycle**. While AI x crypto may struggle to directly compete with Web2 giants in tasks like training cutting-edge models, this does not rule out the possibility for a thriving decentralized AI ecosystem that caters to a variety of customer needs.

AI and crypto technologies complement each other well and we have seen the ecosystem evolve to support a number of different use cases. **Crypto offers AI a permissionless, trustless, and composable settlement layer**, enabling applications such as decentralized compute systems that make hardware more accessible, AI agents capable of executing complex, value-driven tasks, and solutions for identity verification and the prevention of Sybil attacks and deepfakes. Conversely, **AI contributes to crypto with enhancements typical of Web2**, including **improved user and developer experiences** through advanced large-language models and **enhanced smart contract functionality and automatio**n.

Given the synergies between AI and crypto, the effects of this convergence are becoming increasingly evident in the marketplace, both in practical applications and growing interest in AI-related tokens. After a substantial investment exceeding US$298M in 2023[145], the first half of 2024 has begun to reveal the **tangible outcomes of this capital deployment**. In market performance, **AI tokens have generally outpaced the broader market**, with their total circulating market cap increasing to over US$26B this year.

Figure 118: The top five AI coins by market cap have generally outperformed BTC and ETH in the first half of the year



Source: CoinMarketCap, Binance Research, as of June 30, 2024

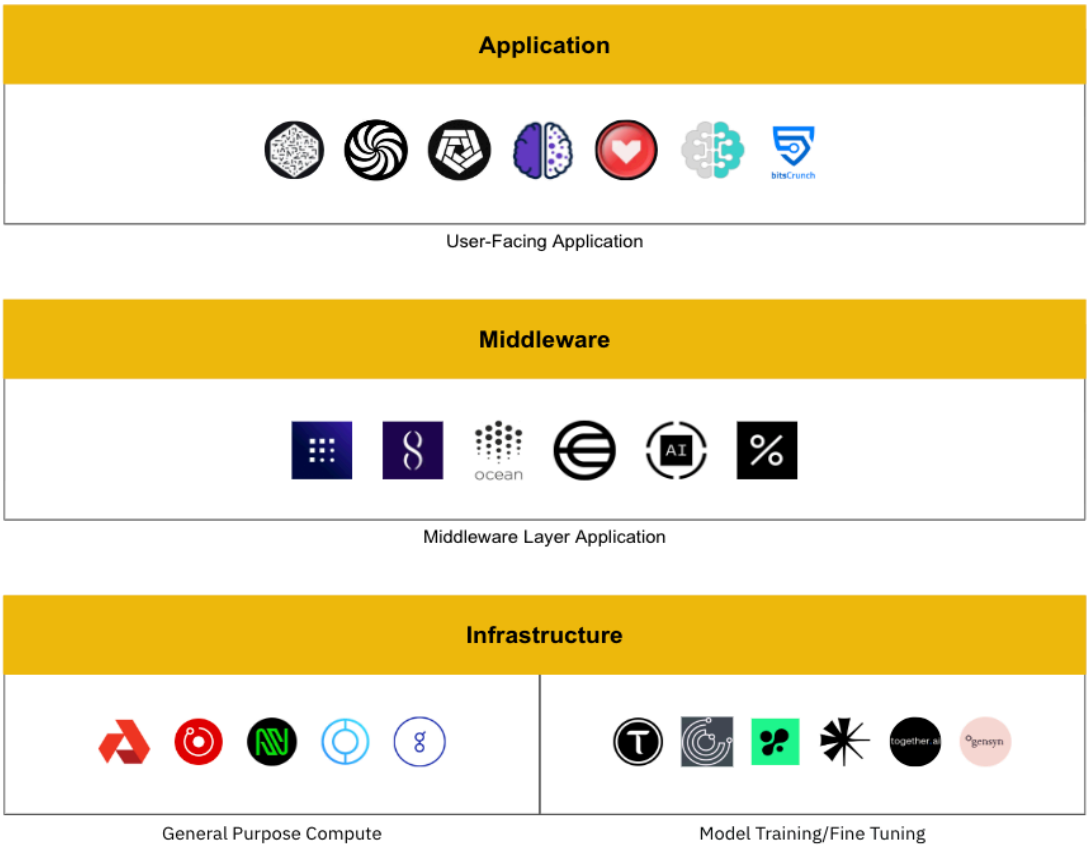
One significant development to be aware of is the merger announced in late March[146] by three leading crypto-AI protocols in Fetch.ai ($FET), Singularity.net ($AGIX), and Ocean Protocol ($OCEAN), forming the **Artificial Superintelligence Alliance ("ASI")**. This alliance will see the **unification of their respective tokens** into a new $ASI token, whilst **leveraging their distinct areas of expertise within the AI stack**: Fetch.ai specializes in autonomous agents, Ocean Protocol focuses on data sharing, and Singularity.NET drives R&D in AI integrations.

The integration process will commence with the native tokens of SingularityNET and Ocean Protocol merging into $FET on the Ethereum blockchain[147]. The subsequent phase will focus on deploying the new $ASI token across various blockchains and onboarding community members. This strategic merger may bring the ASI token close to or around the top 20 largest cryptocurrencies by market capitalization.

While there have been several developments in the space, it's important to recognize that the **AI x crypto tech stack is still in its formative stages**. Projects are still in the process of developing the underlying infrastructure required to facilitate on-chain AI interactions at scale. As such, **much of the current hype and market liquidity is focused on infrastructure protocols** like **GPU networks** (Render, Akash) and **modeling networks**

(Bittensor, Ritual). The next phase is likely to see the rise of **autonomous AI agents**, which will build upon the underlying compute and modeling layers.

Figure 119: The number of AI and crypto projects has been increasing across various verticals, with a particular emphasis on infrastructure thus far



Source: Binance Research

As AI continues to become more integral to the crypto space, numerous AI-specific use cases are experiencing growth, thereby enhancing value across various crypto sub-sectors and protocols. Below, we highlight some notable examples.

AI x Zero-Knowledge ("ZK"): Smart contracts excel due to their code-based automation, yet they sometimes lack adaptability in complex, unforeseen situations. Machine learning ("ML"), a subset of AI, can enhance this by learning from extensive data to adapt and make accurate predictions. **Integrating ML models with smart contracts can greatly expand their adaptability and flexibility**.

A notable development is the **ZK Predictor developed by Upshot** in partnership with Modulus Labs[148]. This tool allows Upshot to utilize Modulus ZK circuits to **verify asset valuations confidentially, without revealing proprietary intellectual property**. It can be instrumental in developing Automated Market Maker ("AMM") optimized for pricing long-tail assets, AI-driven on-chain index funds with cryptographic proofs of operation, or

specialized prediction markets where the accuracy and credibility of crowd-powered pricing signals are enhanced.

AI x Consumer dApps: In the past year, there has been a noticeable increase in consumer-facing dApps adopting **natural language interfaces** and **on-chain agents** to boost interactivity and enhance user engagement. This shift is **revolutionizing user interaction with platforms**, emphasizing personalization and active participation through AI.

A prime example is AI user-generated content ("UGC") platforms like NFPrompt. AI UGC involves content that users create with the assistance of autonomous systems. Beyond content generation, the integration of AI may also have profound implications for Web3 gaming or virtual worlds. In these environments, in-game characters become significantly more interactive, and conversations more lifelike, enriching the user experience.

AI x DePIN: Large language models and various AI applications **rely heavily on graphics processing units ("GPUs") for their computational demands**. Over the past year, the growing interest in AI has led to a significant demand for GPUs, resulting in a shortage[149]. This has made the high cost of computing resources prohibitive, particularly for researchers and startups involved in AI research. In response, **decentralized compute networks**, a key segment of DePIN, have emerged as a **cost-effective alternative to traditional centralized cloud services** and **hardware manufacturers**.

Protocols such as Akash, Render, Gensyn, and io.net exemplify this shift by offering decentralized solutions that address these cost barriers. By providing a potential solution to a tangible problem, decentralized computing networks have capitalized on the AI surge, witnessing increased activity and engagement on their platforms.

For a deeper dive into specific case studies and more detailed analysis, please refer to our previous report, AI x Crypto: Latest Data and Developments.

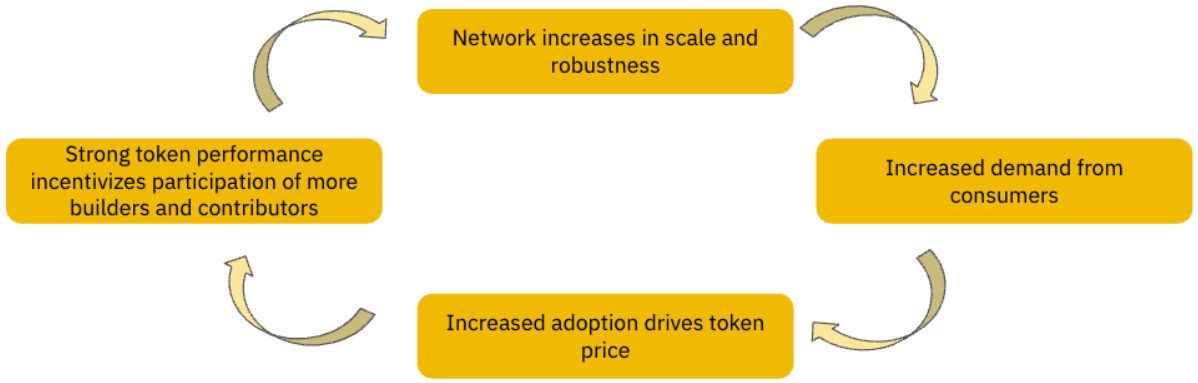
9.3 DePIN

Among various narratives that have gained traction in the past year, the Decentralized Physical Infrastructure Networks ("DePIN") sector has emerged as a prominent focus. DePIN refers to infrastructure projects harnessing blockchain technology and crypto economics to motivate individuals to allocate their capital or underutilized resources towards creating a more transparent, decentralized, and verifiable infrastructure network.

The sector is perceived to possess substantial growth potential due to its extensive total addressable market and its ability to scale infrastructure networks in a decentralized manner through bottom-up growth strategies.

Having a self-reinforcing cycle of growth contributes to a sustainable development of a DePIN project. Token rewards act as helpful incentives to overcome the "cold-start" challenge of sourcing for supply-side participants. As the network increases in size, demand should pick up as consumers start to utilize the network's services. Given that payment for services are usually made in the form of the network's tokens, the increased adoption should translate into higher token prices, which would further incentivize contributors. With the conconcurrent growth of both demand and supply, this virtuous cycle can perpetuate, sustaining the projects' continued growth.

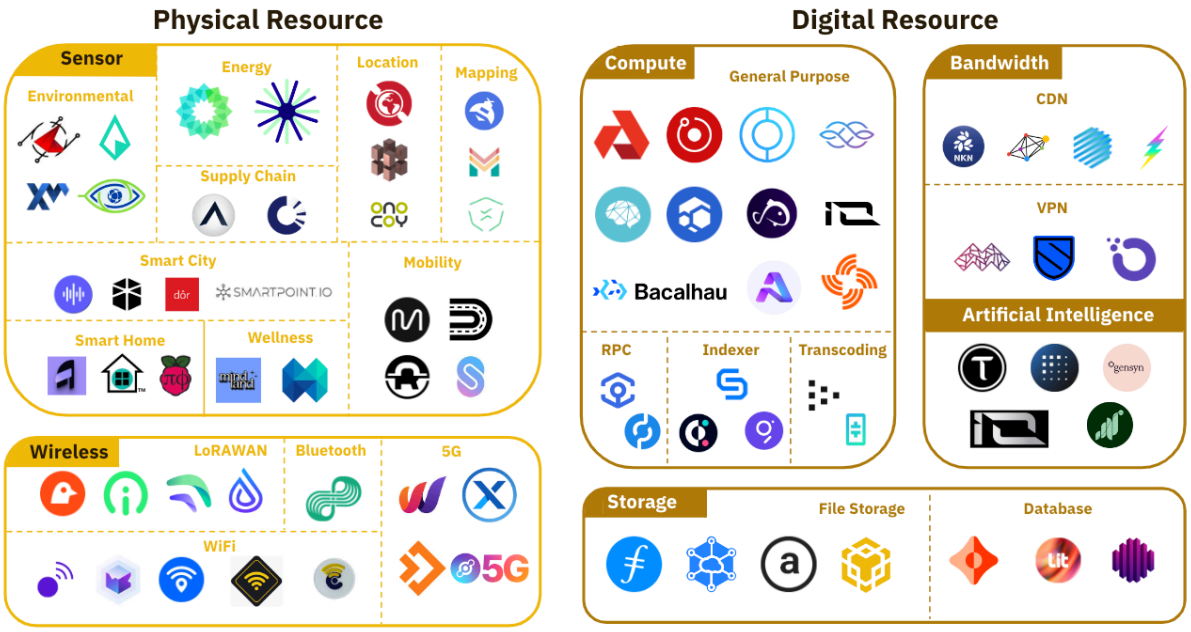
Figure 120: DePIN projects aim to foster a self-reinforcing cycle that can sustain their continued growth



Source: Binance Research

Projects related to DePIN have been steadily building over the years, leading to the sector's currently diverse landscape as illustrated in the Figure 121 below. Note that the map only showcases a fraction of the DePIN projects. According to data from IOTeX's DePINscan, there are approximately 249 DePIN projects recorded[150].

Figure 121: Ecosystem map showcasing sectors and sub-sectors of DePIN projects



Source: IOTeX, Binance Research

As illustrated in the ecosystem map above, DePIN is a broad field made up of several sectors. Each sector plays a different role in enabling the decentralization of network infrastructure and powering different use cases. In this section, we examine each of these in more detail, sharing how they work, and highlighting relevant case studies.

Note that the mention of specific projects does not constitute endorsement by Binance. Instead, projects cited are merely used for the purposes of illustrating conceptual use cases.

Key Themes to Watch

- **DePIN to coexist alongside traditional infrastructure players:** It is unlikely that DePIN can replace traditional networks in the near term, considering that the latter has significant capital resources and established infrastructure. Nonetheless, the ability to enable a sharing economy powered by idle resources, and allowing for last mile coverage in instances where it may not be financially viable for traditional players, DePIN offers a viable solution that augments the current landscape. As such, a more likely scenario is one where DePIN networks coexist with the traditional infrastructure players, supplementing any last mile coverage and providing a solution that allows smaller entities or individuals to participate in the building of infrastructure.
- **DePIN powering Web2 front-ends:** It is undeniable that interacting directly with DePIN may be technically too complex for the general public, and is likely a contributing factor for the relatively slow pace of adoption compared to existing Web2 services. Apart from a focus on improving user experiences and user interfaces, we also expect DePIN projects to work together with traditional players

or web2 companies to expand their reach. In effect, users may interact with a Web2 front-end, unaware that the underlying back-end leverages DePIN and blockchain technology. This could lower the steep learning curve and perceived risks tied to crypto, making the use of DePIN products as user-friendly as those in the Web2 domain, but with the added advantages of cost-efficiency and transparency.

- **Increased token utility and composability:** Most DePIN tokens serve primarily as a medium of payment for accessing project services. While this provides fundamental utility, one of the most compelling aspects of blockchain technology is its composability within the broader on-chain ecosystem, particularly in DeFi. The ability for users to earn additional yield or explore diverse use cases with the tokens they earned could further enhance the appeal of participating in DePIN projects.

  Notable examples illustrating this potential are Filecoin's Filecoin Virtual Machine and BNB GreenField's inherent integration with the BNB Chain. These projects expand beyond the basic utility of using FIL and BNB solely for data storage, offering users opportunities to engage their tokens in a wider ecosystem. Even though it's early days for these expanded uses, they hint at a potential future direction that could spur the growth and popularity of DePIN projects.

For more details and specific case studies, check out our previous report, "DePIN: An Emerging Narrative."

9 Fundraising Activity & Institutional Adoption

9.1 Fundraising Activity

The first half of 2024 saw a notable increase in crypto deal activities compared to 2023, despite a slight decrease in venture capital funding. The market benefited from an increasingly favorable regulatory environment for digital assets, including the approval of Spot Bitcoin and Ether ETFs by the United States Securities and Exchange Commission ("SEC") and significant legal victories for Ripple and Grayscale. The Bitcoin Halving in April, along with the emergence of new infrastructure and DeFi primitives, contributed to a broad market resurgence with sectors such as Restaking, AI, Modularity, Scaling, Interoperability, DeFi and Memecoins emerging prominently. This resulted in a 38.0% increase in crypto deal count from H1 2023, with significant capital directed towards these categories. Additionally, venture capital funding saw a rise of 5.0%, reflecting growing investor interest and confidence across several sectors. During this period, venture funding reached a total of US$6.35B, with OKX Ventures, Animoca Brands, Cogitent Ventures, Big Brain Holdings, and Hashkey Capital being the most active funds by deal count.

Taking a closer look, Riot Platforms, a Bitcoin mining company, and Monad raised the largest amounts of capital, securing US$559M and US$225M respectively. The top 10 biggest raises by Web3-focused projects accounted for nearly US$1.8B in venture funding.

Figure 122: Top 10 raises by Web3-focused projects

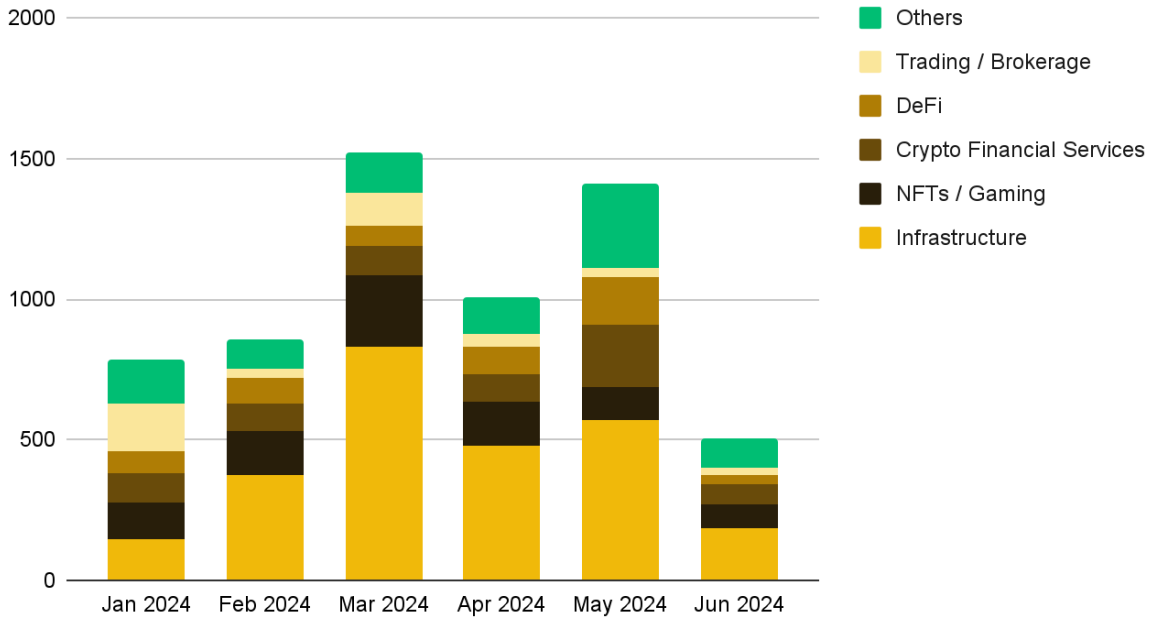
Project	Amount raised	Date	About
Riot Platforms	US$559M	02/23	Bitcoin mining company Riot Platforms raised $559 million in a Post IPO funding round through stock offerings to fund its large purchases of MicroBT's WhatsMiner chips.
Monad Labs	US$225M	04/09	Parallelized EVM L1, Monad Labs raised $225M in an undisclosed funding round with investments from Animoca Brands, Coinbase Ventures, Figment Capital, Bankless, Superscrypt and 50 others.
Bitstamp	US$200M	06/06	Global cryptocurrency exchange Bitstamp entered into an agreement with Robinhood to be acquired for US$200M, accelerating Robinhood Crypto's global expansion efforts.

Project	Amount raised	Date	About
Farcaster	US$150M	05/21	Decentralized social network Farcaster has raised $150M in a Series A funding round announced on May 21st, 2024 with investments from Haun Ventures, Andreessen Horowitz, Standard Crypto, Paradigm, Union Square Ventures and 1 other.
Beacon Accelerator	US$150M	02/03	Sandeep Nailwal's Beacon Accelerator raised US$150M in an undisclosed funding round to accelerate the creation of the next generation of Web3 companies with unparalleled support from Web3 founders.
Hashkey Group	US$100M	01/16	Global digital asset financial services group Hashkey raised US$100M in a Series A funding round to solidify HashKey's Web3 ecosystem, accelerate the product diversification of its licensed business in Hong Kong, and drive the Group's compliant and innovative development globally.
Bitdeer	US$100M	05/31	Digital asset mining service provider Bitdeer raised US$100M with an investment from Tether in a Post IPO Funding Round, to fund its data center expansion, ASIC based mining rig development and for working capital and other general corporate purposes.
Eigenlayer	US$100M	02/22	Restaking infrastructure provider Eigenlayer raised US$100M in a Series B funding round from Andreessen Horowitz, accelerating open innovation and blockchain research to make crypto-economic trust accessible to all.
Berachain	US$100M	04/12	Berachain, an EVM-compatible L1 with a novel Proof-of-Liquidity consensus, has raised US$100M in a Series B funding round announced on April 12th, 2024 with investments from Polychain Capital, Framework Ventures, Brevan Howard, Laser Digital, Nomad Capital and 23 others.
Optimism	US$89M	03/08	Ethereum Layer-2 scaling network Optimism raised US$89M in a private token sale round to an undisclosed buyer, from the unallocated portion of the OP token treasury part of the Foundation's original working budget of 30% of the initial OP token supply.

Source: RootData, Messari, Crypto-Fundraising, Binance Research, as of June 19, 2024

With over US$2.58B of capital deployed, infrastructure was the biggest category in venture funding, possibly showing that VCs are focusing on these opportunities revolving around scaling, interoperability, modularity, and new blockchain infrastructure. Majority of fundraising activities occurred in Pre-Series A and Seed Rounds, indicating strong confidence in new Web3 startups.

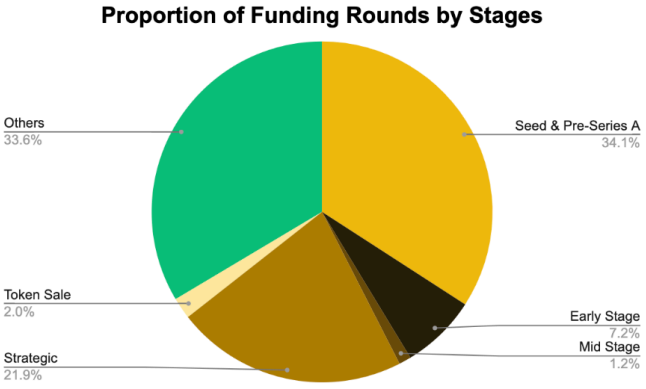
Figure 123: Venture funding by sector in H1 2024: Infrastructure takes the lead



Source: The Block, Binance Research, as of June 24

Figure 124: Most fundraising activities occurred during the Seed and Pre-Series A rounds

Fundraising Rounds	Number
Seed & Pre-Series A	470
Early Stage	99
Mid Stage	16
Strategic	302
Token Sales i.e. Public, Private	289
Others eg. Debt Financing, Equity Financing, IPO, Community Raise	462
Total	1377



Source: The Block, Binance Research, as of June 24

9.2 Institutional Adoption

With continued advancements in blockchain technology and the adoption of digital assets, governments around the world have started to shape a positive regulatory environment to support these innovations. Blockchain technology has garnered large interest from traditional institutions, leading many to embark on pilot programs or experiment with blockchain-based solutions for payments, investments, and asset management. Many countries and firms, including fintech companies and banks, are entering the space with significant development and attention focused on asset tokenization.

Building Infrastructure

The financial sector is witnessing significant advancements as blockchain technology and cryptocurrency adoption gain momentum among traditional institutions. Key developments in payment rails and tokenization reflect the concerted efforts to integrate digital assets into mainstream financial systems.

Payment Rails

- Web3 payments firm Transak partnered with Visa to streamline the conversion of cryptocurrency to fiat. This partnership enables users in over 145 countries to conveniently convert crypto into local currencies through Transak's payments infrastructure.
- Super app Grab partnered with Triple A to enable Singapore users to make payments via cryptocurrencies.
- Mastercard has introduced “Crypto Credential”, allowing users to send and receive crypto with usernames instead of wallet addresses.
- Fintech company Stripe is set to support transactions in USDC starting this summer, marking a renewed focus on crypto-based commerce.
- PayPal USD stablecoin expands to Solana Blockchain, providing faster, cheaper transactions for consumers
- Triple-A, which is the first licensed crypto payments company in Singapore, aims to roll out support for PayPal’s stablecoin by the end of June. The firm currently offers payment services primarily in Bitcoin, Ether and stablecoins issued by Tether and Circle.

Integration of Blockchain Technology into TradFi

- A group of financial institutions, including J.P. Morgan, Citi, Mastercard, and Visa, have initiated a proof-of-concept for a Regulated Settlement Network (“RSN”). The project will explore the feasibility of shared ledger technology to settle tokenized assets.

- Franklin Templeton has introduced peer-to-peer transfers for its on-chain U.S. Government Money Fund, represented by the BENJI token on both Polygon and Stellar blockchains.
- Nomura's Laser Digital has unveiled Libre Protocol, a polygon-powered fund tokenization infrastructure, with investment management firm Brevan Howard being one of the first users.

Expanding Access to Trading Cryptocurrencies

With the increasing demand for cryptocurrencies and digital asset exposure, along with an improving regulatory environment, traditional institutions such as asset managers, brokerages, and exchanges are introducing new technology and providing clients with access to trade cryptocurrencies.

Regulation

- The U.S. Securities and Exchange Commission ("SEC") approved the first spot Bitcoin ETF applications in January, giving the green light to 11 applications in a move that signifies a major advancement for the crypto industry.
- In April, Hong Kong regulators approved six spot BTC and ETH ETFs, while the Australia Securities Exchange and the Thailand Securities and Exchange Commission approved Bitcoin ETFs in June.
- The U.S. SEC officially approved 8 spot Ethereum ETFs in May, including products from BlackRock, Fidelity, Grayscale, and more.
- The U.S. House Of Representatives approved FIT21, marking the first time a major crypto bill has passed in Congress. It will now head to the U.S. Senate. The bill will establish a regime to regulate the U.S. crypto markets, and install the CFTC as the leading crypto regulator in the U.S.
- VanEck filed for the first spot Solana ETF in the United States on June 27, and ARK21 Shares subsequently submitted a similar filing for a spot Solana ETF on June 29.

Platforms Extending Access to Crypto Assets and Products

- Digital bank Revolut has developed a crypto exchange Revolut X which is now available to professional cryptocurrency traders.
- Global investment manager VanEck launched an NFT marketplace and digital assets platform in February called SegMint.
- Trading platform Robinhood launched its first staking product in Europe, enabling users to stake Solana and earn a 5% yield through the app. Robinhood also acquired crypto exchange Bitstamp in a US$200M deal to accelerate their global crypto expansion.
- Grayscale has introduced a new fund that stakes crypto to earn income. The Grayscale Dynamic Income Fund ("GDIF") will own nine assets, including $APT,

$TIA, $CBETH, $SOL, $ATOM, and more. It will aim to distribute staking rewards in US$ on a quarterly basis.

- Aptos has partnered with Microsoft, Brevan Howard, and SK Telecom to build an institutional platform, Aptos Ascend. The platform will aim to offer traditional institutions a gateway and platform to enter DeFi.

Real-World Assets

Real-world assets ("RWAs") continue to emerge as a significant sector, with a notable increase in asset tokenization by traditional financial institutions. The tokenization of RWAs, which represent tangible assets such as real estate and intangible assets such as government bonds or carbon credits, is placed on the blockchain, enhancing efficiency and convenience for transitions.

- BlackRock officially launched its first tokenized fund on Ethereum, BlackRock USD Institutional Digital Liquidity Fund ("BUIDL"), in partnership with Securitize. The fund invests in cash, U.S. Treasury bills, and repurchase agreements, allowing investors to earn yield while holding the token on the blockchain.
- Superstate debuted a tokenized short-term treasury fund, USTB, offering an alternative to stablecoins for U.S. institutional investors. Investors may make deposits in U.S. dollars or Circle's USDC stablecoin, and receive USTB tokens that represent their investment in the fund.
- Digital asset manager Hashnote launched a Short Duration Yield Fund product, USYC, investing short-term U.S. Treasury Bills and engaging in reverse repo activities.
- Libre, a fund tokenization platform built with Polygon CDK, went live in January. Eligible investors will be able to access tokenized funds by Brevan Howard and BlackRock.
- Deutsche Bank becomes the latest bank to join the Monetary Authority of Singapore's multi-year Project Guardian initiative to explore asset tokenization applications, joining the likes of Citi, Fidelity, OCBC and JPMorgan.
- Ondo Finance has allocated US$95M of its assets to BlackRock's recently launched tokenized fund, BUIDL, with total assets under management ("AUM") now over US$270M.
- Fidelity International launched tokenized shares of a money market fund using JPMorgan's Ethereum-based private blockchain, Onyx Digital Assets. This move aims to improve efficiency in delivering margin requirements while reducing transaction costs and operational risk.
- Ripple announced plans to launch a USD-pegged stablecoin. The coin will be "100% backed by U.S. dollar deposits, short-term U.S. government Treasuries, and other cash equivalents" and set to be launched later this year.
- Agora raised a US$12M seed round, with plans to issue their $AUSD stablecoin. Their reserve fund will be managed by VanEck and consist of cash, Treasury bills, and overnight repos.

- HSBC has introduced tokenized gold products for retail clients in Hong Kong, becoming the first bank to create a blockchain-based real-world asset (“RWA”) aimed at the retail marketplace.

10 Themes for 2H 2024

Looking ahead, we are delighted to see the market's remarkable performance in the past year and are optimistic about the following themes for 2024:

- **Continued institutional adoption:** The approval of the U.S. spot BTC ETFs has been one of the defining narratives of the first half of this year. They have helped to **add a new source of institutional demand to the Bitcoin market, a factor that enhances the diversity and depth of investment interest compared to previous cycles**. This will continue with the (expected) final approval of the U.S. spot ETH ETFs.

  The **increased recognition and validation** that these products, and the involvement of TradFi giants like BlackRock and Fidelity, bring to our industry **is significant and perhaps their most important effect**. We hope to see further adoption of these ETFs and crypto products by a wider group of investors (that previously may not have participated) across both the U.S. and worldwide. We also hope that some of them decide to explore even further than Bitcoin and Ethereum, and look deeper into any number of topics, from DeFi, to NFTs, to SocialFi.

- **U.S. macro conditions in an interesting spot:** One of the most important events of the second half of the year will be the **U.S. presidential election in November** (where **prediction markets[151] are currently expecting ex-President Trump to be re-elected**). The period leading up to and after the election is likely to come with some volatility across markets. In addition, macro conditions appear to be easing, after almost two years of record high interest rates. **Traders currently expect the first rate cut to occur in September, while some other global central banks have already started cutting**. Given lower interest rates typically feed into stronger trading markets, this could be a potential tailwind for the crypto sector as we go through the second half of the year.

- **Bitcoin scalability & DeFi:** The Bitcoin market has continued to expand in all directions, growing from a TradFi lens with the ETFs, while also expanding from a crypto-native sense with the continued growth of Ordinals, BRC-20s, and the latest Runes tokens. **Bitcoin scalability is also becoming an increasingly important issue**, with various teams working on solutions, including the likes of Lightning Network, Stacks, RGB, Citrea, and Merlin. The **Bitcoin DeFi market is also growing**, with the likes of BounceBit and Babylon being some of the early players. Check out, The Future of Bitcoin #3: Scaling Bitcoin, to learn more about the scalability aspect.

- **Ownership economy applications gain further traction:** Blockchain technology empowers users to reclaim sovereignty over resources that are traditionally dominated by large entities. This includes personal data, creative content, and

computation resources. For example, centralized storage services may require users to give up control over their data, exposing them to risks such as privacy breaches and the vulnerabilities of single points of failure. In response, various projects are exploring alternative solutions that grant users greater control over their assets and information. Two notable areas in this regard are **decentralized physical network infrastructure ("DePIN") and decentralized social media ("DeSoc").**

Although the concepts of DePIN and DeSoc have been around for some time, we have seen steady traction, attributed to factors like the maturation of infrastructure development, increased awareness, and a growing user base in crypto. For DeSoc, we saw notable developments such as the launch of Farcaster frames, as well as the new highs made in user activity. DePIN, meanwhile, has strong potential due to its extensive total addressable market and its ability to scale rapidly through bottom-up growth strategies, while providing real-world utility.

- **Real-world assets ("RWAs") grow:** The tokenization of RWAs presents a strong use case for blockchain technology. By bringing off-chain assets onto the blockchain, RWA tokenization allows for greater transparency, increased efficiency, and a new realm of possibilities regarding composability and potential use cases.

  While rate cuts are on the horizon, we expect **RWAs to benefit from the tailwinds of relatively elevated interest rates**. Specifically, tokenized treasuries are likely to remain a bright spot given that they present an alternative and attractive source of yield for crypto investors. Additionally, **alongside the accelerated institutional adoption of RWAs, developments in related infrastructures such as decentralized identity, oracles, and interoperability solutions are also expected to gain momentum**. These elements are crucial for the establishment of a comprehensive RWA ecosystem. As more institutions delve into the tokenization of RWAs, the advancement of these supporting infrastructures is likely to follow suit.

- **More Web3 gamers than ever: Web3 gamers are flocking in larger numbers than ever before** to hyper-casual games like Hamster Kombat and Notcoin. Additionally, projects such as Pixels and Parallel TCG have successfully **built strong, sizable, communities around their products**. However, we have **yet to witness the emergence of robust, in-game open economy mechanics**—Web3 gaming's equivalent of DeFi's 'Uniswap moment.' As the Web3 player base continues to grow, projects will be increasingly **incentivized to innovate on sustainable in-game economy solutions** to retain players for the long term.

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