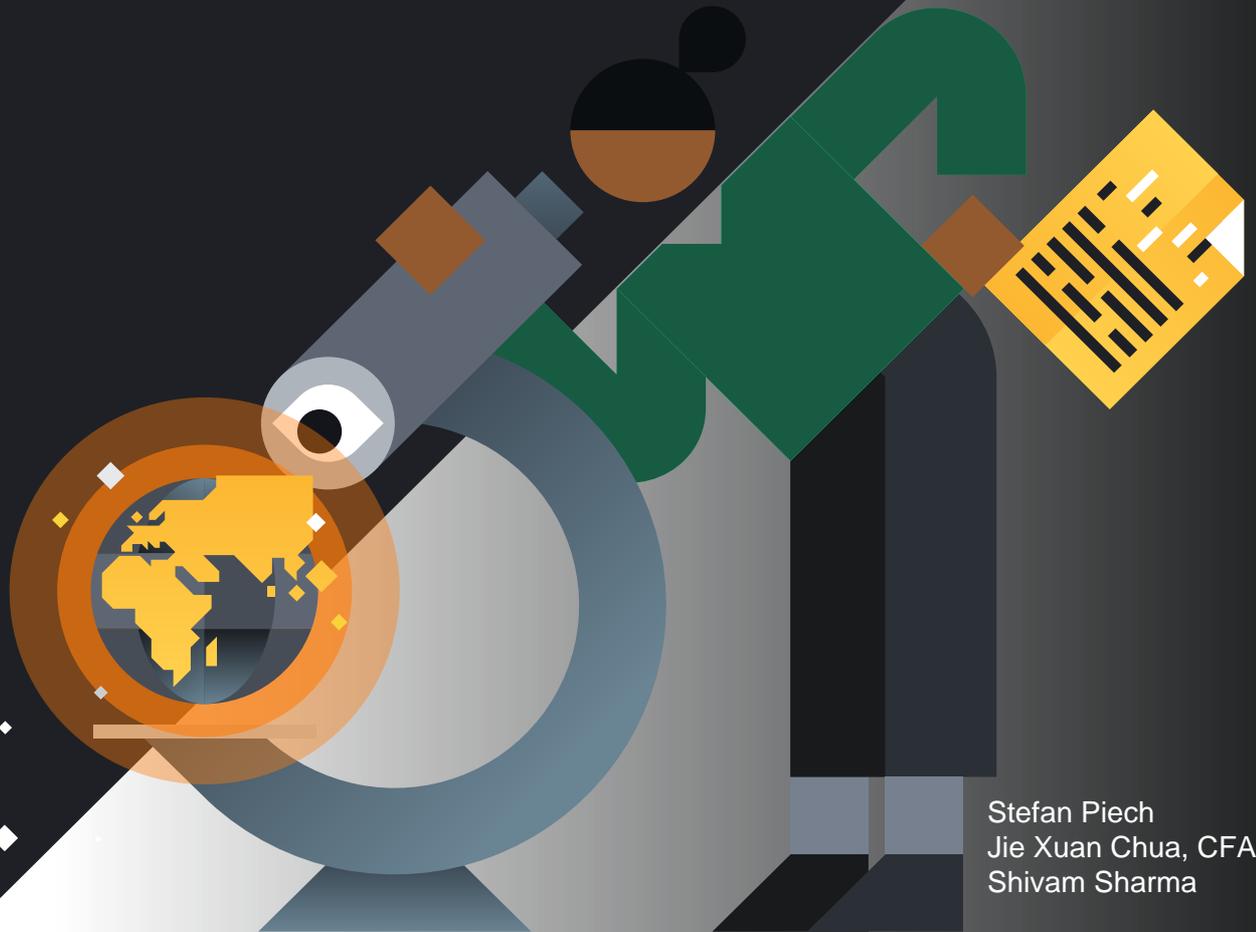




 **BINANCE RESEARCH**

Half-Year Report 2022



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Key Takeaways

- ❖ The first half of 2022 proved to be a challenging period for investing in risk assets. Crypto was not spared from the market downturn that also affected traditional asset classes such as stocks and bonds.
- ❖ Nonetheless, continued developments and innovation in the crypto ecosystem contribute to our optimistic view of the future of crypto.
- ❖ The competition between L1s remains fierce. Different L1s have taken different approaches towards increasing scalability.
- ❖ L2 deployment appears on track to become increasingly ubiquitous going into the second half of the year. It would not be surprising to see most, if not all, of the top-ranked dApps being deployed on some form of L2.
- ❖ Dominance of Ethereum in DeFi has continued to decline, as other chains such as the BNB Chain catch up. Development in the space remains strong and fundraising in DeFi has hit an all-time high.
- ❖ Trading volume for NFTs in the first half of 2022 remained resilient despite a sharp decline in June. OpenSea is still the leading NFT marketplace but new entrants such as X2Y2 and Magic Eden have introduced strong competition. The shift to using NFT aggregators is likely to continue gaining ground, albeit slowly.
- ❖ The number of GameFi projects has continued to rise but there are signs of slowing growth. Deal flows are healthy and capital investments in GameFi exceeded over US\$4.1B in first-half 2022.
- ❖ In terms of returns, the large-cap, blue-chip L1 coins have performed relatively well even amidst market volatility. L1 and Gaming tokens have exhibited some level of resilience and performed better when compared to DeFi and DEX tokens.
- ❖ Cryptocurrencies would likely benefit from a globally coordinated approach to regulation. Working with regulators rather than against them is probably a good approach.
- ❖ In the first half of 2022, there were more than 1,000 investments within the crypto space. The two areas that saw the most number of investments were Gaming/Entertainment and Asset Management.

Introduction

The first half of 2022 has been as eventful as they come. On one end, geopolitics and global macro conditions have left economists at their wits' end and obliterated most markets, while on the other, developments in the crypto and blockchain space continue at an unprecedented and truly unrelenting pace. While many have seen large portions of their investments marked down by double-digits multiple times in the last few months, we must keep in mind that this is part of economic cycles and the BUIDLing continuing in the background is at a pace that is largely unmatched across history.

Economic conditions have worsened since the start of the year. Issues such as persistent inflation, high commodity prices, and tightening monetary policies have contributed to a more challenging investing landscape. US stocks have recorded their worst first half in more than 50 years. The S&P 500 index fell more than 20.6% and the Nasdaq composite index declined almost 30% in the first six months of 2022. Across sectors, only Energy stocks performed well during the period (up more than 30% for S&P 500 listed stocks) while Consumer Discretionary performed the worst, being down more than 30%.

Crypto was not spared from the market downturn that also plagued traditional asset classes such as stocks and bonds. Black swan events such as the suspension of fund withdrawals by several centralized lending platforms and the collapse of the algorithmic stablecoin TerraUSD (UST) in the first half of this year contributed to further negative sentiments and worries.

That said, market booms and busts are not uncommon and are characteristics of market cycles. The market downturn has helped to weed out excesses and the reset in valuations back to more sustainable levels is arguably a positive development for the long-term viability of the ecosystem.

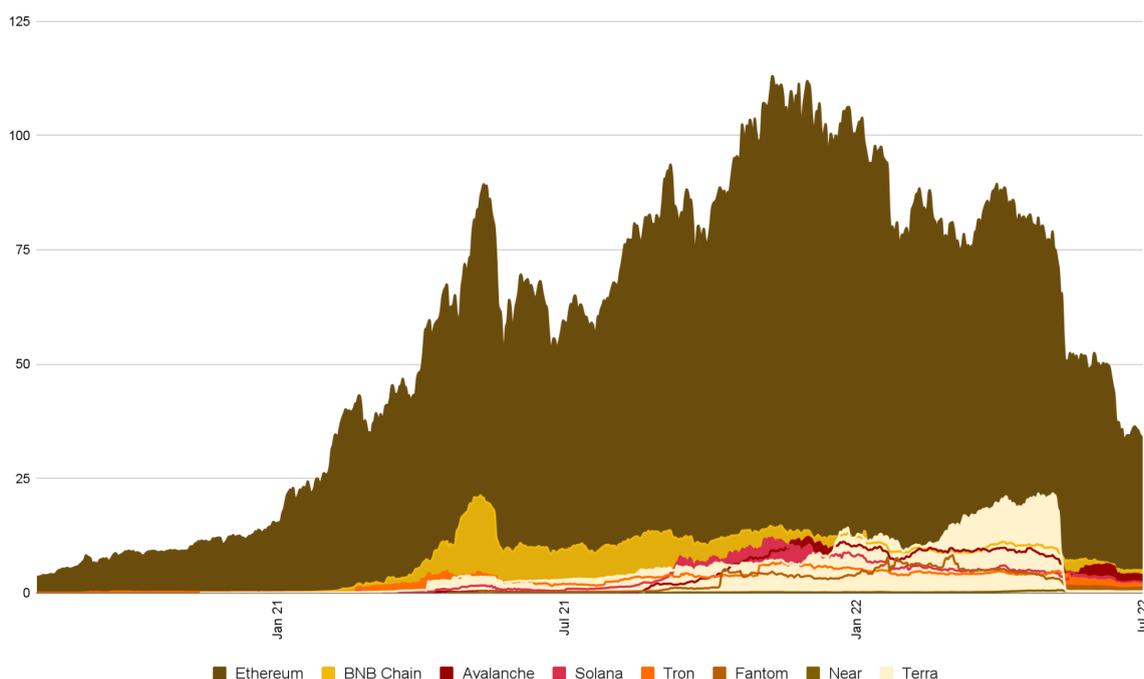
Nonetheless, price action alone is not representative of the health of the ecosystem, nor does it show the full picture of the underlying developments. As such, in this report, we aim to share a holistic review of the past half-year in crypto by analyzing the latest data, trends, and outlook across different areas of the crypto ecosystem. We remain optimistic about the long-term outlook for crypto since we continue to see further adoption and innovation in the space.

L1 Development

Competing Layer 1 (“L1”) protocols have innovated with new consensus algorithms, blockchain architectures, and execution environments, but how did they perform this year? 2022 has been a turbulent year for crypto. **Total Value Locked (“TVL”) of L1s declined throughout the year, and Ethereum has been losing market share to alternative L1s.** Market share of Ethereum (in terms of TVL) fell from 96.91% in January 2021 to 62.43% by the end of 2021, and dropped further to 59.01% by June 2022. On the other hand, BNB Chain’s TVL dominance was only 0.78% beginning of 2021 and grew to 7.02% ending 2021 and 8.66% ending June 2022. **It is noteworthy that over the last year, BNB Chain has had one of the most resilient and stable performances.**

Throughout last year and this, L1s kept on fighting for market share, trying to scale, grow and win in the ongoing multichain battle. Each L1 has tried to gain market share by innovating and trying to solve the “trilemma” of decentralization, security, and scalability.

Figure 1: L1 TVL declined throughout the first half of 2022 (US\$B)

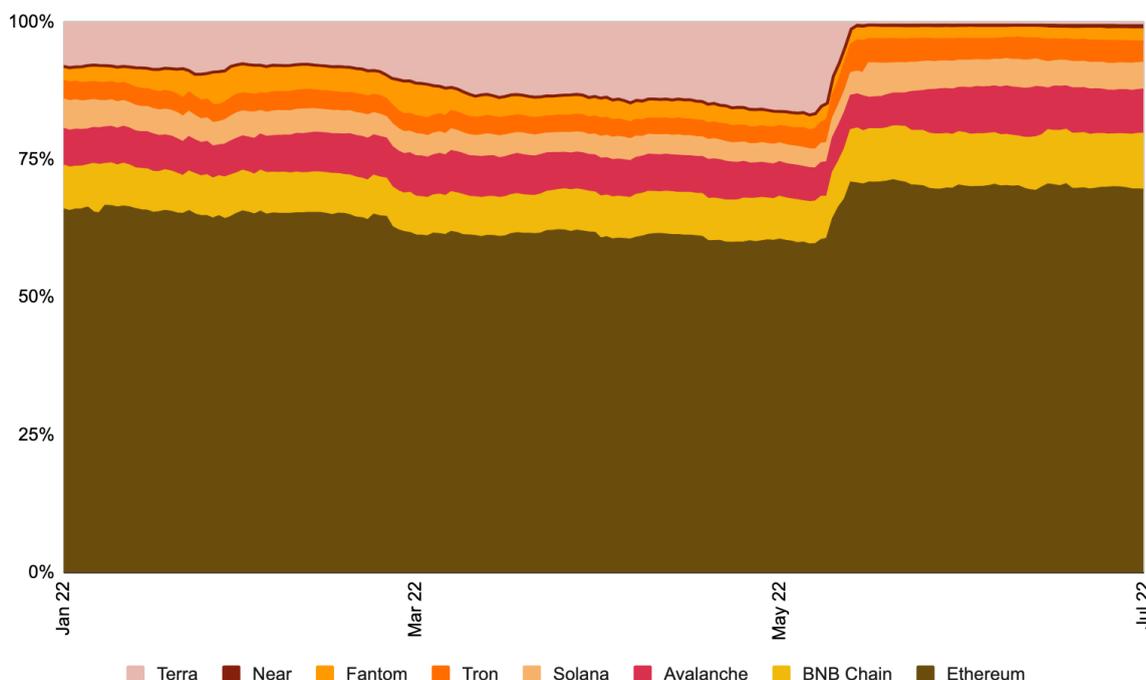


Source: DefiLlama, Binance Research

Looking closer at the market share across L1s in 2022, the downfall of Terra is probably the most noteworthy event, with other chains like BNB Chain and Ethereum absorbing their TVL. Due to the issuance of the algorithmic stablecoin USDD, the Tron network also saw an increase in TVL from US\$4.3B on May 2nd (the day USDD launched) to around US\$6.3B on

June 8th. However, with the de-pegging of USDD on 13th June, TVL came down to around US\$4B at the time of writing. Despite ongoing competition among L1s, we note that Ethereum is still the market leader by a significant margin.

Figure 2: TVL distribution amongst L1s in 2022 shows significant impact from the Terra fallout (US\$B)



Source: DefiLlama, Binance Research

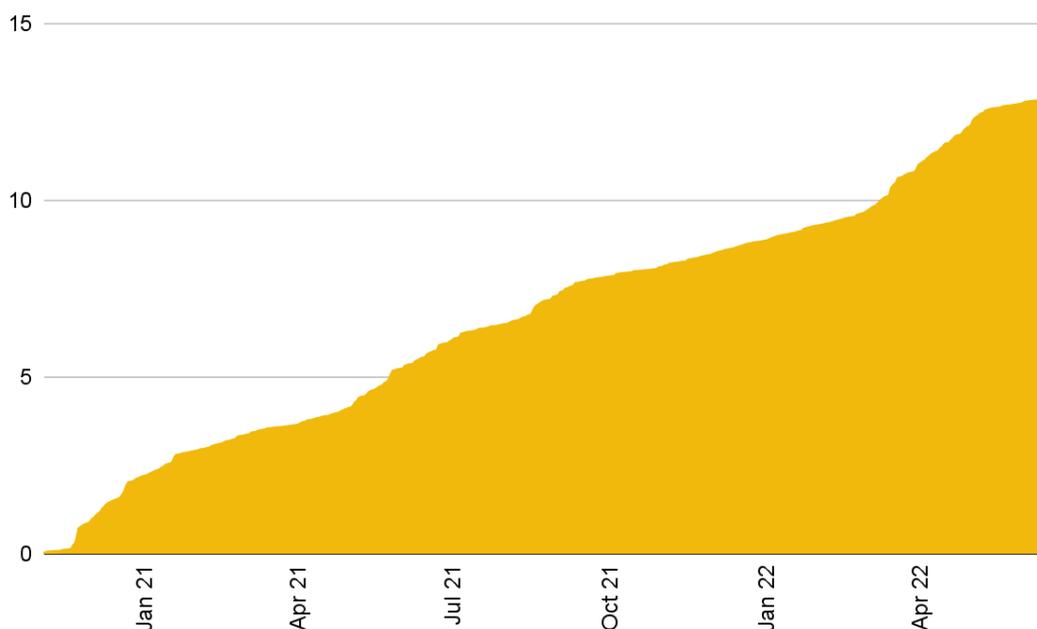
To get a clear picture of what has been happening this year in the L1 landscape, let's look at some of the key developments for the major chains:

Ethereum - will it merge this year?

The big story in the room is Ethereum's merge. While it has been in the works for a while, we are closer to the merge than ever. The Ropsten and Sepolia testnets merged successfully in the last two months, and just one more public testnet merge will be executed before the mainnet merge. The actual date of the merge is still unknown, but the estimated date will likely be in Q3 or Q4 this year if things go as planned, barring unforeseen circumstances.

Currently, Ethereum 2.0 has 402,254 validators⁽¹⁾ close to 11% or around 13 million of the circulating supply (121,202,038 ETH) is staked already.

Figure 3: Staked ETH increased consistently throughout the year (US\$M)



Source: Glassnode

It is important to note that all staked ETH will remain out of circulation until the merge happens. As such, **ETH staking is (and likely will be going forward) the main contributor to shrinking supply.**

The London hard fork (EIP-1559) took place last year but still had a significant impact on ETH in H1 2022. It was the first step to turning ETH into a deflationary asset, and since it was first introduced, it has burned around 1.8% of the total ETH supply.⁽²⁾ Together with the move to PoS, Ethereum will turn into a deflationary asset.

As such, the merge will kickstart Ethereum’s scaling roadmap and usher in the next phase of scaling via sharding and danksharding. For now, however, the focus is still on L2 solutions that will lead to Ethereum moving towards being a settlement layer.

BNB Chain’s steady growth journey

BNB Chain spent 2022 not by being flashy but by continuing its steady growth journey instead. TVL grew from 7.02% at the end of 2021 to 8.66% by the end of June 2022, and the chain did a noteworthy job in terms of fees compared to competitors, ranking second after Ethereum. **With new product innovations, BNB Chain remains competitive.** This year’s key event was the launch of the BNB Chain Application Sidechain (“BAS”), which will allow developers to port data and assets from the BNB Chain, reducing strain on the network’s limited transactional resources.

BNB Chain will embrace large-scale applications, including GameFi, SocialFi, and the Metaverse. In particular, they are scaling from one chain to multi-chain, improving scaling solutions, and expanding the validator set of BSC from 21 to 41. BNB Chain also announced to open-source BNB Beacon Chain alongside the Binance decentralized exchange (“DEX”), making it accessible for developers to build on.⁽³⁾

Avalanche and the story of subnets

Ethereum’s gas fees and Solana’s outages show how important scaling solutions have become. While many prefer Optimistic or Zero-knowledge rollups for the time being, Avalanche decided to take a unique approach with subnets (Avalanche still lacks shared security and settlement). The Avalanche Foundation recently announced a 4 million AVAX incentive program to help develop subnets. This “Avalanche Multiverse” program seeks to grow its subnets and expand their use cases. DeFi Kingdoms, a popular P2E game on the Harmony Network, was the first beneficiary of the multiverse program; the Swimmer Network is another. The general idea is that subnets help to reduce the exploitable maximal extractable value (“MEV”). With the recent implementation of Snowman++, Avalanche aims to achieve precisely that.

So do subnets have a future? Subnets have a few benefits. For example, similar to rollups, gas can be paid in your token of choice, and paid fees will accrue to subnet validators. On the other hand, subnets must validate the primary Avalanche network by staking at least 2,000 AVAX tokens. **Subnets further contribute to innovation and activity within the Avalanche ecosystem.** While this is the case, the risks persist that gains disproportionately accrue to subnet tokens rather than to the primary Avalanche chain - something we saw happening with Cosmos already.

For now, **Avalanche still has one of the clearest roadmaps and a lot of throughputs, despite the question around overall value accrual for Avalanche** still being existent.

Fantom losing fans?

Another key event of the year was the departure of Anton Nell and Andre Cronje from a handful of projects. Several Fantom projects were impacted. Around 25 dApps and services were terminated on 03 April 2022. Despite the Fantom team’s effort to ensure that projects continue, many of them came to an end or were heavily impacted. This was a massive blow to the Fantom network, and the protocol never really recovered from this. TVL has fallen drastically following the events, and the L1 remains on shaky ground. Most recently, the Fantom Foundation proposed the usage of 10% of transaction fees to create a fund to support projects in the network’s ecosystem. This 10% would come out of the 30% of

transaction fees that are currently burned for disinflationary purposes. Voting on the proposal started in early July and ends in October and will be something to keep an eye on.

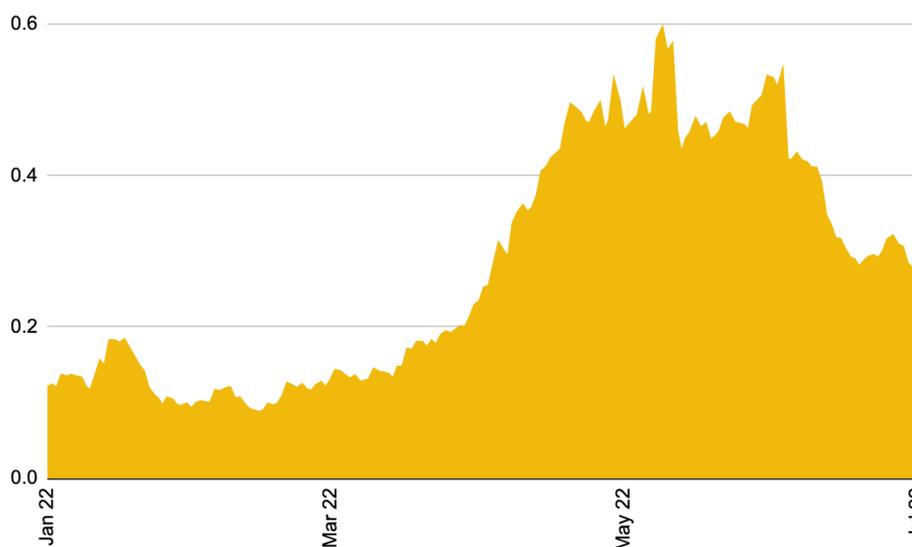
Solana and its outages

Solana has one key strength so far - parallel transaction processing leveraging multiple cores. However, numerous outages, as well as unforeseen bottlenecks, are the commonly cited issues by users that have been reluctant to use Solana. Solana has been offline (at least partially) seven times in the last twelve months and five times in 2022. To be fair, congestion on Solana tends to be a result of one-off, short-term events that result in bottlenecks (eg. popular NFT mints). An area that has stood out for Solana is the NFT ecosystem, which is a bright spot for the blockchain. Earlier this year, Magic Eden, a Solana NFT marketplace, topped OpenSea's daily trading volume as Solana NFTs gained traction.

The growth story of Near Protocol

One of the new rising stars in H1 2022 was Near Protocol. Throughout H1 2022, Near Protocol gained substantial market share, surpassing US\$500M in TVL at the end of April. While only ranking in on number 18 in terms of TVL. Near Protocol's TVL quadrupled from the beginning of the year to its high in May. A big part of this growth can be attributed to the launch of Aurora earlier this year, which allows for EVM-compatible dApps.

Figure 4: Near protocol TVL tripled in the first few months of 2022 (US\$B)



Source: CoinMarketCap

Near Protocol, one of the youngest L1s, had a strong start boosted by an US\$800M ecosystem fund. Near Protocol is a “development platform built on a sharded,

proof-of-stake, layer-one blockchain designed for usability.” Near aims to use dynamic sharding to scale. Currently, Near Protocol processes around seven transactions per second (“TPS”), with the majority coming from Aurora. This does not seem much for now, but it is essential to remember that the Near ecosystem is still nascent and TPS should increase once demand does. Going forward, it might be possible for Near to play an even more prominent role in a multi-chain future as more adoption and users enter their ecosystem.

Goodbye Terra, hello Terra 2.0

The de-pegging of Terra’s algorithmic stablecoin UST was probably one of the most impactful events in crypto this year (we will discuss it in more detail later). It essentially moved the old Terra L1 out of existence (now called Terra Classic) and introduced Terra 2.0.

With UST going to 0, many projects tried to find a home elsewhere, with Astroport and Mars Protocol moving to Cosmos and others to BNB Chain, Injective and other blockchains. Those that stayed worked on a revival plan, launching Terra 2.0. Still being in the early days and with lots of noise around the Terra Foundation and its people, it is hard to judge if Terra 2.0 will be successful or not.

Conclusion

H1 2022 was eventful, to say the least. Polkadot parachains have proven their limits with only limited slots, Polygon experienced congestion, Terra de-pegged and exacerbated the market turmoil, Ethereum announced its testnet merge, and so much more. The list can go on forever. **This year was another year of interoperability, with the old vision of “every blockchain for themselves” slowly fading.** A multi-chain future is also indicated by Ethereum slowly losing its market dominance while alternative L1s gain market share.

Perhaps the world may not be ready for full decentralization, but there have been stepping stones in getting there this year. **Scaling is slowly happening, and different approaches will position the different L1s to each have their strengths and weaknesses.** While Avalanche is bringing online new subnets, Ethereum is targeting rollups - in the end, it remains to be seen which approach works the best.

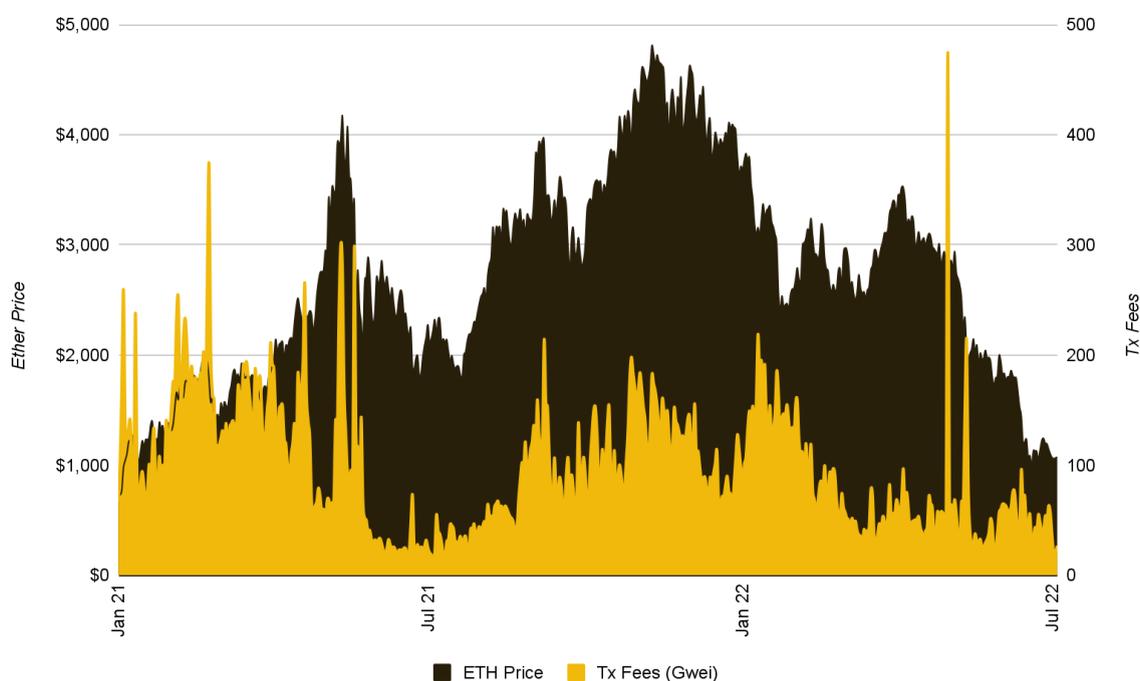
L2 Development

The challenge of scalability within L1 platforms has transitioned from a distant and theoretical limitation to one that desperately needs to be tackled in the current market climate. This fundamental issue, perhaps most notably illustrated by the exorbitantly high fees in the Ethereum ecosystem, has given rise to what is maybe **one of the key crypto narratives in 2022: layer 2 (“L2”) scaling solutions**. In this section, we discuss the increasingly visible integration of L2 solutions within dApps across the space, the leading L2 projects and their upcoming or rumored tokens, and the possible trajectory of the broader L2 network landscape.

L2 Fees and Increasing dApp Integration

To open our discussion, we can have a quick look at how transaction fees have continued to spike, even in a relatively quiet market, and thus have necessitated a move towards L2. Given that Ethereum’s ecosystem remains the largest by TVL and number of dApps, we can use it as a proxy for our general discussion.

Figure 5: Average Ethereum transaction fees have spiked even as Ether price fell



Source: etherscan.io

As we can see above, **transaction fees on Ethereum have continued to spike, even in times when price is in a downward trend**. Our chart is somewhat skewed by the extremities of May 2022, when the Bored Ape Yacht Club (“BAYC”) Otherside metaverse

sale led to a historical surge, leading to fees as high as US\$6,000 per transaction. However, even excluding this, fees have still averaged above US\$30-40 per transaction for almost a year. Note that these are average fees, and the reality is that any hyped NFT drop can often lead to a temporary “gas war”, where fees easily get into the hundreds of dollars. In fact, it has been noted that NFT fees can regularly be 5-10x higher than the cost of transferring Ethereum. With all the talk of widespread adoption of DeFi and GameFi products, a large number of which are hosted on Ethereum, it is clear that this is an unsustainable trend and cannot lead to any meaningful level of adoption within the masses. Add to this the fact that the upcoming “Merge” i.e. Ethereum’s transition from a proof-of-work consensus mechanism to proof-of-stake, is not expected to lead to any notable reduction in transaction fees, and it is clear that the solution lies outside of the base layer.

L2 fees are currently a fraction of the fees you can expect to pay on the L1. Interestingly, according to Vitalik Buterin, they are still too expensive:

Figure 6: Vitalik on L2 fees



Needs to get under \$0.05 to be truly acceptable imo. But we're definitely making great progress, and even proto-danksharding may be enough to get us there for a while!

3:46 PM · May 3, 2022



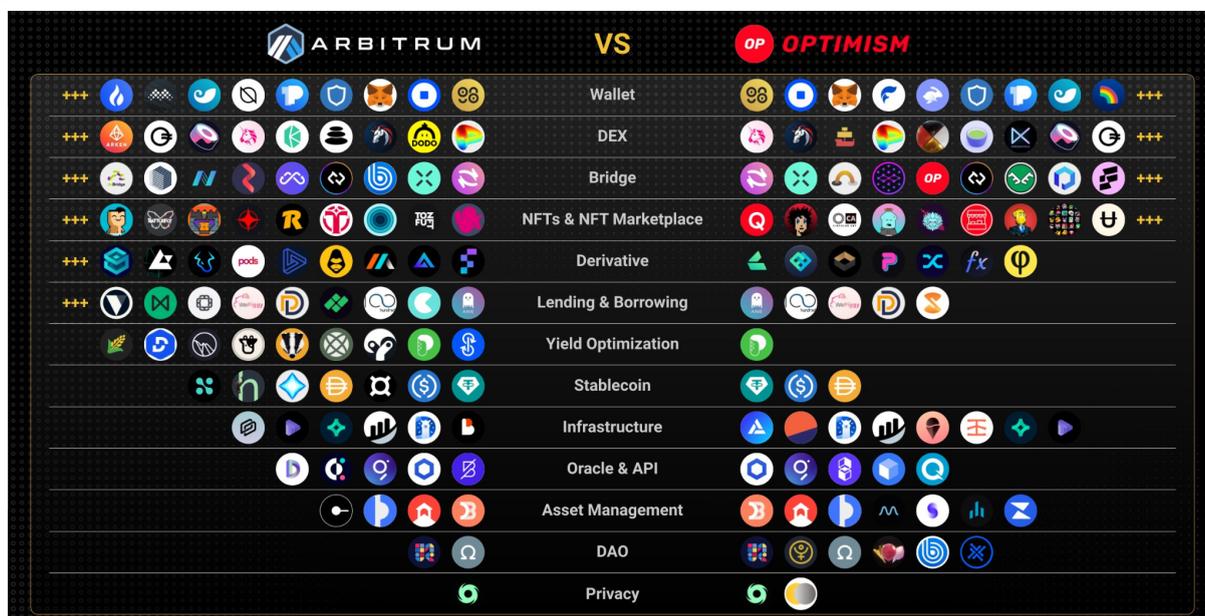
Source: Twitter

Nonetheless, even in their current “high fee” state, for anyone who has used L2 protocols, the reduction in transaction fees is both notable and somewhat relieving. It is no surprise that we have seen widespread deployment of dApps on L2 protocols across almost all major categories, including DEXes, lending, bridges, and yield protocols. **Optimism and Arbitrum, two of the largest players in the space (both utilizing optimistic rollup technology), have seen a massive uptick in usage, with nearly 150 dApps being deployed on them in aggregate.** This includes the top dApps in the space, including the likes of Uniswap, Curve, and Aave, among numerous others.

In fact, it is slowly becoming more apparent that being deployed on L2 is more the norm rather than the exception, and it is becoming more clear that not deploying on L2 simply prices out a significant number of retail users - a market that is crucial to capture for any dApp looking to gain true adoption. With this in mind, and the trend we have seen so far in 2022, **L2 deployment appears on track to become more and more ubiquitous as we**

enter the second half of the year and it would not be surprising to see most, if not all, of the top ranked dApps being deployed on some form of L2.

Figure 7: A comparison of dApps on Arbitrum and Optimism; two of the largest and most popular L2 solutions



Source: Coin98 Analytics

Tokens and L2 Summer?

One notable aspect we have so far been missing from the L2 landscape is the ability for users to buy into the protocols for both governance and speculative price appreciation purposes. Enter the retroactive airdrop. Thus far, the **only major L2 we have seen airdrop a token is Optimism with their OP token**⁽⁴⁾. Airdrop #1 was announced in early April, and “an entire season of airdrops” is expected to follow, according to the Optimism team. Market cap peaked around US\$230M as the token was announced and has since stabilized between the US\$100 - 200M mark, although valuation is still likely to be in price discovery mode. Outside Optimism, **Arbitrum, StarkNet and zkSync have all indicated potential upcoming tokens**, with zkSync being the most vocal and confirming an upcoming token in their official documents⁽⁵⁾ in April. Many major market commentators have spoken of an upcoming “**L2 Summer**” (analogous to the DeFi summer of 2020) or what is commonly being dubbed as “L222”, and it is anticipated that the next token release may very well kickstart this move.

Figure 8: Arbitrum and Optimism rank among the top 7 in terms of fees earned by all L1 and L2 networks

Name	1 Day Fees	7 Day Avg. Fees
Ethereum	\$2,258,316.47	\$4,047,641.72
BNB Chain	\$517,895.50	\$602,665.94
Bitcoin	\$183,791.24	\$281,249.21
Arbitrum One	\$14,231.68	\$149,588.86
Avalanche	\$21,160.55	\$26,203.20
Polygon	\$19,247.65	\$25,847.97
Optimism	\$6,872.46	\$22,529.00

Source: cryptofees.info As of 4th July 22

What are the other chains doing?

While our attention has primarily been focused on the Ethereum ecosystem and its L2 solutions, we would be remiss if we did not mention the scaling protocols that other notable chains have been developing. **Avalanche’s Subnets⁽⁶⁾ and BNB Chain’s BSC Application Sidechains (BAS)⁽⁷⁾ are two relevant examples, with Polygon’s Supernets⁽⁸⁾ also being very closely related.** While these protocols have their individual nuances, ultimately, they aim to scale the base chains and provide app-specific scaling solutions. Avalanche has launched two Subnets thus far, as discussed earlier in the L1 section of the report. On the BNB Chain side, the first deployment will be three dApps by META Apes, Project Galaxy, and Metaverse World, as well as integrations by leading infrastructure partners such as Ankr, Celer, Mathwallet, Multichain, NodeReal, and Pyth Network. Polygon’s Supernets appear to be in a slightly earlier stage of development. The level of developer and builder engagement that these ecosystems can get on these scaling solutions will be an interesting story to follow and may very well contribute to the siphoning of TVL from Ethereum that we have observed in the last 18 months.

Conclusion

To conclude the section, we evaluate a narrative that has run so hot in the last couple years but has perhaps lost some steam in recent months; the alt-L1 narrative. **The bull cycle of 2020-21 very clearly showed us how simple it looks to build something that may look like Ethereum or BNB Chain, but how difficult it is to build economic security, monetary premium or attract a strong set of builders and developers and maintain a solid ecosystem.** Many chains thought they had the answer and could work past the “trilemma”⁽⁹⁾, but the reality is that as soon as the market started trending downwards,

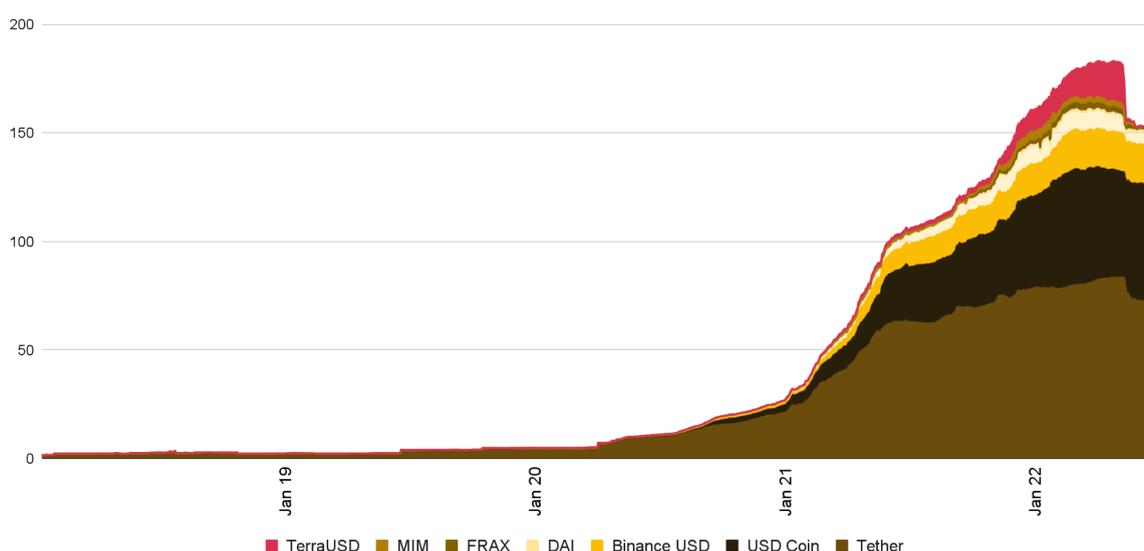
many chains either failed, stagnated, or currently remain in an unreliable state, illustrated by sustained periods of downtime. Furthermore, while price moves are not something we remain too focused on, given our long-term mindset, it shouldn't be ignored that most L1 platforms are down 85-90% from their recent all-time highs.

So the question becomes, do we continue to see builders trying their hands at building another L1? Or have developers learned their lessons and might transition to alternative technologies? We remain biased towards the latter. **One key aspect of building an L2 is that you are able to leverage the security of the base chain** and essentially not worry about it. This is key. At its most basic level - **L2s are significantly less capital intensive to build and expand upon when compared to creating an entirely new chain.** With the success of Optimism and Arbitrum and the tremendous valuations that projects like StarkNet are now commanding in the private market, combined with the relative ease and speed of building a L2, a scenario of "L2 mania" doesn't seem too far-fetched at all. If the trajectory continues as we see it now, at some point L2s will become the most significant users of block space. At that stage, when both builders and investors see that L2s are not only scaling solutions, but are also actively adding to the security of the base chain, that is when L2 activity is likely to start hitting the next level. The conclusion is simple; the next bull cycle can easily see a proliferation of L2 solutions in the market. This might very well lead to the next meaningful onboarding of users into the crypto space as we continue on the long road towards mass adoption.

Stablecoin Development

2020 and 2021 have been crazy years for the stablecoin market. They exploded in size and, following the growth of DeFi stablecoins, found more and more use-cases within the crypto landscape. Within just a few years, **they became a central backbone of further crypto adoption but also continued to be further scrutinized by regulators to find a balance between consumer protection and crypto adoption.**

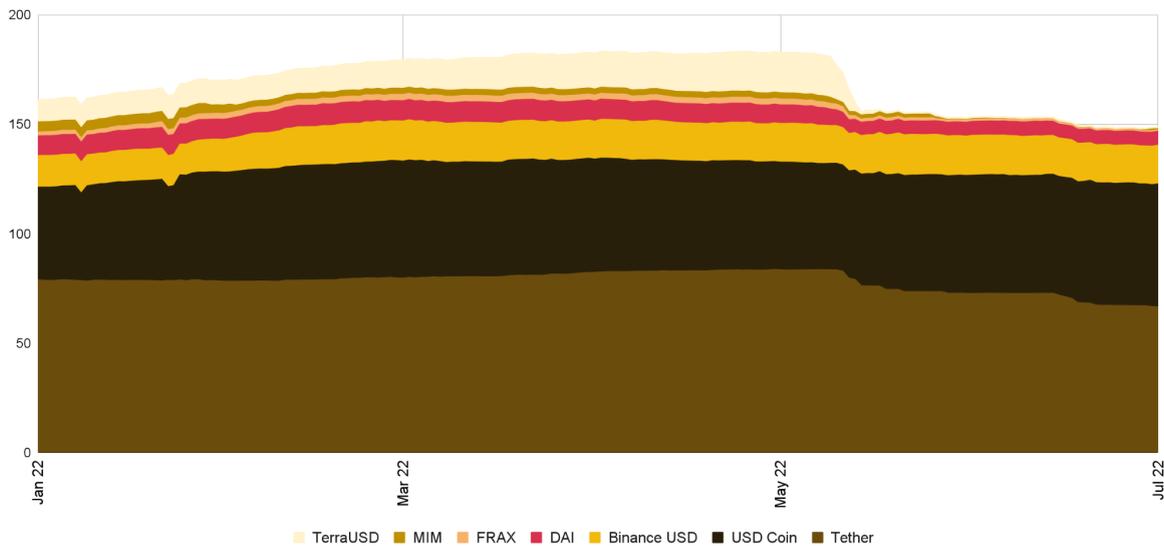
Figure 9: Stablecoin market capitalization grew by over 3000% since January 2020 (US\$B)



Source: CoinMarketCap, Binance Research

Zooming into 2022, we can see that growth was a lot more moderate than in the previous two years. While stablecoins grew steadily throughout the first few months of the year, with investors moving their assets out of volatile cryptocurrencies into presumably less volatile stablecoins.

Figure 10: Stablecoin market capitalization shrank by 7.7% since the start of the year (US\$B)



Source: CoinMarketCap, Binance Research

The growth journey was interrupted in May 2022 with the failure of the TerraUSD stablecoin (“UST”). Early May, Terra’s UST essentially fell prey to an algorithmic stablecoin death spiral, wiping out nearly 40B USD in market cap across UST and LUNA. This report is not meant as another summary of the events that were unfolding during the UST de-pegging, so we will keep this part short.

Figure 11: CZ comment on Twitter



Source: Twitter

The crash of UST has led to lots of criticism for algorithmic stablecoins. **There’s still a lot of education that needs to happen around the risks that come with crypto**, as with many other investments, and with the potential of failure of young projects that are trying to create and grow a new category of stablecoins. Currently, many people are painting all algorithmic stablecoins with the same brush without differentiating between them. Differentiating features include the actual peg mechanism used by different algorithmic stablecoins, their collateralization if they have any, and their governance structure. However, we should not dismiss the entire category as a whole. It is essential to continue to educate about the underlying risks to protect consumers and learn from past failures.

So far, the market is still dominated by fiat-backed and centralized stablecoins. **Tether is still the leading centralized stablecoin, though both BUSD and USDC are catching up fast.** During the first half of the year, BUSD grew by more than 22%, surpassing 17 billion in market capitalization. During the same time period Tether's USDT fell by more than 15%, underpinning the quality element of BUSD.

For algorithmic stablecoins, the over-collateralized model has, so far, proven to be more resilient. With increased adoption of crypto and many use-cases for stablecoins there is a lot of room to fill for projects aiming to compete, and we saw more and more L1s announcing their own version of an algorithmic stablecoin this year.

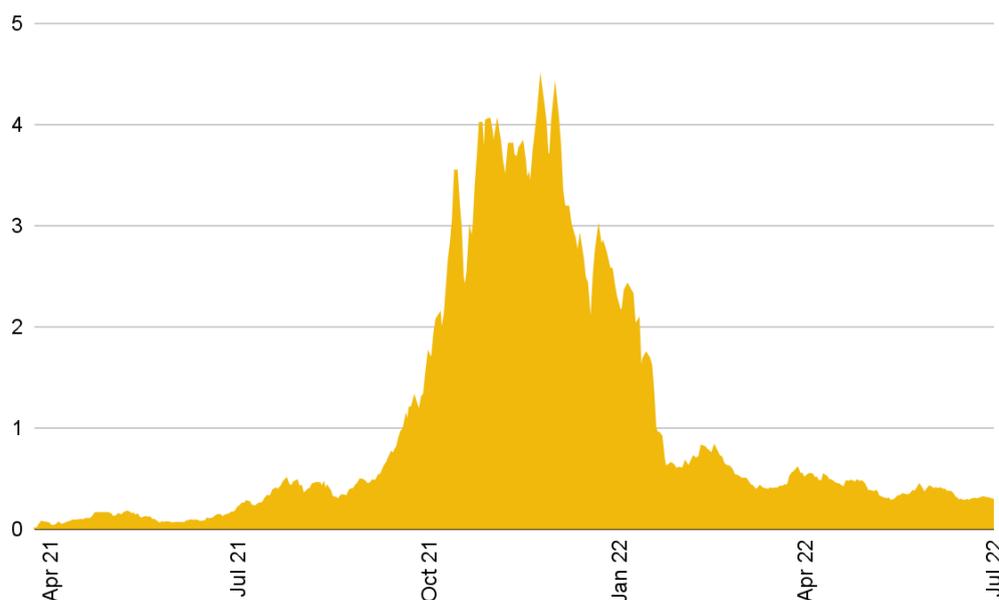
At this point, stablecoins may represent the best approach for connecting payments and other real-world applications with the crypto space. The developments in this area has the potential to lead to more inclusive payment and financial services, growing tokenized financial markets and increased adoption of Web 3.0.

Vitalik probably said it best when he wrote: “Instead, while we certainly should hope for growth, we should evaluate how safe systems are by looking at their steady state, and even the pessimistic state of how they would fare under extreme conditions and ultimately whether or not they can safely wind down.”⁽¹⁰⁾

Another area of “stablecoins” to review is that of decentralized reserve currencies. While we are likely too far along to ever unwind our dependence on USD-pegged stablecoins, lots of projects are still looking at building viable alternatives. Some of these alternatives abandon a peg altogether, codify monetary policy in smart contracts, and employ varying degrees of community governance and decentralization. It is essential to remember that these are entirely new experiments in monetary policy and still need to “test out” the waters. The most famous one was Olympus DAO's OHM. Another big project attempting to do this was Wonderland DAO. While it feels like forever ago, the project saw a massive drop in its price and adoption earlier this year after @Zachxbt, a famous on-chain detective, revealed on Twitter that Sifu, who served as Wonderland's CFO was previously involved in the QuadrigaCX scandal of 2019.⁽¹¹⁾

Olympus is a protocol that is responsible for the issuance and management of a fully backed, algorithmic, free-floating stable asset, OHM. OHM is fully collateralized, as it's backed by a treasury of crypto-assets that sit under the purview of the Olympus DAO, which is known as the protocol controlled value (PCV). While Olympus has been compared to a private bank issuing its own notes, another exciting parallel that comes to mind is the Federal Reserve. As we know, in the fiat system, the Fed holds various assets, such as the US Treasury Bonds, gold, dollars, and foreign currencies, which they use to help conduct monetary policy.

Figure 12: Olympus DAO market capitalization shrank drastically early this year (US\$B)



Source: CoinMarketCap, Binance Research

While Ohmies have emerged as one of crypto’s most passionate communities in 2021, the project saw a considerable drop in market capitalization beginning of this year. **The once famous Twitter handle (3,3) is slowly disappearing.** Olympus has now rolled out a bonding-as-a-service product called OlympusPro. For a 3.3% fee (they’ve proven some humor with this for sure) on all bond payouts in a project’s native token, the Olympus team will implement a bonding mechanism. Treasury as a Service is the business model of decentralized custody of partnership funds that is still in its infancy. Protocols like OlympusDAO are designed for TaaS by selling bonds and absorbing partners’ liquidity into its treasury.⁽¹²⁾

If there is one thing we learned from the development of OHM this year is that the game theory re-basis model has its flaws. It is important to look for utility beyond the staking. While maybe an interesting way to bootstrap a project, it is not enough and there needs to be utility beyond that.

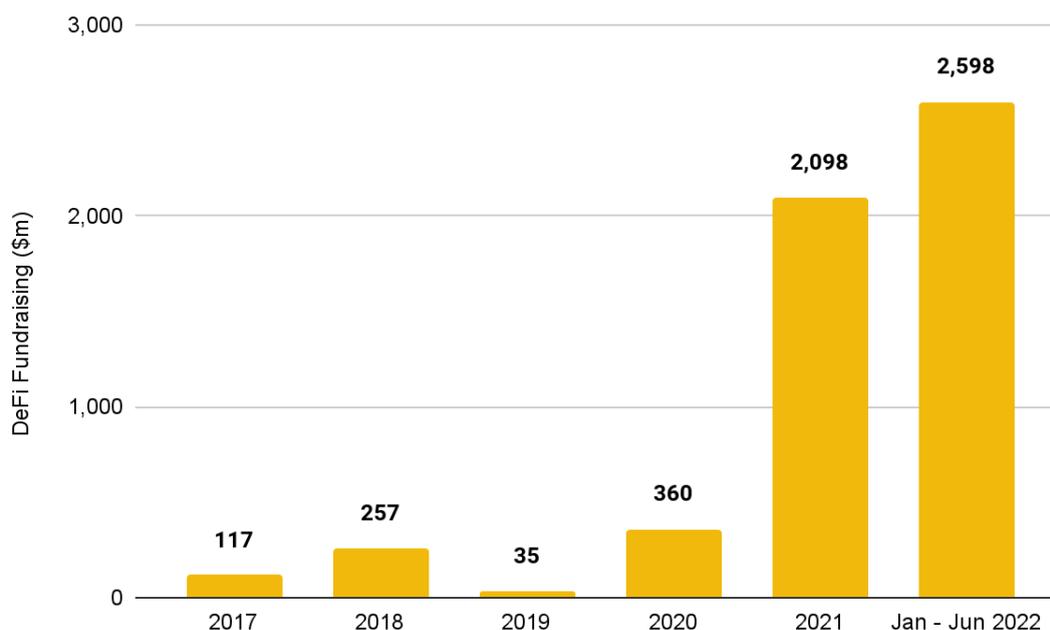
For now, OHM remains a risk-on bet that unpegged currency with a growing treasury, compounding innovation, and passionate community commands enough of a premium in the medium-term to warrant continued growth and participation in (3,3).

DeFi

Introduction

Decentralized finance (“DeFi”) has been on an interesting journey since the peaks of the fondly remembered 2020 DeFi Summer. While numerous tokens have already been in a bear market for many months, developers and builders continue to dedicate time and energy to building the financial systems of the crypto world. With the traditional finance sector a multi-trillion dollar industry, DeFi platforms and builders have sufficient reason and incentive to continue to build in DeFi and vie for a larger slice of the proverbial pie. **Despite scalability being somewhat limited due to high transaction fees, inconsistent liquidity and security concerns, development is consistent and growing, while fundraising in DeFi continues to hit an all-time high.** In this section, we explore how this central sub-sector of crypto has been developing in the last few months.

Figure 13: 2022 DeFi fundraising: Already the largest year on record (US\$M)



Source: Binance Research, Dove Metrics

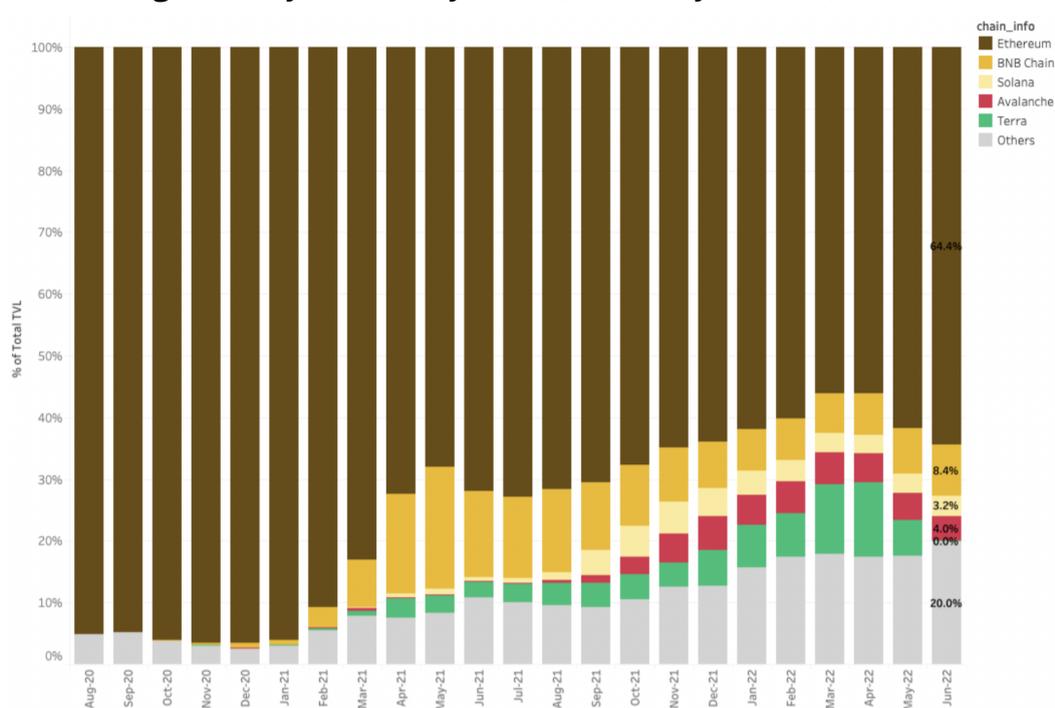
A Macro View

To open our discussion, we can take a top-down view to illustrate how DeFi has been evolving when broken down via chain. DeFi started on Ethereum and most of the largest dApps are still based on the chain. The first-mover advantage was notable and Ethereum has commanded upwards of 95% of DeFi TVL for most of the brief history of this nascent sector. Nonetheless, this dominance started to wane throughout 2021, at least in part due

to high transaction fees and scalability concerns, and **Ethereum has seen its share of DeFi TVL drop from 97% at the start of 2021 to ~63% today.**

Looking closer at 2022, the first few months of the year saw a rapid (and in hindsight, an unsustainable) rise in the TVL of the Terra ecosystem, driven largely by the ~20% yields available on their Anchor Protocol. The peak of this came in April, when Terra, now the second-largest chain by TVL, commanded nearly 15% market share in the DeFi market. What happened after has been covered ad nauseam by the market so we won't delve any deeper, but will note that the new Terra chain currently ranks below the top 50 chain by DeFi TVL. Two other notable moves have come from the BNB Chain ecosystem and the Tron ecosystem. **BNB Chain, which has ranked second by TVL for over a year (except for a brief period of being usurped by Terra) has seen some sustainable growth this year, increasing market share from ~7% to upwards of ~8%.** Additionally, BNB Chain has been one of the major ecosystems to have offered incentives to Terra developers to migrate over and bring their talent to work on its projects. For Tron, a chain that has largely been absent from top TVL rankings for a long time, the increase in TVL has largely been driven by their USDD algorithmic stablecoin, again offering attractive yields to attract users. Outside these, **Avalanche and Solana make up the other two chains in the top five, both of which have lost around ~1-1.5% in DeFi market share this year. The number of protocols on each chain is also indicative of relative development, with Ethereum over 500, while BNB Chain is upwards of 400.** This compares to just **nine protocols in the Tron ecosystem, around 225 in Avalanche and ~70 in Solana.**

Figure 14: Average monthly DeFi TVL by chain (% share of total TVL)



Source: DeFiLlama, Binance Research

Decentralized Exchanges (“DEXes”)

Any discussion on DeFi necessitates a conversation on the primary means of exchange in the decentralized world; enter DEXes. DEXes have always commanded notable levels of TVL across DeFi and the category currently tops the charts in both TVL and number of protocols⁽¹³⁾ with over US\$23B in TVL split across 470+ protocols.

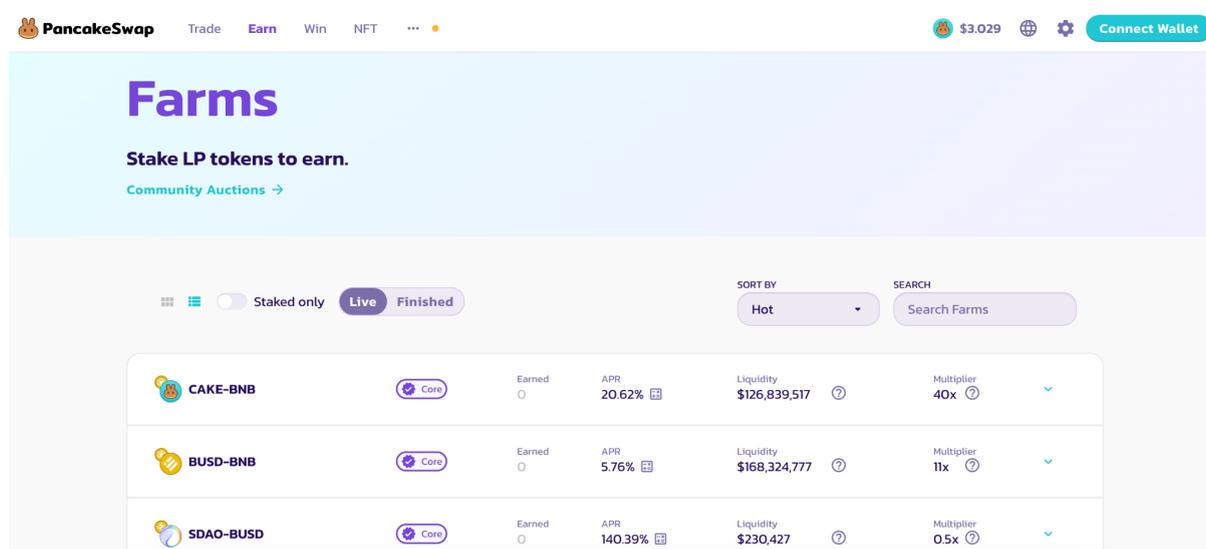
Having peaked near US\$25B of TVL earlier this year, Curve is the largest DEX in DeFi. Curve is an AMM-based DEX, **which focuses its attention on stablecoins and other stable pairs and thus maintains lower fees, slippage and minimizes impermanent loss when compared to other competing protocols.** Curve also maintains composability as an aim and has integrated with Compound, Yearn Finance and Synthetix among others. The Curve DAO, controlled by the CRV token, is also a major part of the puzzle and the **accumulation race for the control of DAO has led to the aptly named ‘Curve Wars’.** Curve has been actively deploying across chains and is currently active across both L2 and alt-L1 chains. In the first half of 2022, Curve has integrated with Optimism, Moonbeam, and most recently with NEAR Protocol’s Aurora network⁽¹⁴⁾. With stablecoins demonstrating considerable growth over the last couple of years, and generally expected to grow in size with increased crypto adoption, the future looks bright for this behemoth of the DEX space.

Very close in TVL is another leading DEX in the space; **Uniswap.** To be precise, Uniswap is an automated market maker (“AMM”) based liquidity protocol and is one of the most widely used dApps in all of DeFi. **In terms of DEX volume⁽¹⁵⁾, June data for Uniswap v3 shows a ~57% market share, just slightly below an all-time peak of 58%** (although that was for Uniswap v2). The protocol is governed via the UNI token and, through its recent v3⁽¹⁶⁾ upgrade, is now deployed on the Ethereum mainnet, as well leading L2 scaling solutions, Polygon, Arbitrum and Optimism. Uniswap has seen its market share grow this year and very recently **announced the acquisition of NFT marketplace aggregator Genie.** While not their first foray into NFTs (they offered NFT liquidity pools in 2019 i.e. “Unisocks”), the move is notable and will allow users to buy and sell NFTs directly on the Uniswap web app. They will also integrate NFTs into developer APIs and widgets and thereby make **“Uniswap a comprehensive platform for users and builders in web3”.**

To round off our section on DEXes, we have BNB Chain’s largest AMM and yield farm, **PancakeSwap.** Originally a Uniswap fork, PancakeSwap rapidly rose the ranks and has at many points been the leading DEX in the DeFi space. While offering the conventional exchange and liquidity providing functions, **PancakeSwap rapidly expanded its product offering to include yield farming, and the somewhat tempting “syrup pools”, among many other features.** PancakeSwap has been credited for bringing yield farming to the masses, at least partially through gamifying the process and offering a beginner-friendly UI. Furthermore, the **native CAKE token further differentiates the project,** offering far more use cases (primarily in yield-generation protocols) when compared to the

governance-focused UNI token. In the first half of this year, the PancakeSwap team further introduced a roadmap⁽¹⁷⁾ (updated quarterly) and has been making headway across various product lines, including perpetual trading and fixed-term staking. PancakeSwap also became the first DeFi project to launch through the Binance Mini-Program⁽¹⁸⁾, which allows Binance users to access the platform via its mobile application. The initiative aims to attract CEX users to experience DeFi within a trusted environment and provides a tremendous opportunity to educate newcomers about DeFi and what it can offer. **With BNB Chain continuing to grow and take market share, alongside its continued focus on manageable growth, including the recent launch of the BAS scaling solution, the top DEX in the ecosystem remains in good standing for further growth and development.**

Figure 15: PancakeSwap offers a number of yield generation opportunities



Source: PancakeSwap

Lending

Coming in a close second in terms of TVL, lending is another key part of the DeFi picture. Much like TradFi, functioning lending markets are key to the system and particularly necessary for an industry in a relatively early stage of development. In our discussion, we will look at the the giants of the sector, including Aave, Compound and MakerDAO, alongside a quick look at some of the competing protocols from other chains, namely JustLend and Venus from the Tron and BNB Chain ecosystems.

MakerDAO is one of the original and most reputable projects across DeFi, often close to, or the biggest project by TVL in the entire space. The fact that MakerDAO dominance, which currently sits around ~10.4%⁽¹⁹⁾, is a regularly quoted and monitored statistic further nods to the relevance and strength of the Maker project. Without going into too much detail, the Maker Protocol issues the Dai stablecoin, a decentralized ERC-20 token that is soft-pegged to the US Dollar, which it maintains through collateral in the form of Ethereum-based

assets. Dai can be generated via depositing collateral into a Maker Vault and can then be used for a myriad of purposes, including earning the Dai Savings Rate, for use in DEXes and also to provide loans. **MakerDAO's journey in 2022 so far has been characterized by an increasing focus on building further use cases through real-world asset ("RWA") expansion, alongside a major proposal to restructure the project's governance and utility.** The proposal i.e. **The Endgame Plan**⁽²⁰⁾ came from co-founder Rune Christensen and primarily **revolves around restructuring the broader protocol around a series of "MetaDAOs" with their own tokens, creating voting committees to ensure that governance is aligned across the ecosystem and community, as well as the continued embrace of RWAs.** So far this year, we saw a notable US\$7.8M Dai loan to Tesla⁽²¹⁾ as well as the financing of an international meat shipment⁽²²⁾ which utilized Mastercard's blockchain traceability solution, Provenance. This year also saw the project deploy on its first zk-rollup scaling solution, StarkNet, following deployment on Arbitrum and Optimism last year. The project has also seen some revitalized interest following the relative stability of DAI in the aftermath of the Luna collapse, further bolstering its credentials. Their continued focus on building more and better products, as well as branching into real-life use cases, means that MakerDAO remains a protocol to keep an eye on.

Aave, sitting comfortably near the top of the TVL charts, has had an eventful first half to the year. As a reminder, **Aave is a decentralized lending protocol which effectively functions as an algorithmic money market** i.e. loans are offered through liquidity pools that are governed by smart contracts. Aave is also largely credited with pioneering the usage of flash loans, through which users can borrow cryptocurrency either under- or uncollateralized, use the crypto for any number of reasons including arbitrage and pay back the funds plus any fees within the same block. **In March, Aave launched their V3 update**⁽²³⁾, **which included Portals (allowing for cross-chain transactions), a high efficiency mode for larger borrowers, an isolation mode for new assets, as well as, gas optimization.** V3 is deployed on six chains, including Fantom, Harmony, Arbitrum and Optimism. Finally, **Aave also recently launched Lens Protocol**⁽²⁴⁾, **which hopes to pioneer Web3 social media and allow users to build their own unique ecosystems on top.** The NFT-powered protocol currently has over 30 live projects built on it, with many more building.

Compound is a decentralized lending protocol with around ~US\$2.8B in TVL. The mechanics of Compound are largely similar to Aave, in that users can borrow and lend on the platform, with rates being asset supply-dependent. **The differences between Compound and Aave are centered around innovation, with Compound not supporting flash loans nor being deployed on any other chains except Ethereum.** Compound appears to be following an 'EVM-first' approach, with integrations for **Optimism, Avalanche and Polygon in the making.** In recent months, Compound Treasury also became the first DeFi dApp to receive a S&P Credit Rating (B-). While the protocol remains among the top ten DeFi applications by TVL, recent metrics for loans and deposits are diminishing. Despite no major headlines which would explain Compound's ailing metrics,

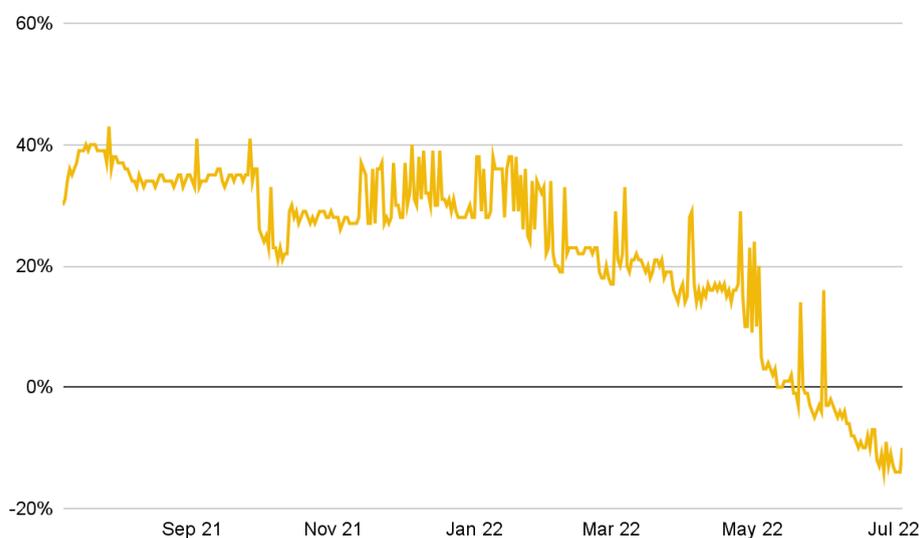
the level of innovation and products that competitors are offering is definitely something to note. **In a market competing with the highly active Aave and Maker, the Compound team will need to keep up the pressure.**

Figure 16: MakerDAO LTV increased throughout the first half of 2022



Source: Dune Analytics

Figure 17: Compound Finance LTV decreased during the same period



Source: Dune Analytics

In the Tron ecosystem, their primary lending protocol, JustLend, saw modest increases in users and TVL following the release of their high-yielding algorithmic stablecoin, USDD. On the BNB Chain side, Venus remains a solid top-10 TVL contender, with recent announcements revolving around wallet integrations, including Coinbase Wallet and Brave Wallet. In the Solana world, Solend leads the charts, with around ~230m in TVL⁽²⁵⁾. Recent

news has been rather mixed, with the protocol receiving some attention for initially voting to take control of a whale's wallet and then reversing course shortly after.

Liquid Staking

An increasingly popular addition to the DeFi landscape, liquid staking allows users to stake their tokens without having to lock up the assets nor maintain staking infrastructure. **Lido is the market leader in the sector, holding ~33% of all staked Ether on the Beacon Chain**⁽²⁶⁾⁽²⁷⁾. Users can stake any amount of Ether on Lido and get stETH in return, which can then be used for lending, collateral and other DeFi activities, all while your staked Ether still earns staking rewards. While your Ether can also be unstaked at any time through the stETH - ETH liquidity pools, recent weeks have seen a depeg in the stETH - ETH pairs, with stETH having traded as much as 8% below ETH. This has largely been attributed to large players like Celsius and 3AC, who might have recently exited their positions to shore up liquidity. The peg has partially recovered since then and can be likened to a bond trading below par i.e. given no further structural risks, the peg will pull to par as we near maturity, or in our case, a withdrawal date for staked Ether. Nonetheless, the issue isn't being perceived as fundamental and actually provides a yield play for arbitrageurs. Other than this, Lido has **expanded to offer liquid staking for Kusama, Polygon and Polkadot in 2022**, adding to their Solana support. The LDO token governs the project through the Lido DAO. Furthermore, Lido has also released a plan⁽²⁸⁾ for further decentralization of the protocol, including the addition of permissionless validation as well as combatting the concentration of LDO ownership.

Lido's closest competitor, Rocket Pool, has also seen some traction since their 2021 launch. Nonetheless, despite a significant increase in its staked Ether (more than 3x), their non-custodial liquid ETH staking market share remains around 4%. Their minimum staking requirement of 16 ETH, alongside the relative lack of yield generation options, provide lower levels of optionality for users, with catching up to Lido seeming like an increasingly distant possibility (at least as things stand).

Figure 18: Lido dominates the liquid staking market

Pool	ETH staked	Market share	USD TVL	Depositors	Average ETH deposit
Lido	4,126,115	90.7%	\$4,837,746,506	65,953	63
Rocketpool	185,312	4.1%	\$217,272,761	3,472	53
Stakehound	63,009	1.4%	\$73,876,243	241	261
Stkr	61,246	1.3%	\$71,809,033	3,804	16
Stakewise	58,314	1.3%	\$68,371,601	4,053	14
CREAM	25,190	0.6%	\$29,534,203	839	30
SharedStake	16,000	0.4%	\$18,759,520	1,125	14
Stafi	12,023	0.3%	\$14,096,853	193	62
Total	4,547,209	100%	\$5,331,446,719	79,680	64

Source: Dune Analytics

Derivatives

The crypto derivatives space is in a more nascent stage of its growth when compared to the more established sectors across Lending and Exchanges. This is evident in terms of TVL, with **Derivatives protocols holding around ~US\$2B, compared to ~US\$24B for DEXes and ~US\$16B in Lending protocols**⁽²⁹⁾.

dYdX remains the biggest project in the space, with around US\$680M in TVL. dYdX is the leading crypto derivatives DEX, focusing on perpetuals trading. The first half of the year saw the successful release of new iOS and Android app. More recently, the project announced⁽³⁰⁾ that the much-awaited dYdX v4 will be developed as a standalone chain in the Cosmos ecosystem. Releasing as a standalone chain, rather than on either the Ethereum L1 or L2s, means that dYdX v4 can benefit from greater flexibility in terms of features, including no trading gas fees. The release also “marks the full decentralization of the dYdX protocol”, achieving the goal outlined by the team early in 2022.

Derivative markets have some way to grow within crypto and thus it remains an area receptive to innovation. TradFi derivatives are thought to bring price efficiency to that market and as crypto markets mature, we can correspondingly expect crypto derivatives markets to grow alongside.

Yield

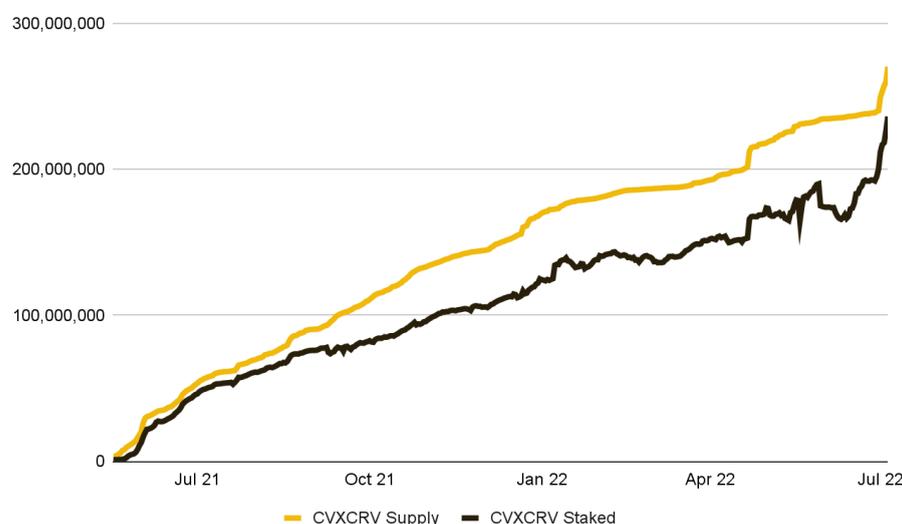
Yearn Finance is a leading yield optimizer which aggregates offerings from other DeFi protocols such as Aave, Curve and Compound to help give users the best returns.

Governance occurs via the YFI token which allows holders to vote on a number of off-chain proposals and submit rules for the ecosystem. **Yearn has deployed on Fantom and Arbitrum and will look to further embrace a multi-chain future in the coming months.**

H1 developments include the well-publicized abrupt departure of founder Andre Cronje from the DeFi space, although news reports suggested that he had little to no daily involvement in running the company. Outside this, **Yearn released V3 of their Vaults product in May, which included a number of improvements and was received well by the market.**

Another project worth touching on is Convex Finance; **a yield optimizer dedicated to maximizing the CRV boost for those providing liquidity to Curve's pools.** Since its May 2021 launch, Convex has seen incredible growth and now ranks in the top 10 DeFi apps, boasting over US\$3B in TVL. In recent months, Convex has continued to grow, with user metrics positive and keeping the protocol comfortably atop the TVL charts in the Yield category.⁽³¹⁾

Figure 19: Convex has been on a steady growth trajectory



Source: Dune Analytics

The DeFi space continues to grow and generate increased interest, both from a retail and institutional level, as the industry grows. Despite headwinds in the way of security and actual vs perceived levels of decentralization, DeFi continues to persist and the incumbents maintain a dominant presence in the market.

NFTs

For the skeptics, it is hard to wrap one's head around why people are paying hundreds of thousands of dollars for a cartoon jpeg, nor understand why people are spending so much time on Discord grinding for whitelist spots. In response, we would encourage the skeptics to look at the bigger picture and try to understand the value and promise of NFTs.

NFTs have enabled the possibility of digital ownership and supported the evolution of Web 2.0 (a read-write economy) to Web 3.0 (a read-write-own economy). In a world where people are spending a significant amount of time in front of their screens, the ability to verify scarcity of digital assets for the very first time has the potential to spearhead a generational shift from physical to digital ownership.

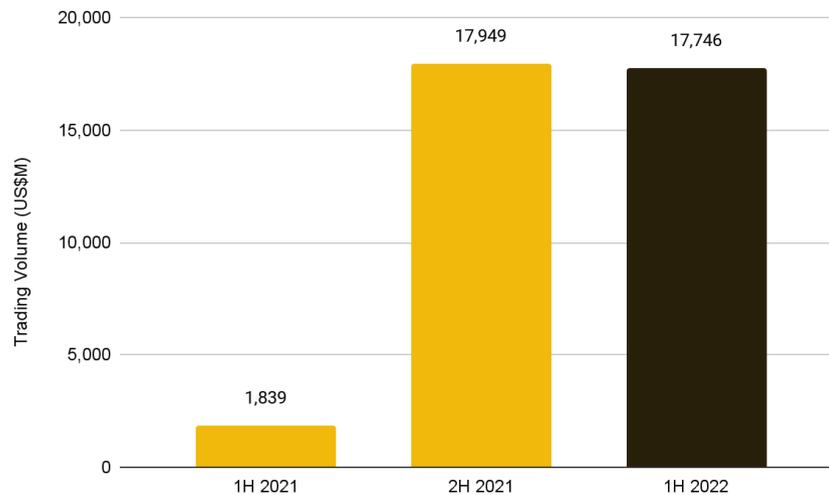
In this section, we will review the NFT market activity in the first half of 2022, fundraising activity, as well as trends and outlook for the sector.

NFT Market Review

Despite a sharp decline in trading volume in June, **the NFT market has had an overall resilient first-half.** 2022 started strong for NFTs as trading activity surged, contributed by the launch of the LooksRare and X2Y2 marketplaces and the corresponding trading rewards offered by them both.

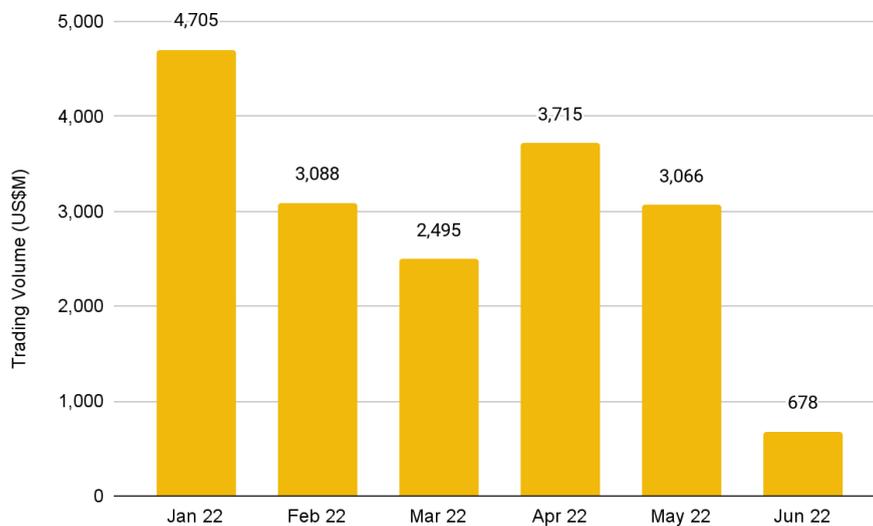
NFT sales recorded approximately US\$17.7B in first-half 2022 (excluding wash trades), which is similar to sales recorded in second-half 2021. **This is also a nearly 10x growth on a year-on-year basis when compared to first-half 2021.** The bulk of the trading volume was front-loaded, with most sales being logged between January and May. Trading volume in June was approximately US\$678M, a sharp drop of over 80% compared to the average monthly trading volume of US\$3.4B from January to May.

Figure 20: 1H 2022 NFT trading volume (US\$M) was flat compared to 2H 2021 but represents a significant increase compared to 1H 2021



Source: CryptoSlam, Binance Research

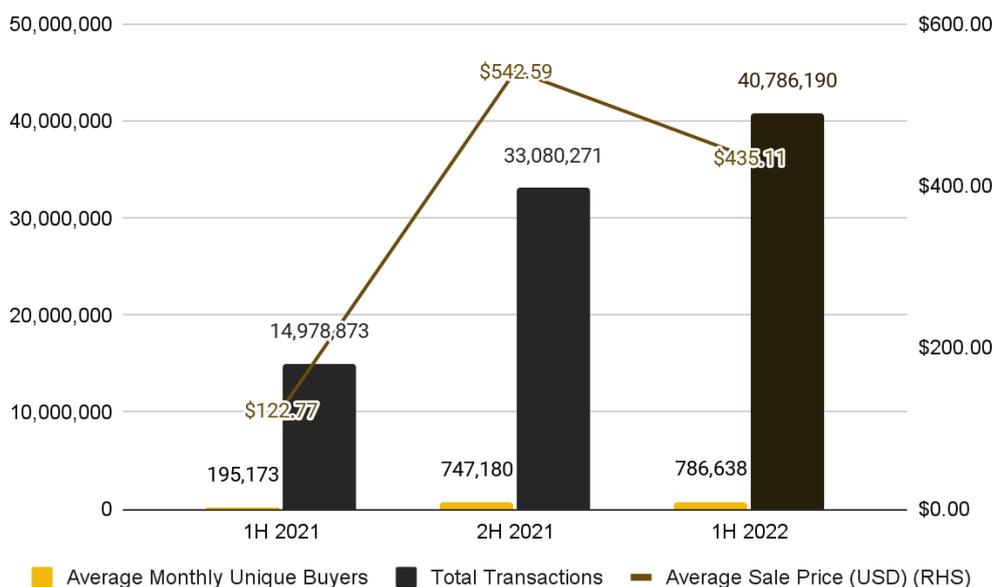
Figure 21: Monthly NFT trading volume (US\$M) was front-loaded with most sales in Jan - May but experienced a sharp drop in June



Source: CryptoSlam, Binance Research

A deeper look at underlying drivers reveals that the relatively **resilient first-half was sustained by a healthy growth in terms of unique buyers and number of transactions, but offset by a fall in average sale price.** This is intuitive as cryptocurrency prices have been on a downtrend over the past few months which translates into lower NFT sale prices in USD terms.

Figure 22: Unique buyers and total transactions grew but average sale price (USD) fell in 1H 2022



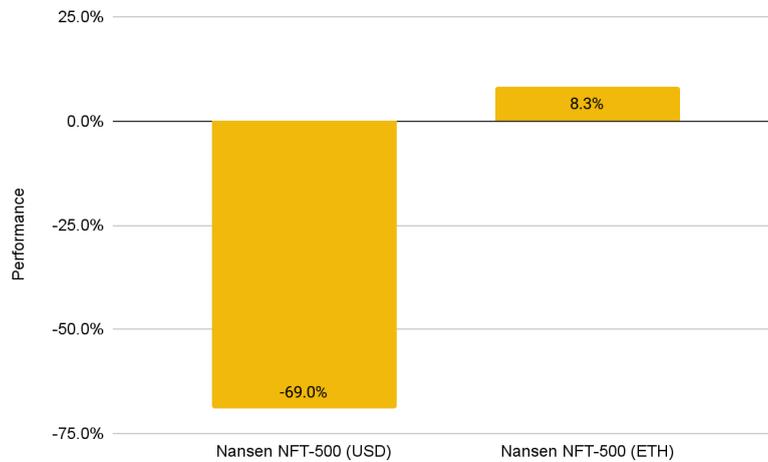
Source: CryptoSlam, Binance Research

NFTs Price Performance

NFTs had a negative performance year-to-date when measured in USD terms, primarily due to a fall in ETH prices. The Nansen NFT-500 index which consists of the top 500 Ethereum NFT collections, weighted by market capitalization, is used in our analysis to track broad NFT market activity. Admittedly, it is not a perfect representation of the NFT market given that not all NFT collections are based on Ethereum. That said, Ethereum NFTs command a dominant market share (>80% of secondary trading volume) and can be used as a barometer of the NFT market.

For the first half of 2022, the NFT-500 index returned -69.0% in USD terms. This is primarily contributed by the fall in ETH prices by -71.0% in the same period. Isolating the effects of the fall in ETH price, the asset class returned +8.3% when denominated in ETH. This is noteworthy considering the overall bearish market environment. If you had put your ETH to work by investing in NFTs instead of holding ETH, NFTs would have offset some of the losses of your portfolio.

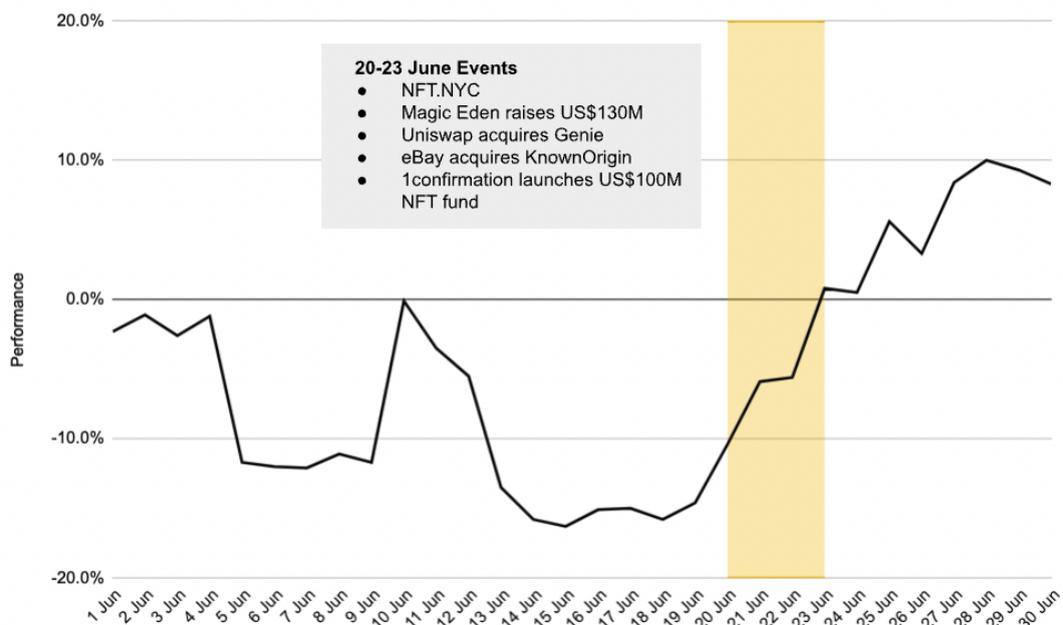
Figure 23: 1H 2022 NFT performance was negative in USD terms and but positive in ETH terms



Source: Nansen, Binance Research

The positive returns in ETH terms could have been contributed by positive investor sentiments due to NFT-specific events in the second half of June such as the NFT.NYC conference, as well as several notable acquisitions and fundraises. Prior to these events, the performance of the NFT index was in negative territory but started picking up momentum in the latter part of the month.

Figure 24: Nansen NFT-500 Index (ETH) showed a strong recovery in the latter part of June



Source: Nansen, Binance Research

Notable Acquisitions and Fundraises

Institutional interest remains strong as witnessed by the fundraising activity in the space. The funding will be key in helping teams ride out the crypto winter.

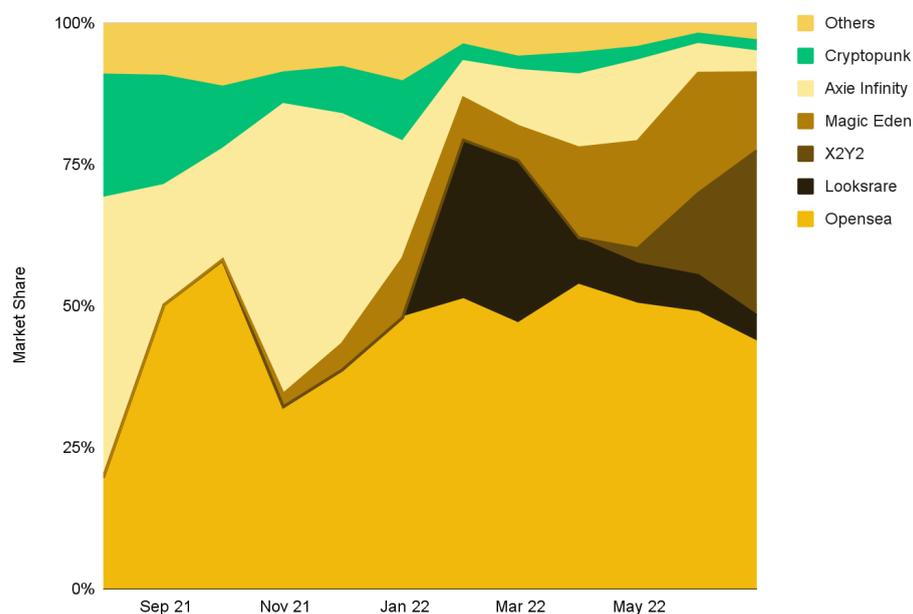
The following are several noteworthy raises and acquisitions in the first half of 2022:

- ❖ **Jan 2022:** OpenSea acquired DeFi Wallet Firm Dharma Labs for an undisclosed sum.⁽³²⁾
- ❖ **Mar 2022:** NFT-scaling platform Immutable raised US\$200M in a Series C round led by Singapore state investment fund Temasek at a US\$2.5B valuation.⁽³³⁾
- ❖ **Mar 2022:** Yuga Labs acquired CryptoPunks and Meebits from Larva Labs for an undisclosed sum.⁽³⁴⁾
- ❖ **Mar 2022:** Yuga Labs raised a US\$450M round from Andreessen Horowitz at a US\$4B valuation.⁽³⁵⁾
- ❖ **Apr 2022:** Rario, a NFT platform for cricket, raised a US\$120M Series A round led by Dream Capital.⁽³⁶⁾
- ❖ **Apr 2022:** OpenSea acquired NFT marketplace aggregator Gem for an undisclosed sum.⁽³⁷⁾
- ❖ **Jun 2022:** Immutable launched US\$500M fund to finance projects building web3 games and NFT-focused companies.⁽³⁸⁾
- ❖ **Jun 2022:** Magic Eden raised US\$130M at a valuation of US\$1.6B.⁽³⁹⁾
- ❖ **Jun 2022:** Uniswap acquired NFT marketplace aggregator Genie for an undisclosed sum.⁽⁴⁰⁾
- ❖ **Jun 2022:** eBay acquired KnownOrigin, a NFT marketplace for an undisclosed sum.⁽⁴¹⁾
- ❖ **Jun 2022:** 1confirmation launched a US\$100M NFT fund.⁽⁴²⁾

NFT Marketplace Competition

NFT marketplaces play an important role in facilitating trading activity by connecting buyers and sellers. **OpenSea remains the leading NFT marketplace by trading volume and has approximately 50% market share.** While OpenSea has largely maintained its market share over the past year, competition is fierce. New entrants such as LooksRare, X2Y2, and Magic Eden have demonstrated strong performance over the first half of 2022.

Figure 25: Market share of NFT marketplaces reveal that OpenSea is still the dominant leader but X2Y2 is a strong competitor



Source: Footprint Analytics (@bond), Binance Research

❖ LooksRare

The first half of 2022 saw the launch of the LooksRare NFT platform which presented a strong competitor to OpenSea. To incentivize platform adoption, the LooksRare team launched a vampire attack and airdropped their native \$LOOKS token. Initial trading volume surged past that of OpenSea but signs of wash trading indicated that demand is not entirely organic. Today, market share has declined significantly from its peak of nearly 29% to below 5%, with no catalyst in sight to reverse this trend.

❖ X2Y2

Despite a challenging market environment, X2Y2 has increased its market share and is now the second largest NFT marketplace by volume. This is likely contributed by a temporary reduction of trading fees to 0.5% (vs. OpenSea 2.5%, LooksRare 2%), as well as trading rewards emission. The increasing use of NFT aggregation platforms such as Genie and Gem, which are marketplace-agnostic (more details in the NFT aggregators section), likely also have contributed to the performance of X2Y2. It remains to be seen whether X2Y2 will be able to sustain its current growth trajectory when discounted trading fees and trading rewards taper off.

❖ Magic Eden

Magic Eden is the leading Solana NFT marketplace. It has benefited from the rising interest in Solana NFTs and its market share has steadily increased over the past year. While

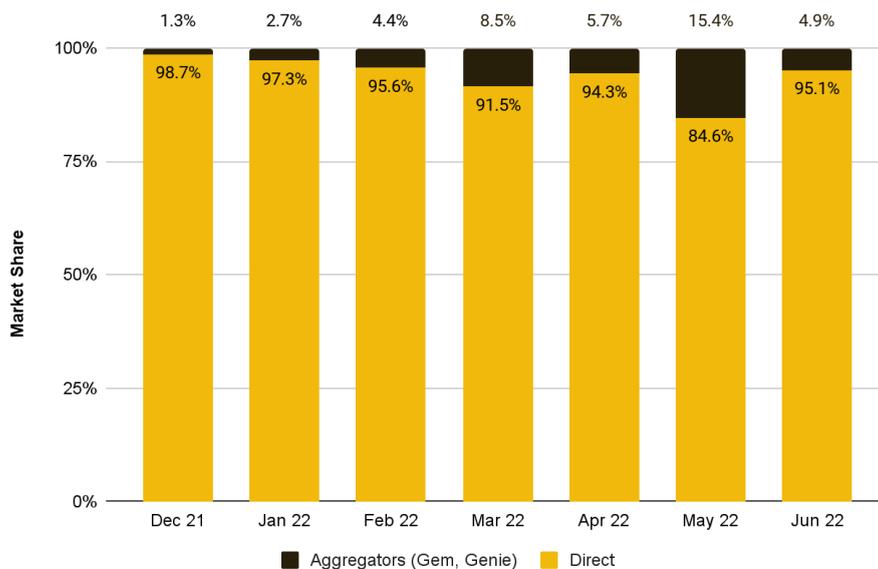
OpenSea integrated Solana NFTs onto its platform in April, Magic Eden still commands a dominant share (>95%) of Solana NFTs trading volume⁽⁴³⁾. We believe that Magic Eden will likely retain its status as the leading marketplace for Solana NFTs as no other competitors come close to the number of listings and the liquidity it offers.

The Rise of NFT Aggregators

2022 witnessed the rise of NFT aggregators which allow traders to buy and sell NFTs across different marketplaces from a single platform (think of it as Skyscanner for NFTs). Such functionality is coherent with and well-suited to fit general trading behaviors. At the end of the day, most NFT traders are inherently marketplace-agnostic. They typically do not mind which platform they are using as long as they are able to secure their ideal NFT at the lowest possible price. In this sense, NFT aggregators are able to capitalize on such user behaviors by consolidating listings across different marketplaces and presenting the listings in one unified interface. Moreover, **NFT aggregators also bring additional value in terms of allowing traders to sweep the floors of collections by buying a bunch of lowest-priced NFTs without having to visit every single marketplace individually.**

The top aggregators Gem and Genie have seen significant growth with over 511,000 ETH in trading volume so far this year. That represents an approximately 21x increase compared to 2021.⁽⁴⁴⁾ Market share of NFT aggregators has also grown from slightly over 1% at the end of 2021 to around 5% today. Note that the chart represents end-of-month snapshots which could result in some fluctuations depending on trades on that particular day.

Figure 26: The market share of NFT aggregators (end-of-month snapshot) has been fluctuating but is on a general uptrend



Source: Dune (@rchen8), Binance Research

While market share of NFT aggregators is still small, the recent acquisitions of Gem by OpenSea, and Genie by Uniswap are evidence of the strong interest that incumbents have in NFT aggregators and are also an affirmation of the value proposition of NFT aggregators. NFT aggregators look poised to play a pivotal role in shaping the NFT trading landscape in the long run.

Overall, given the better user experience and ease of finding the cheapest NFTs all through one platform, the shift to using NFT aggregators is likely to continue gaining momentum. However, this move might take some time to play out. Most NFT listings today originate from a small number of marketplaces (e.g. OpenSea, X2Y2, LooksRare) and it does not take much for a trader to check one or two exchanges before executing the trade. **The incentive to use NFT aggregators will likely rise if and when competition between NFT marketplaces heats up further and as liquidity becomes increasingly fragmented.**

Outlook: A Multi-Chain Future is Likely

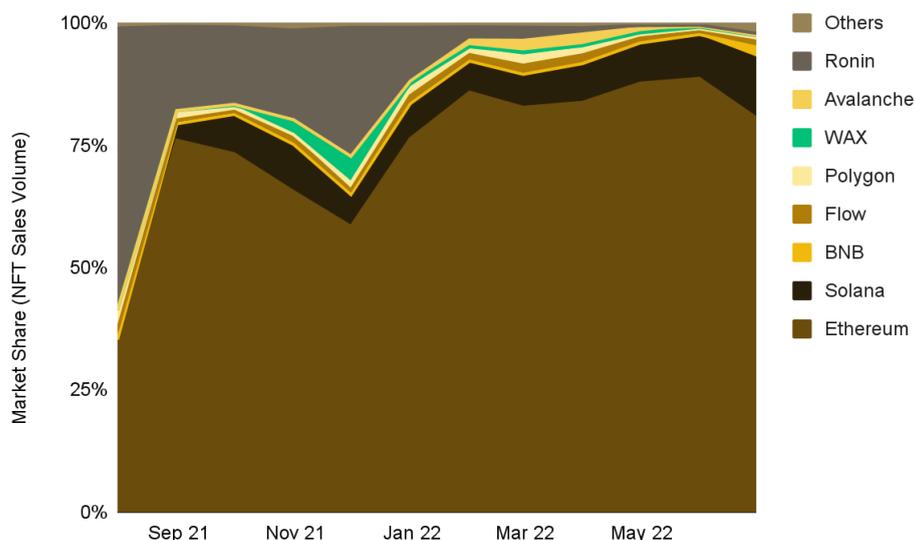
Ethereum is the market leader in the NFT space by trading volume and hosts a large number of NFT projects. However, network congestion as well as high transaction fees have been frequently cited as drawbacks of building on Ethereum. At its peak, it is not uncommon to see gas fees of hundreds of dollars for Ethereum NFT transactions. While this may arguably be acceptable for high-value NFTs valued at hundreds of thousands dollars, the high gas fees can make simple NFT transactions cost-prohibitive for many users.

The NFT ecosystem is rife with competition and the above-mentioned drawbacks present an opportunity for alternative blockchains. The narrative of Ethereum losing market share to other blockchains started gaining steam in late 2021 and we have witnessed increasing interest in Solana NFTs.

Secondary NFT sales data reveals the following observations:

- ❖ Ethereum is still the market leader in NFTs.
- ❖ While Ethereum had a rocky second half last year, it has been regaining market share throughout the first half of 2021.
- ❖ Interest in Solana NFTs continues to heat up; it has the second-largest secondary NFT sales as of June 2022.
- ❖ Ethereum L2 scaling solutions are still far from achieving mass adoption.

Figure 27: Ethereum is still the dominant blockchain in terms of NFT market share but Solana is a strong contender



Source: CryptoSlam, Binance Research

The reversal of market share loss by Ethereum seems to challenge the narrative of a multichain future at first glance. However, it is likely that bearish market sentiments have contributed to relatively stronger trading volume in high-value, large-cap NFTs (predominantly on Ethereum) compared to other NFTs. Against this backdrop, the short-term trend could likewise reverse in favor of alternative blockchains when more bullish sentiments kick in or if a successful project launches on another chain.

Overall, we believe that **a multi-chain future is possible**. Given the size and long-term growth potential of NFTs, it is not unfathomable for more than one blockchain to succeed. **Nonetheless, given the network effects of Ethereum, we suspect that it will remain the dominant blockchain for the foreseeable future.** The advantage of a bustling NFT ecosystem with a large number of traders and high newsflow would likely put Ethereum in the shortlist for project teams that are looking to build the next blue-chip NFT project. The security and decentralized nature of the Ethereum blockchain would also likely be an important consideration for teams that are looking to stay in the ecosystem in the long-run.

Closing Thoughts

Given the overall bearish market environment, it is not surprising that NFT trading volume has declined substantially in the past one to two months. Nonetheless, animal spirits aside and taking a longer-term view, we are optimistic that NFTs will be key in not just establishing digital ownership, but also in driving adoption of blockchain technologies by penetrating different sectors of the real economy. Long-term bullish.

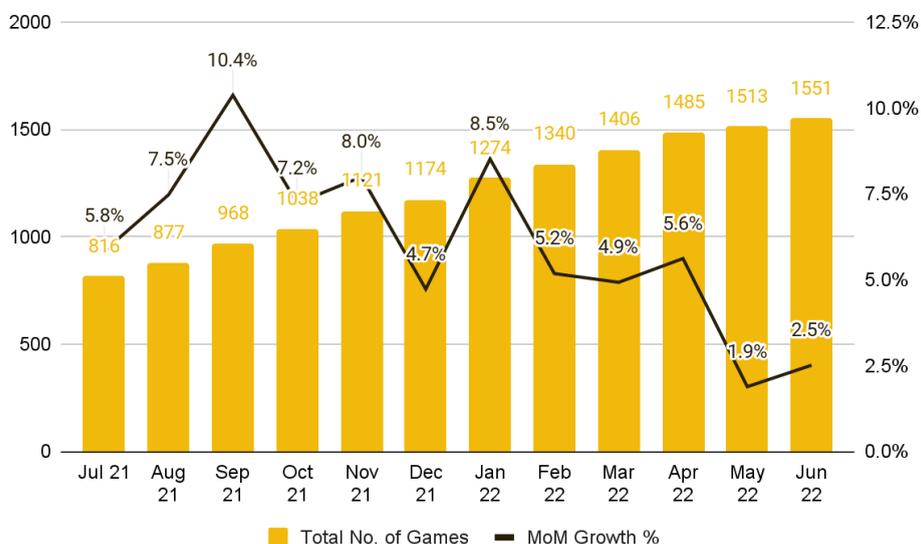
GameFi

GameFi is an amalgamation of the words “Game” and “Finance”, and incorporates elements of both gaming as well as financial incentives. Beyond direct monetary incentives, GameFi offers the prospect of digital assets ownership in virtual worlds that players devote a large portion of their time on and the potential for interoperability by bringing those assets across different virtual worlds. The vast potential that comes with integrating traits of blockchain technology, gaming, financialization, and NFTs, has contributed to significant interest in and growth of GameFi.

The GameFi Landscape in Numbers

The number of GameFi projects has continued to rise and reached 1,551 games as of June 2022. However, **slowing growth is evident as month-over-month growth tapered to low single-digit growth rates**, clocking 2.5% in June 2022. The broad overall negative market sentiment likely contributed to this decline as market participants take a breather from blockchain activities and the number of new game launches slow.

Figure 28: Number of games continue to grow but at a slower rate

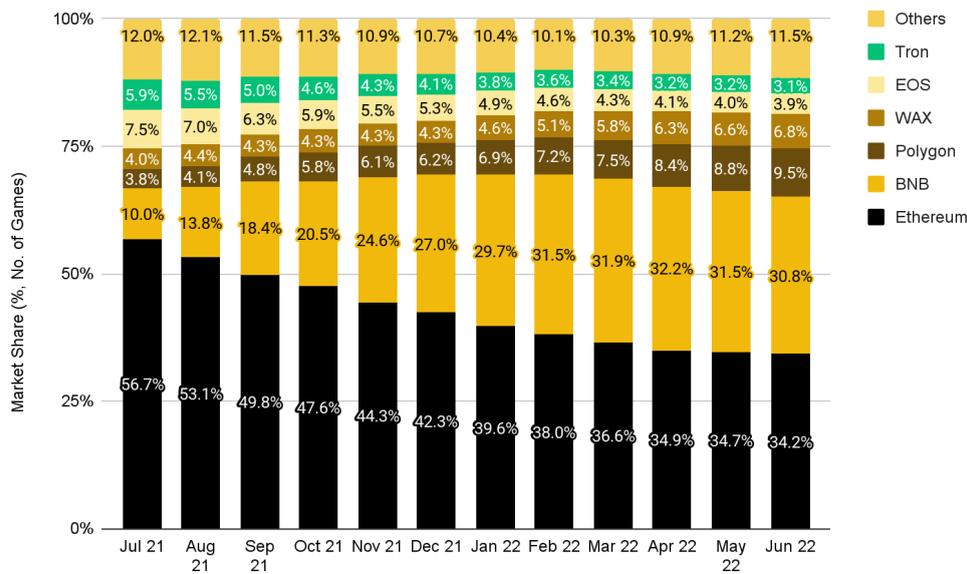


Source: Footprint Analytics (@KikiSmith), Binance Research

Critics of Ethereum often cite high gas fees and slow throughput as reasons for favoring alternative blockchains. Data based on GameFi market share supports such a view. While Ethereum remains the dominant blockchain with the highest number of GameFi projects built, market share has fallen steadily from over 50% in July 2021 to around 35% in June 2022. On the other hand, **BNB chain has been the bright spot and has taken market share from Ethereum - it has nearly 31% market share as of June 2022 and is the**

second largest ecosystem based on the number of GameFi projects. Without diving into the details, we would also highlight that there are other considerations when evaluating this space besides looking at market share by number of games (e.g. quality of games, types of games, product life cycle etc.) for which different chains have their respective advantages.

Figure 29: Blockchain GameFi market share (by no. of games) reveal that Ethereum continues losing market share

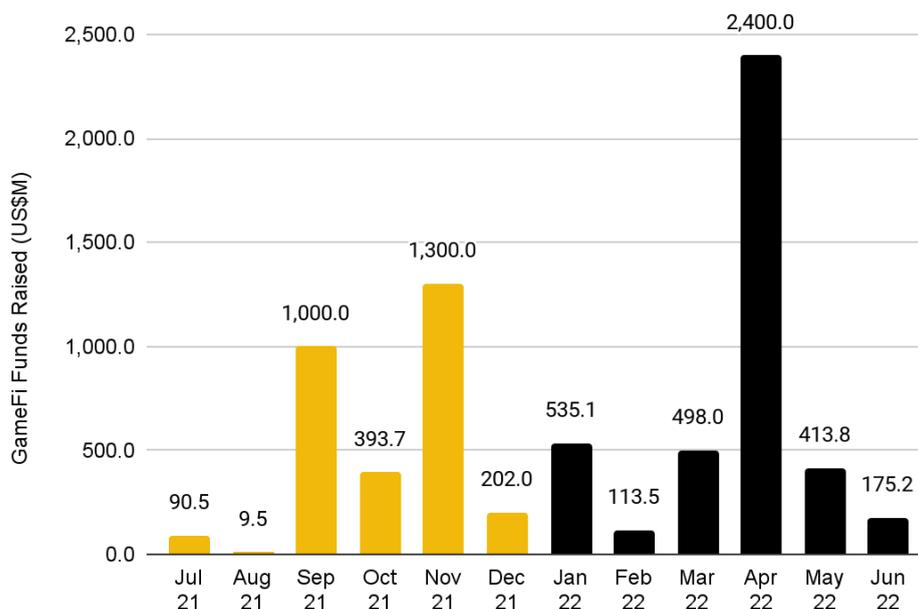


Source: Footprint Analytics (@KikiSmith), Binance Research

Private investments are good indicators of institutional interest and can serve as proxies to gauge the health of the space. For the first half of 2022, GameFi witnessed a healthy deal flow. **Total capital investments in GameFi exceeded over US\$4.1B in first-half 2022,** contributed by a behemoth US\$2B raise by Epic Games. **This represents a 38% increase when compared to second-half 2021.** Overall, GameFi remains a key focus for institutions - Andreessen Horowitz launched a US\$600M gaming-focused fund in May, and Immutable launched a US\$500M venture fund focused on Web3 games in June.

With sufficient funding, teams are able to make the necessary investments and hires to develop better games. Hypothetically, this will lead to higher user adoption and more funding for the sector.

Figure 30: GameFi funds raised (US\$M) remain strong



Source: Footprint Analytics (@KikiSmith), Binance Research

Here come the big boys

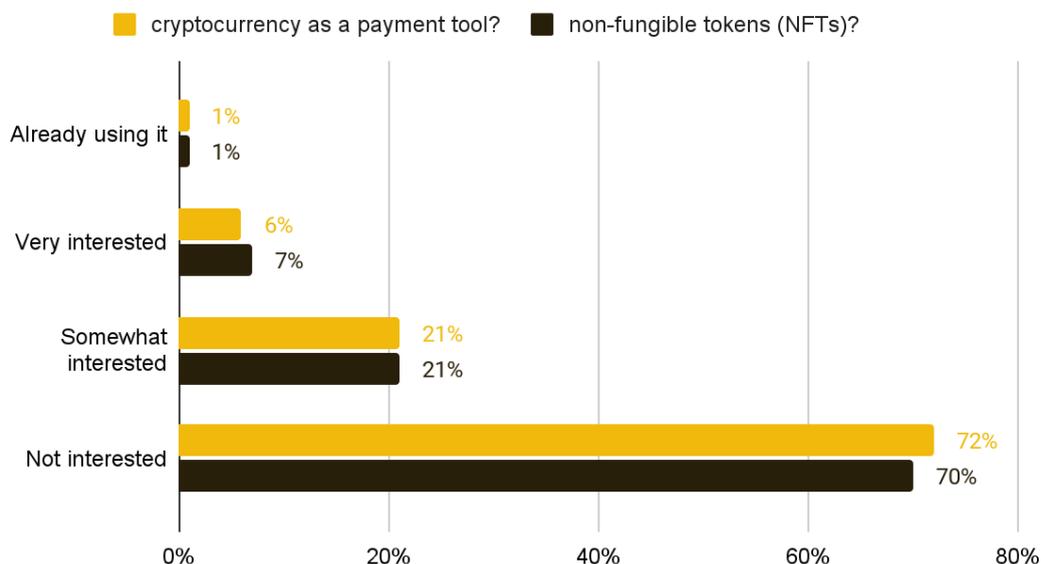
The design and development of successful games come with significant complexity and typically take years from ideation to launch. Ample funding, a strong team of developers, and an experienced management team are just a few of the many ingredients for success. The difficulty associated with launching successful games makes this space a tough nut to crack, especially for new teams.

The first half of 2022 saw tangible actions taken by traditional gaming companies to enter the blockchain gaming space. To name a few, Square Enix sold US\$300M worth of valuable intellectual property to fund its blockchain initiatives in May⁽⁴⁵⁾; Epic Games raised US\$2B to develop its metaverse efforts in April⁽⁴⁶⁾. Companies like Ubisoft, EA, and Tencent have also entered the blockchain gaming space, albeit to different extents. While this means increased competition for existing blockchain game companies, it is a positive sign for the industry in terms of driving innovation.

Nonetheless, we are still in very early stages with significantly more room for growth. More work can be done to attract traditional gaming studios to the space. Based on the Game Developers Conference (GDC) 2022 report, of over 2,700 game developers surveyed, only about 28% of respondents indicated that their studios were interested in or are using cryptocurrency. Approximately 29% said the same for NFTs.

Figure 31: Game developers survey show that a small percentage of traditional gaming studios are interested in or are using cryptocurrency

What is your studio's interest in...



Source: GDC State of the Game Industry Report 2022, Binance Research

Vertical in Focus: Move-to-Earn

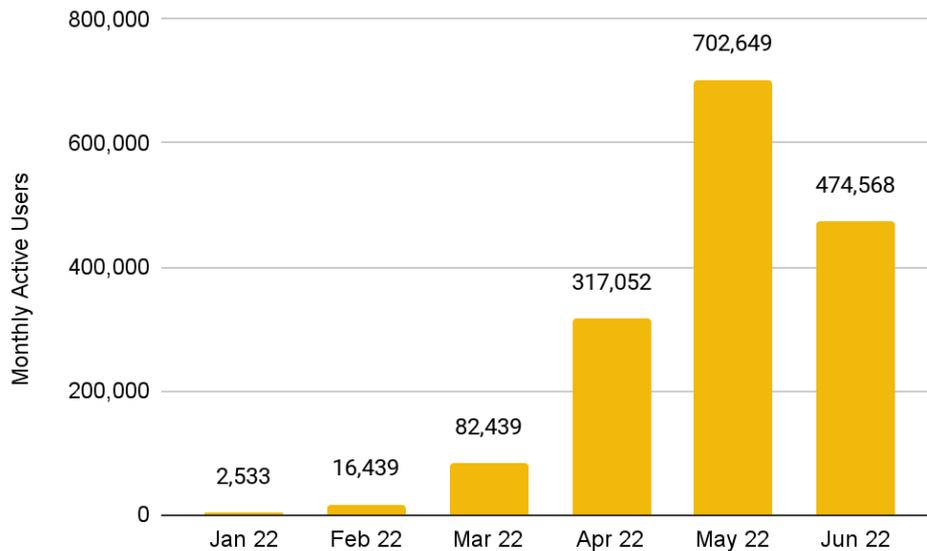
An offshoot of Play-to-Earn that has received much interest over the past couple of months, Move-to-Earn projects reward users for - you guessed it right - moving. Move-to-Earn revolves around lifestyle, and users are typically rewarded for physical activity. Prominent projects include STEPN, Step App, and Genopets. Let us take a closer look at one of the most popular Move-to-Earn projects, STEPN, as a case study.

STEPN is one of the first and is the leader in the Move-to-Earn space. Users earn STEPN's native Green Satoshi Tokens (GST) when they walk or run. Sounds too good to be true that projects are rewarding you for just moving? There is no free lunch in the world - to earn tokens, you have to first buy a virtual sneaker which at the time of writing, costs around US\$120 for the cheapest NFT. STEPN also earns royalty whenever the virtual sneakers are traded on the secondary market.

The project garnered significant attention in Q2 of this year, and interest grew since its governance Green Metaverse Token (GMT) sale in March 2022. At its peak, STEPN had over 700K monthly active users. However, recent trends exhibit headwinds in terms of retaining existing users as well as attracting new users to the game. Furthermore, the declining GST price chart suggests that current token sinks are not effective in contributing to sustainable tokenomics. Without diving into the details, these have had a direct impact on the prices of

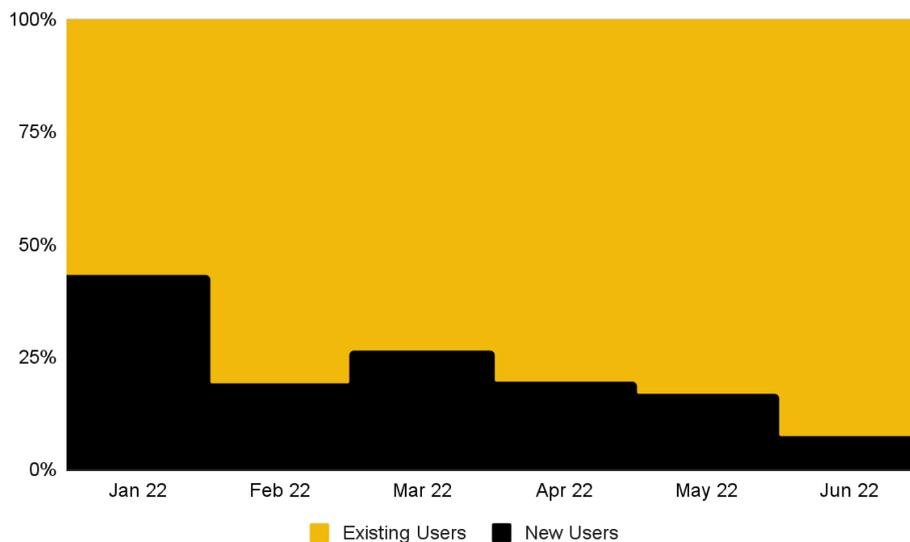
GMT and GST tokens which have fallen by over 85% from their peak at the time of writing. In response to the community’s feedback, STEPN has released their action plan for the game economy. It remains to be seen if STEPN will be able to turn this around, or if this is just a hype train that has left the station.

Figure 32: STEPN witnessed a strong growth in monthly active users but user metrics slowed in June



Source: Dune Analytics (@nguyentoan), Binance Research

Figure 33: STEPN daily active users split (end-of-month snapshot) show that the proportion of new users have been decreasing



Source: Dune Analytics (@nguyentoan), Binance Research

Going forward, we will likely see more variations to the gamification of different aspects of lifestyle beyond just Move-to-Earn. For example, another variation is “Learn-to-Earn” where project teams reward users for educating themselves on a particular topic. This serves as a user acquisition tool and the goal is to incentivize users to learn through their platform. Overall, by introducing financial incentives, project teams can encourage users to perform specific actions and to encourage usage of their platform. However, is such a model sustainable in the long-run in terms of spurring organic growth and encouraging continued usage? We explore more in the next section.

Leveling up GameFi

Playing devil’s advocate, GameFi in its current form has areas to improve as the sector works towards achieving mainstream adoption. Scalability, tokenomics, and gameplay are a few of the commonly cited issues that teams are undoubtedly working on.

An aspect that we believe is critical yet difficult to get right is in terms of striking a balance between financialization and gameplay.

It is not uncommon for Play-to-Earn games to focus on the financialization aspect of the game and how users and the project teams can earn financial rewards. However, **when “earning” becomes the primary purpose of playing a game, long-term sustainability of the game’s ability to attract and retain users is called into question during times of market volatility** (e.g. if token falls significantly in value).

Instead of a Play-to-Earn model, adopting a Play-and-Earn model might better address this. In the Play-and-Earn model, earning is an additional value proposition that enhances the gaming experience. **Rather than playing to reap financial rewards (likened to a job), designing gameplay that attracts gamers who enjoy the game and as a bonus, earn financial incentives is likely a more market-agnostic model.**

Teams are undoubtedly working on the above-mentioned issues, and as the ecosystem matures, we look forward to seeing a vibrant, fun-filled, and developed ecosystem.

Closing Thoughts

GameFi is changing the rules of gaming and is onboarding a new wave of players into the blockchain ecosystem. The gaming market size is estimated to be around US\$175B today⁽⁴⁷⁾, and GameFi market cap is less than 4% of that at only US\$6.2B⁽⁴⁸⁾. We are still at a very nascent stage with a significant runway to grow.

While there still exists numerous areas for improvement, the sector is rapidly developing and innovating. Gaming activity has fallen alongside a downturn in the market and this might pose a challenge for projects with a weak balance sheet. On the other hand, teams that have managed to raise funding and can focus on building in this environment are better positioned to emerge from this cycle stronger.

With the best minds of the industry and even experienced traditional gaming studios working on the space, the future of GameFi is promising.

Sector Comparison

With the market remaining volatile through the first half of the year, it is worth discussing the differences in performance between sectors. Comparing price movements between **L1, DeFi, Gaming, Privacy & Storage, DEXes, and CEXes to BTC, ETH and BNB⁽⁴⁹⁾**, we can draw some interesting conclusions.

Below, we analyze the **frequency with which Bitcoin, Ether, BNB, and various crypto sub-sectors (created by aggregating the price moves of the top tokens in the respective category) drawdown by 2.5% and 5.0% at the daily close**. We also look at the **number of instances with which the assets' experience a rally of 2.5% or above**. The frequency of the moves has been counted since June 2020 and split into three different categories:

Figure 34: Frequencies of various crypto sub-sectors +2.5%, -2.5%, and -5.0%

	% drawdown				L1	DeFi	Gaming	Privacy & Storage	CEX	DEX
Since Jun 2020	> 2.5%	151	223	215	224	233	176	232	184	219
	< 2.5%	139	182	174	213	234	183	234	165	230
	< 5%	57	83	89	119	139	116	132	81	144
Since Jun 2021	> 2.5%	78	103	97	113	119	107	115	95	118
	< 2.5%	87	107	92	65	129	117	127	93	134
	< 5%	34	47	45	65	76	74	72	45	80
YtD	> 2.5%	28	38	43	47	53	46	52	35	50
	< 2.5%	41	56	47	61	65	61	65	41	66
	< 5%	17	26	22	33	39	39	35	18	39

Source: CoinMarketCap

Key Observations:

- ❖ **Bitcoin, Ether, and BNB have shown consistent and relatively stable performance across the time period.** All three assets rank near the top of >2.5% rallies since June 2020 and are on the lower end in terms of -2.5% / -5.0% drawdowns. **Year-to-date, BNB has been the best performer of the trio**, having the highest number of rallies and also a lower number of drawdowns than Ether
- ❖ **DeFi, DEXes, and Privacy & Storage tokens have had the most consistent rallies >2.5%.** Tokens in these sectors have been some of the strongest upside performers, although, the upside potential comes with significant downside risk i.e. they have also had a relatively high number of drawdowns (of both 2.5 and 5%)
- ❖ **L1 and Gaming tokens have performed better than the conventional narrative would tell you.** While these tokens have seen comparatively lower amounts of >2.5% rallies, they have also seen correspondingly lower amounts of drawdowns,

pointing to a level of stability that is usually not discussed when talking about these sectors, especially Gaming. This is particularly evident across the longer time periods, where L1s and Gaming outperform DeFi, Privacy & Storage, and DEXes by frequency of drawdown

- ❖ **CEX tokens have been some of the strongest performers to date.** Their lack of drawdowns, when compared with other sectors, is notable and their performance most closely matches our baseline comparison assets of Bitcoin, Ether, and BNB

We also consider a simple investment-related analysis. Quite simply, for those that invested US\$100 at various points in the last two years - how much is that worth now?

Figure 35: Current value of US\$100 investment by category

\$100 invested in Jun 2020 is now...				L1	DeFi	Gaming	Privacy & Storage	CEX	DEX
	\$201	\$455	\$1,261	\$967	\$201	\$425	\$220	\$638	\$302
\$100 invested in Jun 2021 is now...				L1	DeFi	Gaming	Privacy & Storage	CEX	DEX
	\$51	\$39	\$61	\$69	\$28	\$201	\$28	\$102	\$33
\$100 invested in Jan 2022 is now...				L1	DeFi	Gaming	Privacy & Storage	CEX	DEX
	\$41	\$29	\$42	\$34	\$32	\$87	\$31	\$62	\$24

Source: CoinMarketCap

Key Observations:

- ❖ **BNB has been the best performer since June 2020 (by some margin).** A US\$100 investment in BNB in June 2020, would be worth over US\$1,200 today. Coming close to BNB, L1 performance in that time period has also been notable. Although, a large part of that is due to the ~60x of SOL. Excluding SOL, the US\$100 L1 June 2020 investment would be worth US\$289, rather than US\$967. **CEXes, Ether, and Gaming tokens have also shown strong performance over the time period**
- ❖ In terms of investments **since June 2021, Gaming has been the top performer,** spurred on by strong rallies in SAND, ILV, GALA, and AXS. **CEXes have also managed to hold their value in that time period, while the rest of the tokens have taken losses**

- ❖ **Year-to-date, Gaming has once again performed better than expected.** However, the performance of STEPN's GMT has skewed that figure, and excluding GMT, the US\$100 Jan 2022 investment would be worth US\$25, rather than US\$87. Outside Gaming, **CEXes have also performed relatively well**, while among the blue chips, **BNB and Bitcoin have held onto a relatively higher amount of value than Ether**

Conclusion

Our analysis highlights a few key messages. Firstly, **the blue chips remain blue chips for a reason** and they have continued to perform relatively well even as the market stays volatile. Over the time period, BNB in particular has demonstrated consistent strength and the assets' year-to-date performance is notable.

Next, we must be wary of what we hear in the conventional media regarding categories within crypto. For instance, **L1 and Gaming tokens have performed relatively well** and indicate some level of strength, when compared to the more volatile sectors of DeFi and DEXes. **Given all the talk of how Gaming tokens have been hit extremely hard in the last few market moves, this is interesting data for us to counter that argument with.**

Lastly, CEX tokens have shown their resilience and have demonstrated a level of stability which might be a useful addition to many different portfolios and remain something to keep in mind. Growth in the CEX landscape is continuing on almost unparalleled levels, whether that's through M&A or obtaining international licenses or securing partnerships with high value international brands. Undoubtedly, a sector to keep a close eye on.

Crypto Policy

At this point, global policymakers seem to have different views with regards to crypto and are taking different approaches towards regulating the industry. While some regulators may take the view that Crypto is worth nothing, others would disagree. Even the Fed acknowledges that there is a broad retail audience holding crypto, with around 12% of US adults having at least some exposure to this new asset class in 2021.⁽⁵⁰⁾ For now, let's accept that **there are very different views on cryptocurrencies and how they should be regulated** and dive into what has happened in terms of policy so far this year. Let's do it keeping the below quote in mind. While this quote is from June 2018, it still applies today.

Figure 36: CZ comment on Twitter



CZ  **Binance** 
@cz_binance

...

Good regulations are good, bad regulations are bad.
Sound too simple, right? But I still constantly get
asked, do you like “regulation”, as in one word/entity.
Gotta look a little deeper.

Source: Twitter

Cryptocurrencies experienced massive institutional interest this year, and national financial regulators started to take more notice of the overall benefits that crypto can bring while at the same time encouraging more regulation. **More regulation is nothing bad per se, and the proper regulation can foster increased institutional adoption and enhance consumer protection while at the same time allowing cryptocurrencies to see further adoption.**

US - Crypto is here to stay

The United States is slowly opening up to the fact that cryptocurrencies are here to stay. Both Treasury Secretary Janet Yellen and US president Joe Biden encouraged the nation's regulator to look further into digital assets, their benefits, and the potential need for regulation. In March, President Biden signed off on an executive order on “Ensuring Responsible Development of Digital Assets,” thus further acknowledging the potential of the cryptocurrency industry.⁽⁵¹⁾ - slowly but steadily, world leaders see cryptocurrencies as a way to help their countries grow, innovate and stay ahead in a fast-changing world.

Looking closely at the US, we can see how crypto regulation took a giant leap forward as congressman Glenn Thompson introduced the Digital Commodity Exchange Act (“DCEA”).

This bill, if passed, will establish a reporting regime for cryptocurrency exchanges in the country. More importantly, this bill will further signal that the US is taking the growth of its cryptocurrency space seriously.

Another key policy development in the US is the introduction of the bipartisan crypto bill, also known as the “Responsible Financial Innovation Act.” The two sponsors of the bill, senator Cynthia Lummis of Wyoming and Kirsten Gillibrand of New York, address Commodity Futures Trading Commission (“CFTC”) and Securities and Exchange Commission (“SEC”) jurisdiction, stablecoin regulation, banking, tax treatment, interagency coordination, and more in the bill. While there have been more than 50 different crypto bills introduced in Congress so far, this is the only one that has bipartisan sponsorship by two key senators (Wyoming is currently the leading state when it comes to digital assets). The bill further commissions a study on the environmental impact of digital assets and creates an advisory committee on innovation and orders the development of cybersecurity guidelines. Additionally, it mandates an analysis of the use of digital assets in retirement savings. Interestingly, Bitcoin and Ethereum will be classified as commodities and regulated by the CFTC, while most altcoins will be subject to SEC regulations.

While the bill represents a small milestone for crypto policy in the US and a significant step forward for the crypto industry, there are many hurdles for the bill, having to pass through the Senate banking, agriculture, intelligence and financial services committees.⁽⁵²⁾

Recently, Gary Gensler, Chairman of the SEC announced that he is working on a “memorandum of understanding” with his counterparts at the CFTC in order to sign a formal deal to ensure that trading in digital assets has adequate safeguards and transparency. To cite him directly: “By getting that market integrity envelope, one rule book on an exchange will really help the public. If this industry is going to take any path forward, it will build some better trust in these markets.” To be fair, he is probably very spot on with his observation - the key question that remains is how such oversight will look like in detail, though.

Europe - Building a policy foundation

On the other side of the pond, Europe remains one of the most thriving places in the world for crypto. Cryptocurrency trading is legal almost everywhere in Europe, though it comes with hefty regulations. While crypto adoption is growing fast, so is the push for greater accountability. As such, the European Union announced this April that all crypto transactions must include information on the parties involved. While this law still needs to pass, the pathway seems tilted in one direction - more regulation⁽⁵²⁾ **Two of the most important crypto regulations in the European Union (“EU”) are the “Regulation on Markets in Crypto Assets” (“MiCA”) which amongst others plans to regulate crypto assets issuers and service providers (exchanges) in the EU area as well as the “Transfer**

of Funds Regulation” (“TFR”), which aims to prevent payment systems from being used to launder money (for example by regulating unhosted wallets). Without going into too much detail, it is important to be aware of both these regulations. Finalized after more than two years of consultation MiCA was finalized just in time for this report. Its goal is to harmonize the EU market by creating regulatory certainty and improve consumer protection. Considering the importance of the regulation it is important to be aware of some of the areas covered by MiCA⁽⁵⁴⁾⁽⁵⁵⁾:

- ❖ The feared POW-ban is no longer part of MiCA, instead Crypto Asset Service Providers (“CASPs”) will have to disclose information on the sustainability of the crypto-assets as well as their consensus.
- ❖ Lending as well as truly decentralized DeFi protocols are not in MiCA's scope. However, a report and subsequent regulation on DeFi is expected for 2023 and also Lending could be regulated following future reports.
- ❖ As of now NFTs are out of scope for MiCA, yet again, that does not imply that they will not be regulated on national level or be “in-scope” following future regulation.
- ❖ Zooming in on Stablecoins, the MiCA regulation introduced further supervision with the European Banking Authority (“EBA”) having supervisory authority over “significant” stablecoins. Additionally, stablecoin issuers now need a presence in the EU and have to ensure that the reserves are protected in case of insolvency. This includes algorithmic stablecoins, effectively banning them from the EU. There also is a new issuance limit now for so called “Asset referenced tokens” (“ARTs”) and non-Euro “E-Money Token” (“EMTs”) such as USDC and BUSD. Those tokens used on large scale for payments will have limited volume of EUR200MM per day.
- ❖ While TFR is more important when it comes to “Anti-Money-Laundry” (“AML”) measures, MiCA still requires CASPs to introduce general safeguards and have a substantive presence and management in the European Union.

Other parts of the world - Adoption, Adoption, Adoption

Outside the US, the world has been changing even faster, with the UK doing a 180-degree turn on their policy view, the Central African Republic adopting Bitcoin as legal tender, the Central Bank of Russia accelerating efforts to issue a digital ruble, and many more.

The UK has been highly active when it comes to regulating cryptocurrencies. However, Crypto’s ride in the UK has been bumpy, to say the least. First, the country’s top financial regulator warned about investing in crypto and that people “should be prepared to lose all their money”, then the country’s chief financial minister declared intentions for the UK to be a crypto powerhouse. While the UK has improved a lot when it comes to crypto adoption,

establishing a legal framework for businesses related to virtual assets, including crypto assets and NFTs, we move one step closer to Dubai’s vision to become one of the leading jurisdictions for the still-emerging crypto landscape. As part of this, Binance has been granted a Virtual Asset Licence, allowing it to operate under Dubai's 'test-adapt-scale' virtual asset market model as a platform for regional development.

While policy development has come a long way this year, there have been interesting case studies of how crypto cases were handled in court. As an example, earlier this year, the Lichtenstein-based exchange LCX was hacked and decided to involve a law firm. With the help of their law firm and a court order from a New York Supreme Court, they came up with a creative, blockchain-based way to serve the hacker with a lawsuit. Usually, the defendant of a lawsuit would be served with the complaint to be given fair notice and the opportunity to respond to claims against the person. Due to the pseudonymity of cryptocurrencies, the defendant is not known, however. As a workaround, the New York Supreme Court contends that you can serve a court order as a non-fungible token (“NFT”) and just airdrop it to the defendants' wallet.

While steady progress has been made, there still has not been any internationally coordinated regulation of cryptocurrencies. Central banks kept themselves busy this year, focusing increasingly on regulating the cryptocurrency space. Their main goal seems clear - stabilizing their monetary systems while at the same time participating in innovation and economic growth. Territorial differences still create a lot of uncertainty that is likely to prevail for the remainder of the year. At the end of the day, cryptocurrencies would likely benefit from a globally coordinated approach to regulation. While this is the ideal scenario, it also seems unlikely to happen anytime soon.

It is important to note that crypto technology does not aim to disintermediate governments and legacy institutions. Instead, it is more likely that we will see winners and losers based on competitive strength and integration in an ever-faster-changing world. Going forward, we should expect that regulators will get more involved. The most important part right now is to enhance education, remove fear and disinformation, and clearly communicate the benefits of cryptocurrencies and the technology behind them. Working with governments rather than against them seems to be the best approach to stop the banning and over-regulation due to misinformation and irrationality.

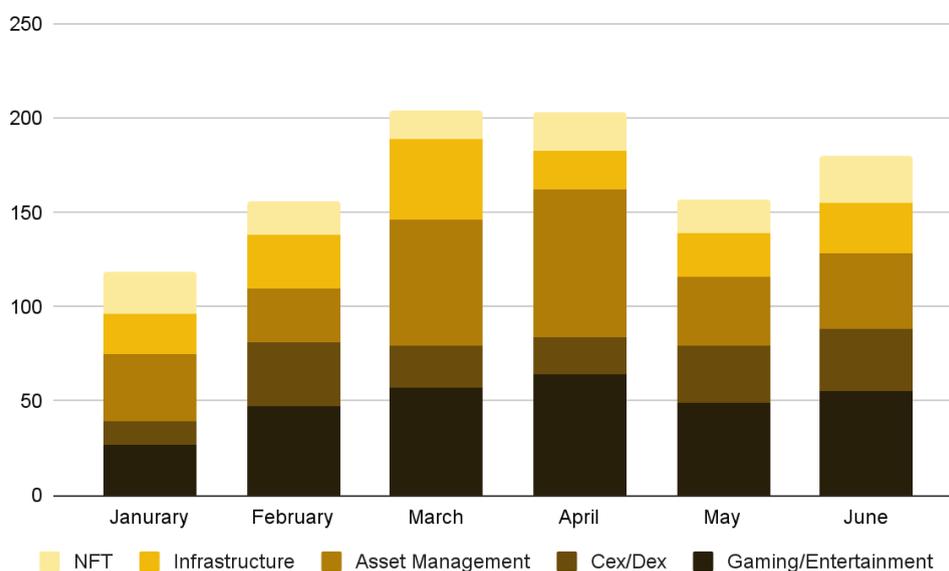
Fundraising Activities

The beginning of 2022 had swings to the downside of the fiat valuation of Bitcoin and other cryptocurrencies. However, these downward corrections did not deter the venture capital (“VC”) space in the slightest. VentureThe VC capital investment in all of 2021 was around US\$35B⁽⁵⁸⁾. Amongst crypto enthusiasts, there is probably a consensus that the entire industry is poised to explode, yet, the whole industry is still in the early adoption phase.

Given the strong growth despite black swan events (Like the UST blow-up and the high number of liquidations in June 2022) **and unfavorable macroeconomic conditions, the industry's long-term growth seems to be unstoppable.** One reason for this is the increased amount of use cases and overall adoption of crypto-currencies.

Taking a step back, we can see that at the beginning of 2020, most investments were focused on crypto infrastructure and financial services. From late 2020 to mid-2021, decentralized finance (“DeFi”) applications were favored, and from the end of 2021 into 2022, non-fungible tokens (“NFTs”) and gaming companies saw the most investments.

Figure 38: Number of venture capital crypto investments shows Gaming/Entertainment is most favored for the first-half of 2022



Source: Binance Research, Binance Labs

Ending June 2022, we saw more than 1000 investments within the crypto space. **The two areas that saw the most number of investments were Gaming/Entertainment and Asset Management.** NFTs saw the lowest amount of investments across all sectors in 2022.

Comparing the number of investments with those made in 2020/2021, we can see continued interest and growth in this space. Additionally, an increasing number of VCs are raising crypto-dedicated funds.

- ❖ Bain Capital just started a US\$560 million fund focused on building the next phase of Web3.⁽⁵⁹⁾
- ❖ Sequoia Capital also heavily joined this space with a crypto fund of over half a billion dollars.⁽⁶⁰⁾
- ❖ Katie Haun broke away from Andreessen Horowitz (a16z) to form Haun Ventures, raising US\$1.5B to focus on Web3 - the largest debut fund ever by a female VC.⁽⁶¹⁾
- ❖ Pantera Capital closed a US\$1.3 billion Blockchain Fund.⁽⁶²⁾
- ❖ Crypto Exchange FTX Sets Up a US\$2B Venture Fund.⁽⁶³⁾

In addition to a lot of fundraising for dedicated investments in the Web3 space, we also saw some big investments being made during the first half of 2022.

- ❖ Citadel saw a US\$1.15B majority investment from Sequoia Capital and Paradigm. This deal marks a shift in Citadel to new asset classes such as crypto.⁽⁶⁴⁾
- ❖ Cross River, a provider infrastructure for embedded financial solutions, received US\$620M to expand its crypto solutions, along with payments, cards, and lending tool⁽⁶⁵⁾
- ❖ Fireblocks, a platform that provides custody, staking, and crypto solutions for institutions, saw a Series E round of US\$550M to expand its protocol support to further blockchains.⁽⁶⁶⁾
- ❖ ConsenSys, one of the biggest creators of Ethereum-centric decentralized protocol software, saw a series D of US\$450M to help align the company's treasury strategy by rebalancing its ETH to USD ratios.⁽⁶⁷⁾
- ❖ Polygon, an Ethereum scaling platform that allows decentralized applications to operate with low fees, raised US\$450M to invest in zero-knowledge (“ZK”) technology to expand the reach of Web3 further.⁽⁶⁸⁾
- ❖ Yuga Labs, best known for creating Bored Ape Yacht Club, raised US\$450M in a seed round to help scale its operations.⁽⁶⁹⁾

Despite more and more money flowing into the space, we also saw some key issues emerging in 2022. Specifically, the need for people and talent in the blockchain space is growing. While there have been recent sell-offs, we have witnessed projects using this period to build and grow to prepare themselves for the next bull run. **As more companies**

plan to expand, create new products and diversify their organizations, employees with the right skills are becoming harder to find.

Right now, both private and public market valuations are taking a hit, and it is essential to remember that Crypto is a risk-on asset class, and funding can dry up quickly.

Nevertheless, despite the recent decline, fund flows remain healthy. The next few months could provide a better picture given the current challenging market conditions and the continued fallout from Terra's collapse last month. As such, the best is to keep your eyes open and to continue observing where the money is flowing.

Conclusion

The correction we witnessed in the first half of 2022 is a stark reminder that markets do not only go up. The last two years saw a historical level of euphoria in the crypto space and when coupled with the ultra-loose monetary policies prevalent across most of the world, investing seemed a lot easier than what it actually is. However, many projects built during these years now face a reality check. We remain convinced that this market correction is healthy for the long-term success of the industry and while some projects might fail, others will use this opportunity to continue improving upon their existing infrastructure, code, mission, and so on. Bear markets are times to build and create sustainable growth and that is what we have been seeing in many parts of this extremely diverse crypto landscape. Be it in L1s, L2s, GameFi, or even regulation - we have witnessed crucial developments in all of these areas in the first half of this year.

To quote Warren Buffet, “only when the tide goes out do you discover who's been swimming naked.” The collapse of some of the previously most respected companies and projects have forced investors to go back to the drawing board and reevaluate how they assess companies. While painful for many, these are the critical building blocks of any budding market and the liquidation of some of the companies today may turn out to be a necessary evil that reduces risks of further contagion down the road”.

Regardless, having reviewed the underlying trends and developments across different sectors in the crypto ecosystem, one thing is certain - we are in a BUIDL market. Excesses are steadily being flushed out of the system, and investors are now more rational in terms of capital allocation. Developers continue to improve their products and smart contracts continue to work as programmed.

Rome was not built in a day. Nothing great comes without time, persistence, and hardwork. Challenges and hurdles are not uncommon. Yet, as numerous communities and the great minds in crypto work together to lay the bricks and build the foundation for a decentralized and permissionless future, we remain more optimistic than ever. We look forward to a future with increased freedom of money.

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