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Are We Entering a Bull Market? Top 10 Narratives to Follow

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1 Key Takeaways

- Total crypto market capitalization (“market cap”) is up ~110% year-to-date, representing an increase of over US$870B in capital. In Q4 so far, markets are up 55% (~US$596B).

- Stablecoin supply is returning, with the quarterly net change in the supply of the top five stablecoins turning positive for the first time since Q1 2022.

- NFT volumes have broken their eight-month downtrend and increased nearly 200% month-on-month (“m-o-m”) in November. Bitcoin was the most popular chain, with US$375M+ in NFT volume, exceeding even Ethereum NFTs (US$348M).

- Fees for the top 20 crypto projects rose in November, and were ~84% higher than in October, and ~100%+ higher than in September. DeFi TVL also rose, while DeFi dominance was up 18% m-o-m.

- Bitcoin has had an eventful year with Ordinals and BRC-20s, and saw a resurgence in interest in November. News of a spot Bitcoin ETF looks positive, with the market expecting a January approval, while the Bitcoin Halving in April is another important milestone to watch.

- A number of alternative Layer-1s (“L1s”) have outperformed Ethereum recently, with Solana and Toncoin making notable moves. SocialFi has emerged with new protocols like friend.tech, alongside updates from Farcaster, Lens, and Binance Square.

- RWAs have started to become increasingly important, now representing over 49% of the assets on MakerDAO’s balance sheet. Chainlink also hopes to bring closer ties between TradFi, RWAs, and crypto, with their new CCIP solution.

- Zero-knowledge (“zk” or “ZK”) technology is starting to take off, with various recent ZK-rollup launches and increased work and discussion around ZK co-processors.

- U.S. interest rates are at a 22-year high, with the market expecting cuts in the next year. China has already started cutting some rates, while lower inflation in Europe has prompted investors to start anticipating cuts from the European Central Bank.

2 Introduction

After the highs of 2021, the crypto market has largely been a building-focused market for the last couple of years. As the mania of celebrity-endorsed NFTs, US$69K Bitcoin, Dogecoin on SNL, and other narratives faded, some left the industry, while others doubled-down on their efforts and vision. In recent weeks, we have seen an increased excitement in the market, with some of the bear-market building starting to show itself, both in crypto activity and asset prices.

While it is too early to definitively say that we are back in a bull market, things are certainly feeling better than they have been for a while. It is to this end that we prepared this report, in order to provide our readers with a few key narratives and metrics to keep their eyes on as we traverse the next few months.

Figure 1: Total crypto market cap is up ~110% year-to-date, representing an increase of over US$870B. In Q4 so far, markets are up 55% (~US$596B)

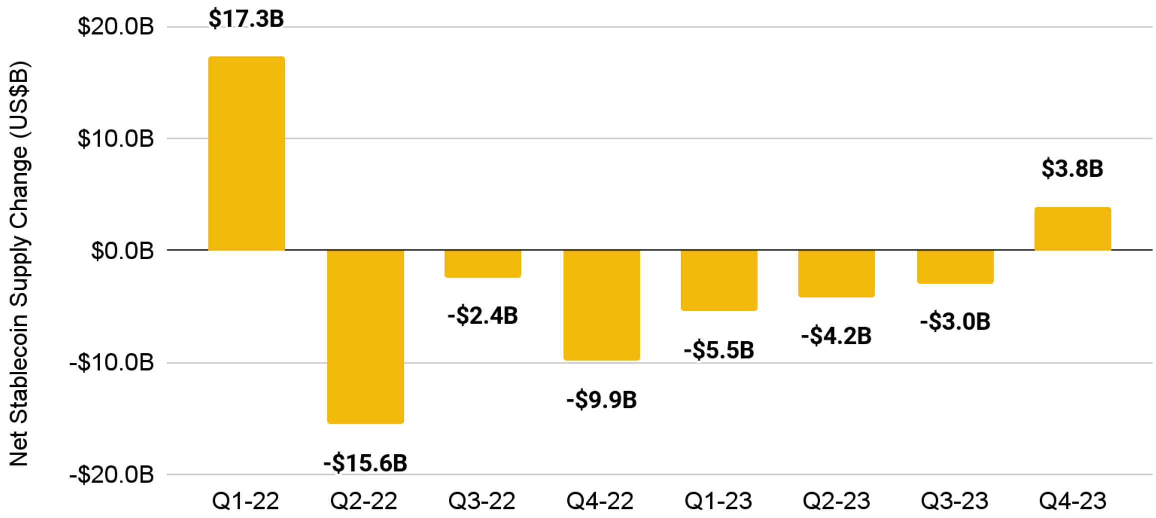
Source: CoinMarketCap, Binance Research, as of December 5, 2023

3 Key Narratives to Follow

1. Stablecoin Supply Returns

Stablecoin supply is a **measure of the amount of capital ready and available to invest in crypto assets at any given point in time**. Recent data has shown that the quarterly net change in the supply of the top five stablecoins (by market cap) has turned positive for the first time since Q1 2022.

Figure 2: The quarterly net change in the supply of the top five stablecoins has turned positive for the first time since Q1 2022



Source: DeFiLlama, Binance Research, as of November 30, 2023

Given that **increasing stablecoin supply is a measure of capital inflows into crypto and an indication of potential buying pressure**, the recent move can be evaluated as a positive sign.

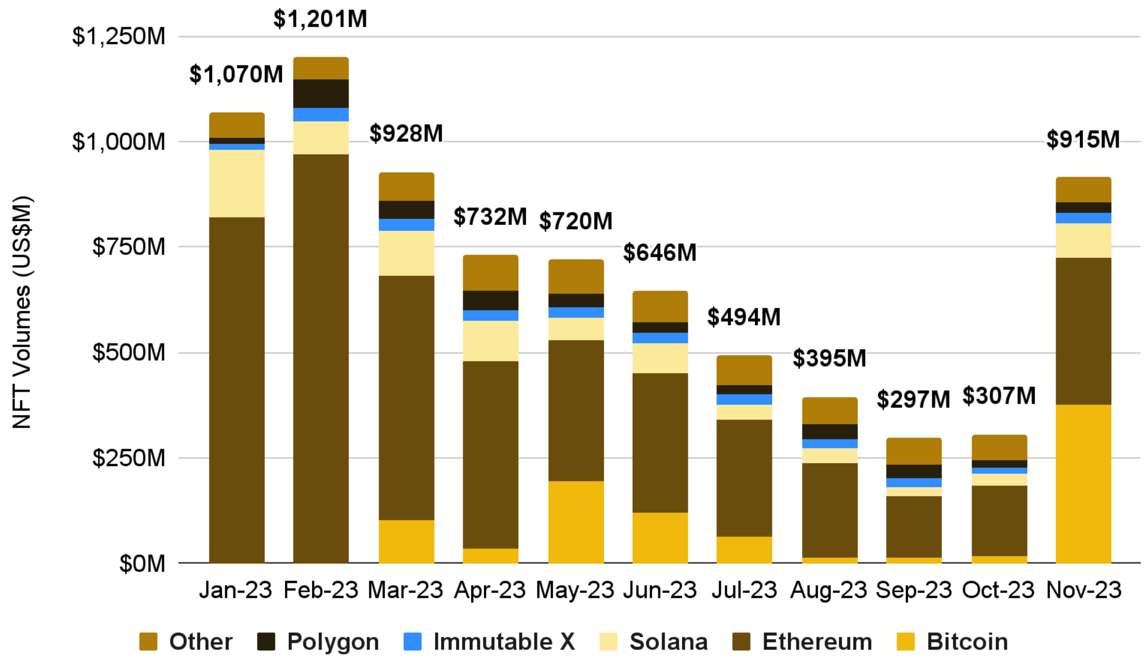
It is worth keeping a close eye on how this metric evolves over the coming months and whether this was a temporary change or representative of a more sustained upward trend.

2. NFT Volumes Rising

NFT volumes can be thought of as a **leading indicator** of market sentiment owing to the fact that **NFTs can be considered higher beta plays within crypto**. For example, if we consider Bitcoin as a benchmark asset, altcoins like Ethereum are generally more volatile i.e., have higher beta than Bitcoin. If we keep going down the risk spectrum, we eventually get to NFTs, and hopefully it is clear why they have significantly higher beta than Bitcoin.

The fact that **NFT volumes have broken their downtrend** and increased significantly m-o-m is an indication of **positive market sentiment** and of a **revitalization of NFT-speculation**, after months of depressed prices and pessimism for the sub-sector.

Figure 3: NFT trade volumes have broken the yearly trend and showed a noticeable m-o-m increase in November



Source: CryptoSlam!, Binance Research, as of November 30, 2023
Note: "Other" category includes the other 10 chains in the top 15 chains by all-time NFT volume

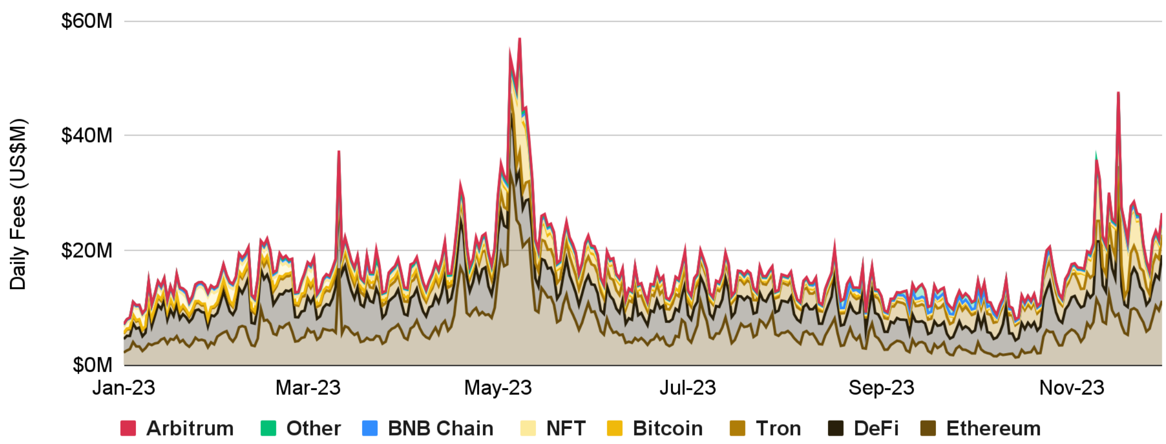
We should also highlight the significant growth in **Bitcoin NFTs** (discussed in more detail in Bitcoin). Their growth has been incredible, as shown in Figure 3, especially considering they were (essentially) invented in late 2022 and only became popular in March 2023.

Bitcoin NFTs, which recorded close to zero trade volume in January, went on to become the **most popular NFTs in November**, with **over US$375M in volume**, **exceeding even Ethereum NFTs (US$348M).** This is a huge achievement for a chain that has long been considered unsuitable for applications and NFTs, and it will be interesting to monitor how things evolve in coming months.

3. Protocol Fees Up

The fees that the top crypto projects generate are an important metric to follow as the industry continues to mature and protocols move towards becoming revenue-generating businesses. Fees have steadily risen over the last year, and were over 88% higher on a m-o-m basis in November as compared to January.

Figure 4: Fees for the top 20 crypto projects (across all sectors) rose in November, and were ~84% higher than in October and ~100% higher than in September



Source: Token Terminal, Binance Research, as of November 30, 2023
Note: "DeFi" includes Lido, Uniswap, Convex, GMX, PancakeSwap, MakerDAO, Aave, dYdX, Venus and Curve. "NFT" includes OpenSea, Manifold.xyz, and Blur. "Other" includes Flashbots and friend.tech.

- In terms of cumulative fees, **Ethereum has generated over twice any other single protocol with total fees over US$2B this year so far.** The next highest, Tron, has generated ~US$880M.
  - Ethereum generates fees through essentially selling its blockspace. The users paying these fees can be anyone from retail traders using Uniswap to trade memecoins, all the way to L2 protocols like Arbitrum, who pay Ethereum to settle their transactions on.

- **DeFi is the second-largest fee generator** after Ethereum, with **Lido and Uniswap being the leaders**. Convex, GMX, PancakeSwap, and MakerDAO have also generated over US$100M in fees year-to-date, with Aave not far behind.

- In terms of NFTs, **OpenSea is firmly in the lead, nearly twice as many fees as Manifold, and over twice as much as Blur.** The lead over Blur is interesting because of the back-and-forth we have seen between these two major NFT players over the past year. While **Blur has succeeded in increasing its share of Ethereum NFT marketplace volume[(1)] from ~40% to ~80%, while OpenSea has fallen from ~43% to around 20%, in terms of fee generation, OpenSea still holds the lead.**

Figure 5: The top 10 fee generators of the year are dominated by L1s and DeFi projects

Logo	Protocol	Sub-sector	Year-to-date Fees (US$M)
	Ethereum	**L1**	2,079
	Tron	**L1**	884
	Lido Finance	**DeFi**	547
	Uniswap	**DeFi**	477
	Bitcoin	**L1**	459
	BNB Chain	**L1**	161
	Convex Finance	**DeFi**	133
	GMX	**DeFi**	121
	OpenSea	**NFT**	118
	PancakeSwap	**DeFi**	114

Source: Token Terminal, Binance Research, as of November 30, 2023

- It is notable to see that **friend.tech, only launched in summer, makes it to the top 20 protocols for fees this year (>US$50M in fees)**. This helps demonstrate the opportunity available for those who can generate traction and hype, especially in the growing and relatively nascent SocialFi sub-sector.

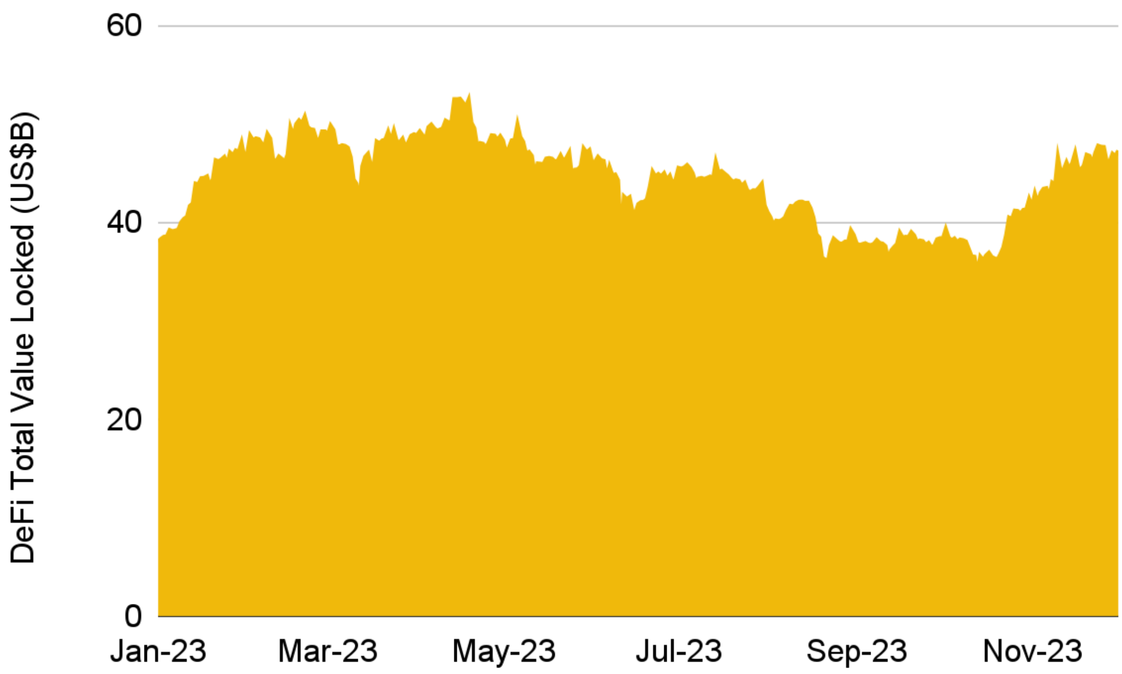
- It is also interesting to see that **Arbitrum is the only L2 in the top 20 list (>US$50M in fees).** This is notable because of the consistent discourse around L2s and how big of a narrative the L2 sub-sector has become. Despite all of that, only Arbitrum features in the list. This might be an interesting metric to consider keeping in mind all of the new L2s that have recently been announced or launched.

- Overall, **fee generation is the hallmark of any truly sustainable business.** It is clear that some parts of the crypto market are able to generate meaningful fees, and it is encouraging to see these figures grow over 2023. Keeping a close eye on which protocols and sub-sectors demonstrate the best fee growth will definitely be an important aspect to consider as we head into the next part of the market cycle.

4. The Return of DeFi

After many months of relatively limited movement in DeFi, we have started to see some activity return to the sector. **DeFi total value locked ("TVL") is up nearly 25% since the start of the year, with 14% m-o-m growth in November.** With TVL having been constrained between US$45-50B since last December, it will be important to monitor whether this latest move can be sustained and comfortably push past the US$50B mark in the coming weeks and months.

Figure 6: DeFi TVL returning



Source: DeFiLlama, Binance Research, as of November 30, 2023

In terms of chains, **Ethereum remains the most dominant player** by a margin, commanding over 56% of total TVL. **Tron** has ~16%, while **BNB Chain** is just over 6%. **Arbitrum** (~4.5%) and **Polygon** (~1.8%) round off the remainder of the top five. It is worth noting that **of the top ten chains by DeFi TVL, four of them are Ethereum L2s** (OP Mainnet and Base in addition to the previously mentioned).

Thinking about categories, **liquid staking (US$27B)** has been one of the biggest winners of the year, with Lido being the dominant player with over US$20B in TVL. The Shanghai Upgrade, which enabled withdrawals of staked $ETH, was very helpful for Lido, helping it grow from ~US$12B in TVL to over US$20B now. **Lending (US$19B), DEXes (US$13B), and bridges (US$13B)**, are the next most popular categories.

One other chart that is worth paying attention to is **DeFi dominance**. This is measured by looking at the top DeFi tokens and calculating their aggregate market cap as a percentage of total crypto market cap. After staying in the 3.8 - 4.1% zone since April, this **number has started to rocket up, gaining 18% across November** to end the month at 4.44%. The likes of Thorchain, PancakeSwap, Uniswap, and Synthetix have been among the key drivers of this move.

Figure 7: DeFi dominance rising

Source: The Block, Binance Research, as of November 30, 2023

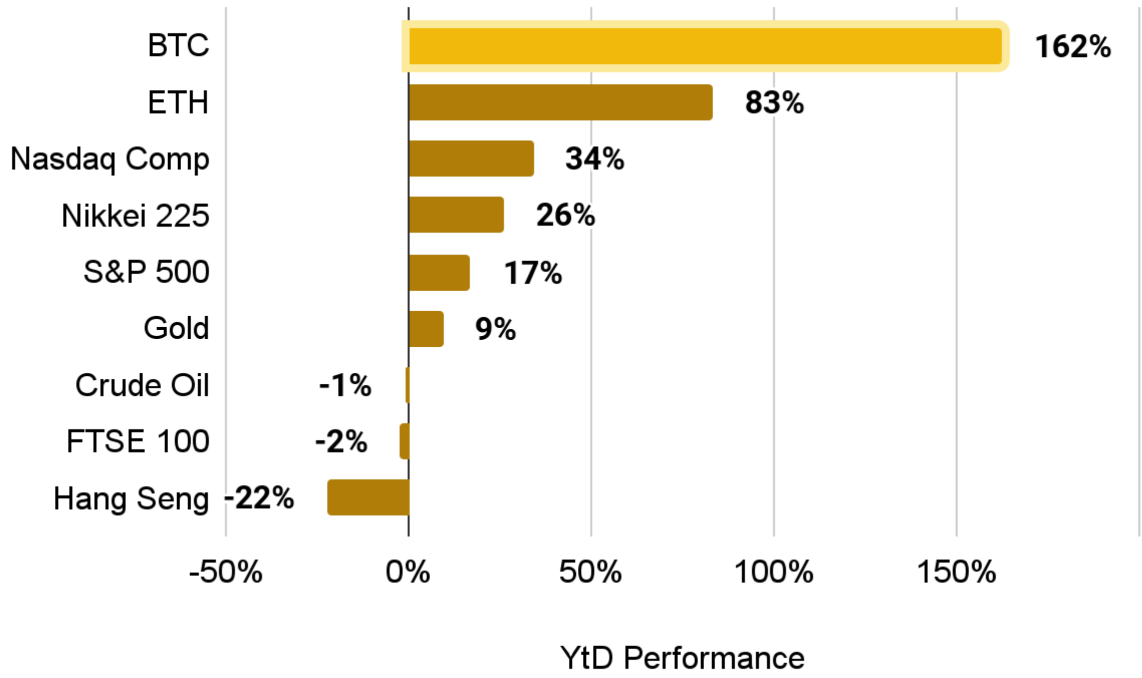
A few key developments to follow:

- **MakerDAO** will continue progressing towards its Endgame, with Phase 1 of 5 expected to launch in early 2024[(2)].
- **PancakeSwap's** recent launch of their gaming marketplace and overhauled governance system with a new vote-escrowed ("ve") token, $veCAKE.
- **Synthetix's** new Infinex product is set to launch soon. Infinex is an upcoming decentralized perps exchange.
- The launch of Fluid, a highly capital-efficient, multi-layer DeFi protocol from the **Instadapp** team.

5. Bitcoin, Bitcoin, Bitcoin

It has been an eventful year for Bitcoin, with developments on all ends of the investor spectrum, from extremely crypto-native Ordinals (Bitcoin NFTs) collectors, to more traditional institutional investors getting closer to a Bitcoin ETF. This has corresponded to a 162% increase in the market cap of Bitcoin across 2023 so far, outperforming much of the market and most other top crypto-assets.

Figure 8: Bitcoin's year-to-date performance has been extremely strong



Source: CoinMarketCap, Yahoo Finance, Binance Research, as of December 5, 2023

Some of the most important Bitcoin narratives:

A. Spot Bitcoin ETF Approval More Likely Than Ever

While the potential for a U.S.-regulated spot Bitcoin ETF has long existed, 2023 has seen notable positive developments. Namely, the dispute between the U.S. SEC and Grayscale regarding the conversion of their Grayscale Bitcoin Trust ("GBTC") into a spot Bitcoin ETF essentially concluded in favor of Grayscale. This led to a number of other players, including the likes of BlackRock, Fidelity, and Invesco, to also file spot Bitcoin ETF applications in recent months.

In total, **there are 13 spot Bitcoin ETF applications currently under review by the SEC, with the earliest final deadline falling in January 2024**, while the latest is in August 2024. The market widely expects these ETFs to be approved in the coming weeks or months, particularly given the outcome of the SEC's case against Grayscale, and the consistent refiling and amendments that each applicant has been making to their ETF applications in order to maximize their chances for approval.

Figure 9: Many of the final deadlines for the SEC to make a decision on Bitcoin spot ETFs occur in Q1-2024, starting in January

Final SEC Deadline	Company
10-Jan-2024	21Shares & ARK
14/15-Mar-2024	BlackRock, Fidelity, Bitwise, VanEck, Wisdomtree, Invesco & Galaxy
19-Mar-2024	Valkyrie
19-Apr-2024	Global X
30-May-2024	Hashdex, Franklin Templeton
~8-Aug-2024	Pando
Deadlines passed - in direct negotiations with the SEC	Grayscale

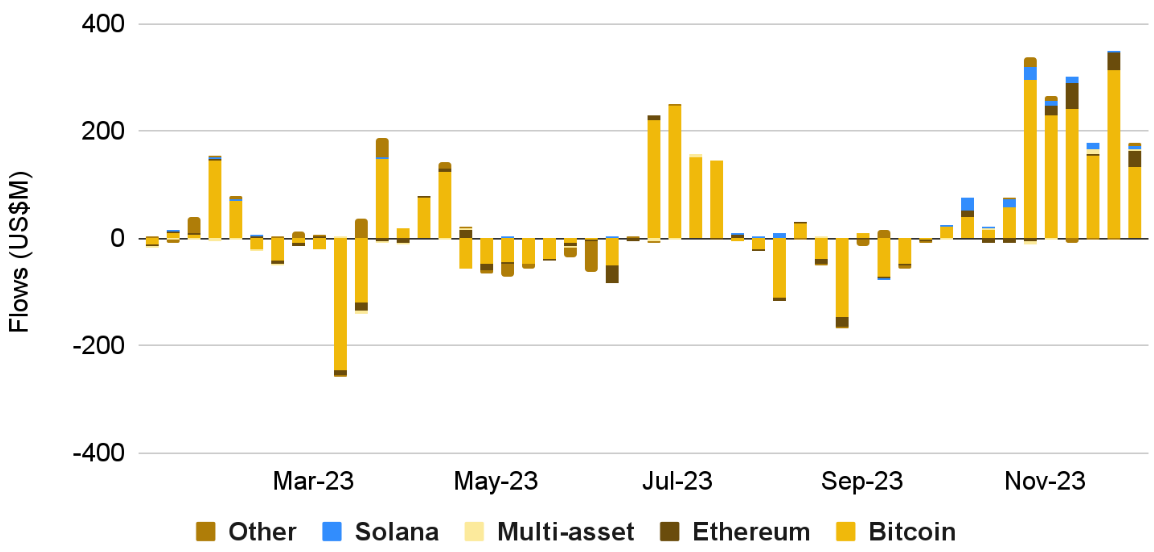
Source: Bloomberg, Binance Research

If approved, a spot Bitcoin ETF will tackle two primary drivers of Bitcoin adoption: **convenience / accessibility and mainstream acceptance.** Having the **spot ETF wrapper will provide many institutional investors with an easy, regulated, and widely-accepted way to add Bitcoin exposure** to their portfolios, as well as improve distribution. The stamp of global asset management giants like BlackRock, Fidelity, and Invesco, will **improve the perception of Bitcoin as a legitimate asset class, and help ease regulatory / compliance concerns for new investors**. This is expected to lead to a significant increase in inflows into Bitcoin, both from previously sidelined institutional investors, as well as, new retail investors who might previously have been wary.

A recent study[3] by Galaxy had a fairly conservative **estimate of US$14B of inflows at the end of the first year of a spot Bitcoin ETF**. In addition, we can consider the case study of the spot gold ETF. Specifically, the **first U.S. traded spot gold ETF launched in 2004**, prior to which it was very difficult to invest in gold. After the ETF launch, the **price of gold went up for seven years in a row**. This demonstrated the sizable market-mispricing of gold due to the lack of a suitable investment vehicle. While not directly comparable to Bitcoin, it is worth considering whether we might see similar moves in Bitcoin if a spot ETF does indeed get approved in the near future.

In fact, **recent crypto exchange-traded products ("ETP") data has demonstrated a sustained increase in inflows**. Although the majority of this data is retail-driven, the CoinShares team has also seen a rise in institutional interest. Furthermore, the rising inflows in crypto ETPs (which includes products like ProShares' Bitcoin futures ETF, Bitwise 10 Crypto Index, etc.) are also an **indication of increased interest in investors wanting crypto exposure in a more traditionally-regulated manner** (versus using centralized or decentralized crypto-native exchanges). Digging deeper into CoinShares ETP data[4], we can see that **Bitcoin ETPs have seen over US$1.6B in inflows this year, being the most popular asset by far**. Total assets under management ("AUM") are up over 100% since the start of the year and, at US$46.2B, are the highest since May 2022.

Figure 10: Global crypto ETP inflows have shown a marked increase across October and November, with Bitcoin the dominant asset by some way

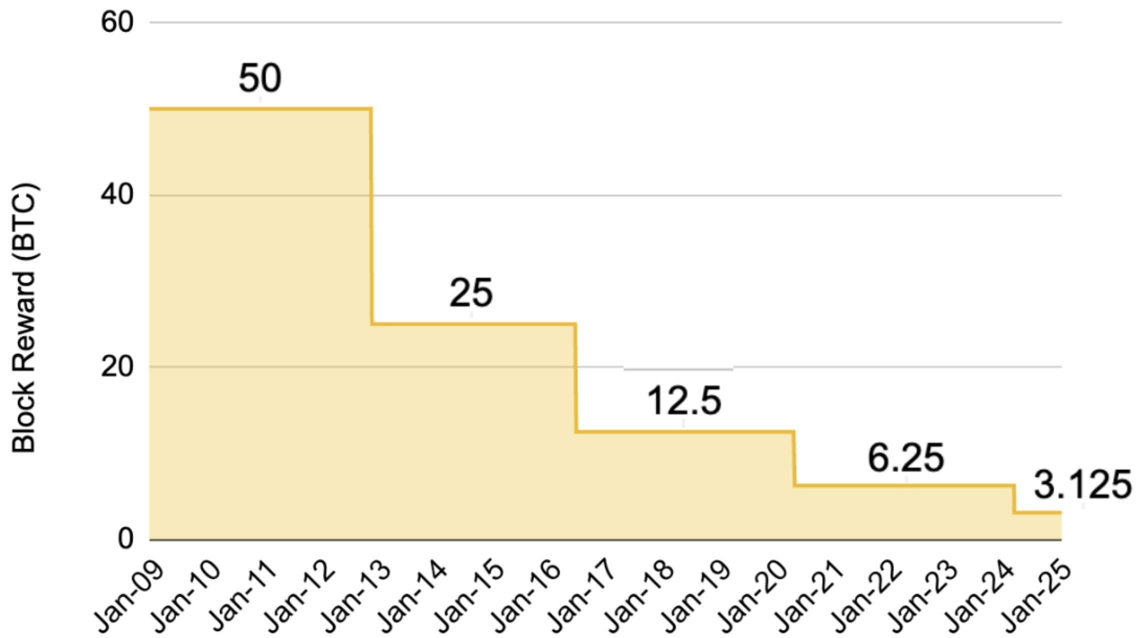


Source: CoinShares Digital Asset Fund Flows Weekly, Binance Research, as of December 1, 2023

B. Bitcoin Halving Approaching

Bitcoin miners are incentivized through two mechanisms: block rewards and transaction fees. The block rewards have traditionally accounted for the majority of miners' income, with transaction fees only recently showing increases in volume (after the launch of Ordinals). These block rewards are paid out for every newly mined block, which happens every 10 minutes on average, and are cut in half roughly every four years. The block rewards started at 50 BTC per block in 2009 when the Bitcoin blockchain first launched. Following halvings in 2012, 2016, and 2020, the block reward is currently 6.25 BTC per block. This number will halve to 3.125 BTC per block in April 2024.

Figure 11: Bitcoin's mining reward is cut in half roughly every four years. The next halving is expected in April 2024.



Source: Binance Research

Given Bitcoin is an asset with a fixed maximum supply (21M), and the Halving reduces the rate at which new Bitcoin are created by 50%, basic economics would dictate that a rise in price is the natural next step. The Halving essentially **creates scarcity for Bitcoin, and further reinforces the narrative of Bitcoin as digital gold**. Historically, the event itself has been associated with heightened market volatility, although the overall crypto market has generally performed well in the year following the Halving.

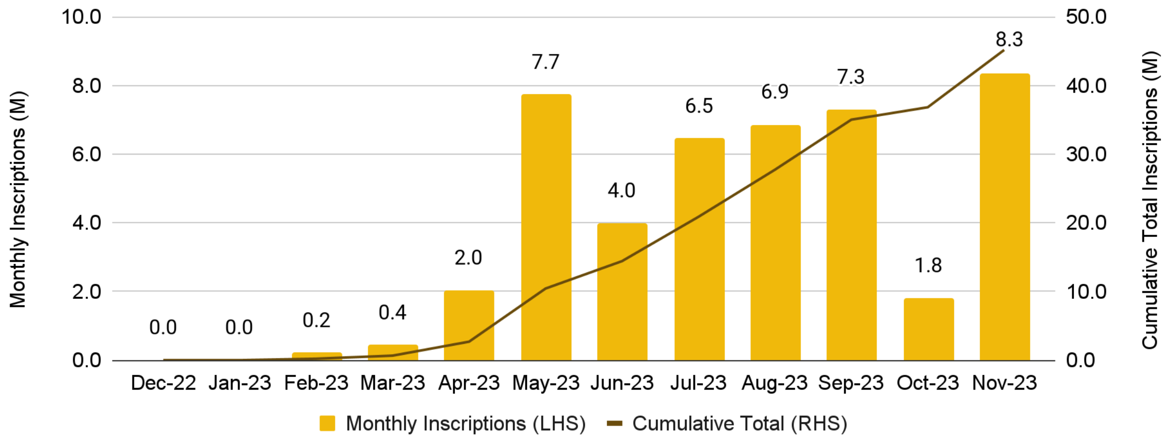
C. Ordinals and Inscriptions Continue to Grow

One of the most significant developments for Bitcoin in 2023 was the advent of Ordinals and Inscriptions. Casey Rodarmor's "Ordinal Theory" enabled the **tracking of individual Satoshis (the smallest unit of Bitcoin), and ascribed a unique identifier to every single**

one. These individual Satoshis were then able to be "inscribed" with arbitrary content, e.g., text, images, videos, etc. This created an "Inscription" or what soon became known as a Bitcoin NFT.

For a more complete understanding, check out our report, "A New Era for Bitcoin?".

Figure 12: Total Bitcoin Inscriptions are approaching the 50M mark after the recent resurgence in minting volumes in November



Source: Dune Analytics (@dgtl_assets), Binance Research, as of November 30, 2023

Inscriptions led to the **birth of BRC-20 tokens**, which enabled, for the first time ever, the **deployment, minting, and transferring of fungible tokens on Bitcoin**. Check out our full report, "BRC-20 Tokens: A Primer", here.

After the initial market frenzies when Ordinals and BRC-20s first launched, the market cooled off a little bit. However, the month of November has seen a significant resurgence in activity in these markets. **Total Inscriptions are up 362% from the lows of October, and have recorded their highest month ever at over 8.3M.** Inscriptions have **also generated over US$140M**[5] **in fees** so far, a welcome addition for miners, given the historically low transaction fee volumes on Bitcoin, in addition to the upcoming Bitcoin Halving (which will also reduce miner income).

Possibly the most important impact of this has been the **underlying excitement and innovation that Ordinals have generated,** both within and outside the Bitcoin ecosystem. Numerous new builders have flocked to Bitcoin, many existing projects have been shipping updates at a faster pace, and various new ideas are currently circulating within the Bitcoin community.

A recent example is the **US$7.5M raise**[6] **by Taproot Wizards**, an Ordinals-focused project based around a famous Bitcoin wizard meme. The effect that Ordinals and BRC-20s have had on increasing transaction fees and congestion on the Bitcoin network has also helped renew discussions around Bitcoin Layer-2s ("L2s"). Notable Bitcoin project, **Stacks, and**

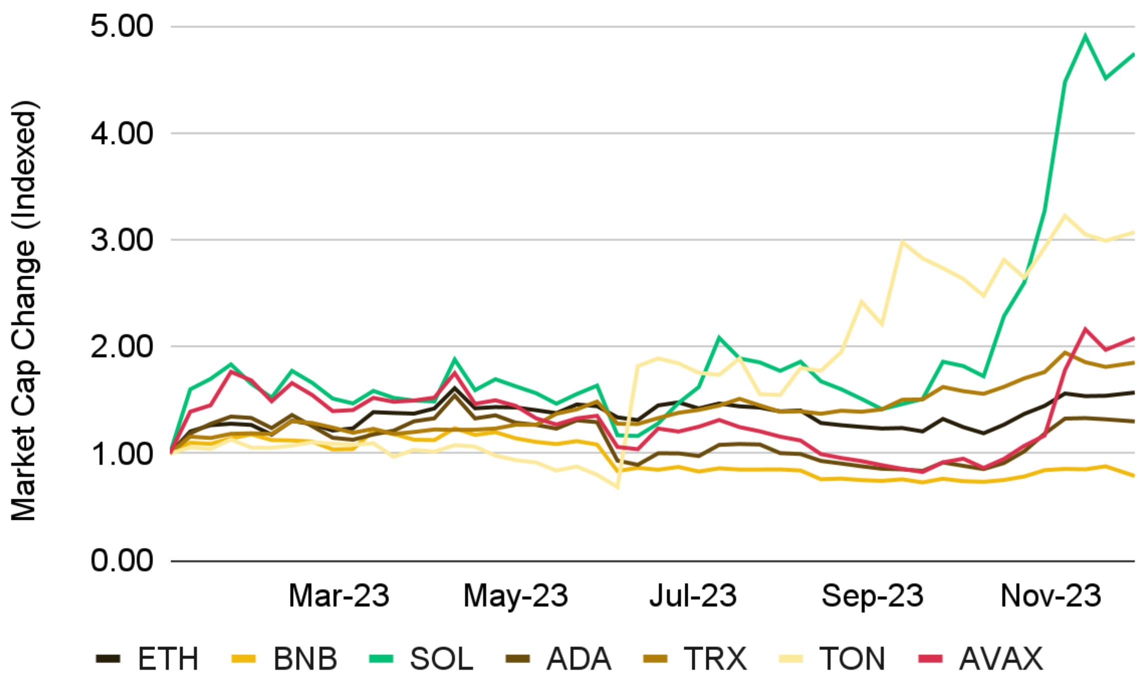
their upcoming sBTC solution[7] to create a decentralized, non-custodial, Bitcoin L2, is an interesting relevant development to follow here.

All in all, between the spot Bitcoin ETF, the Bitcoin Halving, and the innovations emerging from Ordinals, it is clear that Bitcoin is in the middle of an exciting period in its history and is something to keep a very close eye on.

6. Alternative Layer-1s Grow

While Ethereum remains the dominant smart-contract Layer-1 ("L1") by most typical metrics, alternative-L1s have shown promise over the last year.

Figure 13: A number of alternative-L1s have outperformed $ETH over the last year



Source: CoinMarketCap, Binance Research, as of November 30, 2023

- Solana has been the notable outperformer, especially recently, with $SOL market cap increasing ~56% in November.

  - Solana was deeply affected by the FTX collapse of 2022, but having survived the entire situation and continued to release new products and improvements since then has led to a resurged optimism for the project. Additionally, while **in 2022 Solana saw a number of network outages, there has only been one such incident in 2023 so far** (back in February). These incidents are expected to further reduce next year with the upcoming release of **Firedancer**[8], a new, independent, validator client.

  - Solana **DeFi** performed well in November, with **TVL rising 57% from US$418M to over US$650M**, more than any other major chain. This has coincided with the activity and attention generated by **recent airdrops** from oracle project Pyth Network, DEX aggregator Jupiter Exchange, and

MEV-linked liquid staking provider Jito Network. Additionally, some of the other major DeFi projects, including MarginFi and Kamino Finance, have implemented (or teased) **point systems**. User activity generates points, which many in the community think might be a factor in potential upcoming airdrops from these protocols.

- Toncoin has also outperformed, with their partnership announcement[9] with Telegram being a major recent highlight.

  - Announced in September, the partnership means that **Telegram will rely exclusively on TON as its web3 blockchain infrastructure**, and **TON Space**, a self-custodial web3 wallet, has been integrated for all of **Telegram's 800M monthly active users**. Additionally, TON projects and ecosystem partners will benefit from in-app promotion within Telegram and priority placement on their advertising platform.

  - Most recently, we saw gaming / metaverse VC, **Animoca Brands**, announce[10] an investment into the TON Foundation and become the **largest validator** of the TON chain.

- Numerous other announcements and developments have occurred for all the other major L1s. **Ethereum** successfully enabled staked $ETH withdrawals following the Shanghai Upgrade, became a largely deflationary asset, and birthed huge DeFi markets in liquid staking and LSDfi etc.

- **BNB Chain** saw continued ecosystem growth, with the notable announcements of BNB Greenfield, a next-generation data storage platform, as well as opBNB, an optimistic L2 for BNB Chain based on the OP Stack.

- **Avalanche** continued to announce partnerships, especially within gaming and RWAs. Their announcement of partnering with Onyx by J.P. Morgan and Apollo Global was a notable recent move.

- **Cardano** continued work on scaling, with development on Hydra and their upcoming data-protection focused sidechain, Midnight.

- **Tron** remained the largest chain for $USDT issuance[11] and continued to find use as an efficient way to send $USDT payments between users and businesses.

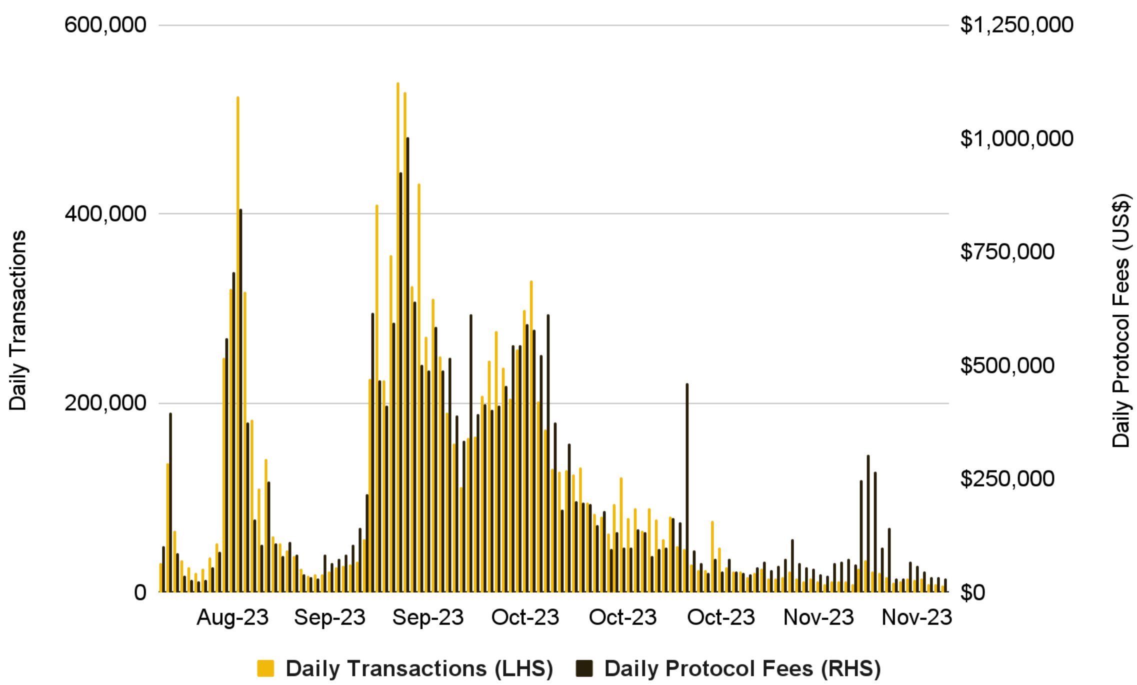
7. The Emergence of SocialFi

Social media applications have long been touted as potentially suitable partners for blockchain-based technology and crypto. 2023 has seen a product-driven uptick in this sub-sector of the crypto economy, with friend.tech in particular grabbing the attention of many.

friend.tech, a SocialFi dApp, was first launched on Ethereum L2, Base, in early August. friend.tech essentially allows users to **trade tokenized shares (called "Keys") of Twitter profiles**. Holding a Key provides you **access to exclusive content and private chat rooms** with the profile owners (called "Subjects"). Users **pay fees for trades**, some of which goes towards the protocol, and some towards the Subjects. friend.tech has been able to generate over US$25M[12] in total protocol fees since launch. They have also been running an activity-based points system which is rumored to be linked to a potential future airdrop.

After seeing significant hype through August, and September, daily activity has slowed down in the last two months. Nonetheless, the **product is still in beta**, with a **full launch coming soon**. Perhaps most importantly, the level of hype and attention that friend.tech was able to gather, including from non-crypto influencers, was encouraging and indicative of the potential that web3 social apps can reach.

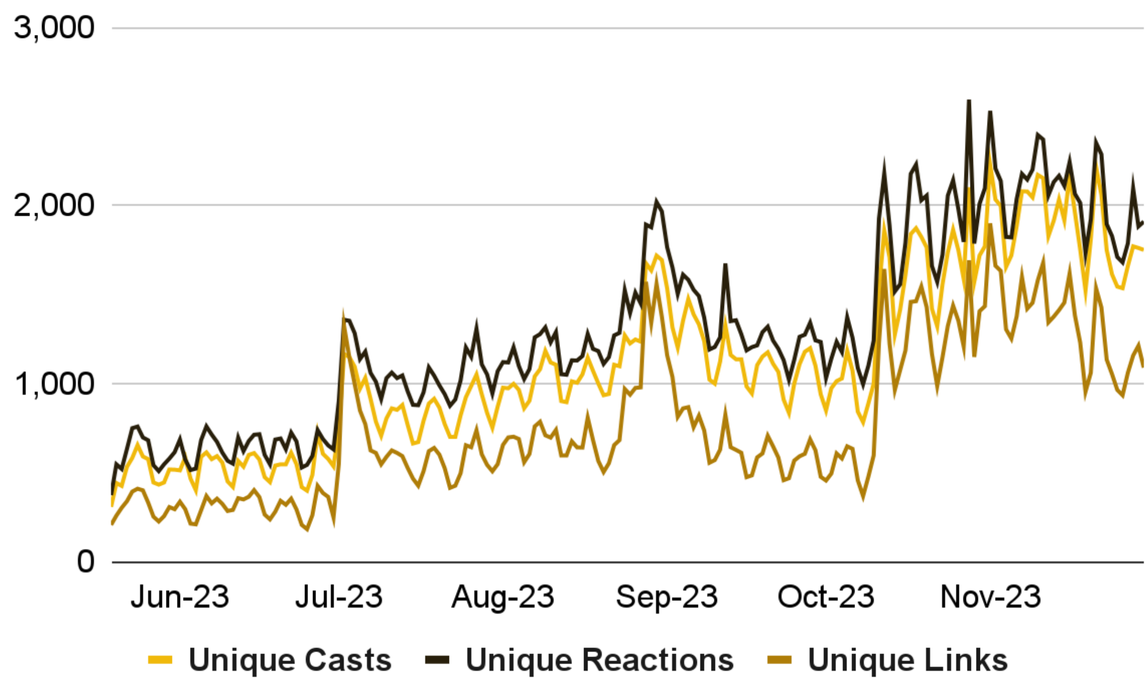
Figure 14: friend.tech daily transactions (LHS) and daily protocol fees (RHS)



Source: Dune Analytics (@cryptokoryo), Binance Research, as of November 30, 2023

Another web3 social app worth mentioning is **Farcaster**. Farcaster is a decentralized social media protocol operating on Ethereum L2, OP Mainnet. In October, the protocol opened up **permissionless sign-ups** (moving away from an invite-only phase), with daily engagement growing strongly since then. Farcaster aims to **facilitate a community-oriented platform with high-quality discussion**. To this end, they have recently been running a Farcaster AMA series, with various high-profile guests, including Balaji[13] and Vitalik Buterin.

Figure 15: Farcaster's unique daily interactions have been steadily increasing since opening up the platform through permissionless sign-ups in October



Source: Dune Analytics (@pixelhack), Binance Research, as of November 30, 2023
Casts, Reactions, and Links are Farcaster's terminology for typical social media features e.g., posting, liking, reposting, etc.

Another notable web3 social media platform, **Lens Protocol**, has also been growing. Built by the Aave team, and deployed on Polygon, Lens shows a lot of interest in **NFTs and is somewhat tailored towards creators and artists**. After an initial launch in 2022, earlier this year, they announced their v2 offering. New features include "**Open Actions**", helping **embed external smart-contracts on Lens publications**, improved **value-sharing opportunities**, as well as a range of new profile-related updates in (dubbed "**Profiles V2**").

The launch of **Binance Square** has also been a noteworthy event, providing crypto users a new platform to **exchange views and opinions**, as well as **keep up with the latest news** events.

8. RWAs Enter The System

Real-World Assets ("RWAs") are a catch-all term for assets that exist off-chain in the physical world being tokenized and bought on-chain. Examples of RWAs include real estate, bonds, commodities, equities, etc. While tokenizing assets and bringing them on-chain has long been discussed, this year has seen some particularly notable moves.

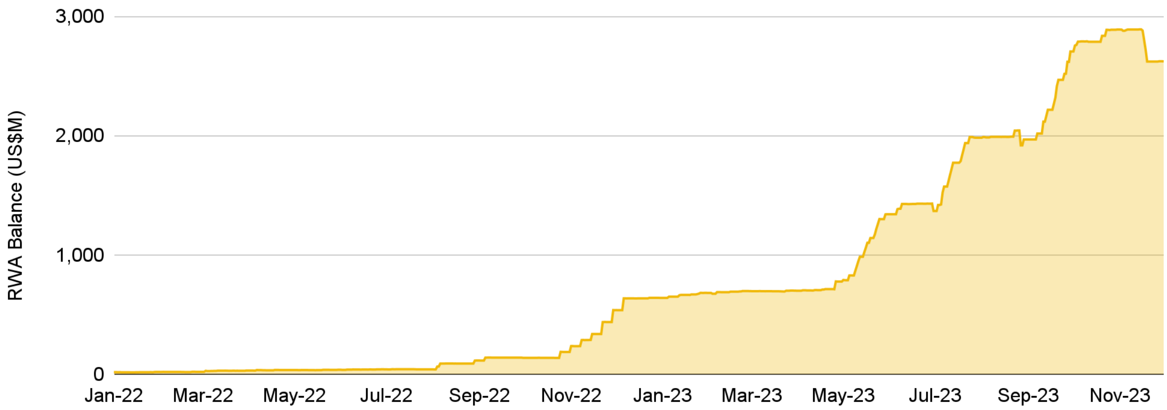
A. MakerDAO

- **Maker**, the protocol behind the **$DAI stablecoin**, has been involved in RWAs since at least 2020[14], and has seen **significant onboarding** across 2023.

- As a brief overview, Maker allows users to deposit collateral into their vaults and take out $DAI-denominated debt in return. While the only acceptable collateral was once simply $ETH, this has since expanded to other assets, including stablecoins, wrapped $BTC, liquid staking derivatives ("LSDs"), and others.

- Maker also offers **$DAI loans in return for RWA** collateral for borrowers that have been approved through MakerDAO. Borrowers include the likes of Huntingdon Valley Bank, who have a US$100M RWA-collateralized loan vault[15] with Maker.

Figure 16: MakerDAO has seen its RWA balance grow by over 300% this year to over US$2.6B



Source: Dune Analytics (@steakhouse), Binance Research, as of November 30, 2023

- **RWAs now represent over 49% of assets on Maker's balance sheet,** up from just ~12% at the start of the year. A significant portion of these RWAs are U.S. Treasury bills, which have benefited from the rising interest rate environment and seen high yields in the last 18 months or so. This has meant that **RWAs currently make up over 60% of Maker's revenue**, which itself **breached all-time highs at over US$200M** (annualized) earlier in November[16].

B. Chainlink and CCIP

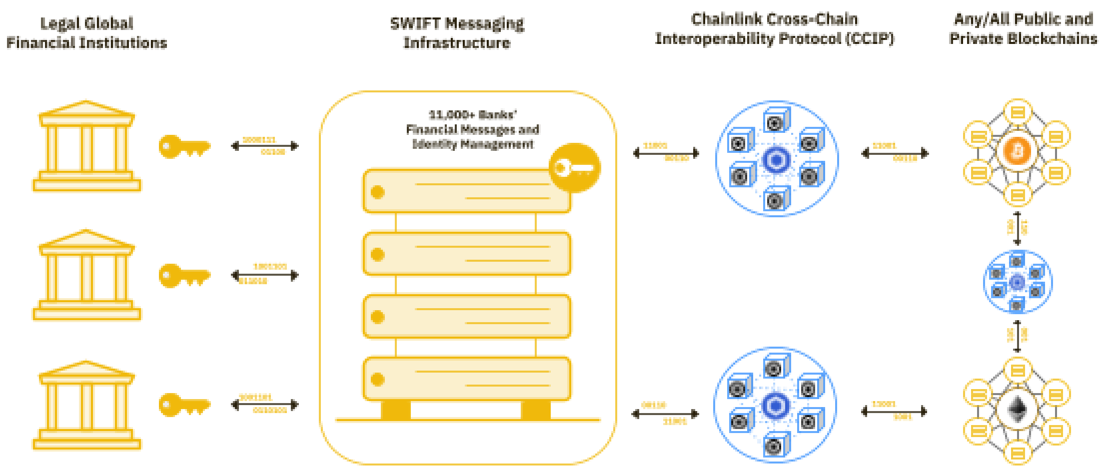
- Chainlink, best known for their oracle network, is a web3 infrastructure company producing a range of solutions. This includes their Data Streams, Functions (to connect smart contracts to APIs), Automation (smart contract automation), etc.

- **Cross-Chain Interoperability Protocol ("CCIP")** is a notable new development. CCIP is a decentralized cross-chain messaging / data-transfer protocol. The goal of CCIP is to create a shared, global liquidity layer, where all chains can connect to one another - whether they are public chains, or private TradFi chains.

- Chainlink hopes that CCIP can help **bridge value between TradFi and crypto, and improve interoperability between the two worlds**. The closer integration of RWAs onto blockchains is a natural part of this process.

- A major **strength** of CCIP is its ability to **let users use their existing APIs and messaging services to define their goals, connect with CCIP, and then transact on-chain**. A key integration that CCIP has built is with **Swift**, which is the messaging service that 11,000+ TradFi institutions globally use to communicate. Given Swift can communicate with CCIP, it helps lower friction for TradFi when connecting to blockchains, and can hopefully be a blessing for further RWA integration.

Figure 17: How the global banking sector can plug into web3 using CCIP



Source: Chainlink documentation, Binance Research

- We have already seen the **early access mainnet[17] for CCIP** launch, with more developments expected in coming weeks. We have also seen notable case studies with the likes of [ANZ Bank](), as well as, a [larger group of major banks]() and financial institutions including Citi, BNY Mellon, and others. CCIP and which institutions it can attract will be an important development to follow in coming months.

9. ZK-Everything

The growth of zero-knowledge ("zk" or "ZK") technology has been a consistent talking point in the crypto space for years. However, 2023 saw notable ZK-related moves, including a flurry of ZK-rollup releases. A few key developments:

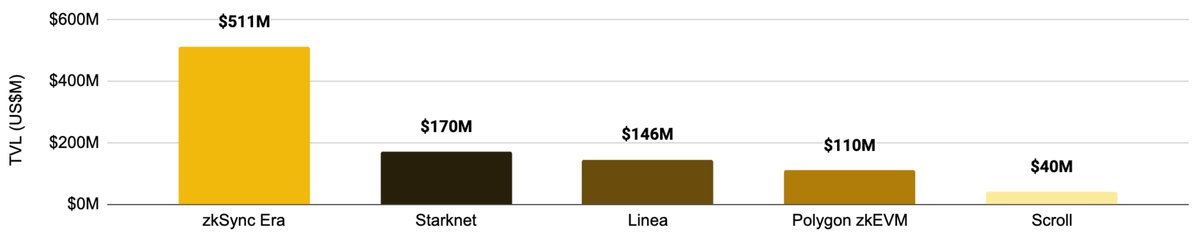
- As a brief reminder, there are **two types of L2 rollup solutions: optimistic and ZK**. While optimistic rollups currently control the majority of L2 market share, ZK-rollups are coming on fast and are widely expected to be the future of scaling. This is due to their reliance on **ZK-proofs** ("ZKPs"), which are an extremely efficient method of proving transaction validity, and have a number of different applications to crypto.

- One reason why ZK-rollups were not as popular until this year was their lack of integration with the Ethereum Virtual Machine ("EVM"). Given the EVM is the dominant smart contract engine in the market, the inability of early ZK-rollups to support it in an easy and accessible manner gave optimistic rollups an advantage (which were compatible with the EVM). However, the zkEVM changed this. **zkEVMs are special types of ZK-rollups that allow smart contracts to be easily deployed on the EVM**, allowing developers to easily port EVM dApps over to their zkEVMs.

- 2023 saw a number of zkEVM launches, starting with **zkSync Era** and **Polygon zkEVM** in March, followed by **Linea**, and **Scroll** later in the year. **StarkNet**, another pioneer of ZK-tech, also has a ZK-rollup in production, with the **Kakarot zkEVM** bringing EVM-compatibility to the Starknet technology. **Taiko** is another upcoming zkEVM expected to launch early next year.

- The growth of **rollup-as-a-service** ("RaaS") providers has also been strong in recent months. While many providers initially focussed on optimistic rollups, the **zkRaaS** sub-sector is also seeing growth, with the likes of AltLayer, Gelato, and Lumoz being notable players. This will likely lead to more ZK-rollups coming to market in the coming year. Check out our full report on the topic here.

Figure 18: TVL of the top ZK-rollups



Source: L2beat.com, Binance Research, as of December 1, 2023

- Outside rollups, there are also various other applications of ZK-technology. One key upcoming example are **ZK co-processors**. The basic idea behind a ZK co-processor is that it is **a tool that dApps can use to move data-intensive and expensive computation off-chain**. This allows dApps to **keep gas costs for users low**, but lets them run more complicated functions and computation, for a **better user experience**. Given the use of ZK technology, the dApps can still benefit from the full security of Ethereum, despite having moved some of the computation off-chain.

  For reference, in the computing world, graphics processing units ("GPUs") act as co-processors for the base central processing unit ("CPU") of a computer.

  - In **web2, many top applications are heavily data-driven** i.e., they capture previous user behavior, and use the data to mold the user experience. For example, consider web2 mobile games. When users play the game, the game is able to record data, log it in a centralized database, use it to inform future decisions e.g. when to offer bonuses, when to send you a push notification, what type of reward to give you taking into account your purchase history, etc.

  - **Web3 dApps cannot really offer this as both, data storage and running queries through it to use it, are expensive on-chain tasks.** This is a simple example that demonstrates how **many web3 dApps are currently limited when executing entirely on-chain**. Being able to move some of this expensive computation off-chain using a ZK co-processor can help **unlock a new generation of web3 dApps**.

  - Use cases include, on-chain gaming, DeFi loyalty programs, variable incentive programs, digital identity & KYC, etc.

- The recent Alpha Release of new ZK protocol, **Succinct**, is also an interesting development.

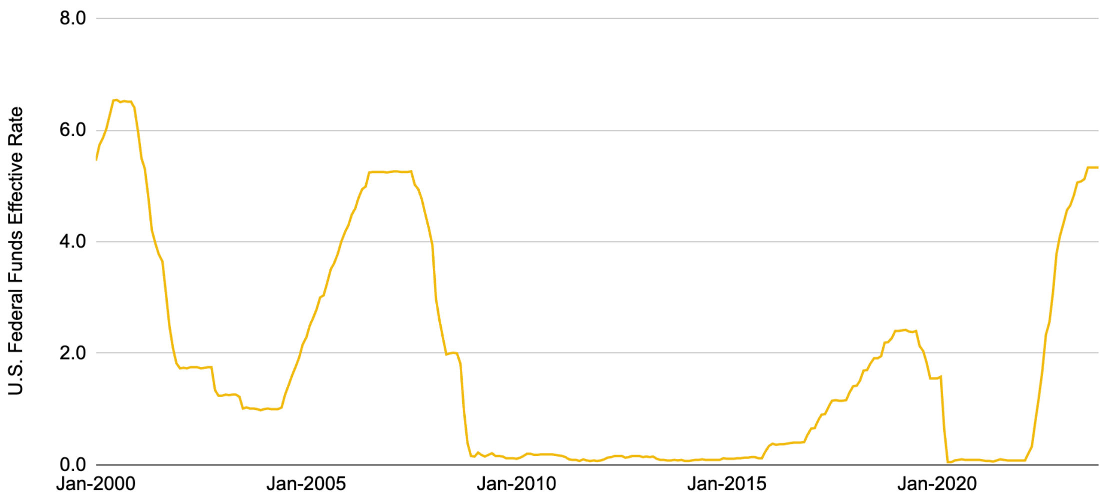
  - Succinct provides a **platform for developers to discover, collaborate, and build applications with ZK technology.** As part of the platform, developers can make use of the **Succinct Protocol**, which is an infrastructure layer designed to make ZK development more coordinated and seamless.

  - A notable recent **partnership** was with data availability solution, **Avail**[18]. Other upcoming partnerships include **Lido**[19] and **Celestia**[20].

10. Interest Rates Set to Decline?

From a macroeconomic perspective, **interest rates are among the most important factors affecting asset valuations**. Focusing on the U.S., **the higher the base rate that the Federal Reserve ("Fed") sets, the higher the risk-free return that investors can get from simply investing in ultra-safe government debt**. Naturally, this reduces the level of interest that many investors have in more volatile options like tech stocks and crypto, as they can simply get a good return on their capital from the government.

Figure 19: U.S. interest rates are at their highest level in 22 years following one of the fastest rate-hiking regimes in U.S. history



Source: St. Louis Fed Economic Data, Binance Research, as of November 30, 2023

After the Fed set the base rate between 0-0.25% to encourage spending after the pandemic, and inflation started rising rapidly, they embarked on a historical rate-hiking regime, which saw 11 rate rises from 0-0.25% in March 2022 to 5.25-5.5% in July 2023. However, the **last two Fed meetings saw them hold rates steady**. Although inflation is still higher than the Fed's 2% target (3.2% in October), it is still noticeably lower than the 5-8% figures in 2022. Furthermore, the **latest Fed projections indicate lower interest rates in 2024 and 2025**, implying that rates might have already peaked or are near their peak.

Moreover, other nations have already started cutting rates. The **People's Bank of China ("PBOC") has cut the reserve requirements for its banks twice this year already**, alongside cutting the one-year loan rate[(21)]. Lower inflation in Europe has also prompted investors to start **anticipating an early cut from the European Central Bank ("ECB")**[(22)]. While this is just one part of the overall macroeconomic picture, it is an important one. As **rate cutting starts taking hold globally, investors will naturally have to look outside government debt to earn returns, and the impact this can have on high-growth sectors like tech and crypto should not be understated.** At the very least, this will be a positive tailwind for crypto markets, as other web3 developments continue in full force.

4 Closing Thoughts

The last few weeks have been exciting and a helpful change of pace from the building-focussed months that came before. As the noise increases, new entrants join the market, and things get more frenzied, it is crucial to make sure you are tracking the right metrics and following the important narratives. This report hopefully serves as a primer for some of the most pertinent discussion points and numbers to watch as we look ahead to 2024.

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