

# Amdax House View

2024



Asset Management

# Preface

Dear reader,

On behalf of the Amdax Asset Management team, I am pleased to present our 2024 House View. In this document, we share our thoughts on the current state of the crypto market, discuss some important developments and outline our key expectations for the new year.

In a nutshell, last year was a positive one. We never returned to the widely feared lows of November 2022 and green candles were plentiful. Perhaps it was caused by the comforting idea of Sam Bankman-Fried's presence in jail, or rather Ben Armstrong's absence from it, enabling him to entertain the entire crypto community with livestreams full of righteous activism and peaceful, yet still highly illegal, trespassing. Either way, bitcoin closed the year over 2.5 times higher than it started it, leading the way for most altcoins that gathered steam a little more slowly.

Regulators made frequent attempts, both successful and sometimes comically unsuccessful, to tighten the reins on the crypto sector in the past year. Many dread this intermingling of authorities and consider KYC/AML regulations devil-like. Neither I nor Amdax belongs to this category. We hold these standards in high regard and include them in many of our expectations. Recent examples like the DoJ's actions against Binance are proof of why this is important.

Another main theme in 2023 was the sizable number of filings to launch a spot bitcoin or spot ether ETF. I argue that this represents the eagerness with which traditional firms and investors are entering the crypto market. One striking observation is this sudden spike in demand with respect to the timing of the usual market cycles. We just passed a cold-blooded bear market that succeeded in accelerating every crypto investor's aging process significantly, only to find institutional parties knocking on the door once things started looking tolerable. My view is that we should embrace the positive sentiment and expect good things to come in the next year.

Now on to the document itself. In the first chapter, we start with a full view of blockchain technology. We will go from the blockchain giants Bitcoin and Ethereum, through the diverse landscape that covers layer-0's and layer-1's, all the way to layer-2's and beyond. We then continue to the point where old meets new. This is where we discuss the realm of crypto exchanges, centralized and decentralized, and other firms making the leap into the crypto space, either through asset management or real-world assets. Lastly, we make our pick of the most relevant and exciting crypto-specific themes: artificial intelligence, meme coins and blockchain gaming.

Marcel Burger — Chief Investment Officer, Amdax



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# Peeling Back the Layers

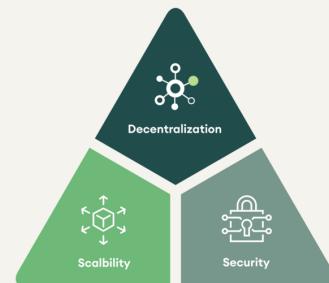
## Bitcoin versus Ether

### 2024 prediction: ether will outperform bitcoin

Bitcoin and Ethereum have established themselves as the largest blockchains by a wide margin and are likely to continue doing so in the coming years. Both ecosystems and their respective tokens have defined and shaped the world of cryptocurrencies. Bitcoin is usually considered the most decentralized and sound form of digital money, and ether is the currency used in all decentralized applications built on the Ethereum network. While these ideas are widely supported within the community, there are arguments to be made in favor of the statement that ether may be able to fulfil both functions in the future.

Firstly, in terms of tokenomics, ether is a superior store of value compared to bitcoin. With the implementation of EIP-1559 in 2021, a small portion of ether is burned every transaction. This causes downward pressure on the supply and has resulted in a pivot from an inflationary model to a slightly deflationary model. So unlike Bitcoin, which has a capped supply and a predictable issuance rate, Ethereum's burning mechanism influences supply and demand characteristics that in turn potentially increase the value of ether over time.

Figure 1: The blockchain trilemma



Source: SEBA Bank AG

Secondly, a case can be made that Ethereum's approach to the 'blockchain trilemma' is qualitatively superior to Bitcoin's. The trilemma covers three pillars that are instrumental to any blockchain ecosystem, but are exceptionally challenging to achieve: security, scalability and decentralization.

#### Security

Since The Merge in September of last year, Ethereum's security is reliant on the Proof-of-Stake (PoS) consensus protocol. Even though this mechanism is newer and less time-tested than Bitcoin's Proof-of-Work (PoW) algorithm, there has been no proof or indication that either consensus protocol is less secure than the other. Moreover, the total dollar amount needed to attack the Ethereum blockchain is multiples of that of Bitcoin<sup>1</sup>.

#### Scalability

The scalability aspect of the trilemma is clearly dominated by Ethereum ecosystem. Like Bitcoin's lightning network, there are many layer-2 solutions that allow for more transactions per second and lower costs<sup>2</sup>. However, Ethereum rollups can require challenge periods or cryptographic proofs that provide more security<sup>3</sup>. Another very important case is that the Ethereum network enables a modular

<sup>1</sup> The estimated cost of a 51% attack on Bitcoin varies, with sources like Braiins and Investopedia suggesting figures between \$5 to \$8 billion. The minimum cost of an attack on Ethereum is the dollar value of half of all staked coins, approximately \$66 billion (28,863,492 coins at \$2,277.90 each, as of late 2023, according to beaconchain.net). This cost would likely be higher due to the market impact of purchasing ether.

<sup>2</sup> More on this in the section From Layer-1's to Layer-2's: Scaling to Survive

<sup>3</sup> More on this in the section Layer-2's and Beyond: Optimistic and Zero-Knowledge Rollups

blockchain design that greatly enhances other scalability factors such as data availability<sup>4</sup>.

### Decentralization

In terms of decentralization, many argue that Bitcoin is undefeated. This opinion often relies on the presence of wealth concentration with a PoS consensus mechanism. Those with more ether have a greater stake and thus more influence in the ecosystem. While this is a valid concern, the same can be said for miners in a PoW network. Bitcoin's mining industry experiences every-intensifying competition, causing only the most energy-efficient and cost-effective miners to survive. In reality, distribution across mining pools and staking pools are similar for both blockchains<sup>5</sup>.

Lastly, Ethereum far exceeds the limited functionality of the Bitcoin blockchain. It has established itself as the leading smart contract platform, enabling the network to host a vast ecosystem of decentralized applications. The recent developments concerning inscriptions have made it theoretically possible to build such applications on Bitcoin, but in a less efficient manner compared to smart contracts. Nevertheless, we take a positive stance towards this new technology, as well as other solutions to add more utility to bitcoin, as it adds other use cases to the network, which would possibly attract more developers and increase the miner revenue share earned through transaction fees. The latter is despised by some in the community, as the additional data congests the network and high fees make the blockchain practically unusable for small transactions. However, considering the security budget problem, we argue that inscriptions are advantageous for Bitcoin miners and thus contribute positively to the economic sustainability of Bitcoin in the long run.

Bitcoin has substantially outperformed ether in the past year. However, we expect that ether will catch up to bitcoin in terms of performance, during which the abovementioned narratives will get more popular. We believe that the different spot ether ETFs will receive approval, mirroring the approval process of spot bitcoin ETFs. This is likely to have a positive impact on the valuation of ether relative to bitcoin, as the latter has already realized significant upside potential due to ETF anticipations. We strongly believe that 'The Flipping', which is the moment where ether surpasses bitcoin in terms of market capitalization, is bound to happen within a few years.

## From Layer-0's to Layer-1's: Oligopolistic Forces

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### 2024 prediction: Ethereum will remain the largest smart contract platform

The journey of blockchain technology represents a pivotal chapter in the digital age. Ethereum, as a trailblazer, introduced the world to smart contracts, paving the way for decentralized applications (DApps) and a new realm of possibilities beyond Bitcoin's initial promise. However, Ethereum's growth spotlighted a core challenge in blockchain technology, known as the 'blockchain trilemma'. As mentioned previously, this trilemma posits that achieving scalability, security, and decentralization simultaneously is exceptionally challenging. When designing a smart contract blockchain, only two out of the three aspects can be optimally addressed at the same time. This explains why Ethereum has scalability issues, as its initial focus was security and decentralization.

<sup>4</sup> See <https://www.gate.io/learn/articles/the-ethereum-blockchain-is-evolving-towards-modularity/1254>

<sup>5</sup> Based on data from <https://www.blockchain.com/explorer/charts/pools> (Bitcoin) and <https://dune.com/hildobby/eth2-staking> (Ethereum)

As a response to the trilemma and Ethereum's challenges, several other blockchain platforms have emerged. Notable among these are Avalanche (AVAX), Solana (SOL), and Cosmos (ATOM), each offering distinctive approaches to scalability, security, and decentralization. For example, Solana focuses on scalability and security at the cost of decentralization. It's important to note that choosing different focus areas than Ethereum, the leading smart contract blockchain, is not good or bad. Designing a smart contract blockchain is all about keeping tradeoffs in mind while sticking to a designated purpose. Paying for a cup of coffee using the Ethereum mainnet would not make much sense due to relatively high transaction costs. However, buying that same cup of coffee on the Solana network or the Avalanche network makes more sense, as transaction costs are lower and transaction times are faster.

A consequence of having different blockchains for different purposes is that we will end up in a multichain world. Over time, we expect the current plethora of smart contract blockchain to converge towards an oligopolistic landscape. An oligopolistic landscape, or oligopoly, is a market structure where a few players dominate one industry, leading to limited competition.

As things currently stand, we predict Ethereum will capture and retain the majority of the market share due to its first-mover advantage and its robust ecosystem. Solana, with its high-speed capabilities, could secure the second spot, potentially followed by, in no particular order, Avalanche, Cosmos and others. It is important to note that as far as expectations go, this is merely a snapshot of our current thinking. Smart contract blockchains are still in an early stage, and future technological developments could very well change the current top contenders.

## From Layer-1's to Layer-2's: Scaling to Survive

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### **2024 prediction: development in and migration to the Ethereum ecosystem will be the main topic in the layer-2 space and activity in layer-2's will increase further**

Layer-2 blockchains are heralded as a (partial) solution to the blockchain trilemma. These operate on top of layer-1 blockchains to address specific struggles that arise when balancing the three aspects effectively.

Layer-1's often run into issues with scalability, usually measured by transactions per second (tps). Among the larger chains, Bitcoin can currently only handle around 7 tps. Ethereum can handle 15, Solana advertises 3,000 and Avalanche 4,500. Actual numbers on the last two are lower when looking at swaps-per-second, where the speed decreases to approximately 270 and 175 tps, respectively<sup>6</sup>. If we compare this to data from the larger global payment providers<sup>7</sup>, we are looking at around 625 billion transactions a year, which boils down to 20,000 tps. If we account for local payment providers, and transactions between/within institutions, the actual number is multiples larger. So even the largest layer-1 blockchains put together are not even close to facilitating real-world adoption.

This problem highlights the importance of layer-2 networks. A batch of transactions is settled and resolved off-chain, and the resulting proof is posted on the base chain as a single transaction. This set-up greatly

<sup>6</sup> Based on <https://web.archive.org/web/20230112142309/https://medium.com/dragonfly-research/the-amm-test-a-no-bs-look-at-l1-performance-4c8c2129d581>

<sup>7</sup> Data from <https://www.statista.com/statistics/261327/number-of-per-card-credit-card-transactions-worldwide-by-brand-as-of-2011/>

enhances scalability in terms of speed and cost-effectiveness, while still leveraging the security and decentralization of the base layer. Bitcoin's lightning network, for example, boosts transaction speed from 7 tps to a theoretical 1 million tps. But this only involves sending tokens from one wallet to another. When smart contracts come into play, things become significantly more complicated, which is part of the reason we see (and expect to continue) most layer-2 development taking place on Ethereum.

Looking at the graph below, we find that the layer-2 approach does increase the tps on Ethereum. The bulk of the transactions (around 80%) is now settled off-chain, raising the total tps capability from around 15 to over 85 at the time of writing. We expect this number to increase further based on the developments over time.

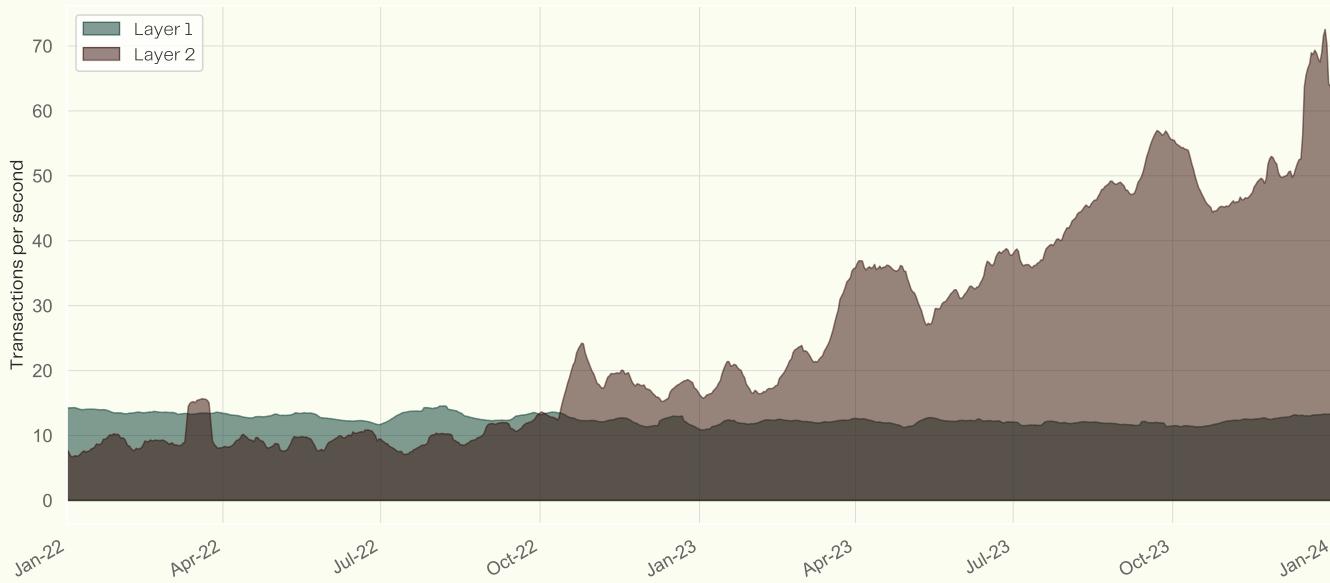


Figure 1: Transactions per second on Ethereum's layer-1 and layer-2's (data from <https://l2beat.com/>)

On the technical side, layer-2's are slowly becoming a plug-and-play technology. One example of this is the Chain Development Kit from Polygon, which enables blockchain developers to effortlessly build a brand-new Ethereum layer-2 network. The codebase is open source, enabling existing layer-1 networks to smoothly migrate and transform into an Ethereum layer-2. Such a migration can be an attractive approach for multiple reasons. There is no need to maintain a proprietary tech-stack, and it is possible to make use of the existing liquidity and/or security of the Ethereum ecosystem. We have seen multiple chains making such a move in 2023, and we expect more to follow, especially when it does not require any changes in the underlying technology. This development is also visibly supported by data, as the total value locked (in terms of ether) has more than doubled last year.

We also acknowledge the possibility to (re)use the security of Ethereum by restaking ether. This is a more modular approach and is being pioneered by EigenLayer. We expect to see some chains, who do not need EVM-compatibility or access to layer-1 liquidity, experimenting with this approach.

One major layer-2 developments that we are looking forward to in 2024 is called 'Proto-Danksharding' (EIP-4844) on Ethereum. The upgrade is scheduled for Q1 2024 and introduces a way to efficiently handle large chunks of block data such that node validators can run verification processes at lower costs. It is



Figure 2: Total value locked on Ethereum layer-2's, either minted on the chain itself or bridged from other chains (data from <https://l2beat.com/>)

estimated to decrease current layer-2 transaction fees by up to 10 times. We expect that this will hugely impact the scalability and further accelerate the migration from layer-1's to the Ethereum ecosystem.

## Layer-2's and Beyond: Optimistic and Zero-Knowledge Rollups

### **2024 prediction: zero-knowledge rollups zkSync and Starknet will launch tokens and will become competitive with optimistic rollups Arbitrum and Optimism**

Rollups enhance base layer efficiency by executing and storing transaction states off-chain, and regularly posting calldata (either actual transaction results or cryptographic proofs) that are stored on the main chain. Anchored by a smart contract on the main blockchain, rollups use a sequencer node for state management, transaction execution, and batch posting. This sequencer is crucial for the rollup network's operation.

Rollups come with advantages and disadvantages. They offer scalability by increased throughput and reduced costs. Batching transactions also lowers the storage burdens significantly, but can sometimes lead to base layer congestion if the size of the calldata is large. This in turn can temporarily result in higher transaction fees on the main blockchain. Moreover, despite the potential for enhanced decentralization, current rollups depend on a centralized sequencer, presenting a challenge for future adoption as a dominant transaction medium in blockchain.

The two main types of rollups currently in use are optimistic and zero-knowledge rollups:

#### **Optimistic Rollups**

Optimistic rollups assume batches are valid when posted to the base layer, with a challenge period allowing network participants to submit fraud proofs against suspicious transactions. They enhance scalability and are compatible with virtual machines, but their centralization and reliance on the underlying chain's security

present risks, such as potential censorship and fraud if no challenges occur during the period. Another issue is the relatively long time to finality, which can be weeks, depending on the implementation.

### Zero-Knowledge Rollups (ZKRs)

ZKRs use zero-knowledge proofs to validate transactions without revealing their content. They utilize either one of two proof types: zkSNARKs, which are succinct but rely on a secure common reference string, and zkSTARKs, which are transparent and scalable, claiming quantum resistance. ZKRs ensure transaction correctness and offer faster finality than optimistic rollups, though they require significant computational power and currently face compatibility issues with the Ethereum Virtual Machine (EVM), affecting DApp development.

The current market is dominated by optimistic rollups with more than 80% of market share, measured by total value locked (TVL). Among optimistic rollups, Arbitrum is most dominant, which is mostly due to user incentivization in the starting phase and a large backing of venture capital. Optimism ranks a close second and offers comparable speed, transaction costs and usability. Base is a layer-2 launched by Coinbase, offering a direct on ramp to on-chain activity for its user base. A new optimistic network, not included in the graph below, but with a TVL of over \$1 billion, is Blast. Its testnet is not even live, but that does not deter users from locking considerable amounts of ether in anticipation of an airdrop. On paper, this network ranks number 3 in terms of TVL.

ZKRs are theoretically superior to optimistic rollups due to their inherent cryptographic security and aim for near-immediate finality, but still lag behind optimistic rollups in most metrics. They also potentially provide more privacy in applications like KYC and AML. However, the technology needed to run a sequencer and efficiently provide zero-knowledge proofs is not yet mature, leading to high transaction costs relative to optimistic rollups. We do think that this technology will improve, after which the different protocols, like zkSync and StarkNet, will be competitive with the optimistic rollups in terms of transaction costs.

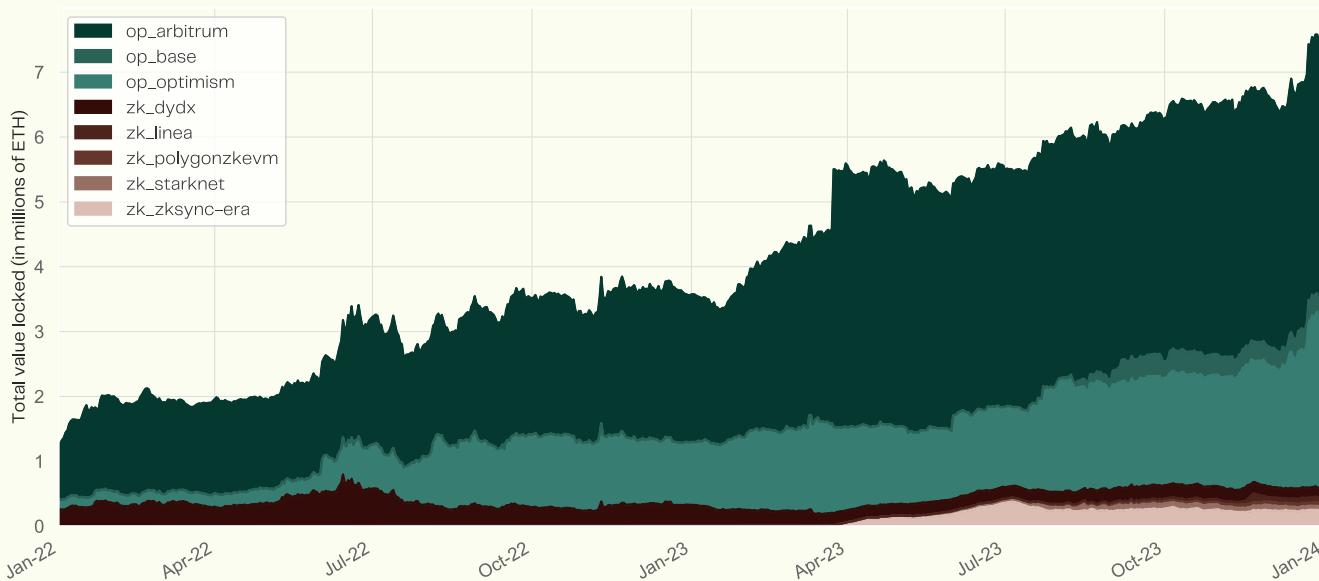


Figure 3: Total value locked of different optimistic and zero-knowledge rollups (data from <https://l2beat.com/>)

# Bridging yesterday and tomorrow

## (De)centralized Exchanges

### **2024 prediction: decentralized derivatives exchanges will increase their market share at the expense of centralized exchanges like Binance and Bybit**

2022 and 2023 have proven to be challenging for many centralized parties within the crypto space. With numerous parties going out of business. Several parties enticed users with the promise of high 'staking' rewards, only for it to be revealed that these coins were not staked, but rather lent to various entities like Three Arrows Capital. This decision had severe consequences for parties like Celsius and BlockFi. Additionally, two of the largest exchanges had major issues. FTX, which had operated as a giant fraudulent operation, filed for bankruptcy in November 2022. Binance also faced its share of problems, resulting in the withdrawal of its operations from several countries worldwide and a \$4.3 billion settlement with the US government.

These problems underscored the need for trustworthy and reliable partners for storing cryptocurrencies. It also led many individuals to shift more of their assets on-chain and maintain self-custody. This renewed the interest in decentralized exchanges (DEXs), but unlike the DeFi summer of 2020, where it was all about spot DEXs, this time the focus has been on perpetual protocols. During 2023 the narrative surrounding these protocols, which allow users to trade perpetual futures directly on the blockchain, gained prominence. This was accompanied by growing trading volumes, especially at the end of the year. The percentage of trading volume in perpetual futures generated on DEXs, in comparison to centralized exchanges, remains quite low, with estimates ranging from 1.5% to 10%. This highlights the substantial growth potential within this sector.

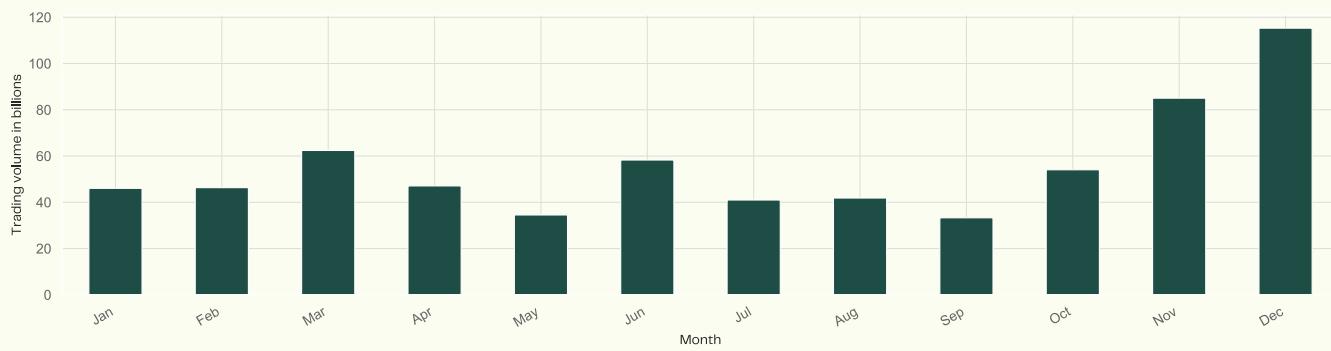


Figure 4: Monthly trading volume on decentralized derivatives exchanges in 2023 (data from <http://defillama.com/derivatives>)

As more regulations are passed in relation to cryptocurrency exchanges, some centralized parties may find it increasingly challenging or simply not desirable to comply. This can result in the expulsion of clients from specific jurisdictions, as exemplified by Binance restricting access for Dutch residents. Consequently, individuals affected by such restrictions may transition to decentralized exchanges in order to continue trading. Decentralized exchanges operate as smart contracts on the blockchain, allowing users to engage with them permissionlessly. While those who create or maintain these protocols may potentially face regulatory scrutiny, assuming they are publicly known and not anonymous, the underlying protocols themselves are quite resistant to attempts to get them to shut down. So decentralized exchanges are not immune to regulation, but

they do possess a greater degree of resilience compared to their centralized counterparts.

To increase the volumes on decentralized exchanges, many of these protocols choose to incentivize trading activity and liquidity provision on their platforms. The majority of these protocols either have their own tokens or allude to the possibility of launching one in the future. These monetary rewards, which centralized parties cannot or will not provide, are used to attract liquidity on-chain, as liquidity tends to follow incentives. This, in turn, enhances the trading experience on these platforms, initiating a cycle where liquidity begets liquidity.

DEXs offer the unique capability to accommodate long-tail assets that centralized exchanges cannot. This includes providing perpetual swaps for tokens that have not yet been launched, as well as tokens that have exclusively on-chain spot markets. This feature becomes particularly compelling during bull markets when people want to move up on the risk curve to more niche assets. At that point in time, the ability to trade these assets with leverage becomes an attractive proposition for these DEXs to get people to trade on their exchanges.

These platforms have seen notable improvements in underlying technology and user experience, and together with the challenges faced by centralized parties made for good conditions for growing mind share among the crypto community. Furthermore, the lucrative business model of these protocols has delivered substantial revenues to the protocol and token holders in the form of revenue sharing. With the expectancy of increased crypto activity in the coming year(s), we expect these revenues to grow further, and with them the attractiveness of the tokens.

In summary, we anticipate sustained growth for derivatives DEXs like dYdX and GMX. They have already demonstrated their product-market fit and will continue to improve their usability and underlying technology. Combined with the incentivization of trading and the ability to trade assets not available on centralized exchanges, we anticipate DEXs to gain larger share of volumes in the coming.

## Institutionals in Crypto

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### **2024 prediction: the first spot ether ETF(s) will be approved and spot crypto ETFs will see inflow north of \$100 billion**

One of the main themes in the crypto space in 2023 was speculation around the various spot-based bitcoin and ether ETF filings. Many anticipate that the presence of spot ETFs will bring more institutional investors into crypto.

The main reason is that investors can gain exposure to the crypto market without going through the hassle of buying and storing the digital assets themselves. Spot ETFs are especially useful, since these, contrary to futures-based ETFs, don't require fund managers to periodically roll over futures contracts. As a result, spot-based products are significantly cheaper, less prone to operational/market risks and track the value of the underlying more closely.

Spot bitcoin ETF filings are not a new thing. Winklevoss-founded crypto exchange Gemini already filed for such a product back in 2013. What makes the current filings special, however, is the spike in demand coming

from the traditional financial world. BlackRock, the world's largest asset manager, was the one to take the lead in the 2023 wave of filings, and other financial giants like Fidelity and Invesco quickly followed suit. These moves represent a remarkable acknowledgement of crypto's growing legitimacy and potential as an asset class. We expect that many institutional investors will be influenced by these 'stamps of approval' and will consider adding digital assets to their portfolios.

In our view, spot ether ETF filings have not been as highlighted as their counterparts for bitcoin. We think that these will be approved. In a case about the SEC's denial for converting the Grayscale Bitcoin Trust into a spot ETF, judges ruled against the main reason brought up by the SEC, stating that there is no reason to support the statement that spot markets are more prone to manipulation than futures market. There are already many ethereum futures ETFs available on the US market, suggesting that approval for spot-based products is imminent.

## Real-World Assets

### **2024 prediction: tokenization of financial assets will become more important within the real-world assets narrative and will push decentralized identification and zero-knowledge technology forward**

Real-world asset (RWA) tokenization is generally considered to be one of the largest market opportunities in the blockchain industry. In essence, tokenized RWAs are blockchain-based digital tokens that represent physical or financial assets, such as cash, commodities, equities, bonds and credit, to name a few. It exists under the assumption that anything of value can be brought on-chain. Hence, RWAs are a growing market segment in the digital asset industry, with a potential total addressable market of hundreds of trillions of dollars. One of the first and most well-known tokenized assets was the crypto equivalent of the United States Dollar: a stablecoin. Tether (USDT) and USD Coin (USDC) are leading this category and have amassed around 7% of the total value of the crypto market at the time of writing. The majority of tokenized asset value lives on Ethereum.

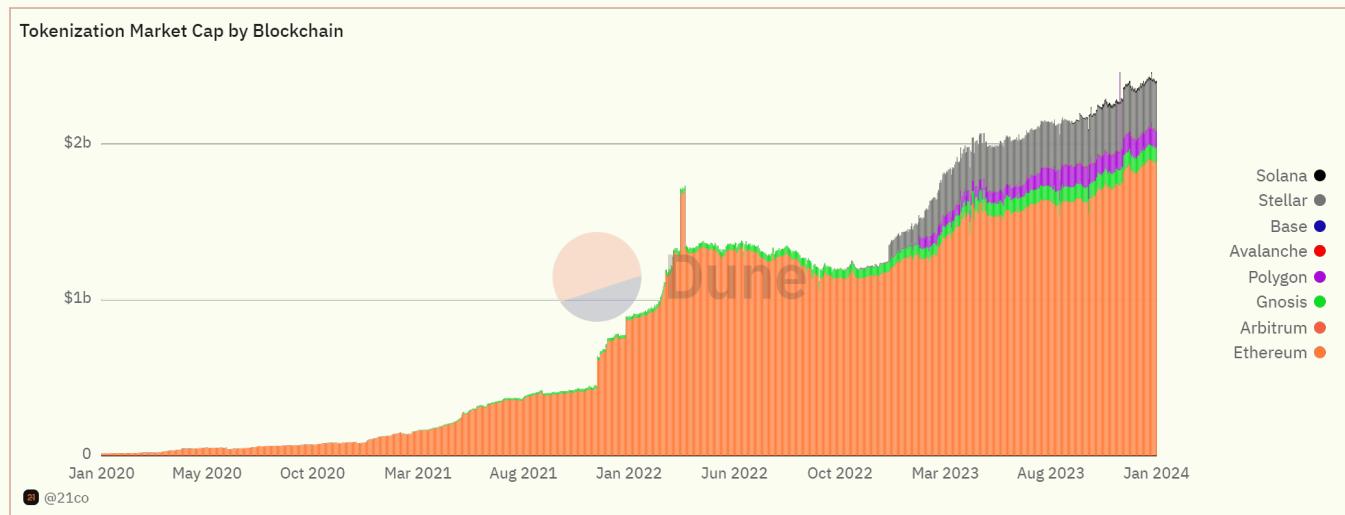


Figure 5: Tokenized value on different blockchains (data from <https://dune.com/21co/tokenization-overview>)

In particular, we expect significant growth in the tokenization of financial assets like cash deposits and money market instruments. In the current high-interest rate regime, crypto investors with stablecoin positions are missing out on this yield, as they generally earn no interest on their holdings. This is where money market fund managers are taking opportunities to tokenize their products, such that they meet this demand. A great example is Aberdeen Asset Management. The asset manager tokenized their money market fund in 2023 to explore blockchain-based token investment solutions<sup>8</sup>.

The tokenization of RWAs is currently evolving beyond its initial stages. Experiments with traditional financial assets started with private permissioned blockchains, but have moved towards public permissionless blockchains over the past years. One notable example is the first end-to-end tokenized bond on Ethereum by Banco Santander in 2019, after working privately on it for years<sup>9</sup>. This kind of dynamic reminds of the early internet years, where most companies were first creating their own local area networks before building on the internet.

There are multiple reasons why we should consider bringing assets on-chain. Two main reasons are the potential for increased liquidity and accessibility. Tokenized assets are often traded on digital platforms that provide access globally and throughout the day, whereas traditional assets usually require the use of intermediaries and are only tradable during trading hours. Blockchain-based assets can also significantly enhance efficiency with (near-)instant settlements. This last point, however, does require a blockchain transaction to be irreversible within a small timeframe. Ideally, a blockchain would improve settlement efficiency by having low to instant time to finality.

One more potential reason for tokenizing assets is transparency. At its core, a blockchain provides an accessible and tamper-proof ledger, and is therefore especially useful for financial assets. Trading and investing in tokenized assets must eventually adhere to similar legal standards as their traditional counterparts. To this end, service providers are subject to AML/KYC regulations and should be able to verify the identity of their customers. But both parties also want transactions and balances to be shielded from the public to safeguard privacy to some degree. To overcome these challenges, blockchains focused on decentralized identification and zero-knowledge technology are ideally positioned. A central authority can then access or verify certain aspects of a customer's information without knowing the full identity and without having the power to make such information publicly available. We think that currently the Concordium blockchain is particularly well-equipped to cater to this need.

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<sup>8</sup> See <https://www.fnlondon.com/articles/abrdn-unveils-tokenisation-for-16bn-flagship-fund-20230608>

<sup>9</sup> See <https://www.santander.com/en/press-room/press-releases/santander-launches-the-first-end-to-end-blockchain-bond>

# Revolutionizing Decentralization

## Artificial Intelligence

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### **2024 prediction: decentralized artificial intelligence solutions will catch up with their centralized counterparts**

Artificial Intelligence (AI) and blockchain technology are two of the most groundbreaking innovations of the last ten years. They can both provide many new opportunities in various sectors. But by combining the decision-making and human-like assistance capabilities of AI with the decentralized and secure nature of blockchains, the combination of these technologies will give birth to new opportunities.

ChatGPT, Dall-E and Midjourney, among others, showed the masses the ease of increasing productivity. People across the globe quickly embraced their new piece of tooling by experimenting with it. ChatGPT acquired their first million users within just 5 days. To put that into perspective, Instagram reached their first million users only after 2.5 months and Netflix even had to wait for 3.5 years. So current centralized initiatives bring great value to the world, but they also come with a few limitations.

Data is key to any AI system, as it is used as input to train and validate the models. Centralized AI systems can suffer from biased algorithms due to limited or homogenous datasets. The datasets are usually selected by the system's developers that presumably have similar background and locations, potentially resulting in an undiversified representation of the real world. Decentralized networks typically encourage diverse data contributions by allowing a variety of participants to choose their own dataset. These decentralized alternatives are inherently capable of providing more unbiased and censorship-free AI models.

It is also possible that datasets are deliberately tampered with. Attackers can feed fake data to models in order to promote disinformation or create biases in their favor. Decentralization can prevent this in two ways: storing data in multiple locations lowers the chance of a successful attack, and even if fake data is introduced, it is likely to be disputed by many correct datasets in the system.

Current players within the AI sector also possess a considerable amount of user data. A lot of information can be derived from user prompts, potentially leading to issues with privacy if a particular party has the power to store, analyze and use personal data. We believe that decentralized identification can play a role in safeguarding a reasonable level of privacy in AI applications.

Another potential point of improvement relates to centralized AI systems not allowing for everyone to be involved in model development. One of the major advantages that contributed to the success of open-source software development is that everyone is able to contribute, which can result in high-quality and reliable products. If everyone is incentivized to improve models, the current AI services could benefit from the same advantages as open-source software.

We believe the popularity of decentralized AI systems will keep rising as an answer to current ownership by big tech companies. Currently, single project-based ecosystems like Bittensor are gaining traction, but we also

expect positive trends for projects focused on specific parts of the underlying infrastructure that serves AI-based applications. These so-called 'decentralized physical infrastructure networks', or DePIN in short, range from data storage solutions to computing-related projects and are able to address the shortcomings of centralized AI services.

## Meme coins

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### **2024 prediction: every blockchain will have their own distinct meme coin(s) that will be explicitly embraced by its users**

Meme coins occupy a unique position within the universe of digital assets. Some perceive them as emblematic of the issues with cryptocurrencies: vaporware with valuations that seem far from reasonable. Conversely, others view them as peak internet culture, gravitating towards communities centered around specific memes. At the time of writing, 2 of the top 20 cryptocurrencies can be classified as meme coins. And one of them, Dogecoin, has garnered such mainstream recognition<sup>10</sup> that many no longer classify it as one.

In 2023, there was a resurgence of meme coins in the market. The initial meme coin frenzy happened in April and May, with Pepe experiencing a meteoric surge in price, accompanied by several other memes following suit. At its peak, Pepe had a valuation of \$1.5 billion, ranking it the 39th largest cryptocurrency. The second significant meme coin wave occurred in December on the Solana blockchain, with coins like Bonk and Dogwifhat leading the charge.

It was during this second period that we observed an, in our opinion, underappreciated aspect of meme coins: the ability to generate attention and hype for an entire ecosystem. Following FTX's implosion in November 2022, Solana had been largely dismissed by many, experiencing a decline in price and on-chain activity. However, the rapid ascent of Bonk and other Solana-based meme coins, prompted numerous users to bridge to Solana in order to participate in this flavor of the month. This influx introduced new users to the Solana network and cast a spotlight on various applications that were flying under the radar before, like Jupiter, Tensor and MarginFi.

Besides the effect of introducing new users to an ecosystem, the large profits of some early investors in these meme coins can have a substantial wealth effect. They often rotate their profits into new coins on the same chain, consequently increasing valuations across the entire ecosystem like a rising tide. This continues a feedback loop for heightened activity, as it again attracts more new investors that are drawn by the returns on this one chain.

Even though meme coins may not possess the same level of technological sophistication or ingenuity as many other cryptocurrencies, they have secured a lasting presence in the crypto space. As we have witnessed an entire ecosystem reap the rewards of a prominent meme coin, we deem it likely that more protocols will embrace meme coins on their respective chains. In doing so, they may transcend their status as mere memes and become the initial point of contact for some individuals with a specific blockchain. This would position them as a fun and playful gateway to broader on-chain adoption. Looking ahead, we expect that most

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<sup>10</sup> It is even mentioned on Tesla's website <https://www.tesla.com/support/dogecoin>

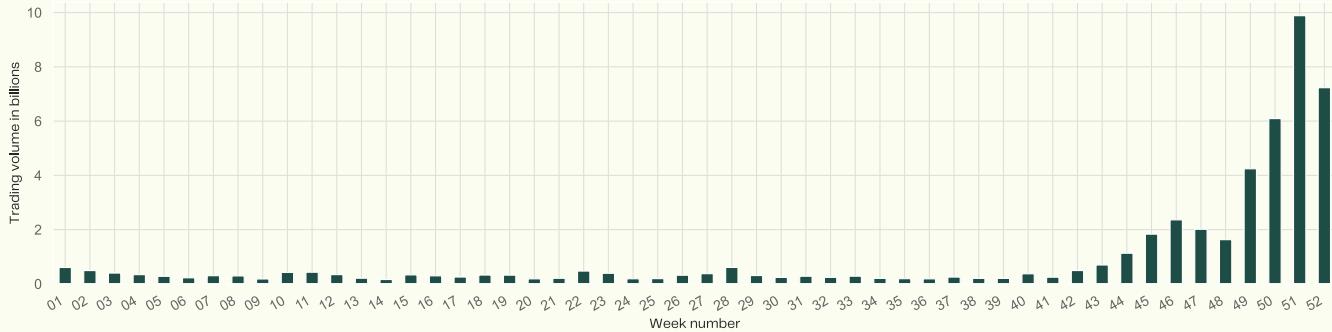


Figure 6: Weekly trading volume on Solana in 2023 (data from <http://defillama.com/dexs/chains/solana>)

protocols will host their own meme coin(s), contributing to the ever-evolving community-based landscape of cryptocurrencies.

## Blockchain Gaming

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### **2024 prediction: although highly anticipated, there will not be launch of a truly decentralized blockchain game that is both enjoyable and economically viable**

The evolution of video games has been marked by continuous innovation, from simple arcade games to complex online worlds. The gaming industry is currently dominated by AAA studios, known for their high-quality and commercially successful games, followed by a plethora of smaller, independent developers. Meanwhile, blockchain technology emerged as a groundbreaking development in digital transactions and asset management. The fusion of these two fields, blockchain gaming, represents a blend of entertainment and technology. However, this convergence also heralds a set of unique challenges and a complex future across multiple relevant aspects:

#### **Game Theory**

Traditional gaming companies have long maintained control over their gaming environments, dictating the rules and economics of the virtual worlds they create. The transition to a decentralized blockchain model is contrary to this approach, as it involves relinquishing control and adopting a system where decisions and governance may be spread across a network of users. This decentralization could potentially disrupt their own business models and undermine the authority game developers have over their creations.

#### **Economics**

Blockchain popularity often leads to increased transaction fees, a critical issue for blockchain-based games. As a game gains users, the underlying blockchain can become congested, driving up transaction costs. This escalation can render the game prohibitively expensive for players, detracting from its accessibility and appeal. Moreover, the economics of in-game tokens or assets require a delicate balance between supply and demand. If the value of these assets inflates excessively, it can again make the game unaffordable and discourage new or continued participation.

#### **Technical**

Implementing blockchain in gaming introduces a range of technical risks, including those associated with smart contracts and counterparty interactions. These risks are often unfamiliar and unpredictable

for traditional gaming companies, potentially leading to operational challenges or vulnerabilities. If these risks materialize negatively, companies could face serious legal repercussions, including lawsuits from disgruntled players or stakeholders.

### **Legal**

The fluctuating prices of in-game blockchain assets can raise legal concerns, particularly in relation to the Howey Test, used to determine whether a transaction qualifies as an investment contract. If in-game assets are deemed securities, this could impose significant legal and regulatory burdens on the gaming company, especially if it's publicly listed. Non-compliance with these regulations could lead to serious legal challenges, including lawsuits and regulatory actions.

Given the highlighted challenges, it's unlikely that AAA developers will pioneer fully-fledged blockchain games soon. If they do venture into this domain, these games might not embrace true decentralization but rather incorporate blockchain elements in a more controlled and limited manner, prioritizing traditional gaming models and economic stability over the novel features of blockchain.

The most significant innovations in blockchain gaming are more likely to originate from companies specializing in blockchain technology, who develop games from scratch with blockchain integration as a core feature. However, creating a blockchain game that is both entertaining and operationally viable, adds a layer of complexity that has not yet been successfully navigated. In that sense, balancing fun gameplay with the technical and economic intricacies of blockchains remains a formidable challenge.

Considering the current landscape and the myriad challenges outlined, we predict that 2024 will not see the launch of a truly decentralized blockchain game that is both enjoyable and economically sustainable. The integration of blockchain into gaming is a complex and evolving field, fraught with technical, economic, and legal hurdles that are yet to be fully addressed and overcome. As a result, we expect that such a game will only be launched in the latter half of this decade.

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