



SECURE
DIGITAL MARKETS

YEAR IN REVIEW



2023

Executive Summary

00 Foreword

01 The ETF Arrival

02 State of
the Market

03 Trading, Derivatives
& Lending

04 On-Chain
Fundamentals

05 M&A
Activity

06 Mining

07 Emerging
Markets

08 Closing
Remarks

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Foreword

The ultimate optimist would say 2023 was about building for the future, as the last 12-18 months were some of the most challenging in this industry's history. After surviving the cataclysmic events caused by some now-infamous Web3 executives, we are finally moving on. 2024 is about beginning with a clean slate and unlocking a new era of leadership, regulation, and venture creation, something that this industry desperately deserves.

As 2023 winded down, it became impossible to ignore this industry's collective resilience. After several black swan events across multiple key sectors, we are back and seeing new yearly highs as the industry celebrates the approval of 11 spot Bitcoin ETFs. Regardless of whatever else might be said of crypto in 2023, the resolve and entrepreneurial spirit that was on display this year can never be questioned.

At the start of this year I don't know if anyone saw light at the end of the tunnel. Suddenly fast forward to the present and it feels like crypto is about to play in a brand new arena where we finally understand the rules. For the first time in a long time, there is a clear path forward for digital assets in 2024.

At this exciting point in our industry's history, we are proud to present the 2023 edition of Secure Digital Markets Year in Review. In the third edition of our annual report, you will find detailed analysis that covers the latest digital asset trends, market-shifting regulatory developments, and expert opinions from founders, executives and thought-leaders all over the space.

We tried our best to capture the highs and lows, and offer some guidance on future tailwinds; hopefully this research is a part of your investment calculus in 2024. On behalf of Secure Digital Markets, we hope you enjoy this latest edition of the Year in Review and we look forward to continuing to build a more robust digital asset ecosystem with our clients, colleagues, and partners.

Warm regards,
David Shafir



DAVID SHAFIR

Chief Executive Officer
Secure Digital Markets

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01.

The ETF Arrival

So there is a Bitcoin ETF... Now what?

Back in 2018, NASDAQ released an Op-Ed titled 'Why Is There So Much Talk About a Bitcoin ETF?'

Fast forward almost 2,000 days later, and we're still talking about a Bitcoin ETF. Except it is no longer a hypothetical discussion. The ETF is here.

For all of crypto's cult-like tendencies, we could not have gotten to this point without this industry's unwavering (and sometimes obsessive) commitment to bringing digital assets into the mainstream.

In our instant gratification era, the wait for the first spot Bitcoin ETF has felt long. However, I'd ask everyone to apply some historical perspective to how far Bitcoin has come. SPDR Gold Shares (GLD), the first gold ETF, only started trading in 2004, a mere 2,554 years after gold was first used as a medium of exchange in 550 BC. On the other hand, the first spot Bitcoin ETF is about to launch only 14 years after the asset's creation. It's safe to say we are making pretty good pace compared to our competition.

The ETF today represents a landmark moment for the industry and is a testament to the growing confidence and recognition of digital currencies by institutional investors and regulatory bodies. Further, this development opens the floodgates to a new wave of institutional and retail investors which will bring unprecedented liquidity and stability to the market.

As we step into a new year, the role of Bitcoin ETFs as a catalyst for broader acceptance and growth in the digital asset space cannot be overstated. Their success symbolizes the maturation of cryptocurrencies and a beacon of potential for what lies ahead. Yet, the work is not complete. The very concept of money is the greatest exercise of trust in human history. But like the timeline for Gold has shown us, trust takes time.

We stand at the cusp of a transformative era where digital assets are not just an alternative but a mainstay in the investment world. It's our responsibility as a community to continue this hard work towards mainstream adoption, without loss of enthusiasm.

Together, let's embrace this exciting journey towards creating a more accessible global financial system, as we continue to shape the dynamic landscape of digital assets. Here's to a future where innovation, accessibility, and growth go hand in hand in our thriving industry.

Warm regards,
David Shafrir



DAVID SHAFRIR

Chief Executive Officer
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In Conversation with Juan F. Leon from Bitwise

Behind the Scenes with Bitwise

- Behind the curtains into what it was like to get one of the first spot Bitcoin ETFs approved
- Implications of the spot ETF for liquidity and Bitcoin adoption
- Obstacles an ETH ETF will face before it can be approved



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Bitwise®

Bitwise Asset Management is the largest crypto index fund manager in America. Thousands of financial advisors, family offices, and institutional investors partner with Bitwise to understand and access the opportunities in crypto.

Let's start by hearing about yourself and your background.

My name is Juan Leon and I am a senior crypto research analyst at Bitwise Asset Management. I come from a traditional finance background. Before joining Bitwise, I was a portfolio manager at a boutique investment shop that specialized in natural resources and precious metals. It is an international fund that manages equities and fixed-income funds.

I helped develop quantitative investment strategies and launch their ETF business. Afterward, I came across the opportunity at Bitwise, which was a great fit for me given my background in investment management, indexing, and ETFs. I've been at Bitwise for almost three years and I'm currently part of the research investment team, where I assist with the strategy development of funds & due diligence, and also manage content production and investor education.

What's the elevator pitch for Bitwise Asset Management?

Bitwise is a crypto asset manager that was built to help investors access opportunities in the crypto sector. We've been in the market since 2017 and are best known as being the largest crypto index fund manager in America. We primarily serve the professional investor segment which includes financial advisors and institutional investors such as family offices, endowments, foundations, and pension funds.

How does the recent approval of the spot Bitcoin ETF impact your firm's overall investment strategy and approach to digital assets?

Bitwise started in 2017. From day 1, one of our primary goals was to bring a Bitcoin ETF to the market. So today is a day that we've been looking forward to for many years. This ETF falls right in line with our goal as a firm of helping investors access the opportunities in crypto. We launched the first and now the largest crypto Index Fund in America, the first DeFi focused Index Fund, the first crypto equities ETF, and we're now tied as one of the issuers of the first spot Bitcoin ETF in the US.

We're proud of all of that work and our goal is to continue innovating and bringing solutions to investors that help them access the best opportunities in crypto irrespective of what shape or form those solutions take. ETFs, of course, are the most popular investment vehicle for professional investors due to their unique characteristics so we hope to bring even more crypto ETFs to the market in the coming years.

You and the other 10 issuers are pioneers and helped launch crypto into the public markets. What was the most unique experience during the filing process?

The most nerve-wracking experience might have been on January 9th when a fake tweet from the SEC announced approvals but was then immediately taken down. I know that my colleagues and I were basically on oxygen support during those times.

Joking aside, one unique aspect was working out the kinks in the creation and redemption mechanism for the ETF because Bitcoin is still an asset where the securities laws in the US are not clear. For these ETFs, there ended up having to be a separation between the trading counterparties, the Bitcoin custodian, and the cash custodian to make the ETF work, which is less straightforward than with most other ETFs.

How does the approval of the ETF contribute to the mainstream adoption of cryptocurrencies?

Great question. Up until this point, access to crypto has largely been a retail phenomenon. Most institutional investors have been prevented from accessing crypto by their compliance departments or investment committees due to a lack of regulation and adequate investment vehicles. These spot ETFs change that dynamic completely.

A week and a half ago, we published our sixth annual survey of financial advisors' attitudes toward crypto and two stats from that survey stood out:

1. Only 19% of respondents said they're allowed to allocate to crypto on behalf of client accounts.
2. 88% of respondents interested in allocating to crypto said they were waiting for a spot Bitcoin ETF launch before purchasing Bitcoin.

Investable wealth in America falls under three buckets:

1. 20% is retail self-directed. That's individuals like you and me investing on our own.
2. 40% is encompassed by registered investment advisors who work with clients to invest on their behalf.
3. The other 40% are institutional investors such as pension funds, family offices, endowments, etc...

The approval of the ETFs opens up the market to that non-self-directed 80%.

How will the spot Bitcoin ETF contribute to increased liquidity and accessibility for investors?

The main answer is fees. Before these ETFs, retail investors could access Bitcoin through select brokerages and institutional investors could access it via private trusts. Both of these options come with fees that tend to be higher than what these ETFs now offer.

Let's take GBTC as an example. It's the largest Bitcoin trust. When they first launched, they charged 2% or 2.5% as their management fee. Now that they've converted it to an ETF, they've lowered that fee to 1.5%, which is still high.

Our ETF, BITB, charges 20 bps which is a ~90% reduction in fees. BITB's fee at 20 bps is lower than the fees and spreads that most brokerage accounts charge retail investors. So all investors, whether retailer or institutional, win with these low-cost ETFs. That's a great outcome for investors as ETFs enable greater access and liquidity given they trade on major exchanges. Add that to the intraday trading flexibility and other attributes of ETFs, and you have a slam dunk for investors.

What role could the ETF play in attracting institutional investors to the cryptocurrency space, and how might it influence their overall investment strategies?

The first thing is that these ETFs clear many of the hurdles that previously restricted access. The second development is that as more institutional investors embrace these ETFs and Bitcoin becomes more accepted and commonplace in investor portfolios, we think that the size of the allocation will grow.

We recommend most investors size their Bitcoin allocation at 1% - 5% of their portfolios. Given Bitcoin's asymmetric return profile and low correlations with traditional assets, even small allocations such as those can positively contribute to a traditional 60:40 portfolio historically.

Portfolio Performance Metrics

Period between January 1, 2014 and December 29, 2023 (assuming quarterly rebalancing)

PORTFOLIO	CUMULATIVE RETURN	ANNUALIZED RETURN	ANNUALIZED VOLATILITY	SHARPE RATIO	MAXIMUM DRAWDOWN
Traditional 60/40 Portfolio	77.56%	5.94%	8.64%	0.414	22.07%
Traditional Portfolio + 1.0% bitcoin	93.57%	6.86%	8.73%	0.513	22.73%
Traditional Portfolio + 2.5% bitcoin	119.60%	8.23%	9.03%	0.644	23.72%
Traditional Portfolio + 5.0% bitcoin	168.77%	10.45%	9.90%	0.807	25.35%

Source: Bitwise Asset Management with data from IEX Cloud.

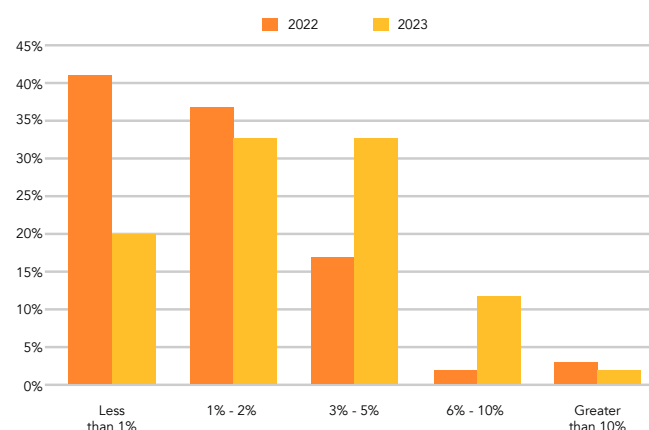
Note: Traditional Portfolio consists of 60% equities (represented by the Vanguard Total Stock ETF, VT) and 40% bonds (represented by the Vanguard Total Bond ETF, BND). For risks and important information of the ETFs discussed here, please see the Appendix at the end of this document. Not considering taxes nor transaction costs. Bitcoin (BTC) is analyzed here because its longer price history allows for more comprehensive historical analysis than other crypto assets. Performance of individual crypto assets may differ significantly from the performance of Bitcoin. For more details, please refer to our white paper "Bitcoin's Role in a Traditional Portfolio" published in August 2023 and available at:

<https://acortar.link/AMFpqB>

Past performance does not predict or guarantee future results. Nothing contained herein is intended to predict the performance of any investment. There can be no assurance that actual outcomes will match the assumptions or that actual returns will match any expected returns. Historical performance of sample portfolios has been generated and maximized with the benefit of hindsight. The returns do not represent the returns of an actual account and do not include the fees and expenses associated with buying, selling and holding funds or crypto assets. Performance information is provided for informational purposes only.

Going back to our survey, this year we saw that Bitcoin allocations greater than 3% of portfolios doubled year-over-year. The majority still allocate at 1-2%, but we think these ETFs will help grow these allocations over time as allocating becomes easier and more prevalent, and as more investors learn about crypto and better understand its risks and opportunities.

Bitcoin Allocation Sizes in Investment Portfolios



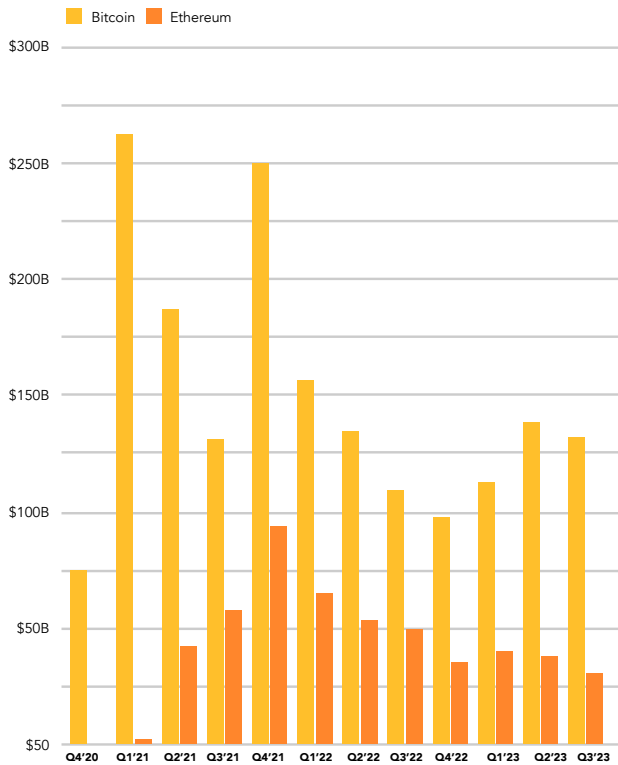
Note: Numbers may not add to 100% due to rounding and/or survey design.

Based on what you know about regulators, what digital assets do you think could be next in line for ETF approval?

Now that Bitcoin ETFs have been cleared, the new conversation is around what the next asset to be approved in an ETF will be. Through these applications, we learned a couple of things about what the SEC is looking for. First is that there needs to be a regulated futures market that they can use to gauge price discovery and market manipulation given that spot markets are unregulated.

For Bitcoin, there's a large and established market in Bitcoin futures on the CME, which is the largest in the US. Ethereum also has futures on the CME, although it's a significantly smaller market than Bitcoin futures. That isn't the case for other altcoins. For now, I think that precludes other altcoins from having any real shot until regulated futures markets develop.

Total Volume: CME Bitcoin and Ethereum Futures



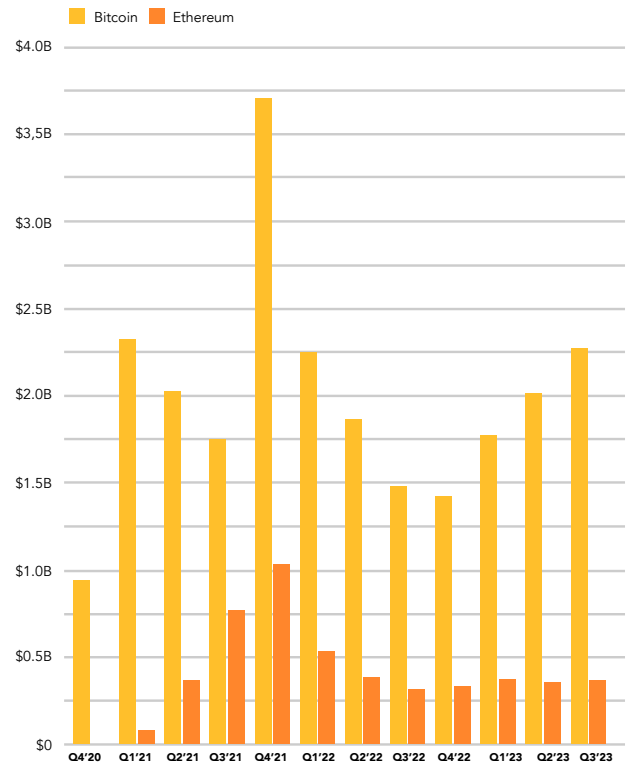
Source: Bitwise Asset Management with data from The Block and CoinGlass.

The next best positioned is Ethereum because it has regulated Ethereum futures on the CME and it's the second largest crypto asset. I think the hurdles that ETH will have to clear are the market depth, since their spot and futures markets are not as large and liquid as Bitcoin's. I think there are going to be questions around that and in my opinion, I don't think the SEC would allow clearing a spot ETH ETF until that market develops more.

There are also questions about the centralization aspect as Bitcoin is the most decentralized crypto asset. While Ethereum is more centralized than Bitcoin, it's probably the second most decentralized.

The next one in line is Ethereum, but I don't foresee the SEC approving an ETH ETF this year. It took 10 years for Bitcoin ETFs to be approved. And of course, in

Average Open Interest: CME Bitcoin and Ethereum Futures



Source: Bitwise Asset Management with data from The Block and CoinGlass.

anything, the first time around is the hardest. So now that that groundwork has been laid, I think it'll be easier for the next approvals in terms of the official regulatory process.

It will largely depend on how the markets for those assets develop to clear the SEC's hurdles. As Ethereum continues to grow, then I would hope that getting an ETH spot ETF cleared will not take 10 years, but maybe 2-3 years. I don't foresee it happening this year, but I do think it may take less time than the BTC ETF.

How does the market continue to advance institutional adoption?

Over the last couple of years, but really ramping up this past year, we've started to see institutional investors creating pilot programs for tokenizing real-world assets. Everyone knows the benefits blockchain technology can bring in terms of opening up liquidity and creating new markets for illiquid assets such as real estate and private equity.

The past couple of years were the training ground for them to pilot and understand the technology, the benefits, the limitations, and the risks. Now that regulations are starting to fall into place, like the approval of MiCA last year which is the regulatory framework for digital assets in Europe, those pilots are translating into actual fund launches of tokenized assets that are trading on blockchains. So I foresee the trend toward the tokenization of real-world assets continuing to gain ground which opens up new use cases for crypto and for the biggest institutions to adopt the technology.

What are you looking forward to heading into the New Year?

We were definitely looking forward to this moment and we're only 11 days into the year so it's been a momentous year already! Further out than that, I'm looking to see continued progress in scaling solutions and zero-knowledge-proof technology.

Crypto still has a user experience adoption issue. You're never going to get the average user to create wallets with authorizations, hold keys, and keep these private keys and passwords secure. You need to make it much simpler. You need to make it as easy as how we use websites and applications today. Until that happens, it will be a huge barrier.

On the gaming side, which is a huge industry, a big chunk of venture capital allocation in the past 2 years went into blockchain games and there's the expectation that many of those games will launch. The launch and traction of those games will be interesting as well.

I would also love to see more pro-innovation regulation. The government keeps talking about protecting consumers but I believe they could have avoided the FTX fiasco had they put regulations in place earlier.

Everyone is talking about BTC, but what about ETH?



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Steno Research

Steno Research is your independent research house on everything macro, geopolitical and crypto. Based out of Copenhagen, Denmark, they provide honest, sharp and actionable content on the topics most relevant for your portfolio.

The crypto industry's big dream has become a reality. The US Securities and Exchange Commission (SEC) gave the green light to 11 Bitcoin spot ETFs after the market closed yesterday. Notably, this includes approval for BlackRock's iShares Bitcoin Trust and the conversion of the Grayscale Bitcoin Trust into an ETF.

In a nutshell, the Winklevoss twins (yes, the ones from The Social Network) first tried to launch a Bitcoin spot ETF in 2013, but the SEC rejected their attempt, along with all others in the following decade, mainly due to concerns about market manipulation.

In October 2021, the SEC surprisingly approved Bitcoin futures ETFs, a different breed compared to spot ETFs. Unlike the latter, which is backed by actual Bitcoin, futures ETFs revolve around futures provided by CME Group. These futures are not ideal for long-term holding due to significant rollover costs, especially in bull markets.

Fast forward to June 2023, when BlackRock, the world's largest asset manager, unexpectedly filed for a Bitcoin spot ETF, despite having no prior crypto products. It is reasonable to assume that someone tipped off BlackRock about the opportune timing. Two months later, the SEC lost a court case against Grayscale, the world's largest crypto asset manager, regarding the conversion of its Bitcoin trust to an ETF. This compelled the SEC to rethink its previous rejections.

These events underscored that the approval of Bitcoin spot ETFs was not a matter of "if" but "when." And that "when" is now. Approved on January 10, 2024, with trading set to start Jan 11th.

Before you read further, it is crucial to note that we see spot ETFs as exceptionally bullish in the long term. They open the floodgates for new capital, allowing institutions, asset managers, financial advisors, and retail investors to allocate capital to Bitcoin in a cost-effective and well-regulated structure. This shift is comparable to when the first gold spot ETF launched in the US in 2004, unleashing a decade-long surge for gold. We anticipate a similar trajectory for Bitcoin.

Chart 1: The Gold Price since 2000



Source: Steno Research, Bloomberg and Macrobond

"Buy the Rumor, Sell the News"

Now, let us dive into what you might be interested in – what to anticipate in the near term.

In recent months, we have taken a position on the Bitcoin ETF that goes against the consensus. We have contended that the short-term impact of the Bitcoin ETF was already factored into the price, possibly leading to a "buy the rumor, sell the news"-event. This means that once the market realizes the ETFs might not attract as much net inflow in the initial months as anticipated, there could be a sell-off.

When discussing inflow, we specifically mean net inflow, considering that some of the approximately 619,000 Bitcoin in Grayscale's Bitcoin Trust might enter the market during its conversion to an ETF. The ease of redeeming shares allows for this possibility. As of yesterday's close, the trust still traded at a 3% discount to its net asset value. Two days ago, the discount was even higher at 5.4%, highlighting that the current demand for the Grayscale Bitcoin Trust does not match its holdings of 619,000 bitcoins.

Chart 2: The Grayscale Bitcoin Trust: Fund Holdings



Chart 3: The Grayscale Bitcoin Trust: Price to Net Asset Value



Our perspective is also rooted in the understanding that narratives play a crucial role in the crypto space. Investors often buy into narratives rather than the actual execution. The ETF narrative for Bitcoin has been exceptionally strong in recent months, potentially setting expectations too high for what the ETFs could deliver in reality.

It seems that the market has largely aligned with our viewpoint. The Bitcoin price witnessed an uptick in the past weeks as the market embraced the ETF narrative.

However, when the SEC's Twitter profile was compromised on Tuesday, falsely claiming ETF approval, the Bitcoin price dropped even before participants realized it was untrue. While the actual approval yesterday evening recovered some of the losses, as of now, we are still trading below the prices seen on much of Monday and Tuesday.

Chart 4: The Bitcoin Price in the Past Week



Our "buy the rumor, sell the news" assertion may not have fully materialized yet, as we have yet to witness any price drop. We anticipate this unfolding as early as today and tomorrow, following which the Bitcoin price is likely to gradually decline in the coming month. We foresee this scenario because, at best, we envision only a modest net inflow in the next month, considerably smaller than what the market is anticipating. This is accentuated by the market's apparent oversight of the risk that Grayscale's outflow could be substantial enough to offset some or all of the inflow from other ETFs.

It is crucial to acknowledge that the actual inflow relative to the expected inflow might surprise us, so we closely monitor today and tomorrow. Until there is potential confirmation, our conviction rests in a full-circle "buy the rumor, sell the news"-event for Bitcoin.

In this context, please stay alert to media headlines congratulating various ETFs on significant inflows. While the BlackRock ETF is likely to be the most successful in terms of inflow on its first trading day of any ETFs, a substantial portion of this inflow is expected to result from outflows from Grayscale. The latter charges a 1.5% yearly management fee, compared to BlackRock's 0.25%, so there will be some sort of rotation towards BlackRock's ETF.

Do not fade Ethereum

Contrary to favoring Bitcoin, our recent *Crypto Moves* notes have consistently leaned towards Ethereum, the second-largest cryptocurrency, even as recently as last week. We assert - and still maintain - that Ethereum is significantly undervalued compared to Bitcoin.

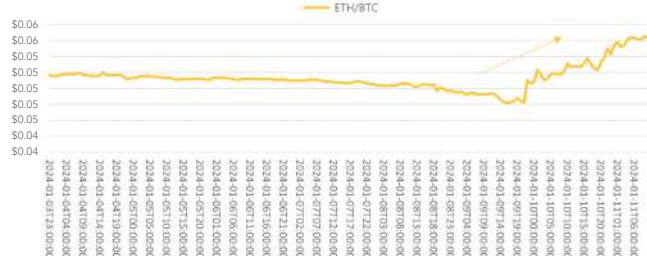
This belief is based on several factors.

Ethereum has largely stayed clear of the ETF narrative, despite BlackRock filing for an Ethereum spot ETF in November 2023. Assuming BlackRock is privy to certain information, this ETF might launch as early as Q2 this year. The SEC recently released a statement that noted that fraud or manipulation is as likely on CME Bitcoin futures as it is on the spot markets. This further supports the likelihood of approval for Ethereum spot ETFs. Ethereum is the only cryptocurrency besides Bitcoin with futures traded on CME and ETFs linked to these futures (approved in October 2023).

The ETF narrative has given Ethereum a boost, particularly in the wake of the Bitcoin ETF approval. Following the false SEC approval on Tuesday January 9, 2024, Ethereum gained over 15% against Bitcoin.”?

Chart 5: The ETH/BTC Price in the Past Month

Ethereum has gained over 15% on Bitcoin since the ETF approval



We anticipate Ethereum gaining even more ground against Bitcoin in the coming months, potentially even in USD terms, as the ETF narrative gains momentum and other positive factors come into play. If this evolves into a full-fledged crypto bull market, a realistic target could be 0.1 ETH/BTC, compared to the current 0.0565 ETH/BTC.

Besides the ETF, this optimism is fueled by Ethereum's shift to a deflationary model after the Ethereum merge on September 15, 2022.

The move from Proof of Work to Proof of Stake significantly reduced Ethereum's issuance rate from 4% to less than 1%. Previously, miners were rewarded with about 5.4 million Ether annually, a significant portion of which was promptly sold, contributing to substantial selling pressure, exceeding \$10 billion in 2021 alone.

Post-merge, stakers are now rewarded with around 870,000 Ether annually, and only a minority of this is typically sold, as stakers are generally long-term holders with minimal staking-related expenses. Consequently, Ethereum has experienced a substantial reduction in its supply, burning about 340,000 Ether out of its nearly 120.2 million circulating supply, as more Ether has been burned due to transaction fees than issued. The market has managed to ignore this supply shock since the merge one and a half years ago, but it is only a matter of time before the market can no longer overlook this supply shock, and it is reflected in the Ethereum price.

The macroeconomic environment also contributes to our conviction that Ethereum will continue to outperform Bitcoin. Ethereum has historically shown significant outperformance relative to Bitcoin when the economy is flooded with liquidity, primarily due to its more speculative nature and increased speculative on-chain activity. The impact of increased liquidity on Ethereum typically manifests within six to 12 months.

Although the Federal Reserve and other central banks have not reduced interest rates yet, liquidity in the economy has been on the rise since October - an explanation for this can be found below. We anticipate liquidity to continue increasing in at least the next few months, particularly as more on-chain activity makes Ethereum more deflationary, thus amplifying the supply shock and its deflationary narrative.

Chart 6: The ETH/BTC Price Relative to Liquidity



In summary, our position remains long ETH/BTC, but we closely monitor the net inflow of Bitcoin ETFs today and tomorrow, which could potentially alter our perspective.

Explanation: Increased Liquidity

We are not rushing to definitively declare the end of the inflation saga, and somewhat counterintuitively, USD liquidity continues to rise due to a series of technicalities.

- *Fed Total Assets (TA): Lorie Logan's influence on the QT policy (discounting treasuries and driving yields higher) is dwindling at the Fed, primarily due to the rapidly declining Overnight Reverse Repo facility (ON RRP) Lorie Logan mentioned on Friday: "... In my view, we should slow the pace of runoff as ON RRP balances approach a low level.*
- *Overnight Reverse Repo facility (ON RRP): The depletion of ON RRP is driven by the spread between the 1m T-bill rate and the ON RRP facility. A wider spread increases the pace of ON RRP depletion, incentivizing the withdrawal of liquidity from the Fed. When a USD is withdrawn from the ON RRP facility to purchase a T-bill, it automatically creates a new dollar deposit in the banking system, unless it is stored in the Treasury General Account (TGA), thereby boosting overall money supply.*
- *Treasury General Account (TGA): However, the USDs will predominantly not be stored in the TGA during this first quarter. The TGA typically decreases due to tax seasonality in the first quarter, with a larger-than-usual deficit. On average, the TGA drops by more than \$200 billion from January 1st until Week 13-14. This will further contribute to the USD liquidity available to the commercial banking system.*

Liquidity can reasonably be approximated as TA-RRP-TGA, and each parameter currently points to a positive net liquidity effect as the ON RRP will be depleted faster than the QT program withdraws liquidity.

<https://n9.cl/28r50>

In Conversation with Eric Balchunas from Bloomberg Intelligence

Insider Insights

- Unraveling the Bitcoin spot ETF saga
- What ETFs are next, and where does the industry go from here
- The long-term impact of the Bitcoin ETF on cryptocurrency awareness



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Bloomberg

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Let's start by hearing about yourself and your background.

I originally was a reporter for *Institutional Investor* out of college and then I did some public relations. Later on I worked in data, which was different, for about 13 years at Bloomberg, and then I got recruited by their research group, which is kind of a combination of data and reporting.

And honestly these days you have to do your own PR. So I use a lot of my former jobs' experience in this one. I've been in research now for seven years.

I lead up the ETFs and mutual fund research for Bloomberg intelligence. There are 10 people on the team. I love the media content I work on, but largely, it's all ways to brand our research and talk about what we do in the background.

What impact will the Bitcoin ETF have on general awareness?

The impact on awareness will be big.

These ETFs are now going to be on a lot of brokerage exchanges and trading platforms. These companies are good at distribution, we're talking about the likes of Fidelity, BlackRock, Invesco, these firms are powerful. These are today's top asset managers, best in class.

It will take a while though, and I don't know what will happen short term to the price. It's interesting as prices sold off on the second day of trading. It's amazing how big of a negative reaction some of the crypto native people have (especially after it just went up 80%).

Sometimes some stock investors get really upset when there's a bad day or a week of negative price action. But this is part of the deal with investing, it's not like a perfectly smooth ride up. Volatility is the price you pay for returns in the stock market and I'd say the same is true here.

Short term, it's a roller coaster ride, but long term, it can't hurt to have all these bridges set up between the asset class and traditional finance, which is what ETFs are, bridges.

What were some of the particular regulatory challenges the issuers were facing during the approval process?

I just think generally speaking, the government isn't comfortable with crypto. That's the root cause here and everything flows out of that discomfort and skepticism. The SEC was hinting at fraud or manipulation in the market but a couple of commissioners pointed out that it's not their job to judge the investment, it's their job to disclose risks and let investors decide.

The court case of Grayscale against the SEC was absolutely pivotal as it really forced Gary Gensler to come to terms with the fact that the courts changed his mind. He probably still doesn't think it's a good idea. But the court win was a major moment to the point where I don't think it would have gotten approved if they had lost in court.

I also think there is something about the BlackRock filing. When the court decision came down, he knew he might have to approve these but at least they've got some traditional issuers that he trusts. I think BlackRock and other big issuers getting involved probably played a part as well.

We'll never know what goes down in Gary's brain, this is just my interpretation of the challenges that the process faced. But then once Gary changed his thinking, and said "we have to do this", then it was just a matter of months of preparing the documents.

We were very optimistic about an approval the whole time because of what we were hearing and because the SEC was engaged with issuers. That was the first time they ever did this in this process. That all came from the 10th floor, which is the commissioners floor and so that's why we never relented. We knew Gary wouldn't tell his staff to do all this work for nothing. Why would he vote against it or say no. And that proved to be totally spot on. Gary was the third "yes" and that's it.

Did you come across any concerns or criticisms regarding the ETF? Some crypto natives believe that this ETF will actually be detrimental for the market as it pushes the ecosystem away from decentralization. What are your thoughts?

Out of all the pushbacks, that's the most rational. I would call those people "true believers. If you really are that into it, there probably should be tension inside of you. These are very big companies getting involved.

But on the flip side, if you want to see it grow and the price go up, this should be awesome, right? I get that tension and I've seen it on my timeline. Most people though, they're not into this mission, they couldn't care less. This is about adding something to their portfolio that cures their FOMO, gives them some diversity, a little hot sauce, that's all this is. These people are not going to get a digital wallet, they'd rather just click "buy" and have this exposure. The ETF companies are simply outsourcing similar to the exchanges, to be honest. And that's all this is. But that is a good philosophical debate to have. And I don't know the answer, but I understand it.

What's interesting to me is how many times this came back from the dead. You have to respect that and I think most people do. If you've gotten any experience or exposure with the community, you would know that they're very creative and there's a lot of intelligent people where the creativity and the passion is real.

What was this application process like compared to others you've covered?

Everyday I'd wake up to a curveball. The Cointelegraph intern tweet, the SEC tweet.

A lot played out on Twitter but there would also be different things in the filings. This was such an interesting process because it reminded me of a scandal. In public relations, if you have a scandal, what you want to do is come out and just admit it, take it all in one shot and then the news cycle ends. What you don't want to do is hide, lie, cover it up and then the truth comes out in little drips, that keeps the story going for months.

This was that, drip, drip, “we got to see the S1s”, “Oh this didn't file”, this happened for over 3 months. It turned into this gigantic snowball rolling downhill story until the last day with the fake SEC tweet. And then in the last 10 minutes there was a document where the CBOE was withdrawing something and the word withdraw was in there and that served as a last second heart palpitation.

I've never seen anything like this. Normally we have a new ETF filing and it's going to launch in 90 days. And then when it launches, we analyze it if it's interesting, we see what it does and then we move on. The 75 days in between the filing and the launch, we don't really care that much. This felt like 10 years of that. The whole thing was just bizarre, every day there was a new little tidbit, a crumb, a bit of hope, which lasted months.

Based on what you know about regulators and their criteria for consumer protections, what digital assets do you think could be next in line for an ETF approval?

It's going to be ETH for sure, probably in May, and then I don't see anything after that for a while. If they don't approve the ETH spot ETF, the SEC risks getting sued again because that's what got them into this mess in the first place, by approving the futures ETF before a spot ETF. If they didn't, I'd be less optimistic. But they did. It's probably a 70% probability, so nowhere near the optimism I had for Bitcoin, but still good nonetheless. I'm just not wildly confident.

How does the market continue to innovate to cater to institutional investors?

You're going to have all kinds of deviations such as leveraged spot ETFs, inverse spot ETFs, covered call spot ETFs, long Bitcoin, short Gold, etc...

They're going to throw it at the wall and see what sticks. That's what happens when you have a new category with some early success. There could be 10 spot ETFs right now but by the end of the year, my guess is there will be over 30.

02.

State of the Market



MOSTAFA AL-MASHITA

Co-Founder & Director of Sales & Trading
Secure Digital Markets

 @ALMASHHH

In 2023, the digital asset industry was going through an autophagic process. Companies were forced to either go lean or risk getting wiped out and unfortunately, 2023 saw a lot of consolidation. This year we lost some of crypto's biggest executives to corruption & fraud, faced numerous lawsuits by the SEC, and suffered a contagion event that threatened to wipe out all of crypto's banking. Yet here we remain, stronger than ever before as we break historical ground with the introduction of the Bitcoin spot ETF.

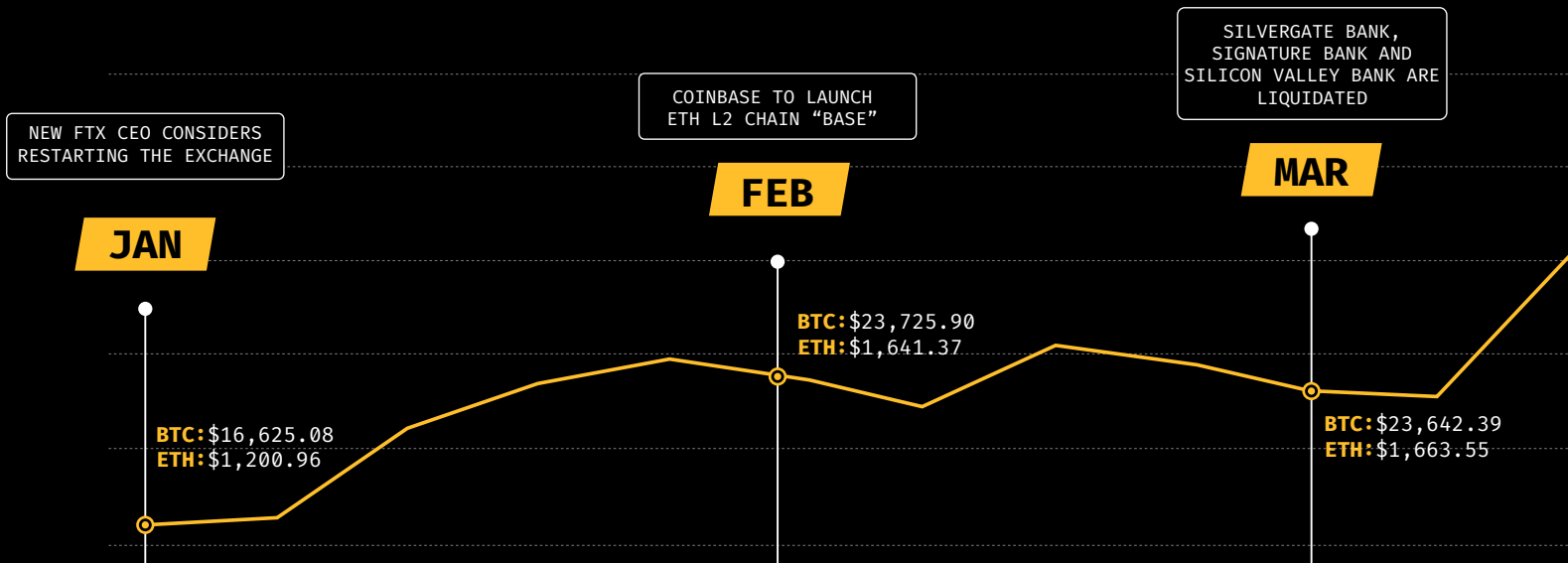
The state of the markets in this post-ETF environment will be healthy, fueled by significantly more market participants. What does that mean? Less speculation and volatility, and more investing into verticals and use cases. We think some of the key drivers for the industry in 2024 will obviously be the increased participation rate through these ETFs and new ETP's soon to come. But more broadly, the use of stablecoins as a global payments alternative is something we've seen a ton of at SDM and I expect to continue. And lastly, we think we will see a profound and positive change in the relationship between regulators and the corporate leaders of our industry. As a conduit between people and the digital asset ecosystem, greater regulatory clarity brought by legislation like MiCA (EU) and RFIA (USA) will make it easier for us to do our jobs safely and securely. This effective step towards regulating digital assets will be an anchor theme for why the rate of institutional adoption increases dramatically in 2024.

In this Year in Review, parts of 2022 and 2023 might show slow or even negative growth. However, this data is complemented by 2023's stellar Q4, which we believe is a precursor to what 2024 will look like. As we finish climbing out of this economic rut from the last 18 months, we are entering into the new year with as much to look forward to as any period in crypto's history.

We hope you enjoy this year's edition of the Year in Review.

Warm regards,
Mostafa Al-Mashita

Q1 2023 TIMELINE OF EVENTS



'1' GENESIS AND GEMINI DEBACLE AFTER GENESIS FILES FOR BANKRUPTCY

'2' NEW FTX CEO CONSIDERS RESTARTING THE EXCHANGE

'3' COINBASE SETTLES FOR \$100M OVER KYC/AML VIOLATIONS

'4' CRYPTO.COM DELISTS USDT IN CANADA DUE TO REGULATORS

'5' 3AC FOUNDERS ATTEMPT TO LAUNCH NEW EXCHANGE

'6' MT.GOX REPAYMENT PUSHED BACK

'7' MASS LAYOFFS ACROSS MAJOR CRYPTO FIRMS

'1' KRAKEN CHARGED BY SEC FOR STAKING SERVICES

'2' SEC FILES LAWSUIT AGAINST TERRAFORM LABS AND DO KWON

'3' BINANCE SUSPENDS USD TRADING

'4' PAYPAL SUSPENDS STABLECOIN DEVELOPMENT AMID REGULATORY SCRUTINY

'5' COINBASE TO LAUNCH ETH L2 CHAIN "BASE"

'6' HONG KONG GETS FRIENDLY WITH CRYPTO

'7' BTC BLOCKCHAIN WITNESSES A SPIKE IN ACTIVITY DUE TO "ORDINALS"

'1' BINANCE AND CZ ARE SUED BY CFTC OVER ALLEGATIONS

'2' SILVERGATE BANK, SIGNATURE BANK AND SILICON VALLEY BANK ARE LIQUIDATED

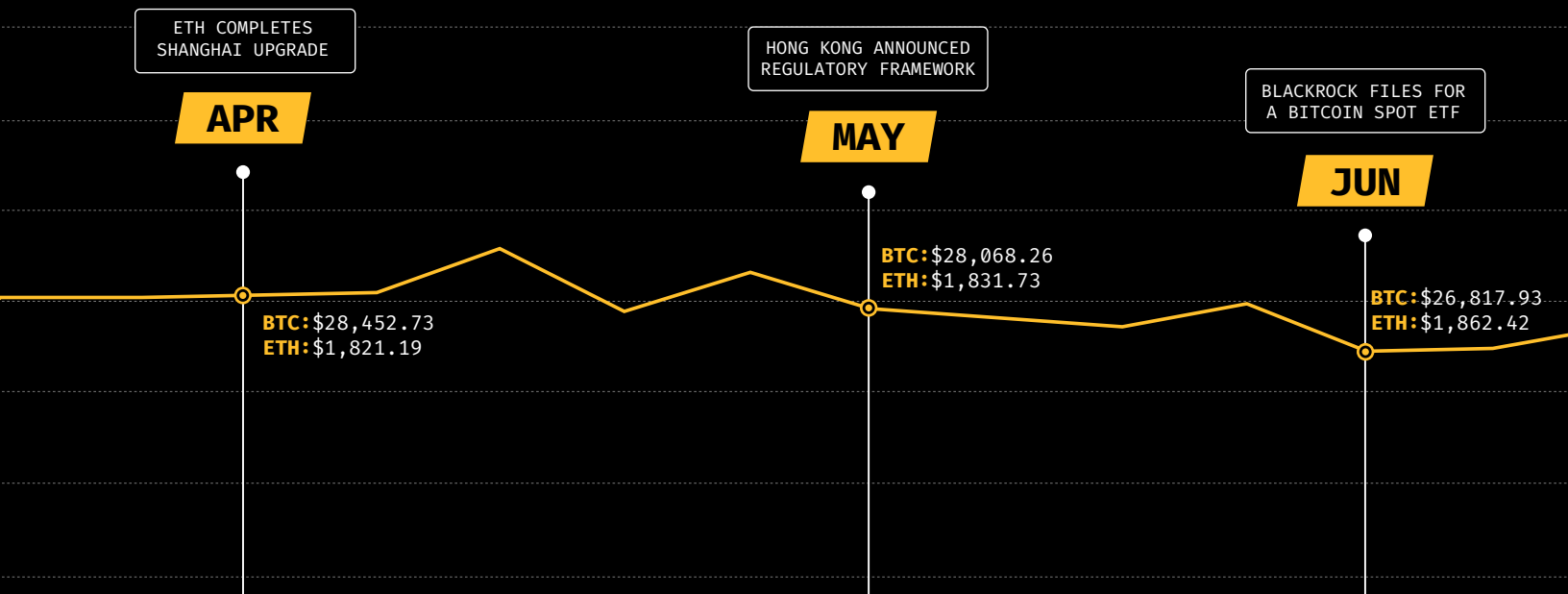
'3' COINBASE RECEIVES WELLS NOTICE FROM SEC

'4' USDC REDEMPTION IS TEMPORARILY SUSPENDED AND PRICE DEPEGS

'5' INSTAGRAM WINDING DOWN NFT BUSINESS

'6' US GOVERNMENT SELLS BTC FROM SILK ROAD

Q2 2023 TIMELINE OF EVENTS



'1' ETH COMPLETES SHANGHAI UPGRADE

'2' EU PARLIAMENT APPROVES MICA REGULATION

'3' LONDON STOCK EXCHANGE LOOKS TO CLEAR BTC FUTURE AND OPTIONS

'4' FTX RECOVERS \$7.3B IN ASSETS

'1' TETHER BUYS \$1.5B OF BTC IN Q1 AND COMMITS TO ALLOCATE 15% OF QUARTERLY PROFITS TO BTC

'2' HONG KONG ANNOUNCED REGULATORY FRAMEWORK SET FOR JUNE 1ST

'3' ETH FOUNDATION MOVES 15,000 ETH

'4' LAYOFFS: BINANCE 20%; NANSSEN 30%.

'1' BLACKROCK FILES FOR A BITCOIN SPOT ETF

'2' THE SEC INITIATES LEGAL ACTIONS AGAINST BINANCE AND COINBASE

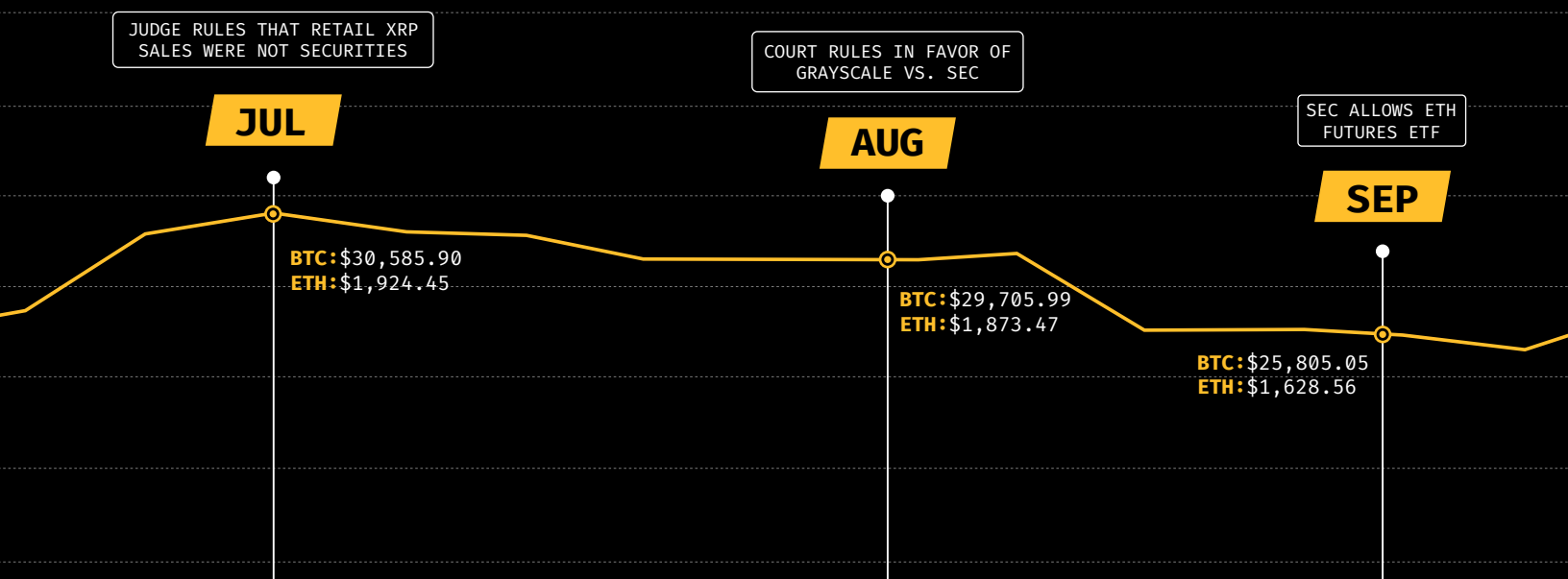
'3' ELON MUSK FACES DOGECOIN INSIDER TRADING LAWSUIT

'4' DEUTSCHE BANK APPLIES FOR DIGITAL ASSET LICENSE

'5' MASTERCARD FILES NEW CRYPTO TRADEMARK

'6' LAUNCH OF FIRST LEVERAGED BTC FUTURES ETF (BITX)

Q3 2023 TIMELINE OF EVENTS

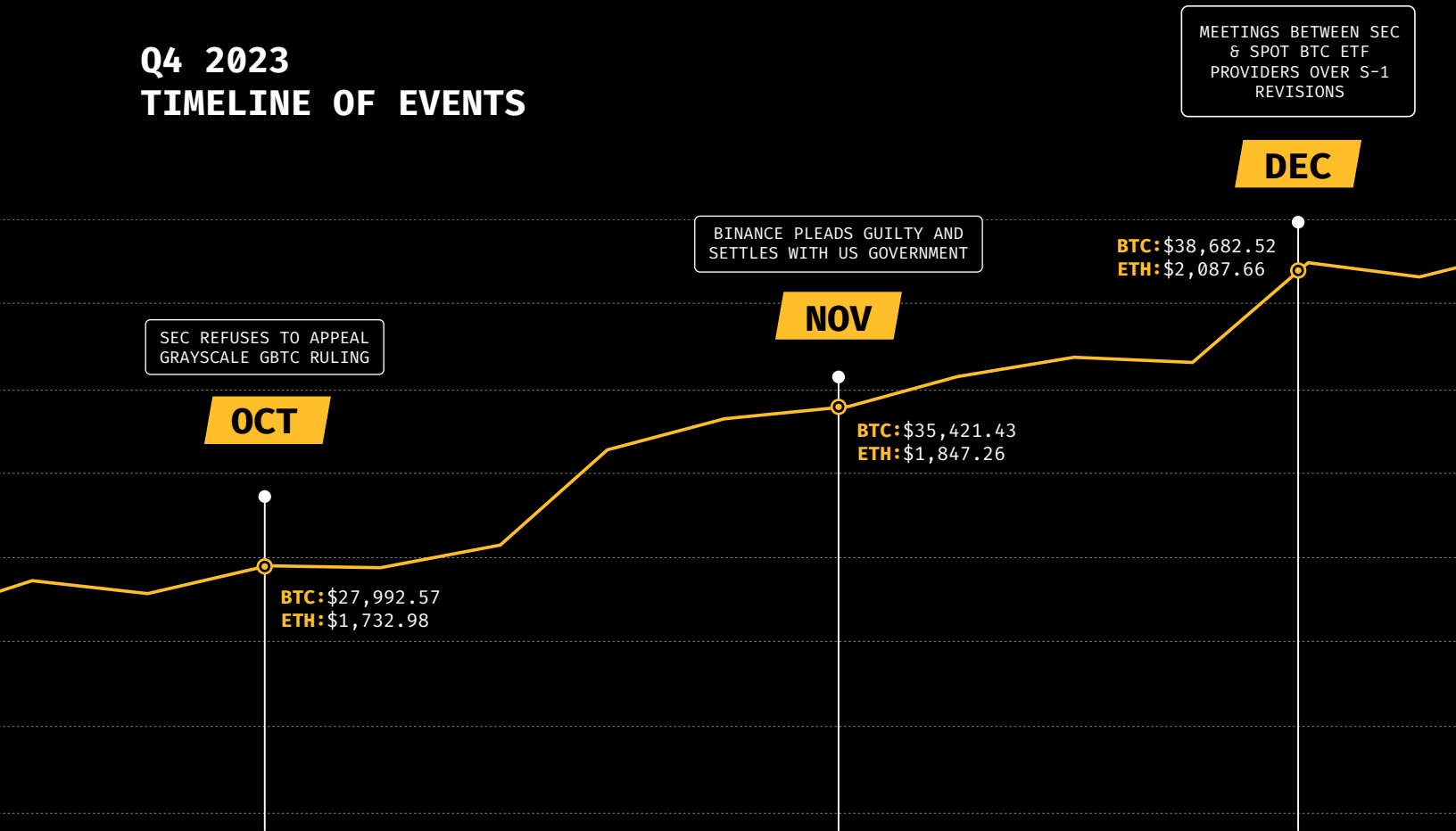


- '1' JUDGE RULES THAT RETAIL XRP SALES WERE NOT SECURITIES
- '2' SPOT BTC ETFS ENTER IN SURVEILLANCE SHARING AGREEMENTS
- '3' SEC AND CFTC SUE CELSIUS AND ITS CEO
- '4' GEMINI SUES DCG
- '5' NASDAQ HALTS PLAN FOR CRYPTO CUSTODY
- '6' LAYOFFS: KUCOIN 30%

- '1' COURT RULES IN FAVOR OF GRAYSCALE VS. SEC
- '2' PAYPAL LAUNCHES PYUSD STABLECOIN
- '3' PRIME TRUST FILES FOR BANKRUPTCY

- '1' VISA BEGINS SETTLING TRANSACTIONS WITH STABLECOINS ON SOLANA
- '2' SEC ALLOWS ETH FUTURES ETF
- '3' BINANCE FACES LAYOFFS AND EXECUTIVE EXODUS
- '4' MICROSTRATEGY BUYS \$147M OF BTC
- '5' RIPPLE ANNOUNCES ACQUISITION OF FORTRESS TRUST THEN BACKS OUT
- '6' JPMORGAN CHASE SET TO BLOCK ALL CRYPTO TRANSACTIONS

Q4 2023 TIMELINE OF EVENTS



'1' BLACKROCK SPOT BTC ETF TICKER ADDED TO DTCC WEBSITE

'2' COINTELEGRAPH MISTAKENLY REPORTS SEC APPROVAL OF BLACKROCK SPOT BTC ETF; PRICE SPIKES

'3' SEC REFUSES TO APPEAL GRAYSCALE GBTC RULING

'4' GRAYSCALE FILES TO CONVERT ETHE TO SPOT ETH ETF

'5' BINANCE.US SUSPENDS USD WITHDRAWALS

'6' KRAKEN FORCED TO SHARE CUSTOMER DATA WITH IRS

'7' SEC DISMISSES CHARGES AGAINST RIPPLE'S EXECUTIVES

'1' BINANCE PLEADS GUILTY TO CHARGES, SETTLES WITH US GOVERNMENT AGENCIES FOR \$4.3B AND AGREES TO FULL MONITORSHIP BY US GOVERNMENT FOR 5 YRS.

'2' SBF (EX-FTX CEO) IS FOUND GUILTY OF ALL SEVEN CHARGES

'3' SEC SUES KRAKEN

'4' MICROSTRATEGY PURCHASES \$590M OF BTC

'5' CME BITCOIN OPEN INTEREST SURPASSES BINANCE FOR FIRST TIME

'6' FTX ESTATE SUES BYBIT TO RECOVER \$950M OF ASSETS

'1' MEETINGS BETWEEN SEC & SPOT BTC ETF PROVIDERS OVER S-1 REVISIONS

'2' FTX ESTATE FILES PLAN OF REORGANIZATION

'3' MT.GOX BEGINS CREDITOR REPAYMENT VIA PAYPAL

'4' DAPPS USING LEDGER'S CONNECT KIT ARE HACKED

Total Crypto Market Cap 2023



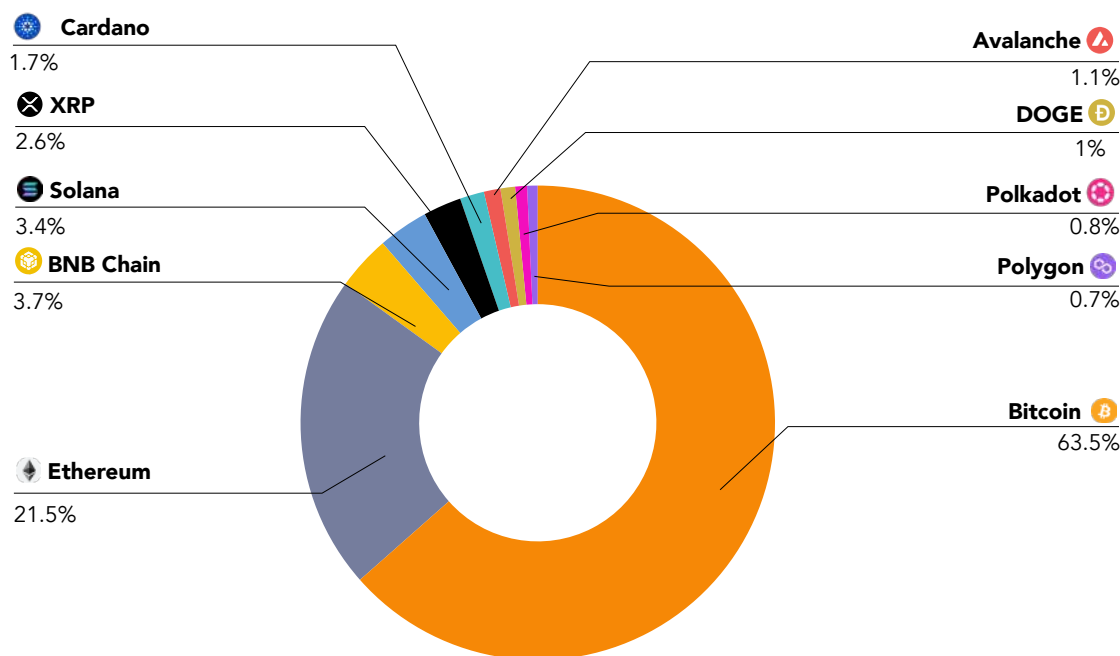
Reading Between the Lines

- Bitcoin's market cap surged by 155% in 2023 to \$830 billion.
- The market cap excluding Bitcoin and Ethereum rose by 71% to \$530 billion.
- Bitcoin's pronounced outperformance over Ethereum, particularly in Q4 can likely be attributed to the forthcoming BTC spot ETF, which will enhance accessibility, liquidity and demand of Bitcoin.

Market Cap of Top 5 Cryptocurrencies

	Jan 1, 2023	Dec 31, 2023	Percent Change
Bitcoin 	\$320,025,834,692	\$827,811,209,384	258.67%
Ethereum 	\$146,966,709,631	\$274,194,287,336	186.57%
BNB Chain 	\$39,053,263,491	\$47,394,056,692	121.36%
Solana 	\$3,671,464,072	\$43,576,016,360	1186.88%
XRP 	\$17,054,534,692	\$33,283,785,351	195.16%

Market Dominance of Top 10 Cryptocurrencies (non-stablecoin)



Reading Between the Lines

- Apart from the obvious rank of Bitcoin and Ethereum, the top cryptocurrencies like Binance Coin (BNB), Solana (SOL), and XRP (XRP), have achieved significant regulatory victories and built more vibrant ecosystems, resulting in significant growth.
- A notable gainer over the last 2 quarters is Solana, which surged by as much as 1,200% while the number of active addresses on its network increased from 370,000 in January 2023 to a yearly high of 980,000 in December 2023.
- Other leading protocols including Binance Coin surged due to its utility within the Binance ecosystem. XRP also experienced significant growth on the heels of a landmark victory against the SEC finding that sales of XRP on public exchanges were not unregistered securities offerings.

Performance of Major Asset Classes 2023

Assets	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Bitcoin	1,319.09%	217.26%	5,537.40%	-57.74%	33.74%	123.31%	1,414.10%	-74.67%	93.95%	308.17%	57.25%	-63.90%	154.02%
US Equity	2.11%	16.00%	32.39%	13.69%	1.38%	11.96%	21.83%	-4.38%	31.49%	18.40%	28.71%	-18.11%	24.86%
DM Equity	-11.73%	17.90%	23.29%	-4.48%	-0.39%	1.51%	25.62%	-13.36%	22.66%	8.28%	11.78%	-14.01%	21.54%
US REITs	8.69%	17.77%	2.47%	30.38%	2.52%	8.60%	5.07%	-4.57%	25.84%	-7.57%	43.06%	-24.51%	7.19%
Gold	10.10%	7.06%	-28.28%	-1.44%	-10.41%	8.14%	13.53%	-1.56%	18.31%	25.12%	-3.64%	-0.28%	12.02%
EM Equity	-18.17%	18.63%	-2.27%	-1.82%	-14.60%	11.60%	37.75%	-14.24%	18.88%	18.69%	-2.22%	-19.74%	-2.41%
US Bonds	7.84%	4.22%	-2.02%	5.97%	0.55%	2.65%	3.54%	0.01%	8.72%	7.51%	-1.54%	-13.01%	1.08%
Commodities	-2.39%	4.16%	-6.55%	-26.43%	-26.68%	19.53%	6.16%	-11.18%	12.94%	-7.53%	42.60%	21.23%	-9.69%
Oil	-1.31%	-11.52%	6.01%	-52.56%	-45.34%	8.04%	4.09%	-20.49%	34.09%	-60.33%	62.26%	27.55%	-5.98%

Reading Between the Lines

Bitcoin Stands Above The Rest

- Despite volatility, Bitcoin has been the best performing asset over its lifetime, generating an extraordinary cumulative return of approx. 55,209% from 2011 to 2023.
- Bitcoin was also the best performing asset over the last 5 years (154.02%), and most recently in 2023 (155%) despite difficult economic and geopolitical conditions.

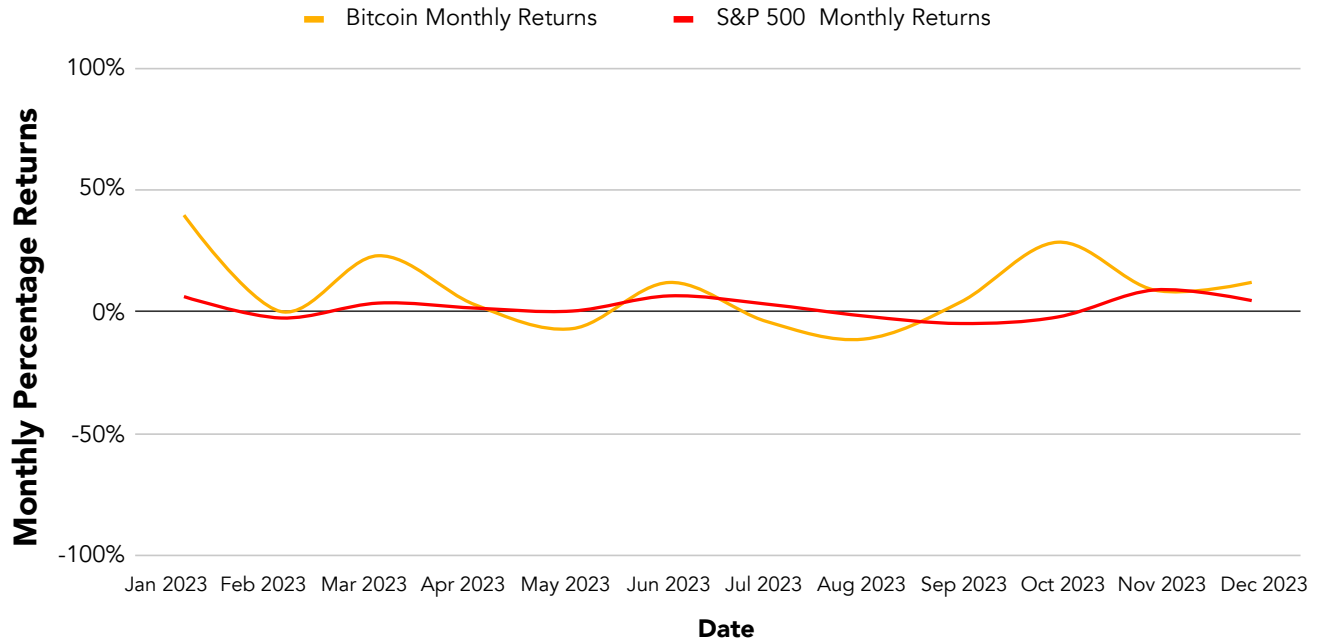
Correlation Data

- Most correlated asset to BTC: U.S Equity (0.385)
- Least Correlated Asset to BTC: Gold (-0.572)
 - After a strong Q4 for risk assets, it is no surprise that Bitcoin's correlation to Gold (the number #1 inflation hedge) has decreased, while its correlation to US equities increased.

Volatility Data

- Most Volatile Assets
 - Bitcoin (SD:1594.69)
 - Oil (SD: 36.58)
 - Commodities (SD: 20.12)
- Least Volatile Assets
 - US Bonds (SD: 5.98)
 - Gold (SD: 14.08)
 - DM Equity (SD: 14.77)

Bitcoin vs. S&P 500 Monthly Returns



Reading
Between the Lines

Correlation:

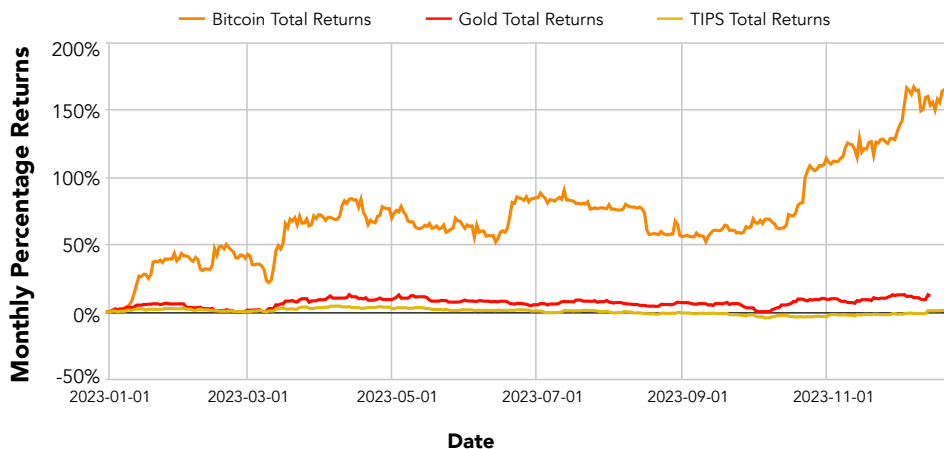
BTC & S&P 500: 0.31

Volatility:

BTC
 • Max: 65.32%
 • Avg: 5.61%
 • Min: -37.28%

S&P 500
 • Max: 12.68%
 • Avg: 0.89%
 • Min: -12.51%

Inflation Hedges 2023



Reading
Between the Lines

Returns

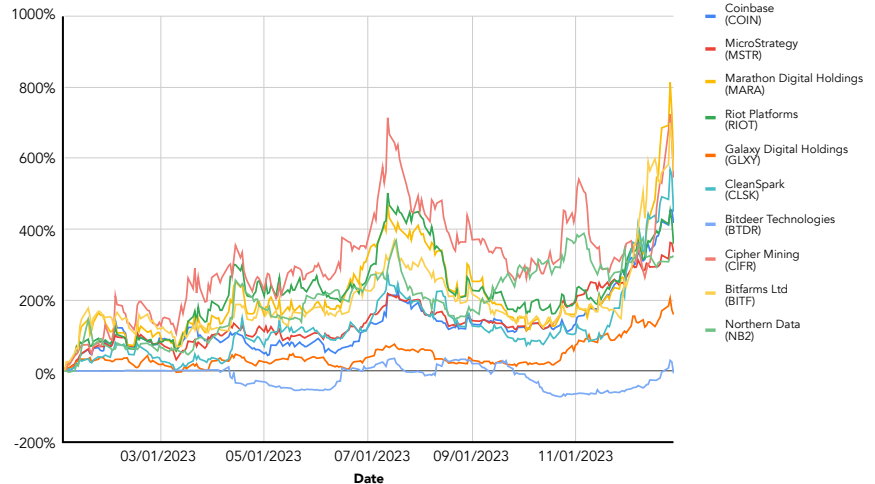
- Average Return
 - Bitcoin: 73.11%
 - Gold: 6.8%
 - TIPS: 0.44%

Volatility

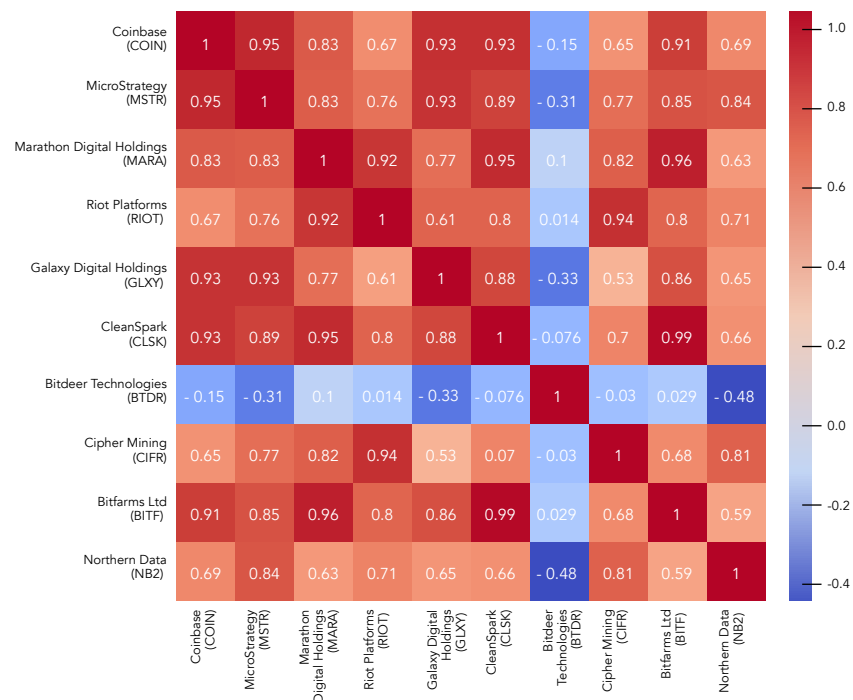
- Volatile Days - Bitcoin: 43 days
- Volatile Days - Gold: 32 days
- Volatile Days - TIPS: 32 days

Market Performance of the Top 10 Crypto Securities

Performance of the top 10 Crypto Equities in 2023



Correlation between Bitcoin Price and Share Value of Leading Crypto-Related Public Securities



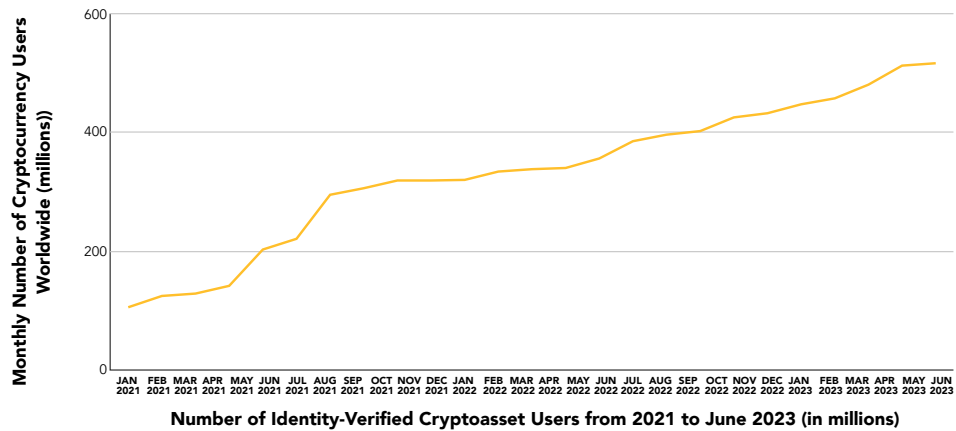
Reading Between the Lines

There is a very strong correlation between crypto-related securities and Bitcoin, suggesting that the performance of these assets is largely dependent on Bitcoin's performance, and that these securities might represent a proxy to Bitcoin for public market investors.

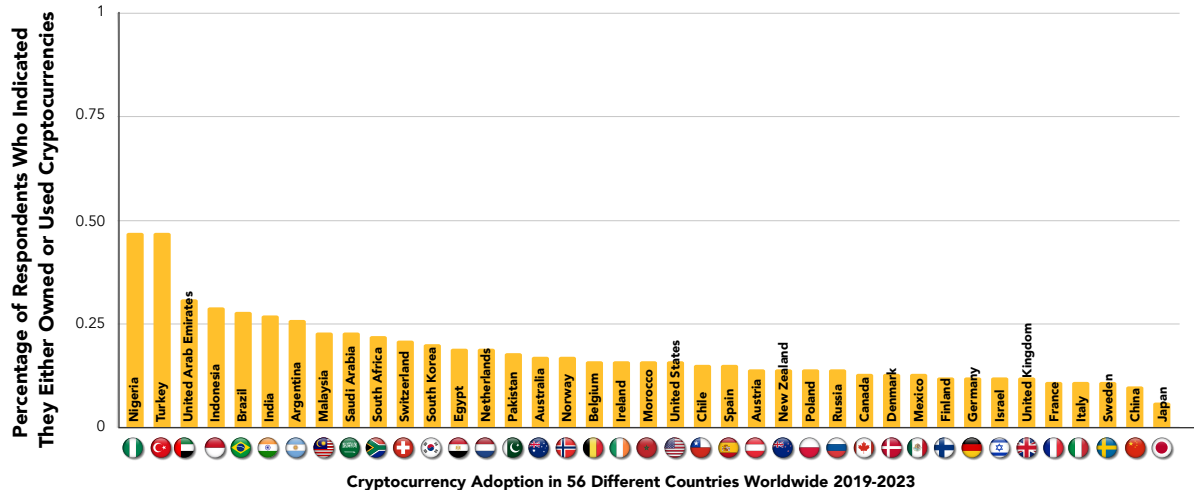
- Average Correlation Between all Companies and Bitcoin:
 - Average Correlation Coefficient: 0.75
- Most Closely Correlated Companies to Bitcoin:
 - Northern Data (NB2): Correlation Coefficient of 0.93
 - MicroStrategy (MSTR): Correlation Coefficient of 0.87
 - Coinbase (COIN): Correlation Coefficient of 0.77
- Least Correlated Companies to Bitcoin:
 - Bitdeer Technologies (BTDR): Correlation Coefficient of -0.40
 - Marathon Digital Holdings (MARA): Correlation Coefficient of 0.6
 - Bitfarms Ltd (BITF): Correlation Coefficient of 0.63

Cryptocurrency User Adoption 2023

Monthly Number of Cryptocurrency Users Worldwide (2021-2023)



Cryptocurrency Adoption Worldwide (2019-2023)



Reading Between the Lines

Consistent Global Growth: From 2021-2023 the number of cryptocurrency users grew from 106 million to 516 million (+386.79%).

Emerging Economies Lead Adoption: We are seeing bottom-up, instead of top-down growth. 11/15 of the leading countries by adoption rate are developing countries where crypto is a disruptive remittance tool.

Inflation Forces Adoption: 5/15 of the leading countries by adoption rate also lead in global inflation rate

Turkey

- Crypto Adoption: T-1st = 47%
- Global Inflation: 6th highest = 61.26%

Nigeria

- Crypto Adoption: T-1st = 47%
- Global Inflation: 17th highest = 27.33%

Argentina

- Crypto Adoption: 7th highest = 26%
- Global Inflation: 3rd highest = 143%

Egypt

- Crypto Adoption: 13th highest = 19%
- Global Inflation: 11th highest = 35.8%

Pakistan

- Crypto Adoption: 15th highest = 18%
- Global Inflation: 14th highest = 29.2%

Unleash **Your** Trading Potential

Secure Digital Markets (SDM) provides OTC cryptocurrency spot, lending, and derivatives trading services to institutional counterparties, HNWI, and crypto-related corporate clients. Offering turnkey trading support to streamline the acquisition, liquidation and reporting of digital assets transactions, SDM is your conduit to safely and securely participate in digital currency markets.

Liquidity

Trade over 40+ digital assets pairs through a global network of liquidity partners that offer ultra-low latency connectivity streams.

Execution

Execute trades through multiple venues including Chat, GUI (SDM Live), and API. Advanced market orders including market, limit, steady pace, stops, and TWAP are available.

Settlement

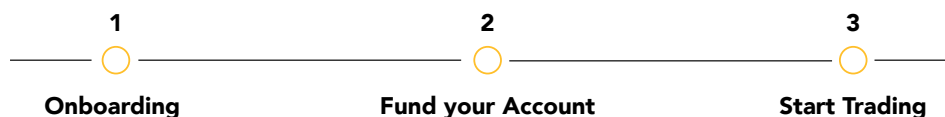
Settle across 4 major currencies (USD, CAD, EUR, GBP). SDM works with 10+ banking partners to ensure all settlement requests can be processed in an efficient manner.

Compliance

All trading activity follows strict regulatory oversight with global KYC/AML compliance protocols and due diligence requirements that are constantly evolving to follow industry-best practices.

ONBOARDING

Start trading in less than 24 hours.

**SDM****40+**

TRADING PAIRS

\$10B+

BILLION IN TRADE VOLUME

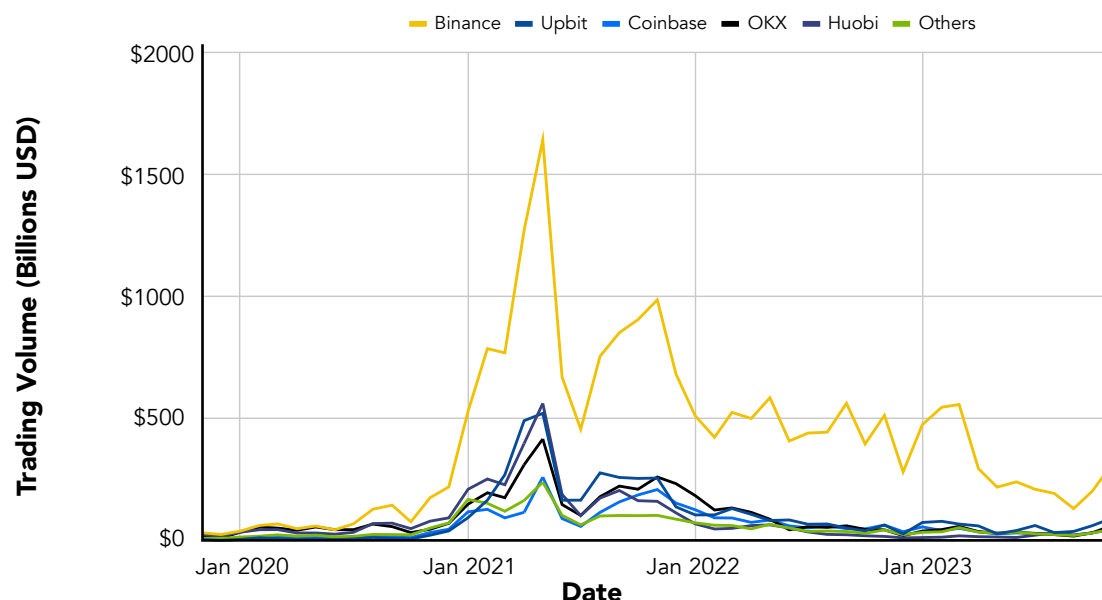
10+

BANKING & SETTLEMENT PARTNERS

**Get
in Touch**

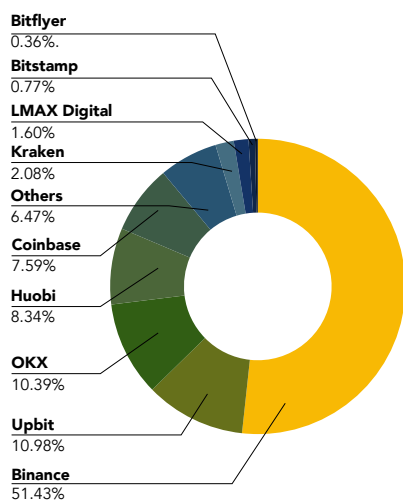
03. Trading, Derivatives & Lending

Crypto Asset Trading Volume on Major Centralized Exchanges (Billions USD) Nov 2019 - Dec 2023

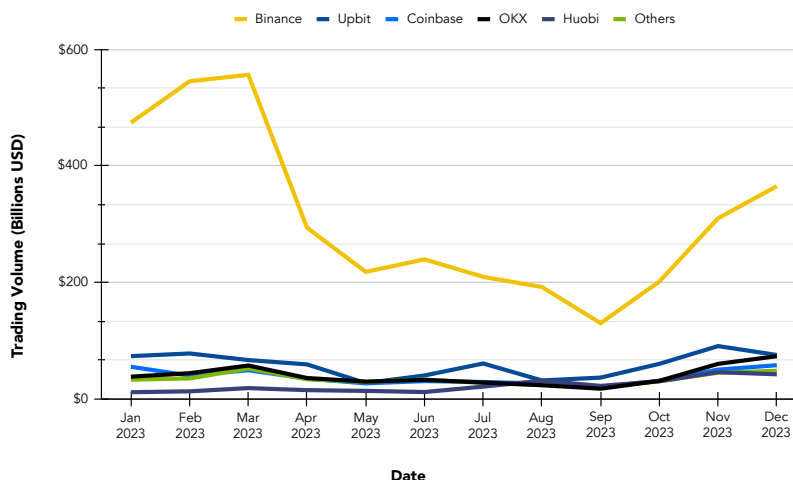


"Others" is the summed monthly spot trading volume for Kraken, Bitstamp, LMAX Digital, and Biflyer

Exchange Dominance



Crypto Asset Trading Volume on Major Centralized Exchanges (Billions USD) Jan 2023 - Dec 2023



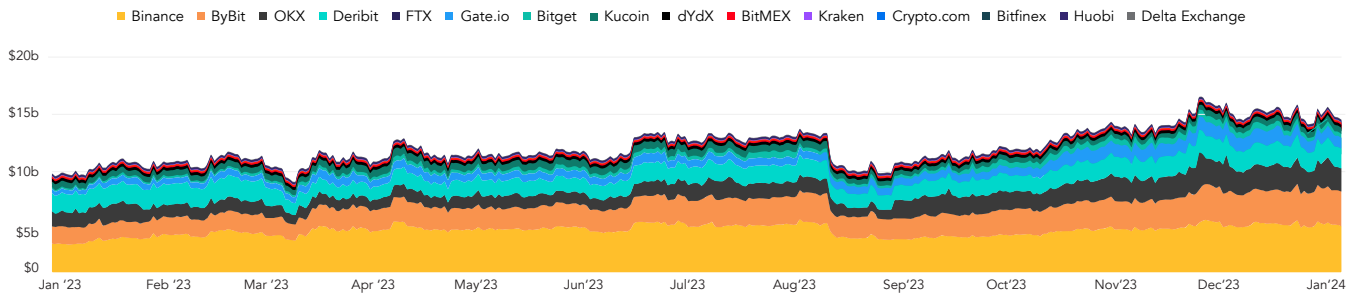
"Others" is the summed monthly spot trading volume for Kraken, Bitstamp, LMAX Digital, and Biflyer

Reading Between the Lines

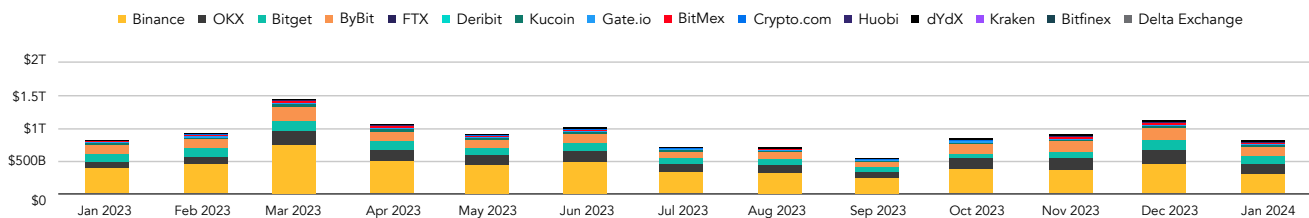
- The market share among top cryptocurrency exchanges has seen notable shifts due to various factors, including regulatory changes, evolving user preferences, and exchange-specific developments.
- While Binance maintains its position as the top exchange, it is facing increased regulatory scrutiny, which has impacted its overall market share. This is why its spot market dominance has fallen from 60% in January 2023 to 40% in December 2023.
- As the leading publicly listed exchange, Coinbase must adhere to compliance standards that other exchanges are not required to follow. This regulatory-focused approach attracts a new wave of users that are seeking a more regulated trading experience, proving to be a key differentiation compared to other exchanges.

Bitcoin Derivatives Market

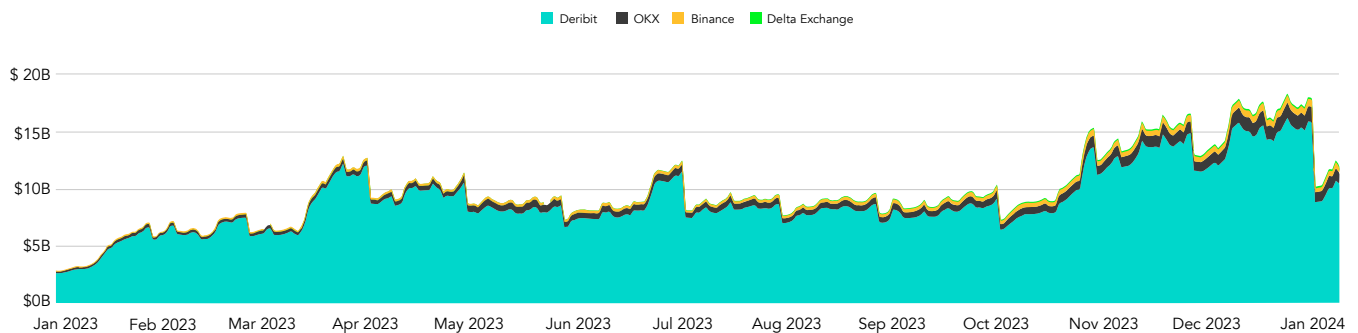
Aggregated Open Interest of Bitcoin Futures



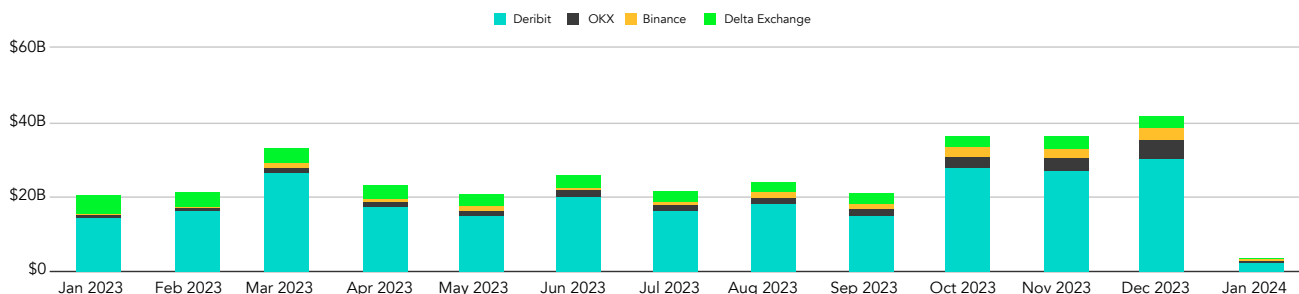
Volume of Bitcoin Futures



Aggregated Open Interest of Bitcoin Options

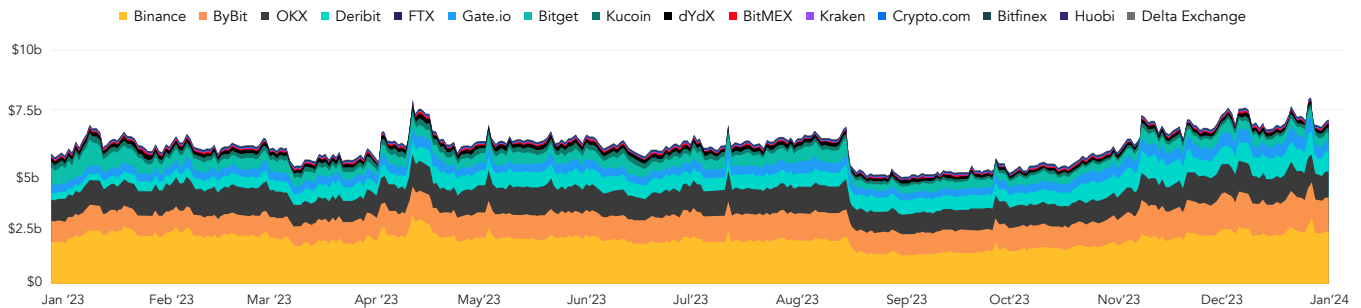


Volume Of Bitcoin Options

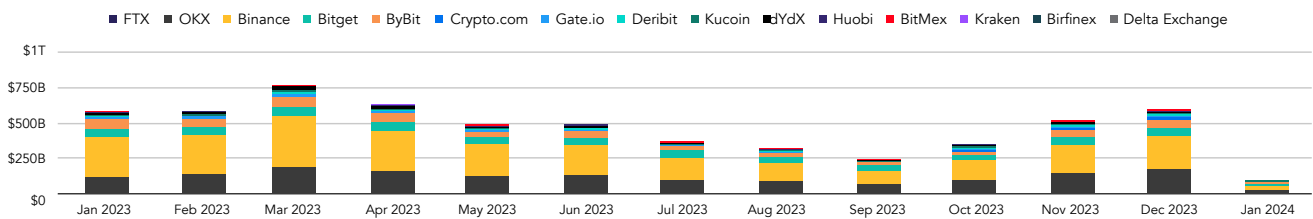


Ethereum Derivatives Market

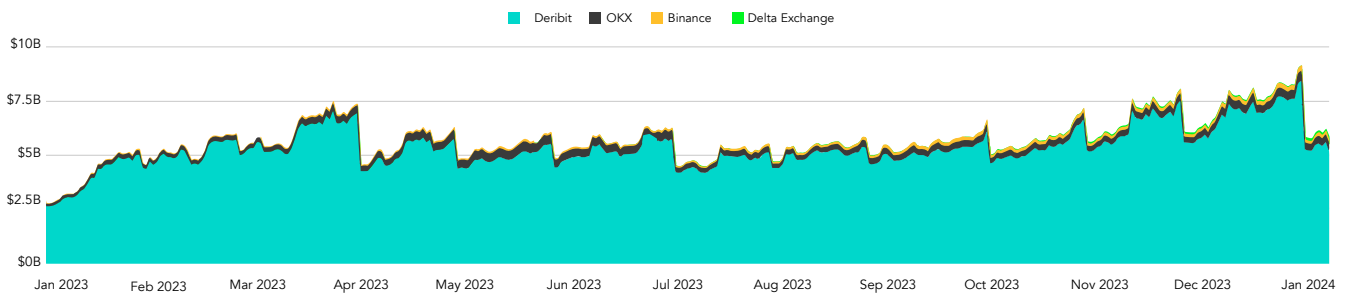
Aggregated Open Interest of Ethereum Futures



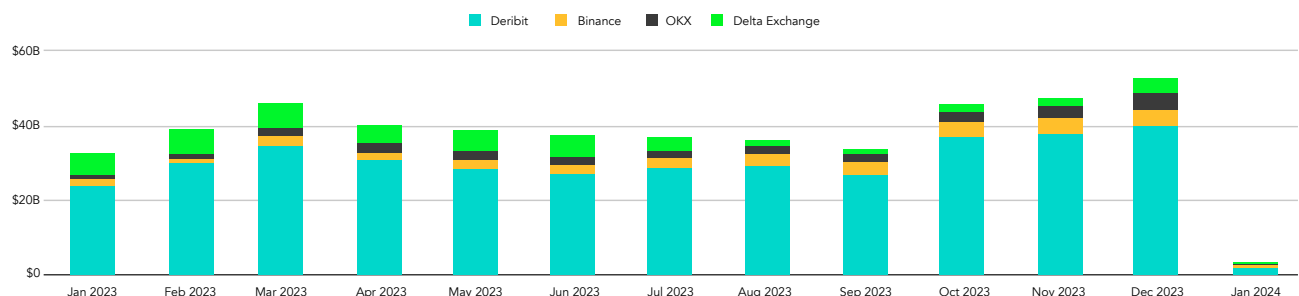
Volume of Ethereum Futures



Aggregated Open Interest of Ethereum Options



Volume Of Ethereum Options



Macro vs Crypto - 2023 review and the 2024 liquidity Outlook



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In 2023, both macroeconomic factors and the cryptocurrency markets exhibited a complex interconnection. Economic policies, particularly those related to liquidity and interest rates, significantly influenced both traditional markets as well as crypto markets. This dynamic was evident in the fluctuations of major cryptocurrencies like Bitcoin and Ethereum, which reacted to macroeconomic developments such as central bank decisions and global financial stability concerns. Thus, 2023 highlighted a clear, albeit intricate, relationship between macroeconomic conditions and the crypto market, with each influencing and reflecting the state of the other.

Throughout 2023, cryptocurrencies showed varying degrees of correlation with traditional financial markets. For instance, during times of market stress or liquidity crunches, such as in the case of the regional banking crises in March following the SVB crash, both crypto and traditional markets reacted similarly, reflecting a growing correlation to and integration of crypto within the broader financial ecosystem.

Inflation Remains the Name of the Game Currently

The latest Senior Loan Officer Opinion Survey on Bank Lending (SLOOS) suggests that credit conditions, though not uniform across sectors, are now substantially weighing on wages, and accounting for consumers in the lowest wealth percentile having depleted their entire excess savings, demand is slowing and will eventually slow more expeditiously. Ultimately, we do believe that the path ahead for the US is more cumbersome relative to cross-Atlantic peers currently, and financial lags have yet to set in.

On the flip side of combating inflation, economic activity suffers. The US economy hasn't yet capitulated, but more and more data show worrying characteristics, and

while markets have had their say and effectively loosened policy on the Fed's behalf, we do not believe that the economy can sustainably idle or even grow at current interest rates if 'longer' turns to indefinitely.

Addressing the apparently now common perception that Bitcoin serves as a hedge against recessions, inflation, or anything in between, it is crucial to exercise caution, as historical narratives can shift unexpectedly. In 2021, Bitcoin was widely regarded as an inflation hedge until circumstances proved otherwise.

During a recession, the conventional response from central banks involves slashing interest rates and injecting money and liquidity into the economy. While such measures have traditionally been positive for crypto assets, the unique characteristic of fear in the crypto space during a recession raises concerns. In this context, the impact of fear on the crypto market is anticipated to be more pronounced than the positive effects of increased liquidity, which tends to lag behind.

Chart 1: Inflation Versus Cyclical Momentum



The effects of rising liquidity on crypto depend on the reason

Due to high nominal interest rates - with inflation coming down, and real yields to - and the still ongoing Quantitative Tightening (QT), liquidity has been dwindling throughout 2023.

However, the Overnight Reverse Repo facility (ON RRP) will likely be depleted FASTER than anticipated, which will make the liquidity situation look oddly strong (on paper) short-to-medium term.

Apart from selling on the strong NFP and hawkish January CPI, the Q4 rally in the Treasury market (and the subsequent increase in the value of the collateral) has probably made secured funding attractive relative to unsecured, and bank balance sheets are apparently struggling to meet those demands in the repo space. After all, we don't see this as a liquidity issue as a rising value of US Treasuries is good news for liquidity and the liquidity multiplier as the value of the collateral has gone up not down, but it may limit the appetite for basis trading in USTs in coming months.

The end-game is likely that QT will end earlier than otherwise projected, and ultimately, the bar has typically been raised for the amount of "needed reserves" in the banking system to keep repo markets afloat.

The liquidity outlook has, in other words, improved markedly lately, and the Fed will probably taper the QT process during the spring, which will leave liquidity better than feared.

Chart 2: QT Coming to an End Sooner Than Expected



Modest Growth Held Up by Services

Now, the overall market conclusion is that central banks will have to cut massively in 2024, with inflation easily dropping towards the target, while the economic landing will be all fine – and yet cyclicalities is not performing in PMIs.

Chinese trade restrictions and a domestic economy still coming out of a coma don't tailwind the dozing US economic activity, but even with the current nominally high interest rates, financial conditions are easing from

a momentum perspective due to the much less aggressive sequential tightening of the conditions seen over the past 2-3 quarters. If anything, FCIs currently predict a cyclical rebound, rather than the opposite, and the inflation drifts towards the target will likely be all but easy as forward-looking price indicators are also starting to tick upwards.

Currently, the still relatively strong services sustain overall growth, but with wage growth squeezing margins and corporations warning of layoffs, we are not confident it will keep up.

Chart 3: ISM Services Model



Macro Conditions Will Determine the Path from Here

Presently, both the crypto market and equities have factored in an almost perfect soft landing in 2024 and 2025, anticipating substantial interest rate reductions from central banks globally.

In this scenario, we anticipate the onset of a new bull market from the next year onward. This projection aligns with the historical 4-year cycle of the crypto market, influenced by the Bitcoin halving in April 2024. The Bitcoin halving has fueled three prior bull runs, due to the supply shock caused by the halvings, with Bitcoin setting a new all-time high at the latest one and a half years after each halving.

Chart 4: The First Three Bitcoin Halvings



However, it is vital to note that the supply shock of the Bitcoin halving is unlikely to have much price impact this year, as the relative change in issuance compared to circulating supply and market liquidity decreases with each halving. The result is a delayed price impact. That being said, we anticipate that in a couple of years, the supply shock will be clear in the Bitcoin price.

There are also other bullish catalysts in 2024. These include a continuous rise in institutional adoption, regulatory clarity, for instance, by the European Union's MiCA framework, and notably, the recently approved Bitcoin spot ETFs.

We argued for months that the Bitcoin spot ETF would be a "buy the rumor, sell the news", event, largely due to the conversion of the Grayscale Bitcoin Trust to an ETF, allowing the 619,000 Bitcoin to be redeemable. We were on the right side here, however, please do not get us wrong: We perceive the long-term impact of the ETF as overwhelmingly positive, as it opens the floodgates to institutional - and retail investors normally not willing or able to acquire spot Bitcoin directly on an exchange. We expect the ETFs to slowly but surely see inflow, but the impact greatly depends on the macro environment. If the latter turns out as positive as expected by the market, then expect the ETFs to see a considerable inflow. On the other hand, if the macro conditions turn hostile, then everyone will ask themselves why we hyped the ETFs as much, considering that most will find something better to throw their money at.

If you are on team soft landing, then we see no issues accumulating at these levels, but please prepare for rather significant corrections along the way. That being said, in this potential soft landing scenario, we observe more significant risk/reward dynamics in crypto compared to Bitcoin, particularly in the case of Ethereum, which we deem notably undervalued relative to Bitcoin at current price levels. Several factors substantiate this perspective.

Ethereum has demonstrated substantial outperformance relative to Bitcoin in the past two bull markets, primarily attributed to its speculative on-chain activity. We anticipate a similar increase of such activity in a potential upcoming bull market. Additionally, while Bitcoin witnessed heightened ETF enthusiasm, particularly in the past few months of 2023,

Ethereum has experienced comparatively less, although we expect that an Ethereum ETF will follow in Bitcoin's footsteps as early as the second quarter. Notably, any potential bull run from now on marks a unique situation for Ethereum as it has largely transitioned to a deflationary model following the Ethereum merge on September 15, 2022. The merge shifted Ethereum's consensus mechanism from Proof of Work to Proof of Stake, significantly reducing its issuance rate from 4% to less than 1%.

Post-merge, stakers are now rewarded with around 870,000 Ether annually, and only a minority of this is typically sold. Consequently, Ethereum has experienced an unprecedented reduction in its supply by slightly over 340,000 Ether out of its approximate 120.2 million circulating supply, as more Ether has been burned due to transaction fees than issued. This reduction is poised to have a significant and unparalleled effect during a bull market.

We are, however, not on team soft landing yet. Considering the environment and macroeconomic backdrop, our anticipation leans towards either at worst a hard landing rather than a soft one or at best, simply that the FED and other central banks will not reduce interest rates as quickly as the market presently expects, as the fight against inflation is not over yet, particularly in the US.

The markets otherwise anticipate a perfect soft landing, followed by substantial interest rate cuts, all this year. This anticipation leaves little room for surprises to the downside. Such surprises are likely to have a severe price impact, as the crypto market is considerably sensitive to macro conditions, such as liquidity and interest rates. So, it may be that there are quite a few bullish crypto-native catalysts this year, but the market depends more than usual on the macro environment going forward.

Navigating the ETH/BTC Convergence

Implied volatility and the influence of institutional interest



Christopher Newhouse
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Infiniti Labs is grounded in the principles of experience, expertise, and execution. Their mission is to provide an unparalleled depth of knowledge, acting as a trusted ally in the complex world of cryptocurrencies and blockchain technology by bringing credibility and a hands-on approach to the table. The team is dedicated to delivering modern, impactful solutions, and helping navigate the ever-evolving digital frontier.

As 2023 commenced, the cryptocurrency market carried forward the volatility from the previous year's tumultuous events. Notably, the collapse of the FTX exchange and the significant downturn in Bitcoin's value to around \$16,000, both of which marked a period of heightened bearish sentiment. Despite this, the market showed signs of resilience in Q1, with leading cryptocurrencies Bitcoin and Ethereum demonstrating the potential for a recovery as the year progressed and macroeconomic tailwinds started to emerge following the CPI/FOMC meetings in Q1.

The first quarter saw a series of impactful events that induced considerable volatility across all crypto assets. The de-pegging of USDC, a stablecoin previously considered a paragon of stability, raised concerns and tested the market's confidence. Concurrently,

the failure of Silicon Valley Bank contributed to a decline in risk assets across the board, which later diverged as prices of cryptocurrencies saw relatively muted price action and volumes while the S&P 500 index began its ascent in March.

The market's sentiment shifted positively in the latter half of the year following BlackRock's announcement of filing for a BTC spot ETF. This move signified a pivotal point for Bitcoin and signaled growing institutional interest that could potentially lead to substantial capital inflows and increased market confidence. This development was met with enthusiasm, suggesting a future where cryptocurrencies could gain wider acceptance within the traditional financial system.



The State of Crypto Volatility

At the beginning of 2023, the cryptocurrency market was influenced by the previous year's volatility. Volatility indices such as BVIV and EVIV, which represent market expectations of volatility for Bitcoin and Ethereum, illustrated a market grappling with uncertainty from as early as September 2022.

One of the most notable points was the week of November 7th, 2022, when the fall of FTX significantly impacted market volatility. 2022 ended with meager volumes and muted prices. Yet in Q1, performance was bolstered by optimistic macroeconomic indicators starting in January. However, the markets faced another setback with the de-pegging of USDC and the collapse of Silicon Valley Bank in early March, which noticeably impacted implied volatility across the board.

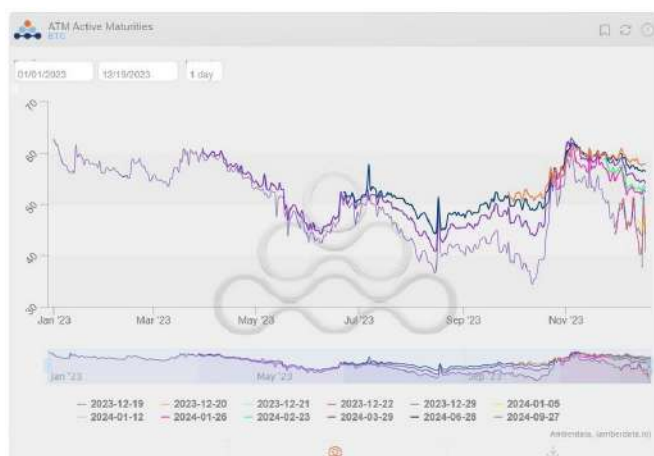
Over the summer, as Blackrock filed for a BTC spot ETF, the market responded with a surge of optimism, causing an increase in volumes, large open interest in the more institutionally adopted venues such as the CME, and bullish trading strategies. The filing was anticipated to connect traditional finance with the digital asset domain, promising market stability, legitimacy, and potentially billions of dollars in capital inflows.



As the year concluded, Bitcoin's price reached heights not seen in over 18 months, indicating a recovering market. Traditional financial institutions and event-driven traders played a crucial role in this recovery, while the market also saw renewed interest from retail investors in Solana and several memecoins.

The ETH/BTC Implied Volatility (IV) Contraction

The year 2023 marked significant shifts in the cryptocurrency market's volatility. The implied volatility relationship between Ethereum and Bitcoin was of particular interest, reflecting the market's response to various events. Ethereum's IV is typically higher than Bitcoin's, consistent with its perceived higher risk, as Bitcoin has always been the quintessential representation of digital money. However, the gap between their IVs narrowed throughout the year as we saw narrative-driven traders pile into options trades and speculative positions off the back of the ETF narrative, as shown in the attached charts.



The announcement from Blackrock regarding a BTC Spot ETF served as a significant market catalyst. Occasionally, Bitcoin's IV surpassed Ethereum's, suggesting a recalibration of market expectations. This shift indicated a transition, as volatility in Bitcoin had a catalyst that Ethereum didn't (until early November when Blackrock filed for the ETH Spot ETF) and a mysterious overwriting entity in ETH noticeably compressed ETH's term structure.

The market's response to Blackrock's filing for an Ethereum spot ETF further emphasized the importance of institutional filings in shaping market dynamics, and both price and IV rose as we broke out toward levels not seen in over 18 months.

Implications for Traders in a New Volatility Regime

Reflecting on 2023, cryptocurrency traders had to navigate a landscape marked by quickly mean-reverting volatility trends and significant market events. The year began with a predominantly declining trend in implied volatility as option sellers profited significantly from the start of Q1, but from October onwards, volatility levels remained elevated, suggesting a shift into a higher volatility regime.

Traders adapted to these changes with strategies such as risk reversals, capitalizing on shifts in volatility skew, and even outright naked calls in response to Bitcoin's bullish price movements. Call spreads became interesting as call skew and IVs started to become more and more expensive. Additionally, the ETH overwriting entity appeared to have closed out some of their positions in Q3, and Deribit's adjustment of short Vega margin requirements led to further closed positions in ETH options.

Looking towards 2024, traders are preparing for a market that may experience increased volatility, especially with the anticipation of a decision on the spot ETF approval. Traders are positioning their strategies to navigate this new environment, and predominant flows are significantly bullish in price action with deep OTM call buying starting to emerge. Traders are cognizant of how reflexive the markets in crypto can be, and liquidations and leverage are some of the main drivers of price at these levels.

In Conversation with Alan Mittleman from Secure Digital Markets

The Institutionalization of Crypto

- The ETF and other tailwinds
- The growing acceptance of digital assets from the regulators
- How institutions will view crypto in 2024



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SDM Financial is a CFTC-regulated derivatives dealer with a special focus on OTC options, helping clients efficiently deploy capital, manage treasury risk, and express their views. The team provides hedging solutions as well as yield enhancement strategies for miners, payment providers, funds, family offices, and other institutional market participants.

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Let's start by hearing about yourself and your background.

I've worked on Wall Street for over 20 years, leading the fixed income desks at several major financial institutions including Credit Suisse, Bear Stearns, Societe Generale, and RBS or NatWest markets as they're now known. I was one of the first people to pitch a spot and derivatives desk at RBS, but ultimately the appetite for digital assets wasn't there yet. However, the legwork I put forth to try and get that desk running put me in a perfect position for when I met one of our co-founders at SDM. It was a perfect storm of being in the right place at the right time.

Why did you transition from a successful career in Wall Street to the crypto market?

I was always interested in crypto, I bought my first Bitcoin back in 2016. For years there was a steady rise in interest in Bitcoin from colleagues on the trading floor and clients. I felt that the groundwork I had already put down from trying to launch a desk at RBS gave me a huge head start in what I thought was going to become a revolutionary asset class for the capital markets. Everyone knew about the existence of digital assets, but nobody knew if they were securities, commodities, or currencies. So even though there had been some desks and service providers handling Bitcoin, there was so much regulatory uncertainty that I felt no business had a true first mover advantage. As regulations evolve, there would be a lot of shuffling around, and a few predecessors would get pushed out of the market and it would be ripe for new competition. I felt that this blue ocean dynamic plus the research I had already done at RBS made switching from Wall Street to crypto a no brainer.

Unfortunately, the industry has been plagued with bad players. What do you think is needed to create trust amongst the crypto industry?

Establishing trust in cryptocurrency hinges on effective regulation. It's about crafting a framework that weeds out malfeasance while bolstering the sector's legitimacy. Consumers see their food, real estate, parks, healthcare, and virtually every facet of life undergo some form of regulation. So to them, why should crypto be any different?

I think regulation is absolutely the most important way to regaining and building consumer trust. However I think the negative connotation surrounding digital assets has gone a bit too far. It's actually much easier to track crypto than it is with fiat. If you have a hundred dollars moving around the system, there's no way to really track that, but if you have a hundred Bitcoin moving around, it is on the blockchain and that asset can be tracked for the rest of time. I think most people that really understand the traceability of both systems would argue that fiat is used for more illicit activities than crypto. I hope with new regulations comes a new level of trust and understanding because this industry has so much more to offer to consumers.

How do you think the approval of a Bitcoin spot ETF will impact the market and why?

I think in the short term, it's been well publicized that the spot ETFs are going to happen and are most likely going to get approved by the second week in January. Everybody knows that and I think the day that they get approved, we're going to pop to the upside.

I think once you get the pop, the market will sell off as sellers come in to take profits as a lot of funds and investors have been waiting years for this announcement.

If you're a short-term trader, I like selling into it, but then you have to remember to buy it back eventually. If you're a long term holder, I think you should just be patient because if you fast forward, one to three years, I don't see any reason why Bitcoin won't be over \$100,000.

What do you think is needed for the big players, such as JPMorgan & Goldman Sachs, to jump in the crypto market significantly?

A lot of these guys are involved in crypto on the tech and product side; leveraging blockchain to improve settlement and operational efficiencies etc., but for the institutional giants like JPMorgan & Goldman Sachs to fully engage in crypto on the asset side, the regulatory landscape, specifically capital requirement rules, must evolve. Currently, it is expensive and inefficient to hold these assets on the balance sheet because of 1:1 capital requirements against digital asset holdings. To get

these guys to give crypto a better chance, that rule needs to change which probably will happen down the road, especially as volatility continues to decrease and the industry matures.

What are the biggest signs of institutionalization within the industry?

We have the future ETFs out already and then the spot ETFs should be approved early 2024, I think those are irreversible steps in the right direction. When I attend a lot of these conferences, there's a lot of non-native institutions that are extremely interested in the space. We've seen a lot of fund groups now getting involved with digital assets, a lot of hedge funds and asset managers so there's more TradFi and institutional players getting involved and that's going to continue to grow over the coming years. I think the key to increasing institutional participation is to bring this industry to the institutions, instead of trying to bring institutions to the industry; which has not worked. What I mean by this is that for years the industry expected institutional asset managers to onboard and trade on offshore exchanges that they have never used before. The added risk was never worth the reward. But now, through the upcoming BTC and ETH spot ETFs, asset managers can offer their clients digital asset exposure through the same delivery as buying securities. I think bringing this industry to the institutions and making it easier and more familiar for asset managers is going to reduce risk and increase participation by orders of magnitude.

CME has surpassed Binance as the top destination for futures contracts. Regulated venues have been gaining more traction vs offshore platforms. Clearly that must serve as a sign. What are your thoughts?

I think the collapse of some of the venues that were previously seen as 'blue chip' or 'institutional' (FTX, Voyager, Genesis, etc) has a lot to do with the rise of activity on the CME. The CME is a legitimate TradFi exchange, well regulated and well capitalized. More and more flows are heading there because it reduces counterparty risk and that trend is probably going to continue. I think crypto native people will always trade

on these unregulated exchanges; these businesses have a first-mover advantage and that is no small feat. But as the TradFi players get more involved in the industry, they want to transact on exchanges that they are familiar with, are approved by their risk department, and that they know have robust liquidity and capital requirements.

Do you think the entry of traditional financial institutions within the crypto sphere is mostly tied to the growth of the derivative market, consumer adoption trends or simply market awareness?

Probably a combination of all of them. Derivative markets will develop independently of any market hype because digital asset businesses and portfolios already need derivatives for hedging, leverage, speculation and yield enhancement. I think consumer adoption and market awareness is what will bring TradFi firms that are still on the sideline into the space because that will mean there is sufficient demand and regulatory clarity to offer these assets to their clients.

The SEC, CFTC and even the DOJ have indicated a more bullish stance towards regulatory acceptance of digital assets. What are your thoughts on how these regulatory agencies will perceive digital assets in the near future?

Regulatory agencies are striving to create a safe and equitable digital asset landscape, especially for non-professional market participants. The evolving regulations are aimed at ensuring digital assets are as secure and reliable as traditional asset classes, with an ongoing debate on their precise classification. I think everyone knows change is needed, but no one knows what that change is. Regulators are still in the first inning; determining what is a security, commodity, or currency. Until we have consensus on that, I think any subsequent legislation will be like fitting a square peg in a round hole. However, I think the demand for this asset class has been proven and there is now enough economic interest to push these regulations forward much faster compared to years prior.

Based on your Wall Street contacts, do you think there has been a change in perception towards digital assets?

I do think we are still at a relatively early stage. Bitcoin has been around for over 10 years, but its adoption rate among institutions has largely stayed flat. However, the last 6-12 months have really seen a uptick in interest from these institutions. I think a lot of these firms are just trying to figure out what's the best way for them to get involved and how much of their budget do they put towards developing this business.

What are you mostly excited about as we embark on this new year?

The spot ETFs will be exciting so we'll see how that plays out. I'm always excited in the digital asset space because the innovation rate is faster than any industry I have seen. I think what I am most excited for is for these ETF's to be approved and Pandora's box to be open for the first time. Crypto has always had an uphill battle in terms of capturing institutional interest. I think the approval of these ETF's will create a new era of crypto that will be impossible to rewind.

In Conversation with James Godfrey from Secure Digital Markets

The Lending Landscape

- The threat of counterparty risk
- Looking at different lending business models



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Secure Digital Markets is a digital asset brokerage, offering robust liquidity and trading solutions that help our clients achieve maximum profitability, capital efficiency, and treasury management.

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How would you describe the current crypto lending landscape?

The crypto lending landscape has changed a lot in the last 12 months; specifically around the importance of counterparty risk.

The market has faced too many terrible traumas from the likes of FTX, 3AC, and Celsius. All of whom were the counterparty for billions of transactions across the digital asset space, and were largely seen as being 'too big too fail'. 12 months ago the first question someone would ask me was 'what are your rates'. Now the question I am asked is, 'how can you make sure that my collateral is secure and protected'. So over the last 12 months the industry seems to have gotten a tad poorer, but a whole lot wiser.

How do you think the lending market has evolved from the collapse in 2022 to 2023?

As I mentioned, it took a few disasters but the industry is finally getting more sophisticated and beginning to price in the counterparty risk of a trade, just as underwriters price in market risk. We are seeing far less undercollateralized loans, and even less exotic loans like BTC mining equipment as collateral as an example.

Most people just think about trading digital assets, but why might lending be a better option for some people?

The reasons include just about anything under the sun. From pragmatic use cases like businesses who need inexpensive capital to inject into their operations, to crypto whales buying their next boat or sports car, and speculators who want to just buy more crypto. The most common reason as of late is people that want to acquire more crypto without selling a position and triggering a tax event. Lending is an agnostic business, we work with miners and BTMs to help hedge their BTC inventory, we work with funds and portfolio managers to manage their treasury, and we work with UHNWI to help optimize their tax planning and help them access capital. Our most exotic lending use case was a UHNWI who wanted to get a loan against his BTC for seed funding for his new insurance venture.

What are your thoughts on over collateralized versus under collateralized lending?

In the wake of some of crypto's largest institutions collapsing in 2022, I can't imagine why anyone would do under collateralized lending. When speaking to potential counterparties one of the first things we ask if they will do uncollateralized lending. Any firms that would answer yes were immediately struck from our list of partners from a risk perspective. The only way forward for this market is to be over collateralized. Currently we're doing 65% loan to value for larger transactions and this is not reinventing the wheel. These are business models that are tried and tested over decades, and I think our lending clients are finally finding some comfort in traditional practices instead of the high risk business models that have let the industry down over the last 18 months.

What are your thoughts on centralized versus decentralized entities offering lending services?

Protocols like Aave, Compound, etc are very efficient. The problem is quantifying risk. When you can't quantify risk, you can't price the risk, and if you can't price the risk, then you shouldn't do the trade. You will always lose money on the risk as a trading house that you're not pricing in. So while the product is efficient, there is so much risk that you can't quantify, you can't price, and therefore you can't hedge out.

What are your thoughts on equipment backed loans for miners? A lot of these firms are now out of business, do you think that business model can come back?

As long as Bitcoin experiences volatility, it's a tough business. Let's say you're lending a million dollars against one and a half million dollars worth of machinery. You're doing an over-collateralized loan. The problem is, you can't hedge that loan. If Bitcoin starts to go down and starts to go down heavily, you're stuck watching the value and demand of your machinery go down with it.

If you've lent against Bitcoin, you can sell it. If you have mining machines, it's a much more illiquid asset and you most likely cannot get out of that loan. So you're taking a binary risk on the value of that machine, but you're only receiving a coupon for it. Now, if the price of Bitcoin doubles within the period of the loan, you get your money back and you get your interest, but you're not receiving any upside from the Bitcoin. So I think the way forward for lenders is starting to think about how the lender participates in the upside, and not just the downside.

So how does SDM's lending offerings differ from the rest of the industry?

The reason we are so different is the entity that backs our loans is a multi-billion dollar family office. There is no leverage and no external lines of credit. We are basically borrowing from a large pot of cash, your coins are not re-hypothecated out and they sit in cold storage at Coinbase. That is fundamentally different to anybody else. Everybody else is out there borrowing money on the international financial markets to run their loan book which they're paying away and then they have to charge more, and as rates and the cost of capital evolves, we see this vicious cycle of lenders having to change their rates to match the market. As a quick example, I saw one of our competitors recently did a loan against GBTC for \$10 million and they did it at 11%. I would have done that at 5.5% and we would be an infinitely better counterparty because all they've done is put that out on tri-party and lent that out to somebody else. So not only are you taking the credit risk of the person that you've gone to, you're taking the credit risk of the person they've lent it to as well.

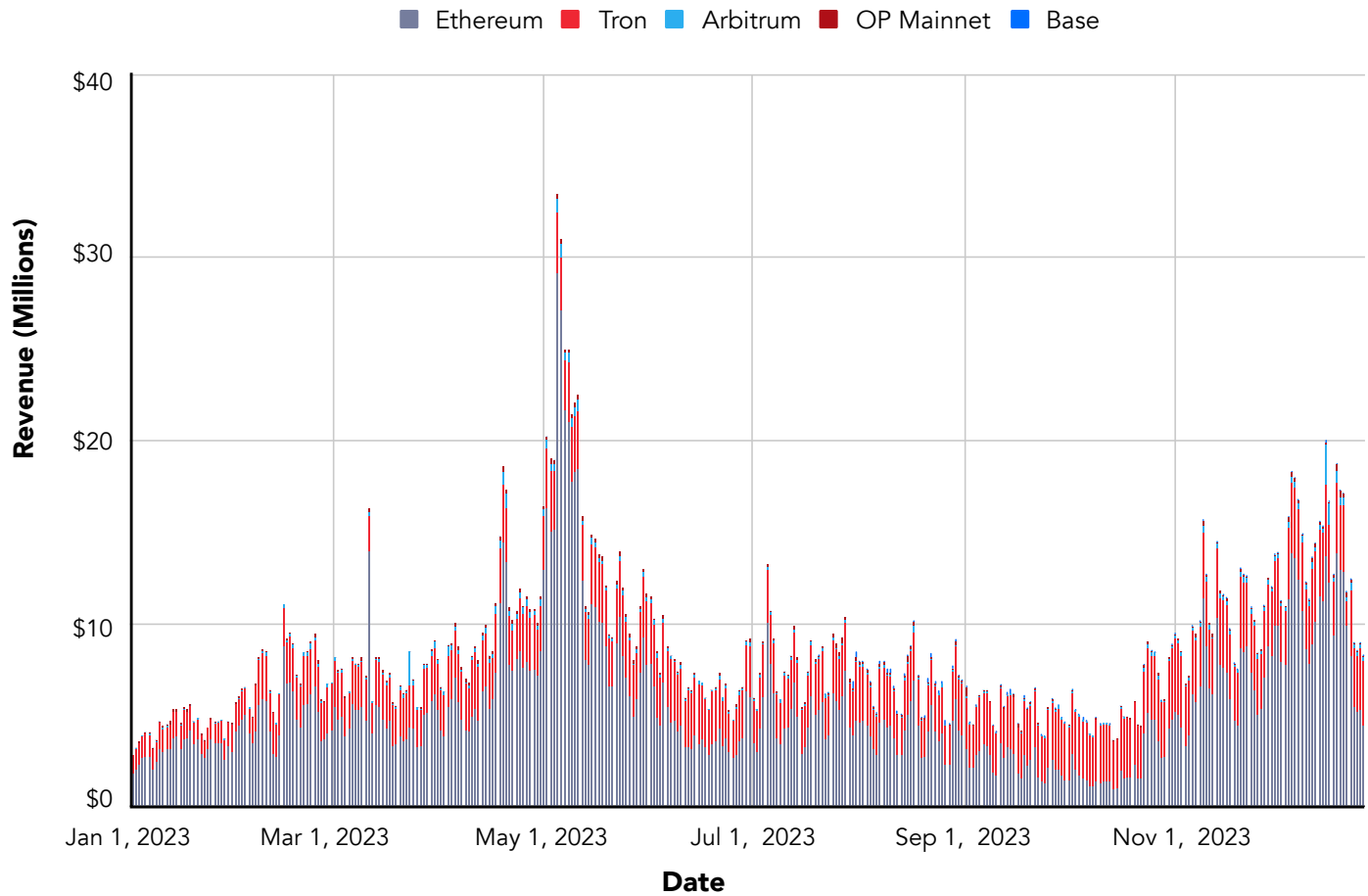


SECURE
DIGITAL MARKETS

04. On-Chain Fundamentals

Leading Blockchains by Revenue 2023

*Leading Blockchains by Revenue



*Revenue is measured by the share of fees that go to the protocol

Reading Between the Lines

Total Revenue

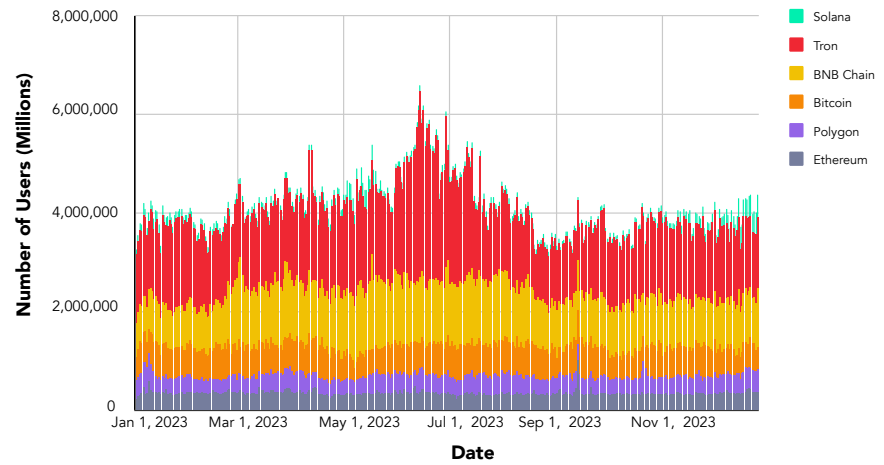
- Ethereum leads with approx. \$1.99 billion.
- Tron follows with significant revenues of approx. \$972 million.
- Arbitrum, OP Mainnet, and Base contribute much smaller revenues of approximately \$61.96 million, \$36.74 million, and \$12.45 million, respectively.

Average Daily Revenue

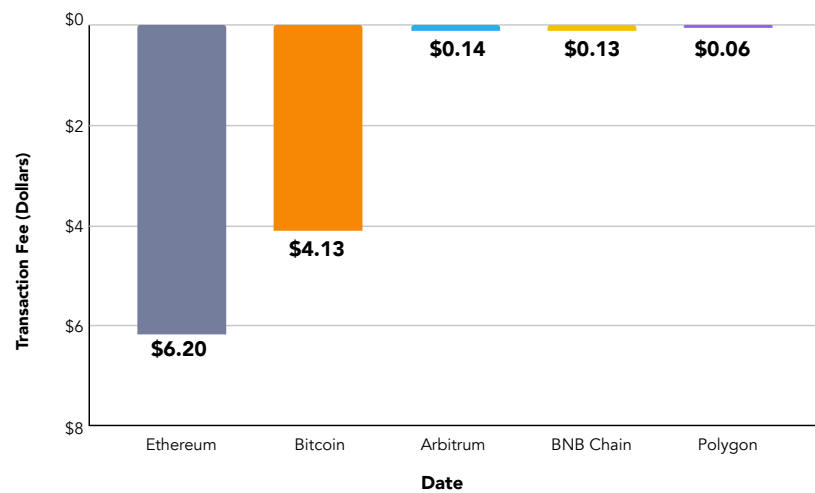
- Ethereum: \$5.52 million
- Tron: \$2.70 million
- Arbitrum: \$172,117
- OP Mainnet: \$102,060
- Base: \$34,570

User Activity 2023

Daily Active Users for Select Protocols



2023 Average Fee Per Transaction



Reading Between the Lines

DAU Growth Rate (2023)

- Solana: 353.62%
- BNB Chain: 69.43%
- Ethereum: 60.66%
- Polygon: 25.86%
- Bitcoin: 4.27%

*User/Transaction Fee Correlation

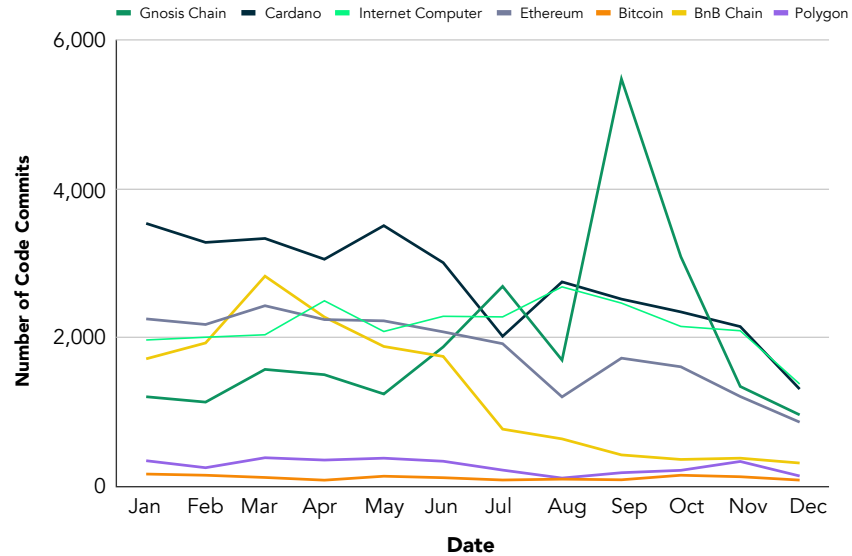
- Ethereum: -0.475
- BNB Chain: -0.277
- Polygon: -0.232
- Bitcoin: -0.208
- Solana: -0.203
- Tron: -0.044

*This elasticity figure helps determine how sensitive each protocol's user base is to an increase in transaction fees.

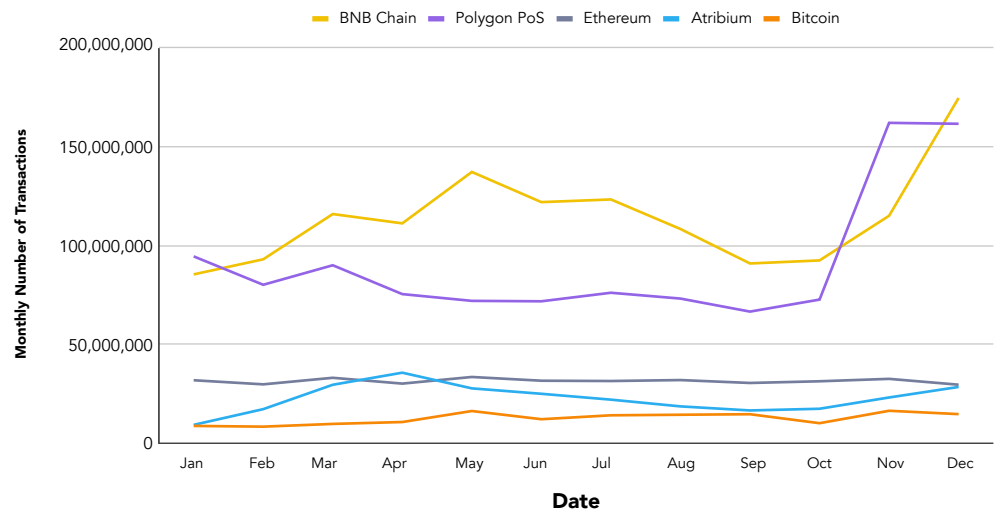
Leading Blockchains by Ecosystem Activity 2023

*Leading Protocols by Developer Contributions

*Developer Contributions is measured by the daily number of commits to the project's public GitHub repositories (i.e. "code commits")



Leading Blockchains by Number of Transactions (Monthly)



Reading Between the Lines

- BNB Chain has the highest number of secondary projects thanks to its inexpensive fees, vibrant community of users, and support from the Binance ecosystem.

Activity:

- Most Usage: BNB Chain approx. 3,804,980 average daily transactions

Highest Growth Rate:

- Polygon (Approx. 615.19%)

Lowest Growth Rate:

- Ethereum (Approx. 14.27%)

In Conversation with Ryan Mueller from Phantom Compliance

The Realities of Regulation

- The rise of CBDCs
- How regulation impacts innovation
- Crypto regulation in 2024



RYAN MUELLER

Founder & CEO
Phantom Compliance



Ryan Mueller



Phantom Compliance is a fully outsourced and modular agency providing regulatory and operational compliance services, fraud prevention, risk management, and others. Founded in 2009 they have a wide breadth of knowledge and experience to assist businesses of all sizes and types.

How does regulatory clarity facilitate easier entry into the market for investors and businesses?

Regulatory clarity makes it easier to know what the rules are. However, it doesn't necessarily make it easier to follow them. Regulatory clarity can lead to new barriers to entry.

As an example, it's been four years since the Canadian government acknowledged its plans to regulate crypto as a Money Services Business (MSB). Prior to this, there were several kinds of companies operating with very different business models (Bitcoin cafes, Bitcoin ATMs, exchanges, and trading desks), all of whom were operating in Canada with no clear regulations or guidelines to follow.

But now that we are at a point where operators know **exactly** what regulations apply to their business, the long list of regulations stifles innovation and reduces the rate of entry for new businesses. It may be "easier" to understand what you can and can't do on paper. However, executing your business while jumping through these hoops is a new challenge.

So, does regulatory clarity make it easier to enter? I don't think so. It makes it easier to stay out of trouble and follow a clear list of guidelines, but it doesn't necessarily facilitate an open market that allows startups a clear path to succeed. Looking at a long list of regulatory requirements before you even set up shop either requires you to have a considerable amount of capital to bootstrap your business or forces operators to take their business to more favorable jurisdictions. It's helpful to know what regulations you have to abide by but it doesn't necessarily make it easier or more cost-effective to abide by them.

Where do you think the line needs to be drawn so that regulations protect customers without stifling innovation?

I see clients all the time with a business worth pursuing. The capital requirements to get the business started from a regulatory point of view make it nearly impossible. I think regulators need to create a path that allows people access to what's required to comply with these regulations in a cost-effective way.

It could be a low-cost KYC (know your customer) module, or the ability to access mentors to walk them through how to meet their reporting obligations. Either way, you can't just give businesses a rulebook and say "figure it out." You need to also give them the tools to follow these regulatory best practices. The best businesses and most innovative founders are putting their mindshare into building amazing businesses, not building amazing compliance departments. The question of balance between regulation and industry is more a question of: Do we want to continue the control and monopolization of financial services in the hands of people who are wealthy and can afford to implement these checks and balances? Or do we want to promote a free market where startups are not torn down through regulation and bureaucracy?

How do you see the tokenization of real-world assets evolving with the advancement of regulatory frameworks in an institutional context?

Good question. We've worked with several platforms that want to tokenize real estate or want to tokenize this or want to tokenize that. At the same time, everyone saw the bottom drop out of NFT markets, and NFTs became worthless. So I don't think the world or platforms are ready for tokenization beyond a deed of sale or the actual transfer because over 50% of global transactions are still cash. So we're still getting adoption to plastic cards, which means there's a lot of time before we have significant adoption of crypto or buying assets that are tokenized.

While I think people who are early adopters of crypto are ready for that, I don't think the overall market is. We've seen platforms that fractionalize ownership of art and these kinds of things and there's no traction. They don't survive, they don't last. I think it's cool, but I just don't think that the general public is ready.

What have been the most significant crypto policies that have been introduced globally in 2023?

There have been lots of significant developments toward consumer safety and toward customer protection in retail spaces. Especially after FTX, Celsius, Luna, and Voyager. In terms of institutional or B2B use cases for crypto, the stablecoin regulation that is coming out is incredibly significant for crypto's ability to challenge and destabilize international finance. A quick

example of this destabilization of traditional banking is BRICS (Brazil, Russia, India, China, and South Africa). They've been developing their own coin to facilitate cross-border movements of funds and get them off the SWIFT network.

Other legislation that will pave the way for years to come would be the Markets in Crypto Assets regulation (MiCA) which has come out in Europe. Canada has also been at the forefront of some really interesting policies that would require the issuer of private stablecoins to register with Canadian regulatory authorities versus the platforms that facilitate the transfer of these assets like exchanges. This should be enforced countrywide by April '24 and would create a lot of peace of mind for Web3 business owners who were previously nervous about Canadian regulators suddenly preventing them from accessing these stablecoin assets.

Continuing along the theme of stablecoins, how could the development of Central Bank Digital Currencies (CBDCs) intersect with the regulation of private stablecoins?

We're already seeing that right now. In a regulated crypto market, Canada is saying "Okay, the only stable coins that get to play are the ones backed by CAD or USD that produce up-to-date, open, transparent account audits signed by a CPA."

Back to what I was saying about how regulatory clarity both helps and hurts the industry, I think the emergence of CBDCs will have a similar effect on stablecoins. Prior to CBDCs, there was no alternative to stablecoins, and businesses were forced to use it. Now with the emergence of CBDCs, businesses and consumers might be forced to only use assets that have been audited and approved by regulators. For the record, I don't think that governments are going to be able to launch a competing stablecoin in the next six months. But if you just follow the general principles of regulatory capture, it's reasonable to assume businesses will face more and more pressure to stop using private stablecoins.

We are seeing a trend where CBDCs will be the regulated or above-board stablecoin, and private stablecoins will thrive with more decentralized use cases. What competitive dynamics do you foresee emerging from CBDCs versus private stablecoins?

This will effectively create two classes of crypto users. If you use Tether or a private stablecoin, you're suddenly a criminal. That forces private stablecoin holders to only use exchanges that are less safe and aren't based in Canada because Canadian exchanges no longer want to tempt fate by listing private stablecoins.

It creates a little bit of marginalization. It creates a criminal class where none existed before. Maybe you'll get people that are just moving this volume into Bitcoin with auto-buy/auto-sell on either side to minimize volatility. Another thing we're not talking about here is what gas fees are going to look like on government-owned blockchains. Because TRC20 USDT has very competitive gas fees, but if a government is issuing the coin and dictates that for any movement on this, we're going to charge 5% or whatever, that's another thing that I guess kind of kills one of the attractive features of crypto where a central authority can't profiteer.

And because the platforms I use to make payments will probably also accept them, I'll probably also accept these things as a form of payment and I'll use them to pay international vendors. Because with my bank, which is one of the big five banks in Canada, to send a wire I might have to go to the bank and spend 30 minutes adding the person. And then I have to send the wire and sometimes the wire gets rejected for no real reason.

People are going to keep using stables for payment use cases as long as the fiat payment system continues to... not be convenient to use for users. It's like I owe some software vendor \$500. After the wire fee plus my time, I'm effectively paying 10% to pay that bill, which is insane. Whereas if I do it with a stablecoin, I'm paying 0.1% and it takes five seconds.

Lastly, in your opinion, based on the policies that have been enacted or proposed this year, where do you see the policies of the future going?

I mean, I feel like every regulatory development in the last two years in crypto has just been making it more and more like real money, and making it regulated and controlled like real money. So I think you should keep an eye on anything that's retail-facing. If it's an institution offering services to retail, you should keep an eye on consumer protection laws. Keep an eye on capital adequacy requirements. Keep an eye on what your bank wants from you to be able to transact at all.

And if you're an institution accessing digital assets, you're going to have to keep an eye on what the platform that you use requires for you to participate at all. And if they have custody, do they carry the correct registrations for that, or are they telling you to just place a limit order that has an unrealistic price that never resolves? Then we don't technically have custody because they're just waiting for that order to settle but they're actually holding your funds.

If I had this crystal ball, I would either be on a government policy board or I'd be much wealthier than I am. But in terms of what the implications are for institutions, I think that the governments of the world are trying to enforce the travel rule much more, which is like KYC information has to be readily available and has to be transmitted along with payments. That's eliminating the anonymous nature of some cryptocurrency payments. For anybody that's legit, it's no problem and you have KYC on the transaction. And for anybody that isn't legit, they can attach the same bogus KYC to that that they would attach to a bank wire if they were using a money mule or whatever else.

So all I see is it being treated more and more like real money and behaving more and more like real money. Greater focus on identifying who's using it and why, greater focus on being able to assess tax to it, and greater focus on consolidating monopolies in countries using domestic solutions.



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05. M&A Activity

Crypto M&A in 2023



Todd Lawrence

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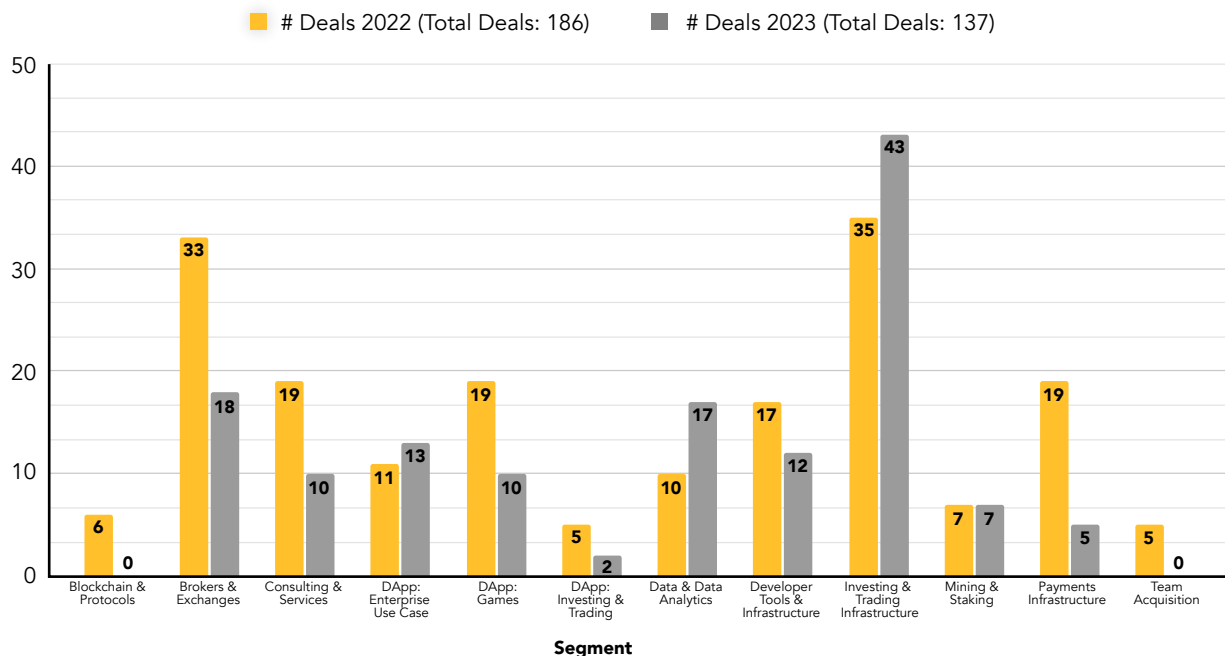
Eric Situ

Associate
Secure Digital Markets
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2023 began with an influx of M&A activity in the crypto sector, setting a record in Q1 with 54 transactions*. However, as the year progressed, there was a noticeable deceleration in the number of deals, dropping to 34 in Q2, and 26 in Q3. Compared to 2022, the total number of deals decreased from 186 to 137 in the same period in 2023 (January - November), reflecting a ~26% decrease year-over-year.

A notable aspect of 2023's M&A activities was the concentrated interest in specific sub-segments, particularly in Investing & Trading Infrastructure, Brokers & Exchanges, Data & Data Analytics, and DApp: Enterprise Use Cases. Collectively, these sub-segments accounted for ~66% (91/137) of the M&A transactions, underscoring a strategic emphasis on building robust, scalable, and efficient operational frameworks within the crypto industry.

Number of Crypto M&A Deals by Segment 2022 vs 2023 (Jan - Nov)



*Deal count reflects publicly announced M&A transactions and may not include non-disclosed transactions.

Segment-Specific Insights

1. Investing & Trading Infrastructure:

- Investing & Trading Infrastructure experienced the most significant increase in number of deals and made up ~31% (43/137) of all 2023 M&A transactions compared to ~19% (35/186) in 2022.

2. Brokers & Exchanges:

- Despite a ~45% drop in deal count from 33 deals in 2022 to 18 in 2023, Brokers & Exchanges remains one of the most active M&A sub-segments of 2023, indicating a sustained interest in platforms facilitating crypto transactions.

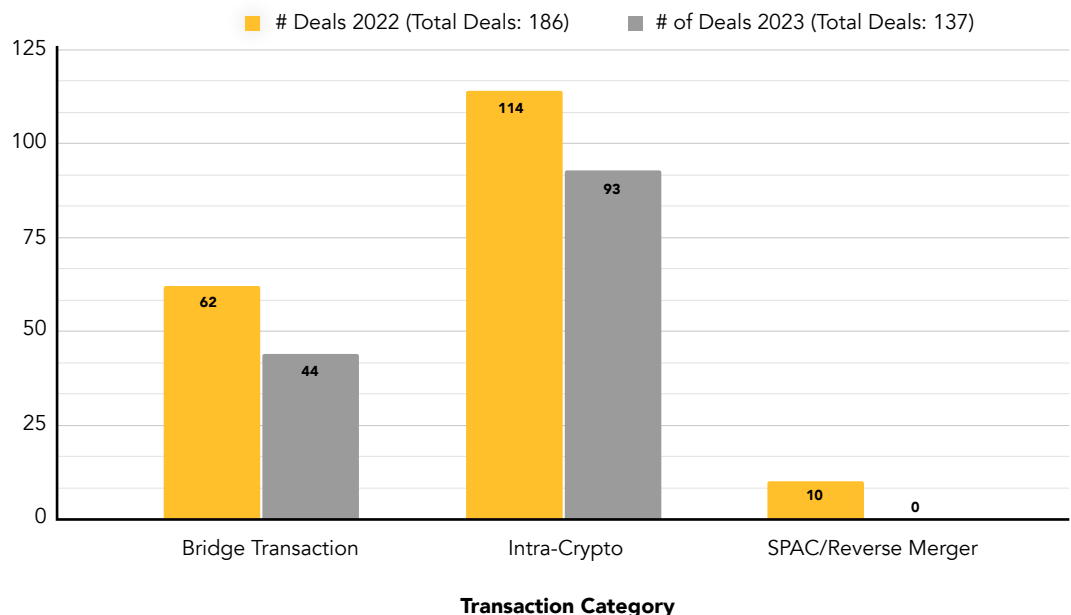
3. Data & Data Analytics:

- Aside from Investing & Trading Infrastructure, Data & Data Analytics was one of the only other sub-segments that saw an increase in deal activity in 2023. This highlights the trend of companies seeking advantages through the value of data in supporting informed decision-making and driving actionable insights.

4. DApps: Enterprise Use Case:

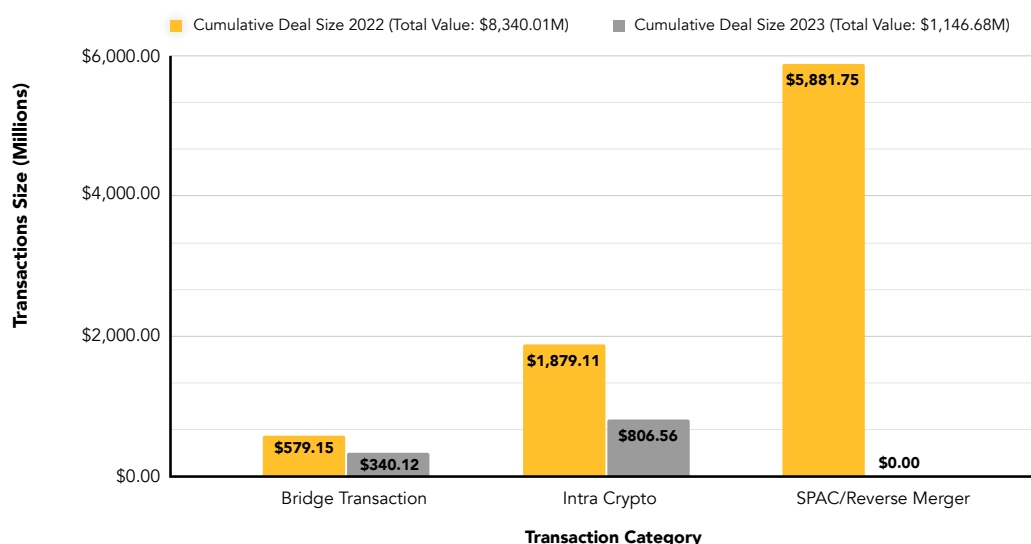
- While most DApp-related sub-segments experienced a decrease in deals, the Enterprise Use Case category saw a slight increase from 11 deals in 2022 to 13 in 2023, indicating a shift in focus towards practical and business-oriented blockchain applications.
- The trends in M&A activity within the crypto industry reflect a steady interest from institutional market participants. The focus on infrastructure, exchanges, data analytics, and enterprise applications implies a recognition of the long-term value and potential utility of blockchain technology within traditional investment frameworks. Moreover, this focus is indicative of the industry's maturation, moving towards a space that is increasingly infrastructure and service-oriented.

Number of Crypto M&A Deals by Transaction Category 2022 vs 2023 (Jan - Nov)



Although 2023 saw a decrease in crypto M&A deals across the board, the relative proportion of Bridge Transaction deals, defined as a transaction in which a non-crypto native firm acquires a crypto-native firm, remained consistent at ~33% (62/186) in 2022 and ~32% (44/137) in 2023. Intra-Crypto Transactions, which are transactions in which a crypto-native firm acquires another crypto-native firm, saw a relative proportional increase from ~61% (114/186) in 2022 to ~68% (93/137). The trend of intra-industry acquisitions among crypto-native firms points towards a phase of consolidation where companies are looking to strengthen their core offerings, diversify their capabilities, and enhance competitive positioning. This could potentially lead to a more stable and mature market, with key players emerging as comprehensive solutions and service providers.

Cumulative Publicly Disclosed Deal Size by Transaction Category 2022 vs 2023 (Jan - Nov) (Millions)



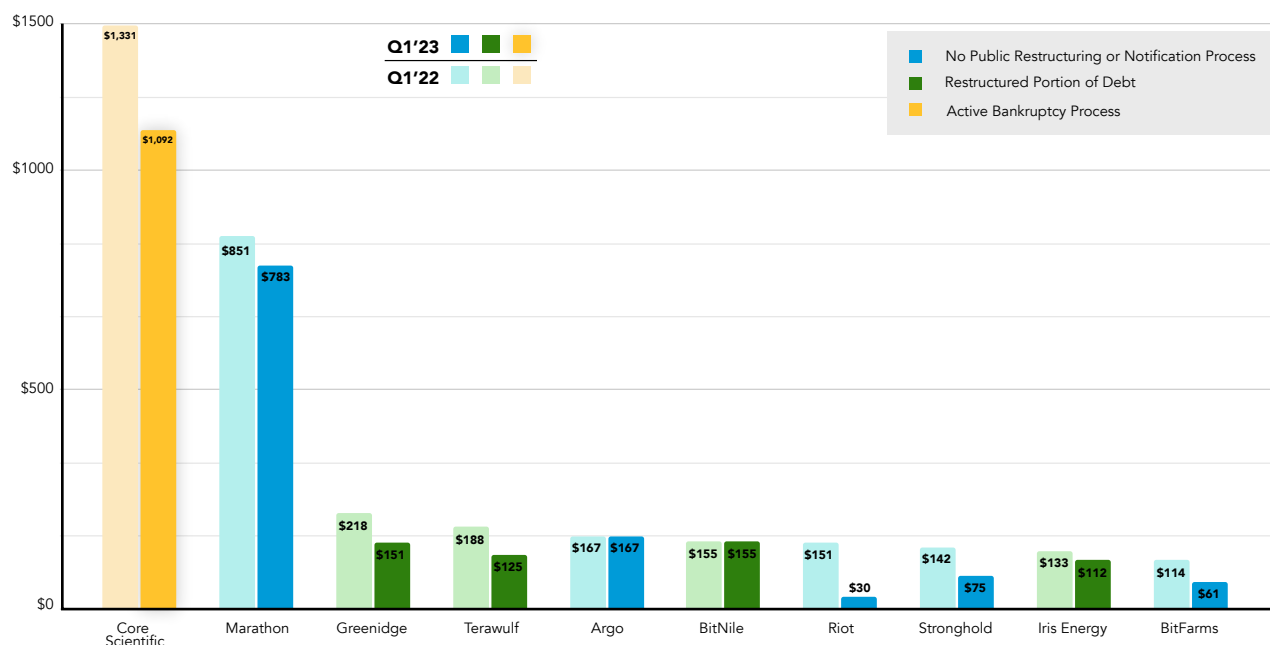
The total value of publicly announced deals in 2023 was \$1,146.68 million compared to \$8,340.01 million in 2022.

Publicly Announced BTM M&A Deals in 2023

Date	Event
January 24, 2023	Bitstop founders Andrew Barnard and Doug Carrillo acquire Genesis Coin Inc, the first and largest Bitcoin ATM software platform worldwide
June 22, 2023	RockItCoin acquires XBTeller to strengthen market position and expand Bitcoin ATM network
June 28, 2023	Bullet Blockchain acquires Bitcoin ATM fleet to expand presence in the digital assets market
June 30, 2023	Bitcoin Depot and GSR II Meteora Acquisition Corp. announce successful close of business combination
July 19, 2023	Genesis Coin announces acquisition of certain assets from CoinCloud to become leading worldwide software platform for Bitcoin ATM transactions
Oct 19, 2023	RockitCoin bolsters national presence with acquisition of FirstCoin ATM and Phoenix Crypto Bitcoin ATM networks

Similarly, the 2023 M&A activity in the Bitcoin ATM sector reflects strategic moves by companies to solidify their market positions through consolidation, leading to enhanced service offerings, operational efficiencies, and broader consumer reach. Key players such as Bitcoin Depot, Genesis Coin Inc., and RockItCoin have been observed to be establishing comprehensive networks to bolster their service capabilities during this period. 2024 will likely see increased activity in the BTM space as larger organizations look to extend healthy balance sheets to less financially efficient operations.

Public Crypto Mining Companies Outstanding Debt 2023 (Millions)



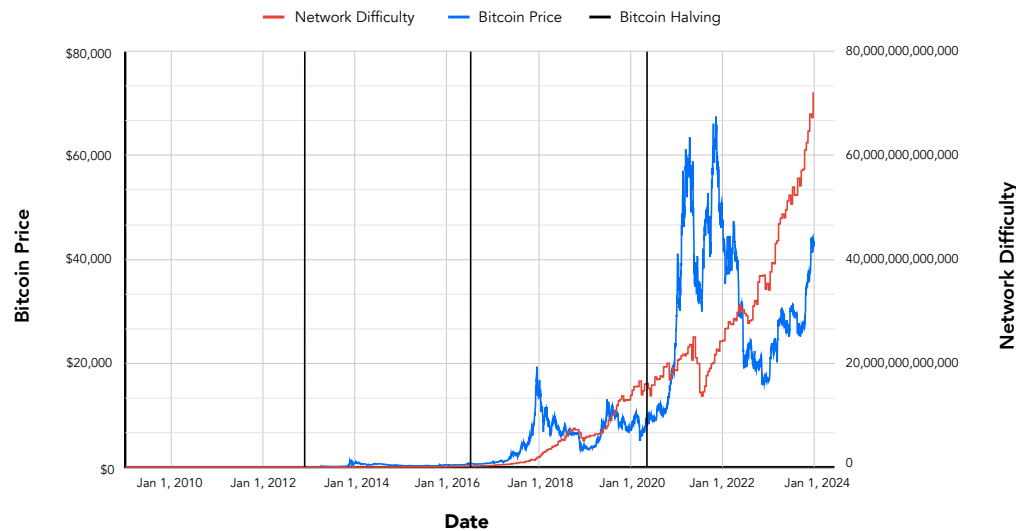
The first quarter of 2023 depicts the Bitcoin mining industry in the midst of responding to the financial pressures of a volatile market, coupled with the anticipation of the next Bitcoin halving in 2024 which is expected to reduce miner rewards by half. Placing pressure on mining companies to strengthen balance sheets and improve financial resilience, companies with high debt burdens are expected to find it increasingly difficult to operate profitably once the block reward diminishes and will likely become targets of the better prepared.



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06. Mining

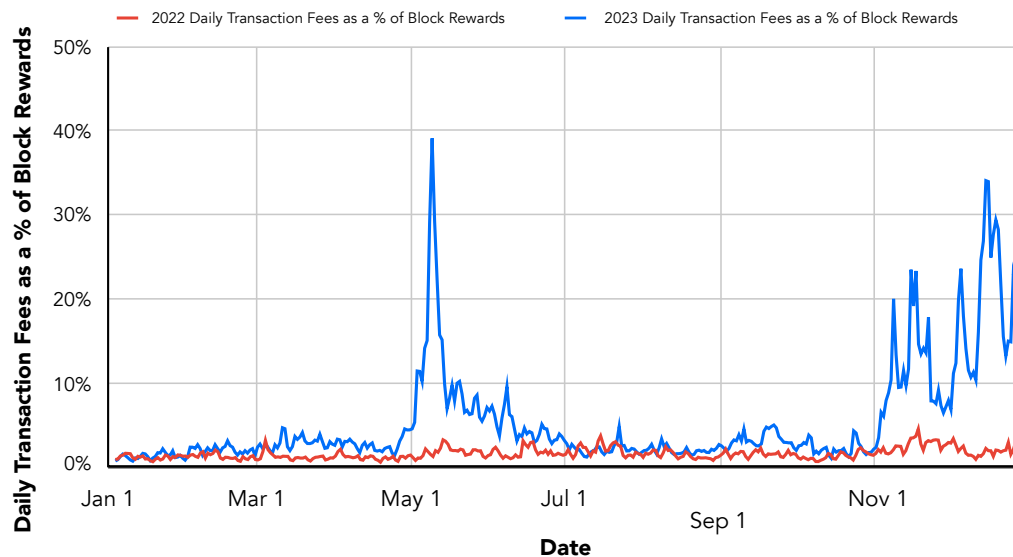
Bitcoin Price and Network Difficulty



Reading Between the Lines

- This growth in network difficulty reflects the competitiveness among miners, the expansion of the Bitcoin network, and the continuous investment in mining hardware to secure the blockchain and validate transactions. As a result, the network difficulty jumped by 100% in 2023 to 72T.

Daily Transaction Fees as a % of Block Rewards in 2022 vs 2023

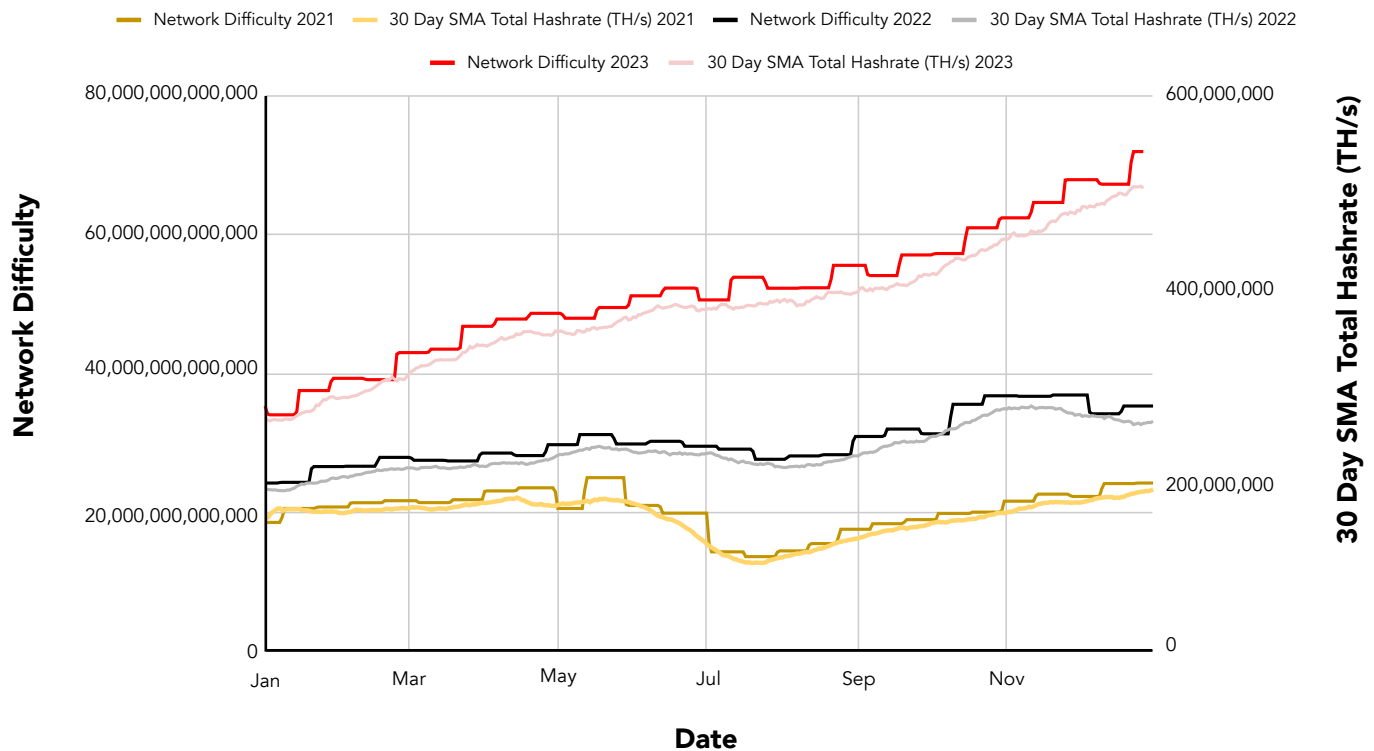


Reading Between the Lines

- Bitcoin network fees surged to over \$37, the highest since April 2021. As more users transact on the Bitcoin network, the limited block space available leads to competition among users to have their transactions included in the next block.
- During periods of high demand, users often bid higher fees to prioritize their transactions. This bidding war for block space causes a surge in transaction fees. Additionally, when the network experiences high congestion, users may opt to pay higher fees to ensure faster confirmation times for their transactions.
- A major reason for this has been the increased speculation around the spot Bitcoin ETF, increased regulatory clarity in key markets, and innovations to the Bitcoin protocol like the emergence of Bitcoin NFTs called Ordinals.
- Miners, who receive BTC for verifying blockchain transactions, are currently generating approximately \$63 million in daily income from fees, totaling around \$23 billion annually. This figure is nearly four times the two-year average.

Network Difficulty and 30-Day Moving Average Hashrate

2022 vs 2023 Network Difficulty and 30 Day SMA Total Hashrate (TH/s)



Reading Between the Lines

- Bitcoin's network difficulty has exhibited a consistent upward trend over time, mainly due to the increasing computational power (Hash Rate) dedicated to mining. Miners use specialized hardware to solve complex cryptographic puzzles, and as more miners join the network or upgrade their equipment, the overall hashing power increases. Consequently, the network difficulty adjusts upwards to ensure that blocks are mined at the intended rate.

In Conversation with Scot Johnson from Digital Shovel

A Deep Dive Into Mining Equipment

- Miner consolidation
- Hardware innovation
- Mining regulation



SCOT JOHNSON

President & CEO
Digital Shovel

 @Digital_Shovel



Digital Shovel is leading producer of datacenter and electrical equipment infrastructure for the cryptocurrency mining industry. The firm helps businesses scale Crypto-Mining operations with turn-key mobile units. With low energy cost, and high security, they help businesses with managed and unmanaged miner hosting.

Let's start by hearing more about yourself and your experience in crypto.

I got started around 2016 mining Ethereum. I went down the rabbit hole and converted a room in my condo and then eventually worked on an industrial unit with a colleague. One thing led to another and we needed to expand from there. We then built our first shipping container, which we converted to a data center. At the time there weren't a lot of people in the space so we were one of the early ones to the point where people would ask us to build some for them.

One thing led to another and Digital Shovel got founded in 2018. We've now grown to be one of the largest fully vertically integrated manufacturers of not just data center equipment, but also all the infrastructure that goes into it, from the smart PDU to the power distribution systems, switchgear, and other automation to manage and run data centers for mining Bitcoin.

Can you tell us about Digital Shovel and what you're working on?

Historically our focus has been on the data center side of things. The structure that holds the actual units is the ventilation and power distribution. We've now moved into building other sub components, including an immersion unit that we're developing. We also have a custom power supply, which uses industry leading technologies to drive better power efficiency, as well.

It's all fully integrated and we do everything in-house in Toronto from PCB assembly, welding, metal forming, which really allows us to pivot, build stuff and prototype quite rapidly while adapting to the changes in the market, like in form factor and things of that nature.

The software solutions presently are limited to the control of our power distribution systems. There's smart automation that we build into the PDU to make our data centers as autonomous as possible and lower the number of humans you need to operate a Bitcoin mining farm by creating automated watchdogs that monitor drops in performance or drops in consumption and can automatically perform events like unplugging and plugging in the device back in to reset it, which traditionally would take an actual person to go out and do.

It's the same with automation in terms of thermal management as it's important to pay attention to weather conditions, not just temperature, but also dew point so that you can minimize the risk of condensation by using systems such as our hot air recirculation. The core of our business is building the actual modular data centers themselves.

How would you describe the current state of Bitcoin mining?

It has certainly performed a 180 in the 4th quarter of 2023. It was a very slow period over the last year until August when things started to pick up a little bit, both in terms of interest for building sites and obviously the price of Bitcoin, which makes a lot of these projects a lot more promising.

Now as we go into the halvening, it's jumping into full swing: we're starting to have a backlog, quoting much larger products in the last 6 months as well.

How has the landscape of Bitcoin mining evolved in the last few years?

We're seeing more and more efficient equipment. There's been a much bigger move to liquid solutions, immersion cooling, anything that's air cooled. The majority of our projects are still air cooled projects. Many are moving towards reusing the heat because once you've converted the heat into liquid form, whether it's through a hydro solution or through an immersion based solution, it's a lot easier to move that heat around and use it for other things rather than when it's just in an air form. There's been a big move there.

We're starting to see other participants that are developing their own chips, it's not just Bitmain or Luxor Mining with the Samsung chip that they make, there are other guys that have been developing chips even though Intel got out of the game. Block is developing one which I believe they're pretty far along the road but they're developing a new chip that might be a good contender against Bitmain.

Those are some of the major changes we've seen over the last six months.

Are you seeing a trend in mining innovation globally?

In terms of innovation, there's not a whole lot of that being done around North America. Most of the chips and stuff are being made overseas. We'd like to think of ourselves as an innovator in terms of the data center structure. In terms of the actual miners themselves, what pushes stuff here is our price and lack of geopolitical risk.

You can go get really cheap power in Russia, or in Paraguay, for instance, but there's a large amount of geopolitical risk associated with doing those projects, which makes it very difficult to get funding from institutional players. That's what really pushes the market around here, not as much the innovation side.

What has happened to the mining equipment industry since China banned crypto?

There was a huge onslaught of projects coming over here to be hosted. After that, a lot of it went to other markets like Russia. If you were already in China, you weren't afraid of geopolitical risk which is why a lot of that might have moved over to Russia especially as the rates were pretty competitive there. But then you've also got the risk of never being able to get your equipment out of the country.

You saw a dip in prices for used equipment for sure because instead of relocating a lot of players we're just liquidating their equipment. The market wasn't exactly in a prime position at that time so the projects weren't always as profitable and there were definitely players that were making an exit by liquidating their equipment which pushed the price down across the board.

What are the latest technological advancements in Bitcoin mining? Hardware has improved but we're also seeing a rise in software solutions. What are you seeing on your end?

Some hardware manufacturers have been doing some really cool stuff as of late by finding chips in a way more efficient manner than the OEM provides. In terms of immersion, there's more polished builds, but I don't think the technology has evolved that much, what's evolved is the price.

You've seen the price points come down to a point where it makes sense to do. Around \$600,000 to \$700,000 per megawatt, it's a bit prohibitive and really doesn't make sense at that price point. Now, if you're seeing projects on a regular basis around \$300,000 to \$400,000 a megawatt, it starts to be a little more attractive at that point and that's why you're seeing more players move into that space.

It seems that there's a rise in consolidation amongst top players: As the hashrate and difficulty increases, miners will have to try harder to remain profitable. There's also a rise in technological advancements such as immersion cooling which is widening the gap of profitability between the old and new miners. What are your thoughts regarding the consolidation of the industry?

You're going to witness that in any industry as it becomes more industrial and more commoditized, you're going to see more and more consolidations across the board just because there's going to be a better value proposition in that setup. I think it's good for the industry in the sense that it shows that it's evolved to that level where really large institutional money is willing to get behind it.

In terms of the profitability going into the halvening, traditionally we always see a price rally which generally offsets that, but what we're also seeing right now is a dramatic increase in the fees per block compared to what the block reward was previously. Rates were as high as where we were in 2017 at certain points, before the change in the fee structure, which those two factors traditionally offset the drop in the block reward.

Any update regarding the environmental regulations for BTC mining?

That's a constant evolution and we're seeing the developments on a state by state basis in the US. A group that we sponsored, the Satoshi Action Fund, is doing a lot of lobbying to try and level that field a little bit, but you've seen states come out and put very punitive regulations in place on Bitcoin miners in particular.

There's a certain level of decibels in certain states that a data center is permitted to emit from their cooling devices and in that same state, a Bitcoin miner is only allowed to emit half the sound even though they're both doing the exact same thing. And I think a lot of that comes out of ignorance and not knowing the actual benefits of Bitcoin mining, not just from the Bitcoin standpoint, but also what it can do for the power grid.

People often think of Bitcoin mining as this huge power consumer, which it is, but they see that as solely negative when in reality, it actually helps to balance the grid by using underutilized electrical inventory, whether it be through hydro electric or really cheap gas or nuclear for example. It's the same with renewables where you get renewable wind farms that generate power, no matter what you have to consume, those wind farms will be generating so much power, they actually have to pay the grid to take it. Now you have a load that can be used all the time, and then when you need that power, you can curtail that load in real time, making all of these other projects more profitable when they had idle inventory, and not have the need for additional peaker plants the rest of the time.

Where do you see the future of Bitcoin mining equipment heading in the next couple of years?

It's always tough to predict a couple years out. I think this next year is going to be pretty crazy. I think equipment is going to get parabolic in terms of cost and lead times are going to go through the roof again. The new generation of equipment is going to push the difficulty up significantly as it starts to get delivered. Like we've seen earlier, some of the really cool innovation that's happening with firmware is the idea of allowing what would have been otherwise obsolete equipment that would have ended up dropping off the market, to add a year or two to its lifespan, which is really exciting to see. When you combine firmware with something like the new power supply we have coming out which is going to give anywhere from a 6% to 8% bump in terms of efficiency, this is also given an 8% bump in terms of yield. That equipment that would have been obsolete post halvening, is now going to be good for another year or year and a half, which is something we weren't able to see in previous equipment market cycles.

What is the focus of BTC mining advocates and lobbyists?

The big push is to use various states as precedents. It's important to get a win in one state and then push it off to the others. It's something that's ongoing and you're seeing more and more lobbying groups that are dedicated to the mining space.

I go back to Satoshi Action Fund but there's several other groups that are similar to that. If you take a look at some of the stuff that they've done over the last year, a lot of it has been around noise while some of it has been around our restrictions. So for instance, in the state of New York, they had banned any new Bitcoin miners so the group will push back on stuff like that. There's a variety of different initiatives that they've been pushing across the board to benefit the industry.

What are the biggest markets in the world for equipment sales?

The US is our biggest market in terms of where stuff has gotten by far.

Part of that though, is because we just can't sell into Russia, we wouldn't, so we don't really see that side of the market. I was at a show in Dubai in September / October, and I was amazed by the size of these Russian companies that were there, some companies we had absolutely never heard of in terms of equipment, dealers, and mining operations. It's a bit of a black box, we don't really deal with that side of the world too much so I can't really speak for that market but in terms of everywhere else, the US is our biggest by far.

That goes back to the attributes that make it attractive, like power, geopolitical risks, you could raise huge money if you say that you're doing a project there. You can't raise that kind of money if you say that you're going to be doing a project in Paraguay or Russia for that matter, or one of the other Baltic states.

What are you excited about heading to the New Year?

For starters, BTC hitting \$100,000.

We're just looking forward to being back into a good bull market. It's been long and slow here for the last year so it'll be nice to get back to building, not that we stopped, but it's nice when you're that busy because you can spend more money on innovation, growing and building new stuff.

In Conversation with Spencer Marr from Sangha Systems

The State of Bitcoin Mining

- The technology disrupting mining efficacy
- Miner consolidation and what that means for Bitcoin
- Energy's relationship to mining



SPENCER MARR

President
Sangha Systems

X @SanghaSystems



Sangha Systems aids high-density computational and indoor agricultural setups by situating them in sites with substantial power infrastructure and affordable renewable energy. Their focus lies in optimizing Bitcoin mines using underperforming renewable energy assets, either existing or in development. This mining process allows the firm to trade energy and harness waste heat for other high-demand environments. They established and sold a successful Bitcoin mining facility, Hennepin, located in Central Illinois, showcasing their expertise in this field since 2019.

Let's start by hearing more about you. Where did your experience in crypto begin?

I came from a legal background. I was working in renewable energy public policy for City University of New York, and that's where I realized that Bitcoin is this large, flexible, flat, interruptible load, the throughput of which is money. That's what makes Bitcoin a perfect vehicle for arbitrage and energy markets.

How would you describe the current state of Bitcoin mining?

The word that comes to mind is hyper-competitive. You have to have some sort of competitive advantage because fundamentally, it's just a commodity-generating business. And for us, the competitive advantage is very flexible, very low-cost, strictly renewable energy. We understand renewable energy deal structuring better than anyone else in the industry. And that allows us to derive a competitive advantage.

Other people have technology advantages or capital markets advantages. We've elected not to focus as much of our attention on building relationships in the capital markets and sourcing cheap capital because we're not working towards going public. We're operationally focused on finding the cheapest cost of renewable energy. But you need an advantage. Not just anyone can put some money together with their friends and get into this business. You really have to understand that and be hyper-competitive.

There's been a rise in consolidation amongst the top players as difficulty increases and miners are finding it harder to stay profitable. What are your thoughts regarding this consolidation of the market?

We like smaller deals. There's a disincentive to scaling too big based on the particular way we structure our energy arrangements. The first electrons we buy are the cheapest so we don't want to buy too many of them, because the more we buy the more expensive they get. So we like the idea of staying small. We don't want to be a publicly traded company, we want to be a well-regarded, lower volume, higher margin developer and operator.

In the end, the decisions made by the Marathons, Cores, and Cleansparks of the industry impact the network hash rate. And machines getting more efficient

puts pressure on everyone else. But I think what's interesting about mining is the way it all normalizes over a long enough period. That's why we bring everything back to what is fundamentally an orthogonal variable, which is the energy trade.

No matter how efficient your fleet is over time, others in the network will get efficient too, which will then create this equilibrium where difficulty keeps resetting to the point that the average miner is hurting on an operational cash flow basis.

They have to get their energy at a better rate and they have to improve their fleet efficiency. So in everything we do from software, site selection, and site development, to the structured financial products we're looking at now, everything is based on the notion that there is a revenue per megawatt hour out there at which you'll find equilibrium. That equilibrium is where you won't see more upward pressure on the network hash rate because that increase in hash rate would result in too much of a decline in the revenue on a per megawatt-hour basis. Something would have to give and people would have to turn off. So there is an equilibrium point and we're searching for it, there's a lot of variables that go into influencing how that changes direction over time.

What are you seeing on the energy front? Has the energy community's perspective on Bitcoin mining evolved over the last few years?

It's a mixed bag; these companies are all very different from each other. They all have different histories, different business models, and operate across different jurisdictions. I don't know if there's one answer, but what I would say is that it has at least become a national conversation. At this point, most energy producers in the country have at a minimum been approached by a Bitcoin miner looking to do business, and in many cases, a deal has been done. That creates an interesting problem because in some cases that means they're happy with whoever they did the deal with and that makes it harder for us to gain access. In other cases, it went terribly wrong, making it harder for us to get our foot in the door because they feel like they got burned. Hopefully, it's made them more curious about what the arrangement would have looked like if the execution was better.

Where do you see Bitcoin mining going in the next 5 years?

I think getting closer and closer to vertical integration with energy sources is the single most important ingredient. I think that will naturally lend itself towards decentralization. Of course, it's much more complicated than this, but generally, energy pricing has a bell curve distribution to the pricing in any given local market.

The job of a Bitcoin miner is to buy up the left half of that graph and no more. This means once you exhaust a given market, you have to move on to the next market. This is good for the process of self-correcting the market signal on energy pricing. There's a deep relationship between the price of Bitcoin as a speculative asset, network hash rate (which determines difficulty), and machine efficiency.

These three ingredients will keep moving and the key is staying nimble. You need to have flexible energy deal structures, software operational protocols, and hedging strategies. I think we have another good run or two in the next 5-10 years of just crazy high speculative pricing of Bitcoin. At some point that will stop, and what I've long thought will come after is this sort of boring big business like any other commodity or commodity-oriented business. Margins will be 8-10%, it's gonna be huge companies doing it. Whether it's the existing miners, energy companies, or future miners, we don't even know yet.

But our perspective on a few things remains universally true:

- 1) Source the best sites.
- 2) Deploy the best infrastructure technology.
- 3) Have the best software that controls it all.

I think over time, people's ability to realize revenues natively as an energy function is going to unlock a lot of value and allow much bigger pools of capital to come into the industry.

What are you most excited about in 2024?

I always struggle to find the right ways to describe this but what I hope happens socially, politically, and economically is that Bitcoin is recognized as the economic scaffolding of digital interactions. We all have digital interactions a thousand times a day and our old money system has a hard time keeping up with this. We are all reliant on the whims of central bankers which makes dealing with climate change even harder.

The money system has no way of cross-referencing "The Ledger of Money" expenditure to "The Ledger of Energy/Climate" expenditure. If we can articulate a transfer of value system that ultimately settles digital transactions into an energy transfer then it will force us as a society to include the real cost of transacting. I think that this is good for society, I think it's good for Mother Nature, and I think it is equitable. I think the idea of scarcity in energy and scarcity and money can only be reckoned with through a more just distribution of resources. I don't know if it will happen, but it would be nice to know that when we transact in Bitcoin we can reconcile it back to an energy ledger that has limits. Because indeed it does. It's just that in a carbon-based, oil-based, and US-dollar-based world economy, we just don't see the limits on that ledger. They're just externalized into the ether.



Bitcoin Solutions for Miners

Treasury management solutions and settlement workflows that streamline the sale of BTC for miners.

Auto-Trade Wallet



SDM's auto-trade wallet eliminates any volatility risk from holding BTC. Our auto-trade solution scans whitelisted addresses for new Bitcoin and automatically convert it to fiat.

Full Service Spot Desk



SDM's non-custodial trading services provide miners with expert trade support, deep liquidity, and the best possible price on all of their BTC activity.

Derivatives



Manage the tail risk of keeping BTC on the balance sheet by utilizing SDM's CFTC compliant derivatives trading desk, SDM Financial. SDMF can trade simple options to manage risk, collars to more cost effectively hedge, or specific structured products that lock in a premium to spot for weekly BTC sales.

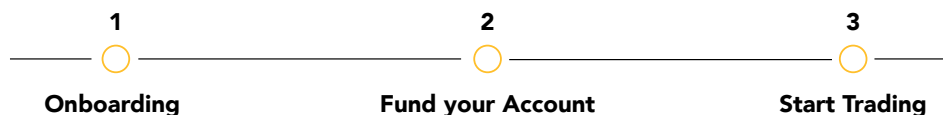
Lending Facilities



If you are holding BTC in treasury long term, SDM can give you cash against the BTC at a industry-competitive rate.

ONBOARDING

Start trading in less than 24 hours.



SDM

40+
TRADING PAIRS

\$10B+
BILLION IN TRADE VOLUME

10+
BANKING & SETTLEMENT PARTNERS

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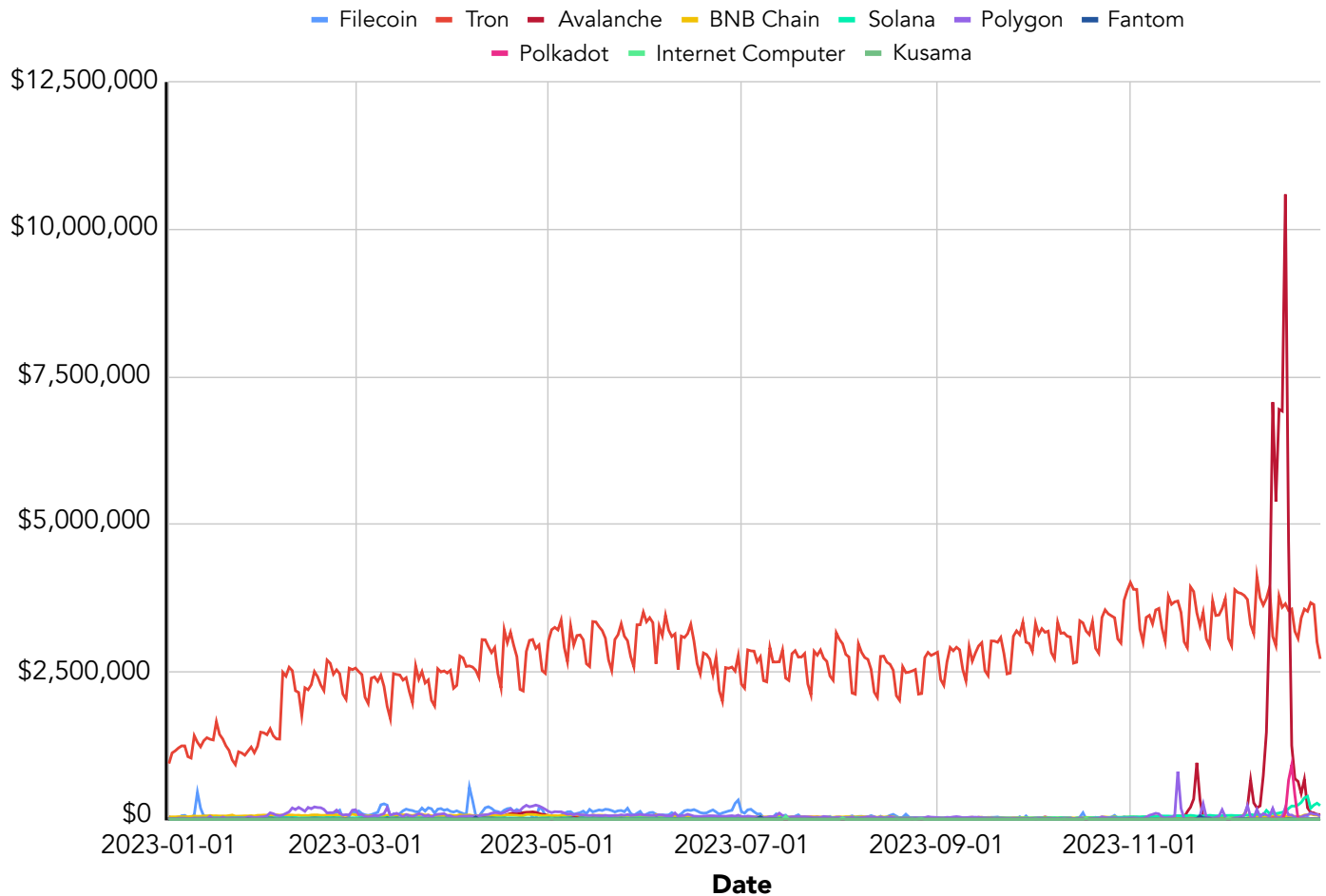


07.

Emerging Markets



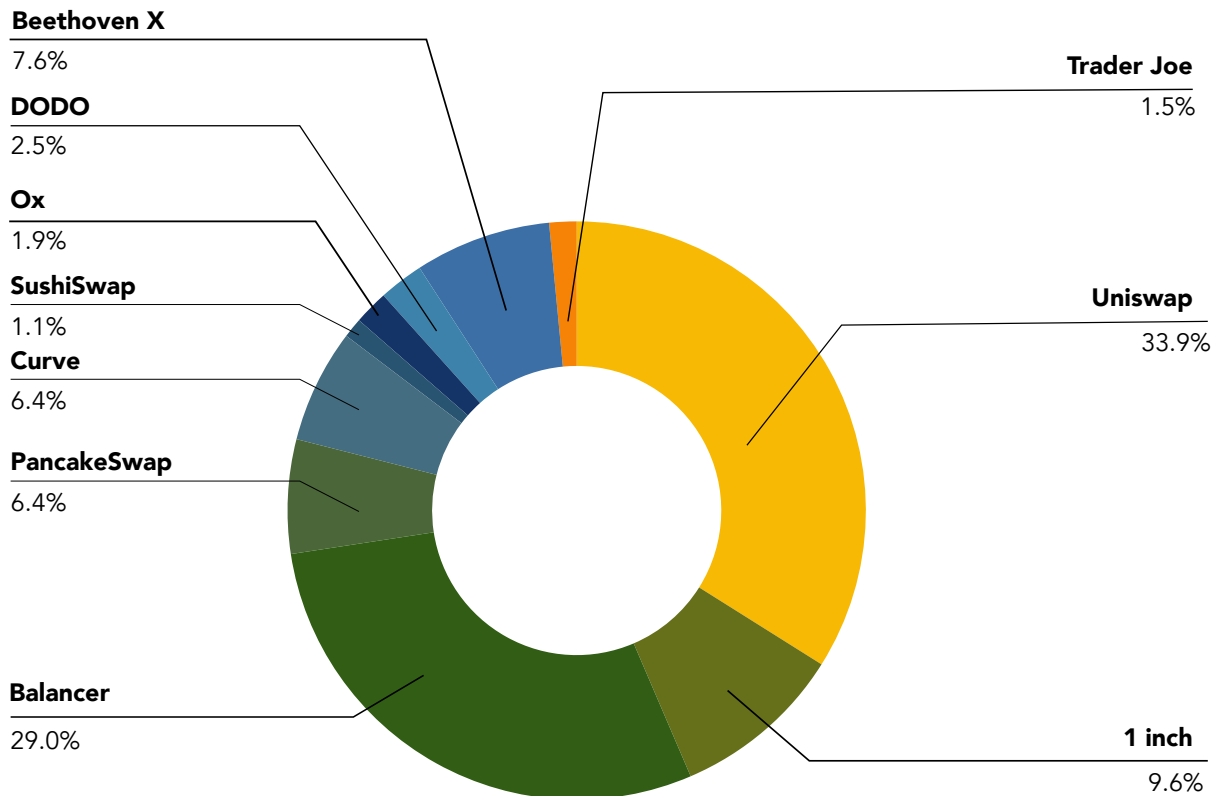
Top 10 Altcoins by Revenue 2023



Reading Between the Lines

- Recent advancements underscore Avalanche's reliability and profitability. With rising fees and a growing user base, the altcoin AVAX emerges as a cryptocurrency holding substantial promise, appealing to both investors and crypto enthusiasts alike.
- Avalanche has also witnessed strategic collaborations with influential entities, including partnerships with Amazon Web Services, J.P. Morgan, and Apollo Global.
- A significant change in Avalanche's performance occurred upon the introduction of Stars Arena, a social application aiming to rival Base Network's Friend Tech. This launch resulted in a substantial surge in transactions, propelling its annual revenue to a total of \$60 million. Notably, on Wednesday, December 20th, the project amassed an impressive \$10.6 million in fees.

2023 Decentralized Exchange (DEX) Dominance by Trading Volume



"I think we'll see a convergence of use-cases where one or two platforms will dominate market share and represent DeFi in terms of competing with CeFi"

DARIUS TABATABAI

CEO & Co-Founder Vertex Protocol

@DariusTabai



Reading Between the Lines

- Decentralized exchanges (DEXs) have seen notable growth in trading volume, with platforms like Uniswap, 1inch, Curve, and PancakeSwap leading the way. These DEXs have garnered significant dominance in trading volume by providing users with decentralized, permissionless trading opportunities directly from their wallets.
- Uniswap, in particular, has maintained a considerable share of the DEX market volume due to its user-friendly interface and liquidity provision through automated market-making mechanisms, showcasing the increasing adoption and trust in decentralized exchange platforms.
- The market share of DEX to CEX spot trading volume increased in the first half of the year from 8% to 21%, setting a record high. It then fell back and stabilized around 11% in December 2023.

In Conversation with Mike Grantis from Contango Digital Assets

The Next Disruptive Trend in 2024

- Novel ways of regulating digital assets
- Unique metrics for analyzing altcoins



MIKE GRANTIS

Managing Director
Contango Digital Assets

X @mikecontango



Contango Digital Assets is a Canadian venture capital firm focused on fueling the financial revolution. We invest in and partner with exceptional founders at an early stage to help scale businesses and grow their communities. Contango brings value to blockchain-based projects in the form of advisory services, project launch support, community growth hacking, and influencer marketing campaigns.

How did you get into crypto?

I got into the crypto space in 2016. I've always had an entrepreneurial spirit and found Bitcoin as a payment method for my digital marketing company I was running at the time. Then I fell down the EVM rabbit hole and saw what this technology can do for the world and decided to go all in. I've generally had an Austrian economic outlook, so the technology made a lot of sense to me and it was easy to see the socioeconomic implications of blockchain. I first started working full-time in Web3 at an OTC desk in Canada. Then later left that to start a crypto media company called Crypto Weekly. Then in June of 2021 myself and my co-founder Josh Field who I've been friends with for over a decade decided to join forces. We were both doing some liquid token investing and decided to pool our capital and resources to form Contango.

What is Contango? What is your mission and how do you think you differentiate yourself in the market?

First and foremost Contango is a venture capital firm, focused on seed round investments at the intersection of blockchain and AI. Our mission is to accelerate the global adoption of decentralized systems, and we're doing that through strategic investments into DLT tech and decentralized AI. We're also building a SaaS platform that makes it easier for investors to track and manage their Web3 private allocations.

What did you guys see from the startup ecosystem in '23?

I think startups were in a bit of denial at the beginning of the year, and it was difficult for founders to accept that the low interest era and access to free capital was over. I think valuations are now starting to reflect that reality; we saw some capitulation and projects began doing extension or down rounds by the midpoint of '23. I think we're finally emerging from this bearish hibernation and we're going to see valuations climb back up and to the right, hopefully we're entering a full-fledged bull market. While I'm very bullish long term, I think we might have gotten over our skis and we may see a pullback before the end of the year, but I think we've seen the bottom and we have a couple very strong years ahead of us.

What were some differences in your investment strategy in '22 versus '23?

In '22 we definitely had a focus on blockchain infrastructure, L1s, L2s, bridges, and scaling solutions etc. It was a year of building and we wanted to be invested into the pipes and rails that a lot of the dApps are running on today. I think at this point though, most of the necessary infrastructure has been built so now we're focusing on the projects that will run on top of this infrastructure like GameFi; which really fits well within Web3. We're also giving a hard look at decentralized AI as AI and blockchain work extremely well together. There's also the socio-economic consideration when it comes to AI. I think the risk of centralized AI is probably one of the least understood but most daunting risks facing society today. We need to do everything we can to decentralize this technology before a few actors consolidate this technology beyond the point of return.

There's a lot of noise and marketing flash in the altcoin world. What are some fundamental metrics that you guys use to evaluate potential investments?

I think the way crypto markets move is very different from the way traditional markets move and it's not always based on fundamentals. We apply some objective metrics, TVL, throughput, and the quality of tech, etc., but another huge metric for us is community. Not just the size of the community but the activity and veracity of the community. Tokens are this new kind of incentive mechanism that turn your users into your advertisers and so the size of your community effectively equals the size of your earned media budget. Chris Dixon once said that in Web 1.0 you were the consumer, in Web 2.0 you were the product, and in Web 3.0 you are the brand.

Another important criteria for us is partnerships. It is very easy to get stuck in your project's echochamber, so partnerships with L1 chains and L2 chains, KOL's, media publications, and other service providers bring fresh perspectives to your community, help expand your project's footprint, and ultimately bring in new users to your ecosystem.

Over the last few years we've seen L2's, Metaverse, NFTs, and DeFi all take their turn as being the industry's next disruptive vertical. What technology or trend will be the next industry darling in 2024?

I think there's two that really excite me, one being real-world assets coming on-Chain, and I think that's gonna first happen with financial assets. We've already seen stablecoins come on-Chain, and they've really proven a good use case now with rates the way they are. A 4-5% risk free rate is a lot more desirable so I think you'll see these treasury assets come on-Chain. Then you'll start to see more tokenized equities and eventually real estate and other illiquid assets. Bringing any real-world assets on chain increases the velocity of money in an ecosystem and in turn, increases GDP of an economy; so I think RWA's will be the trojan horse that brings a lot of new capital into the space.

The other thing we're excited about is AI. I think with the emergence of chatGPT in 2023 we're going to see AI as the next major tool, akin to the impact search had in tech over the last two decades. Every major tech company seems to be building their own AI and every Fortune 500 is finding a way to talk about AI on earnings calls. AIs will book our appointments, fulfill our online orders, and contribute to virtually all aspects of digital life. I don't suspect AI agents are going to be paying for these things using SWIFT or cashiers cheques. They're gonna be using a digitally native currency like a stablecoin or ETH or Bitcoin. I think beyond these product efficiencies, blockchains will be important to maintain a sense of ethics with AI. From validating and verifying information given from AIs, to identifying when you're working with a humans or AIs. This will become the number one ethics debate in tech. Sort of like blood diamonds vs. ethically sourced diamonds; while the finished products may look the same, how both goods got to there are radically different and that supply chain will matter just as much as the end result.

How do you think ETFs and some of these macro developments are going to impact the venture and early stage parts of Web3?

I think it'll be a massive win. The ETF adds an incredible amount of new institutional liquidity into the market and typically what happens in every market cycle is capital rotates from Bitcoin into larger blue chip assets, like Solana and Ethereum, and then further down the spectrum into smaller cap and more speculative assets as the bull market progresses and investors look for higher returns. So essentially what we're doing is just opening up the floodgates at the top of the funnel, and allowing this new capital to flow down into other digital assets.

If you look at the last two market cycles, they both started with some event in the traditional markets that led to the rally. First was the launch of GBTC and then subsequently, it was the fall of DCG that really kicked off the last bear market. I think the Bitcoin spot ETF will be the catalyst that really kicks the next market cycle up a notch.

You mentioned your libertarian outlook, I'm sure you have an opinion on regulation and its place in Web3. If it's not government regulation, what are some other ways to create a safer market for investors?

Yeah, it's a really good question. Balaji Srinivasan actually has some great perspective on this when he talks about the evolution of authority. In the early days, God and religion was a huge reason people didn't commit crimes. Then as society became more structured, people wouldn't commit crimes out of fear of the state. The police and the legal system created a clear cause and effect where if you break the law you will be punished accordingly. Now I think authority in crypto comes from within; from the networks themselves. There's a lot of really eloquent free market dynamics at play here. Google's old motto was "don't do evil" now in some ways the Web3 motto is "can't do evil" simply based on strong network dynamics and aligned incentive mechanisms. Bad projects or bad communities will eventually be weeded out by the better projects as they lose market share, partnerships,

and capital to the projects that are doing a better job than they are. So while there may be instances where projects get away with things here and there, I think the free market will always correct this, and the projects building the right way are the ones that will be rewarded over time.

Any initiatives on your roadmap to improve Contango's corporate governance?

Absolutely. One of our subsidiary companies is a private syndicate called VANTA. We're in the process of migrating that to become a full fledged DAO. And so that's gonna be rolled out in several phases over the course of our next 50 investments; approx. 2 years. Over that time our goal is to decentralize the deal flow, investment, and management process of how VANTA will operate. The first phase is a membership NFT that will represent partial ownership and voting rights of the DAO. So as we continue to invest and the treasury grows, you'll have a fractional stake of that treasury if you own an NFT.

Is there a specific vertical or project you're particularly excited about in 2024 and beyond?

Absolutely, so I would say there's one ecosystem that we're essentially betting the farm on and that's Bittensor. Please DYOR, but at a high level, Bittensor is a peer-to-peer market for machine intelligence. They leverage a lot of economic and game theory from Bitcoin; 21 million total supply, four-year halving, POW consensus, no pre-mined assets. It is purely a utility token that is only created through the production of machine intelligence.

This ecosystem is very much in its infancy but the scale of the opportunity speaks for itself. Decentralized compute scales much faster than centralized compute and proof of that is Bitcoin, which has 500x more compute power than all of Google's data servers globally, combined. I think a lot of companies are going deep and building their own LLMs, Bittensor can effectively aggregate these LLMs and add it to their network, so it really has that 'end-game' upside and we're excited to be building and investing in the ecosystem.

In Conversation with Graeme Moore from Polymesh

The Tokenization of Real-World-Assets

- What tokenizing an asset really means
- The value proposition of Real-World-Assets



GRAEME MOORE

Head of Tokenization
Polymesh

 @MooreGrams

POLYMESH

Polymesh is an institutional-grade permissioned blockchain built specifically for regulated assets. It streamlines antiquated processes and opens the door to new financial instruments by solving regulatory challenges with public infrastructure around identity, compliance, confidentiality, governance, and settlement.

Thanks for doing this, Graeme. Let's start with introducing yourself and telling us about your journey into Web3.

In 2014, I worked at an investment advisory fund but I was getting bored while doing my CFA Level 2 and ended up quitting. I didn't want to be in finance anymore, I was planning to go into health and wellness. But then I found out about Bitcoin at the end of 2014 and it became the only thing I could think about. I started buying Bitcoin in 2015 and telling everyone "this is the most exciting thing in the entire world".

I did that along with some random things until September 2017 when I joined Polymath as the first employee. We were squarely focused on security tokens, which was a brand new thing at the time. I think we coined the term Security Token Offering (STO). Before us, people were creating tokens on blockchains, mostly on Ethereum. Our thesis was that these tokens would work as actual financial securities.

There can only be so many protocol coins and so many dog tokens that people want to buy. However, people want stocks, they want bonds, and they want derivatives. So we built the first compliant securities framework for tokens on Ethereum: ERC-1400.

ERC-1400 is an extension of ERC-20 that allows issuers to do things like whitelisting token holders and implementing 24-hour volume transfer restrictions, which are required in some securities offerings. ERC-1400 was very cool and we got a lot of adoption. The government of Norway used it, Consensys used it, and BNP Paribas used it, but we still didn't see the immense traction we wanted.

So we (Polymath) decided "okay, Ethereum is good, but it's a general-purpose infrastructure." That meant it does all things for all people and tries to be a solution for all use cases, but it wasn't purpose-built for securities and it wasn't the best system for that use case.

We identified five main problems with Ethereum:

- 1) Governance
- 2) Identity
- 3) Confidentiality
- 4) Compliance
- 5) Settlement

It was clear we needed to build our own blockchain just for securities so we started building the Polymesh blockchain and launched in October 2021. Many of our team moved from Polymath over to the Polymesh Association, which we set up as a not-for-profit in Switzerland, and that's where I've been since. I'm focused on onboarding more financial institutions and bringing more regulated financial securities on-chain.

To take it a step back, what is the process of tokenizing an asset and why are people suddenly paying such close attention to this use case?

The process is surprisingly easy and the "tokenizing the asset" part is not, in my opinion, all that interesting. Tokenized offerings still require all the initial due diligence that happens in the legacy world like filing your prospectus, getting your securities lawyer to draft documents, etc.

Where these tokenized offerings differ is the inclusion of certain language that says "this offering may be offered as a token." So instead of signing a piece of paper that says "I own 10,000 shares," I can physically custody those shares in the form of tokens.

The tokenizing aspect isn't that interesting to me. It's more about what happens after tokenization. What's interesting now is how you receive and manage that asset, and the fees associated with it. For example, if I want liquidity for my asset I'll probably go to the Toronto Stock Exchange, New York Stock Exchange, or the NASDAQ, and then I'll spend a few hundred thousand dollars on due diligence, filing, and all of the ancillary fees to investment bankers, securities lawyers, and transfer agents. I have to do all of this to get my asset listed. But a tokenized offering lets the issuer unlock some of this liquidity for significantly less effort and cost.

I think what most people still haven't figured out yet is that you no longer have to talk to someone to get the same amount of work done. People used to have to go

to a bank to make a deposit or send a wire. Now we have crypto. I can send a billion dollars to anyone, anywhere, instantaneously. Previously you would have had to call someone if you wanted to lend against a stock position, but now you can deposit your security token into some type of DeFi lending protocol and take a loan against that asset.

What asset class will benefit the most from tokenization?

We're seeing a lot of real estate and a lot of debt. I think initially what people were excited about was the flashy crowdfunding opportunities that would drive up the asset class. There is still some of that, but we're seeing more banks use tokenization to save on OpEx and fees.

If a bank saves a hundred basis points inside of a bond issuance, that can be billions of dollars over a year. We just saw Soc-Gen (Société Générale) issue a green Bond on Ethereum, and we've seen BNP Paribas issue a bond via ERC-1400 (the standard our team created) on Ethereum. So I think banks are seeing how this stuff can save costs on their bottom line, which opens them up to more innovative ideas like tokenized collateral.

Soc-Gen is the clear leader. In terms of institutions that leverage public blockchain infrastructure, they recently submitted a proposal to MakerDAO that would allow their bond to be used as collateral to mint DAI which is super interesting. The most adoption we've seen for public blockchains today is with debt instruments and then real estate, which makes a ton of sense when you look at how slow and inefficient those markets are.

What impact do you believe tokenizing real assets will have on the traditional financial markets?

It's going to be big. The initial impact is just the cost savings as I mentioned. The things that are more interesting in the long-term are the features and utility you can bake into the asset and these securities. One thing we've explored with a couple of partners is paying daily dividends through a stablecoin. That is pretty interesting because it's never been done and the logistics of doing daily dividends without blockchains don't make sense. You'd have to manage all those bank accounts, wire fees, and intermediary banks, and it would get cost-prohibitive very quickly.

Another example is if you invest in a company and they set into some type of smart contract that if their cash flow hits a certain point, a dividend automatically gets paid to shareholders. Automating that kind of functionality today is impossible. So I think these new features and automation are where banks are going to be more excited in the medium- to long-term.

JP Morgan started this tokenization initiative using BlackRock shares as collateral with Barclays. The industry thinks this is promising. What are your thoughts?

I think in general it's just very promising to hear Larry Fink go from "Bitcoin is an index of money laundering", to BlackRock successfully launching one of the first Bitcoin spot ETF's, to him now saying, "tokenization is the next generation of markets".

They clearly understand what's happening. They understand that this is the next shift in the type of infrastructure that will be used for assets. Our thesis is that every single financial asset will live on a blockchain in the future. It's not an "if" at this point, but a "when". It's still going to take 10-20 years for that to happen, but it's going to happen.

Today, crypto has a market capitalization of \$1.7 trillion. I think securities on the blockchain will be \$10, \$20, \$50, or even \$100 trillion. Then you put real estate on top of that. It is all about getting tokenized assets in the form of securities on-chain. That's what pushes TVL (Total Value Locked) on blockchains. It's less about DeFi and protocol tokens and it's way more about all these financial instruments coming on-chain. I think everybody sees this infrastructure revolution coming and nobody wants to be last, but they also don't necessarily want to be the first to jump into using public blockchains so it's about finding that balance.

What are the biggest perceived drawbacks of tokenizing Real World Assets (RWA)?

The biggest concern we hear from banks is about privacy. They're interested in the tech, but they can't showcase client data on-chain. Even if it's a wallet address named 0x123, eventually someone can figure out who really is 0x123. The biggest hurdle is providing a sufficient level of confidentiality that institutions are happy with, while still giving the benefits of a transparent and open blockchain.

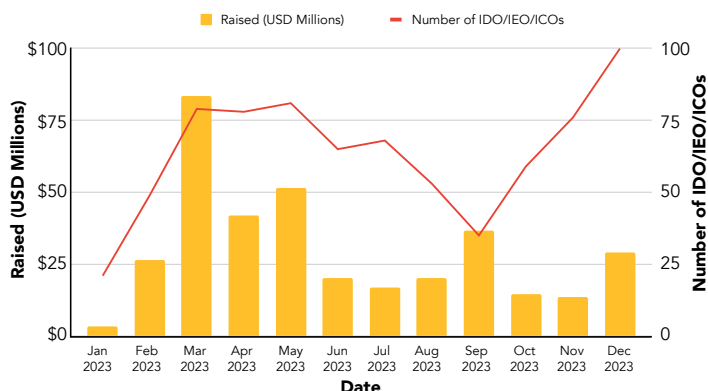
Other concerns are around identity. One of the reasons we built Polymesh instead of continuing to build on Ethereum was institutional concerns around identity. Everyone on Ethereum is pseudonymous and you can transact with anyone. So one of the concerns that they have is that they could have a hundred million dollar bond, make a trade, and pay five dollars in fees. But those fees could go to North Korea. So without the ability to determine if those funds are going to regulated actors, identity is a huge drawback of RWAs and public blockchains. We've solved that concern on Polymesh where all node operators are licensed financial entities.

What do you think is the next big trend or technological advancement that RWAs are expected to unlock for the industry?

Real estate is probably the biggest one we're going to see an immediate impact from. It just makes a lot of sense to put real estate on-chain. There are a lot of jurisdictions outside the US that have a huge appetite for real estate, especially real estate inside the US. Blockchains can facilitate much simpler multi-jurisdictional trading. Because of how blockchains work, it's pretty easy to program and delegate who can interact with these assets. We're going to go from a world where only the Blackstones, Starwoods, and gigantic U.S. REITs have access to these amazing buildings in the United States, to where someone in Vietnam with an Android device is going to be able to trade these assets. That's probably the most exciting shift in the near-term.

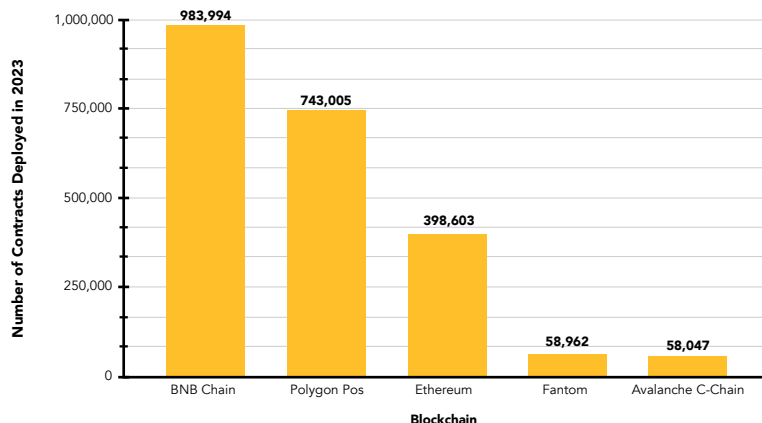
Public Token Launches 2023

Total Raised and Number of Public Sales Per Month



Date	Raised (USD Millions)	Number of IDO/IEO/ICOs	Average Raise Per Project
Jan 2023	\$3,420,000	21	\$162,857
Feb 2023	\$26,470,000	49	\$540,204
Mar 2023	\$83,600,000	79	\$1,058,227
Apr 2023	\$42,030,000	78	\$538,846
May 2023	\$51,670,000	81	\$637,901
Jun 2023	\$20,100,000	65	\$309,230
Jul 2023	\$16,710,000	68	\$245,735
Aug 2023	\$20,240,000	53	\$381,886
Sep 2023	\$36,640,000	35	\$1,046,857
Oct 2023	\$14,480,000	59	\$245,423
Nov 2023	\$13,580,000	76	\$178,684
Dec 2023	\$29,220,000	100	\$292,200

Number of Contracts Deployed in 2023



Blockchain	Number of Contracts Deployed in 2023
BNB Chain	983,994
Polygon PoS	743,005
Ethereum	398,603
Fantom	58,962
Avalanche C-Chain	58,047

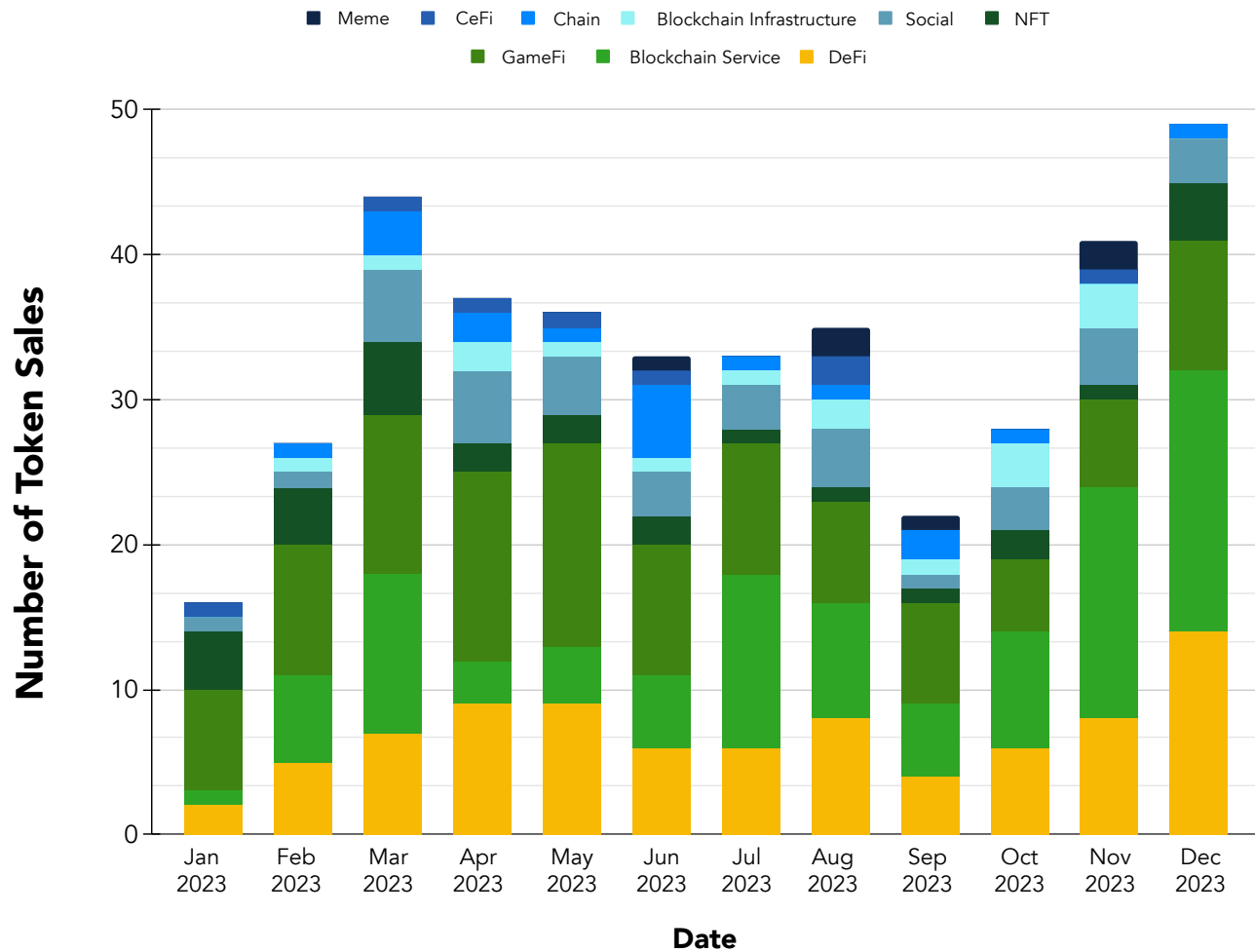
Reading Between the Lines

It appears that market participants were investing less into new altcoin issuances and were instead reserving their capital for more established projects. The per project raise total in Q4 dropped by -57%, while the market caps of blue chip assets like Bitcoin and Ethereum increased by 51% and 31% respectively.

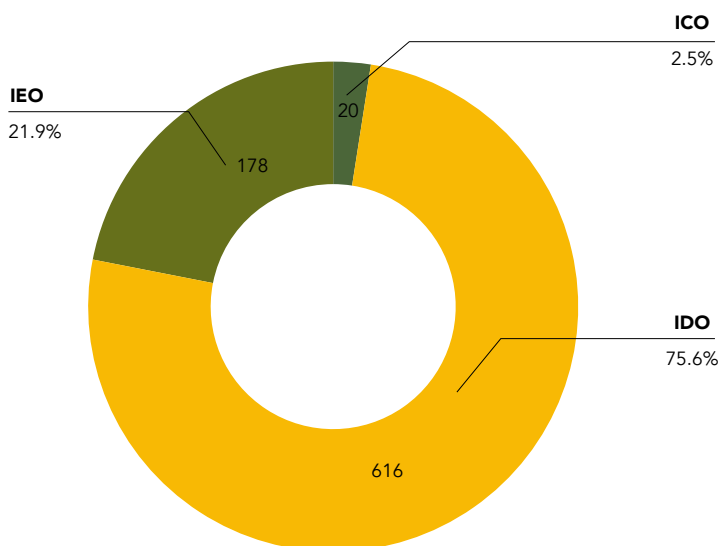
Average Raise Amount per IDO/IEO/ICO in Each Quarter of 2023

- Q1 2023: \$0.59 million
- Q2 2023: \$0.50 million
- Q3 2023: \$0.56 million
- Q4 2023: \$0.24 million

Number of Token Sales



Number of Public Token Sales By Type in 2023



Reading Between the Lines

The Top Three Categories by Number of Token Sales

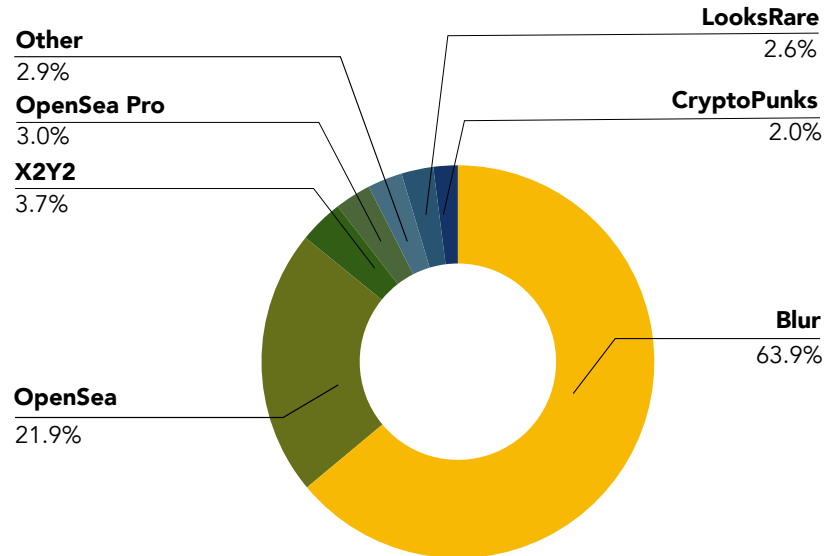
- GameFi: 106 token sales.
- Blockchain Service: 97 token sales.
- DeFi (Decentralized Finance): 84 token sales.

Token Sale Growth Across Sector:

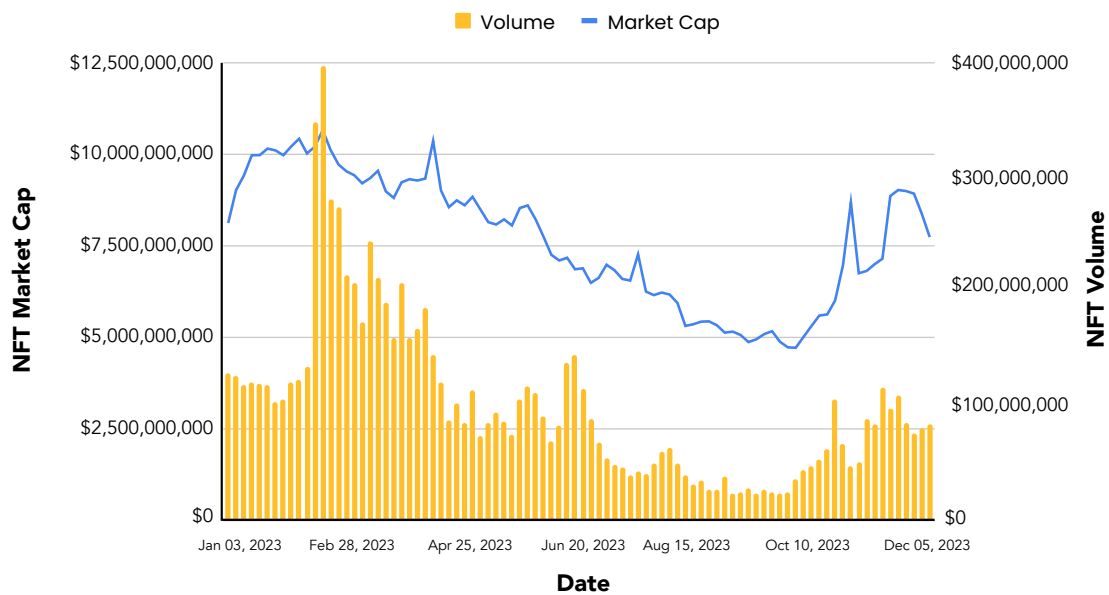
- The overall growth rate of token sales in the fourth quarter of 2023 was approximately 32.22%
- "Blockchain Service" had the highest growth rate of token sales (1700%)
- "CeFi" (Centralized Finance), saw the slowest growth in token sales with a negative growth rate of -100%

NFT Market Insights 2023

Market Dominance of NFT Marketplaces by Volume 2023



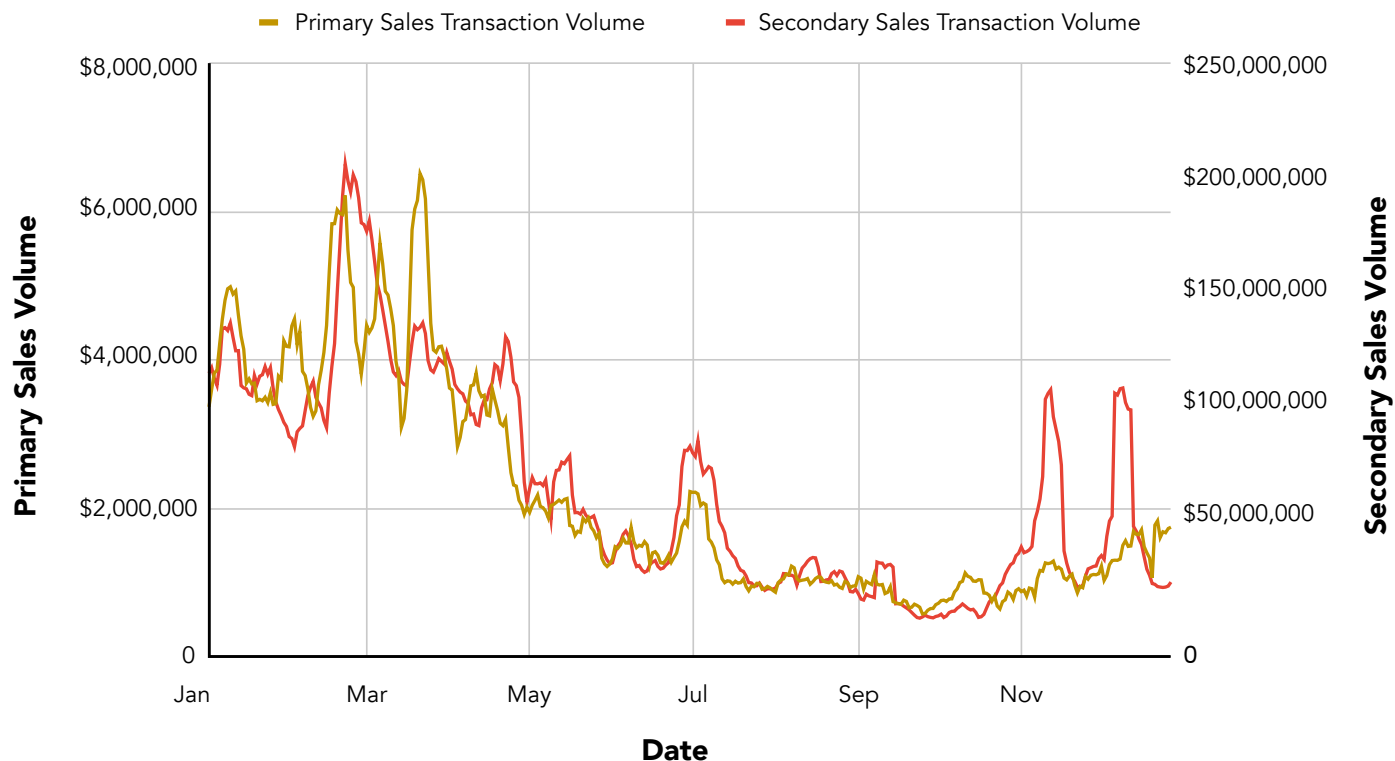
2023 NFT Market Cap and Volume



Reading Between the Lines

- OpenSea maintained its position as a leading marketplace, offering diverse collections and attracting a broad user base. However, its market share has been significantly reduced to #2 with the emergence of new entrants and niche marketplaces, contributing to a more diverse and competitive environment.
- Competition heightened as various platforms, like Blur, differentiated themselves through new offerings including offering zero platform fees, optional royalties, and more of a focus on trading analytics.

Primary vs Secondary NFT Transaction Volume 2023

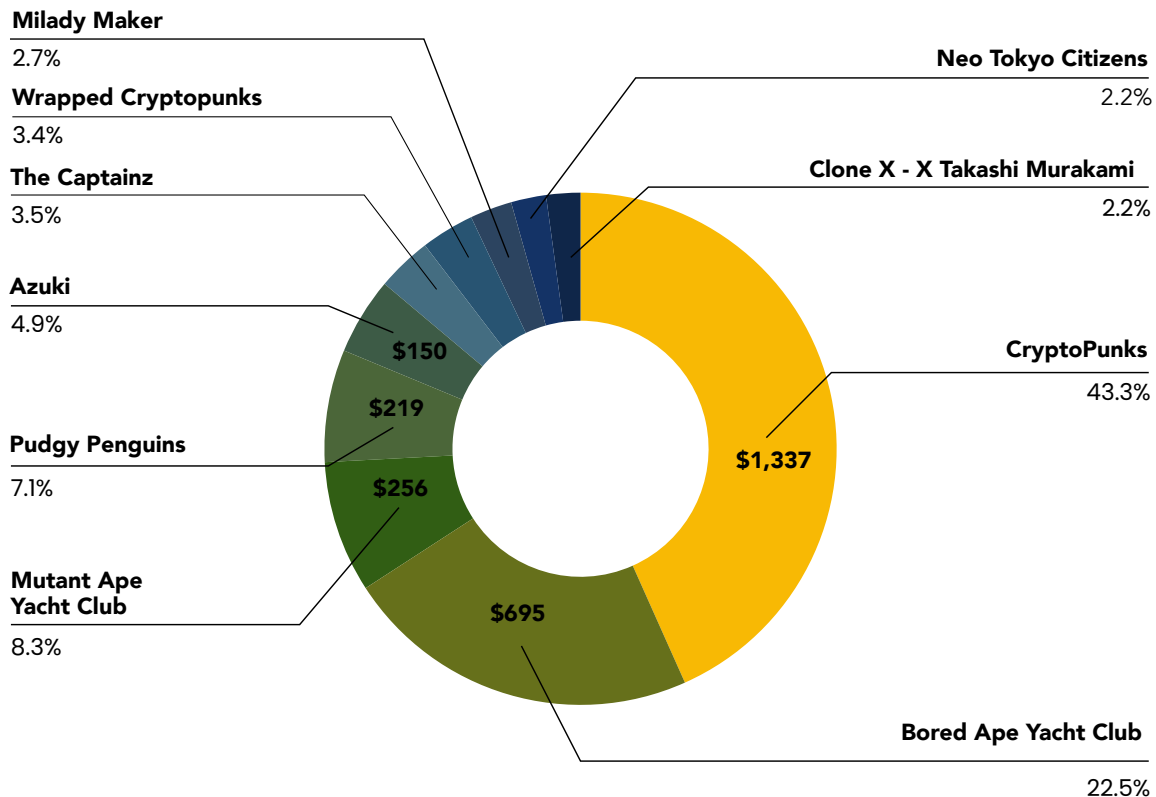


Reading Between the Lines

- In 2023, the growth of NFT transactions failed to materialize in both primary and secondary markets.
- Interestingly, despite the overall slow pace, there was a notable surge in secondary transactions during Q4. This uptick coincided with a broader market upturn, reinforcing the observed positive correlation between NFT transactions and the price movements of Bitcoin.
- Starting in November 2023, Bitcoin NFT volume surpassed the Ethereum volume in the NFT market.

Market Dominance of PFP Collections

Leading Profile Picture (PFP) NFT Collections Worldwide as of December 2023, by Market Cap (Millions USD)



"In November, some of the hottest gaming projects raised significant funding from venture capitalists. It's an exciting time for gamers and investors alike"

NICK GROSSI
Co-Founder & CEO Bridg3
@nickygee44



Reading Between the Lines

- As the NFT market gradually revived, established collections like CryptoPunks and Bored Ape Yacht Club remained in the spotlight.
- Ethereum maintained its lead in NFT transactions, commanding over 50% of the total transactions in 2023, with Solana following as the next prominent platform in terms of NFT activity.
- The floor price of CryptoPunks and BAYC were both at 75 ETH and dropped to 50 ETH and 25 ETH respectively.

In Conversation with Tom Nguyen from Metis

Exploring L2 Innovation

- Optimistic Rollups and ZK Rollups
- Ethereum scalability issues



TOM NGUYEN

L2 Executive Lead
Metis

 @MetisDAO



Metis is a first of its kind, scaling and user friendly platform built to scale Ethereum and facilitate infrastructure development. The Metis Layer 2 is just the core component of the Metis Stack, followed by the Reputation Power System, and the Decentralized Autonomous Company (DAC) Framework. The Metis Stack will provide the perfect environment for infrastructure development, day-to-day businesses, and other forms of open collaboration to take place.

Tell me more about your background.

As an entrepreneur with a foundational background in investment and business development, I delved into blockchain in 2018. Over three years, my active role in this field, especially in Web3 projects and the broader ecosystem, has been a contributing factor in driving innovation and advancement for teams building in the space and more recently with Metis. This mix of experience and engagement in the blockchain sector has been valuable in shaping a forward-thinking approach to drive Metis as a leader in innovation and contributor for adoption.

Tell me more about MetisDAO.

MetisDAO, to me, is a paradigm of innovation that is community centric in the blockchain space. It's not just a technology or a platform; it's a vision of a more scalable, efficient, and collaborative blockchain ecosystem. MetisDAO stands out for its commitment to enhancing the Ethereum network, making it more accessible and practical for a wider range of applications.

Can you explain how Metis' Smart Layer 2 technology enhances the scalability and security of Ethereum?

Metis' Smart Layer 2 technology is a leap forward in addressing the scalability and security challenges of Ethereum. By enhancing transaction speed and efficiency, while maintaining one of the lowest if not the lowest transaction fees for an L2 and inheriting the security measures of the Ethereum network, Metis provides a solution that is both practical and forward-looking. It's about making blockchain technology more usable and applicable.

I find that crypto is amazing at building, but not so great at explaining. In your own words, please explain Optimistic Rollups from ZK Rollups.

In simple terms, Optimistic Rollups and ZK Rollups are two approaches to scaling blockchain networks. Optimistic Rollups assume transactions are valid by default and only run computations in the event of a challenge, which enhances efficiency. ZK Rollups, on the other hand, provide cryptographic proof of validity for each transaction. Both have their merits, but they cater to different needs and scenarios in the blockchain ecosystem.

Why has Metis chosen to go with Optimistic Rollups as its architecture?

Metis' selection of Optimistic Rollups as our primary architecture was a strategic choice, aimed at balancing efficiency and security, ensuring fast transaction processing with simpler validation. At Metis' inception, ZK rollup technology was still in early stages, but recognizing its potential, we're evolving our approach. We're excited to introduce our Hybrid Roll soon, blending Optimistic and ZK rollups to meet current user and decentralized app demands.

At scale, what will the L2 landscape on Ethereum look like? Will one L2 'rule them all', or will certain L2's be used for certain use cases etc?

The future of L2 solutions on Ethereum will likely be a diverse ecosystem where different technologies coexist and serve various niches. No single L2 solution will "rule them all", but rather, we'll see a range of solutions catering to different use cases, security needs, and performance requirements.

The value of any network is directly attached to the people and communities using said network. So, in what ways can Metis' platform support the development and growth of decentralized autonomous communities (DACs) or decentralized autonomous organizations (DAOs)?

Metis' platform can significantly support decentralized communities by providing a more scalable and efficient infrastructure. This enables DAOs, DACs & Econodes to operate more effectively, fostering growth and innovation within these communities. Metis' governance framework can help facilitate better governance, more transparent operations, and enhanced collaboration among community members while aligning economic value for collaboration that will be rolled out this year.

What are some of the unique economic opportunities that Metis' technology unlocks for developers and businesses?

Metis' technology, particularly our decentralized sequencer architecture, is a key driver in unlocking unique economic opportunities. This innovation not only allows for diverse participation in ecosystem

operations but also stimulates economic growth through a 'capital flywheel' effect. By enabling entities, from operators to community members, to build upon and around the decentralized sequencer, it creates a vibrant environment for expansion and innovation. This approach catalyzes a dynamic cycle of economic activity, where the success and growth of one participant amplifies opportunities for others, creating a self-sustaining ecosystem for continuous development and economic stimulation.

What strategies does Metis have in place to foster a robust and decentralized ecosystem governance?

Metis is deeply committed to fostering a robust and decentralized ecosystem, and our governance strategies are centered around this commitment. We believe in empowering our users and stakeholders, giving them a significant voice in governance decisions. This not only promotes a more democratic environment but also ensures that our ecosystem aligns with the foundational principles of blockchain technology.

To concrete this vision, we are excited to begin the rollout of the Metis governance framework in the second quarter of 2024. This framework is designed to support and enhance community-led governance.

Can you discuss any partnerships or collaborations that Metis has formed to expand its technological and market reach?

Certainly. Strategic partnerships are a cornerstone in broadening the scope and impact of Metis' technology. Our collaborations with notable industry leaders like Chainlink, LayerZero, Avascan, Versal Payment, Parsiq, and ZKM are prime examples. Each partnership brings its unique strengths to the table:

- Chainlink enhances our platform with reliable, tamper-proof data feeds.
- LayerZero contributes to interoperability, allowing seamless cross-chain interactions.
- Avascan provides transparency and analytics for on-Chain activities.

- Versal Payment extends our capabilities in the fintech domain, enabling more robust financial solutions.
- Parsiq offers advanced monitoring and automation features, enhancing the utility and efficiency of our network.
- ZKM supports our Hybrid Rollup Integration by providing instant withdrawal with ZK validity proof.

How might changes in global regulatory frameworks for blockchain and cryptocurrency impact Metis' operations and adoption?

Global regulatory changes are a significant factor for blockchain platforms like Metis. Metis will adapt its operations and strategies to comply with legal requirements, as the area continues to evolve. Staying ahead of regulatory trends is critical and Metis is working with guidance from leading experts in this area.

Besides the obvious challenges of scalability, what are some other challenges that face Ethereum and its ability to scale and acquire new users?

Beyond scalability, challenges like user experience, interoperability, and security are crucial for Ethereum's growth. Ensuring a seamless and intuitive user experience is vital for attracting new users and mass audiences. Interoperability with other blockchains and systems is also essential for broader adoption. Lastly, continuously enhancing security measures is critical to maintain trust and reliability in the ecosystem.

In Conversation with Darius Tabatabai from Vertex Protocol

Blurring the Lines Between DeFi and CeFi

- Exploring L2 innovation
- What is holding DeFi back from parabolic growth
- Building a startup in DeFi
- Major innovations in POS ecosystems



DARIUS TABATABAI

CEO & Co-Founder
Vertex Protocol

X @DariusTabai



Vertex is a cross-margined decentralized exchange (DEX) protocol offering spot, perpetuals, and an integrated money market bundled into one vertically integrated application on Arbitrum. Vertex is powered by a hybrid unified central limit order book (CLOB) and integrated automated market maker (AMM), whose liquidity is augmented as positions from pairwise LP markets populate the orderbook. Gas fees and MEV are minimized on Vertex due to the batched transaction and optimistic rollup model of the underlying Arbitrum layer two (L2), where Vertex's smart contracts control the risk engine and core products.

Thanks for joining us Darius, before we get into Vertex, I would love to hear more about you and how you got into crypto.

I first started trading crypto in 2017. I was quite early on BitMEX. I was trading cash and carry there and then moved into messing around with a few other things before I drifted away for a bit. I still had my eye on it, but I wasn't like a crypto maxi or anything. I didn't hold Bitcoin or Ethereum (I probably should have) and then I bought some again in early 2020, and was trading a bit again. I was working at a hedge fund trading commodities and had tried to get the fund into crypto but couldn't get it done so I then decided to go full time into the space about three years ago. I had the initial idea for Vertex which was going to be a multi-currency trading platform on Terra. I sort of went full-on on the builder side and I met my co-founder and got a team together. We raised money early last year (2023) and then went through the collapse of Terra and all that fun over the last 18 months until we kind of launched Vertex about seven months ago. So that was kind of the journey.

Okay, so let's tackle Vertex right away. What is Vertex and what problems are you guys solving?

There's loads of things going on under the hood. But Vertex is basically an exchange that is totally self-custody and allows you to trade spot or perps on an order book like you would with any normal exchange. Under the hood, it's all built on top of smart contracts on Arbitrum. It's an order book, so everything goes directly to chain and the two major advantages you have over a centralized exchanges are 1) it is self-custody so you control your funds at all times and 2) everything we do is cleared on-chain so you know that all the volume we do is real, you know that the trades are done fairly, and every event is registered on-chain.

DEX to CEX trade volume has decreased over the past year, closing November at just 3%, down from 5% in January. What do you think is needed to see those numbers rise again?

I think I've said this in a number of interviews, but the major problem with DEXs is UX. I think Vertex sets a pretty good standard, our front end is quick, we have one click trading to enable order placing, you don't have to sign every time you send an order or try and do a trade. But some of the things that are baked into being a DEX are kind of painful. Wallet UX is generally terrible, and onramping is generally terrible. DEXs and DeFi are in a very unregulated space so companies like Vertex who've worked really hard to be credible, look after our users, and make sure everything functions well, are on the same footing as a rug pull. As an average user it is kind of a scary place to be. I think as long as these UX issues persist for the users, DeFi and DEXs will remain a difficult vertical to grow. The advantage with centralized exchanges is they've been around a lot longer, so they've got all their UX and UI buttoned down. They know what their users want, broadly speaking, and it is generally regulated. So you've got a lot of things going in their favor. I think that can change with products like Vertex. As we expand our product, we will move into things like account abstractions, help obfuscate some of the wallet stuff away, and build deeper partnerships with onramps. The fact is, all these things will improve, but it's going to take time and at the moment these are the things that hold people back. I can't imagine DEXs being more than 10% of all volumes, until these things are solved I don't think there will be a meaningful uptick in that number.

Do you think these UI/UX constraints are a good way to prevent people from just jumping into Web3 without knowing the importance of self-custody, DYOR, and other key themes?

Not really, I think that's kind of a crypto bro, lie to yourself kind of thing, right? If you look at the original, hardcore Bitcoin developers this was why they designed it this way; so that the complexity was the protection. But what you have now is a bunch of people just jumping in, they can't understand it, and the complexity just breeds new risk. There are so many nuances to safely operating in Web3; how many people inspect a transaction before you send it in MetaMask (which you're supposed to do every single time)?

Even if you did inspect it, do you know what you're looking for? Probably not? And so, at that point, it's not really protecting anyone because people's excitement or greed leads them to still carry on using crypto even though they haven't done the due diligence to operate safely. Then when you look for help, hardcore crypto people say "well, you should have inspected the transaction" or "you should have learned to code before you use crypto". If that's the hurdle rate, then we're never going to get mass adoption. And if you want this to be a successful, vibrant space, you've got to be appealing to the masses.

What macro changes (regulatory, education, etc.) need to happen to increase the adoption in DeFi?

I think it's more micro than macro. I bang on about it all the time, but the UX thing is just such a hindrance. Anyone that works in crypto that's tried to help their family member set up a MetaMask will know the sudden PTSD that comes from having to explain seed phrase security, transactions signing, avoiding beta features on dApps etc. This is such a leaky funnel in terms of user experience that you just lose people along the way. The industry has already made leaps and bounds (I mentioned trading on BitMEX), But it still needs to make another leap of that magnitude. It might take another 2-4 years but we're moving in the right direction. You see it with some of these new wallet providers, how good they are, how easy they are to use, but I think we still need to make another huge leap.

Is there a new trend that you think hasn't gained a lot of traction that you think is gonna come up? Do you think there's one thing that's been a little overrated?

I think composability has been a bit overrated, people talk a lot about composability but in reality, the net benefit to users has been limited. As far as I can tell the biggest upside has been for people doing MEV where they take money out of the hands of general users, which is not fantastic. I think you'll probably see more integrated platforms. I'm kind of talking about my own book a bit, but you know, the reason we built Vertex the

way we did is because it integrates a number of primitives. I think you see that with others as well. Mango pioneered some of this with Mango markets on Solana. You see dYdX trying to integrate spot and perps now.

I think you'll see DeFi platforms move this way because once it's integrated in one place, you reduce the attack surface area external to your own contracts. You've got something that operates well, you retain wallet share with your users, and then you can share that with other community members. So there's like an efficiency component to that which kind of mimics how banks work right; you'd never go to like one person for lending, one person for spot, one person for your derivatives. You'd always have all of that under one roof. I think you'll see that sort of thing in DeFi. As a result, I think you'll see convergence on fewer platforms. One of the characteristics of DeFi is a million competing protocols, sometimes it feels like there are more protocols than there are users, right? You still have to have that wild creation, but I think we'll see more concentration, just look at UniSwap. They control such a huge percentage of spot already. And for dYdX, up until the last couple of months, they were dominant beyond reason in the derivatives space. Now we and a couple of our competitors have grown and that is changing. I think you'll just see a bit of that, where use-cases converge on one or two platforms to be dominant. And those platforms will be what leads DeFi in terms of trying to compete with centralization.

Another trend is probably the convergence between DeFi and CeFi. I don't believe that DeFi and CeFi will be radically different ecosystems, it'll all just become crypto. The centralized exchanges will start to use more self custody and on-chain clearing solutions and the DeFi solutions will probably start to integrate more centralized pieces to help with UX, there's probably a middle ground where these things just work best for users.

Liquid staking tokens gained a ton of traction as ETH went through its network upgrade. Why do you think it was able to attract \$26 billion of deposits?

I think staked ETH is quite an interesting product. The Ethereum foundation for all the dysfunction generally has been very innovative. I think most people who come into crypto want to make money in one way or another right. So, they're either looking for yield or something that they think will go up in value. The nice thing with staked assets is they give this kind of rebasing yield in the native asset. Which means if you're bullish, and you want it to go up, you can get that but also get that compounding yield on top. So yeah, I think staked ETH has been a good addition. I think in some ways it's a shame that those are probably the only two things that have got a massive draw for most people. You know, you hear people talk about blockchain games or payments, in reality the ground that's been made in that space has been pretty limited. Most people are in it for speculation on capital or yield accrual.

Obviously at one point you guys were building on Terra, now you're on Arbitrum. Can you take a few minutes and explain how the Terra/Luna situation impacted you, and why a L2 and specifically Arbitrum made sense as the next home for Vertex?

It's kind of an interesting situation. We closed our round in March/April of last year (2023). We had been building so a lot of the team had been operating on good faith until after the raise. So post-raise, we paid people, and we were like a month or so away from testnet launch and then UST started to depeg and Luna started to wobble. I've seen currency depegs before, I was a currency trader for a long time and traded options for a long time so I knew there was a possibility of a death spiral if things depegged too much and volatility picked up a lot. So thankfully we took the decision to hedge our treasury very early. I think on average we hedged it all around 98 cents. At the time, anyone we spoke to about this decision laughed at us a bit because if you remember, it did briefly bounce back to 99 cents. This happened Monday, but by Wed/Thurs UST was at 40 cents and Luna was in freefall. By the end of the week Luna was essentially zero. So thankfully we had the treasury and good funding, but we now had to decide what we wanted to do next. We took the view that we built this interesting exchange mechanic, but

currency-as-a-service wasn't going to be interesting to crypto folks for a while. That meant that everything was probably going to converge on Ethereum in terms of TVL and activity. So for Vertex as a trading app, activity would probably converge on a L2, so that's what we did. The choices were between an Optimistic Rollup and a ZK. We didn't want to build on Stark because we didn't want to build with Cairo. We wanted to be interoperable and that really left us with Solidity which was on Optimism or Arbitrum at the time. And Arbitrum just basically edged Optimism and that's how we ended up going on Arbitrum.

You've onboarded quite a few MMs to Vertex, and some are even on your cap table. What about Vertex made it a viable platform (and investment) for these MMs ?

I think the number one thing we do when approaching Vertex is trying to build with as little friction as possible. So in the case of market makers, our technical setup is such that we have a sequencer that also operates as our order book. That setup operates in extremely low latency with very high throughput. We have a latency in the region of like five to 10 milliseconds, that's comparable to, or even beats several centralized exchanges.

That means we're extremely easy to connect to because they use the API that comes from us. We give them technical assistance. They connect and they're able to provide liquidity via API through the sequencer at low latency that enables them to be confident about rates they're showing, and that they're not going to get picked up etc. So I think just coming from a trader background where we understand what traders want and need to be successful; we've given it to them. That's made them able to be confident in making markets and trading and it has really become a mutually beneficial relationship.



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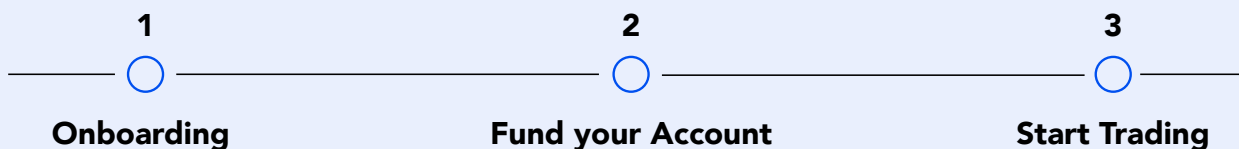
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Closing Remarks

2023 – a year that has been as challenging as it has been transformative for the digital asset markets.

This was a period characterized by high volatility that certainly tested the resilience of our industry. Despite the adversity, we managed to make significant strides towards forging a more mature market, marked most notably by our regulatory breakthrough and continued innovation.

The regulatory changes provided clear guidance that allowed the impressive integration of new investment vehicles and DeFi into mainstream finance. This highlights the global financial community's growing recognition of cryptocurrencies as a legitimate and integral part of the financial ecosystem. Further innovations continue to also disrupt industries far beyond just finance. This includes healthcare, supply chain and entertainment, showcasing the versatile and far-reaching potential of this technology.

As we look to 2024, it is clear that the digital asset space is at a pivotal moment in its history. The coming year promises further growth, and, inevitably, more challenges. However, if the lessons of 2023 have taught us anything, it is that the digital asset community is unyielding, adaptable, and fiercely forward-looking.

Let us step into 2024 with a renewed sense of optimism and purpose. We stand on the brink of a new era in digital finance, one that promises greater inclusivity, transparency, and efficiency. Together, let's embark on this journey with an open mind and a steadfast commitment to innovation and excellence.

As we wrap up the report I would like to once again express my heart felt gratitude to our team, partners, and the entire cryptocurrency community.

Thank you for your trust in SDM, here's to a monumental year ahead in the world of digital assets!

Warm regards,
Zach Friedman



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