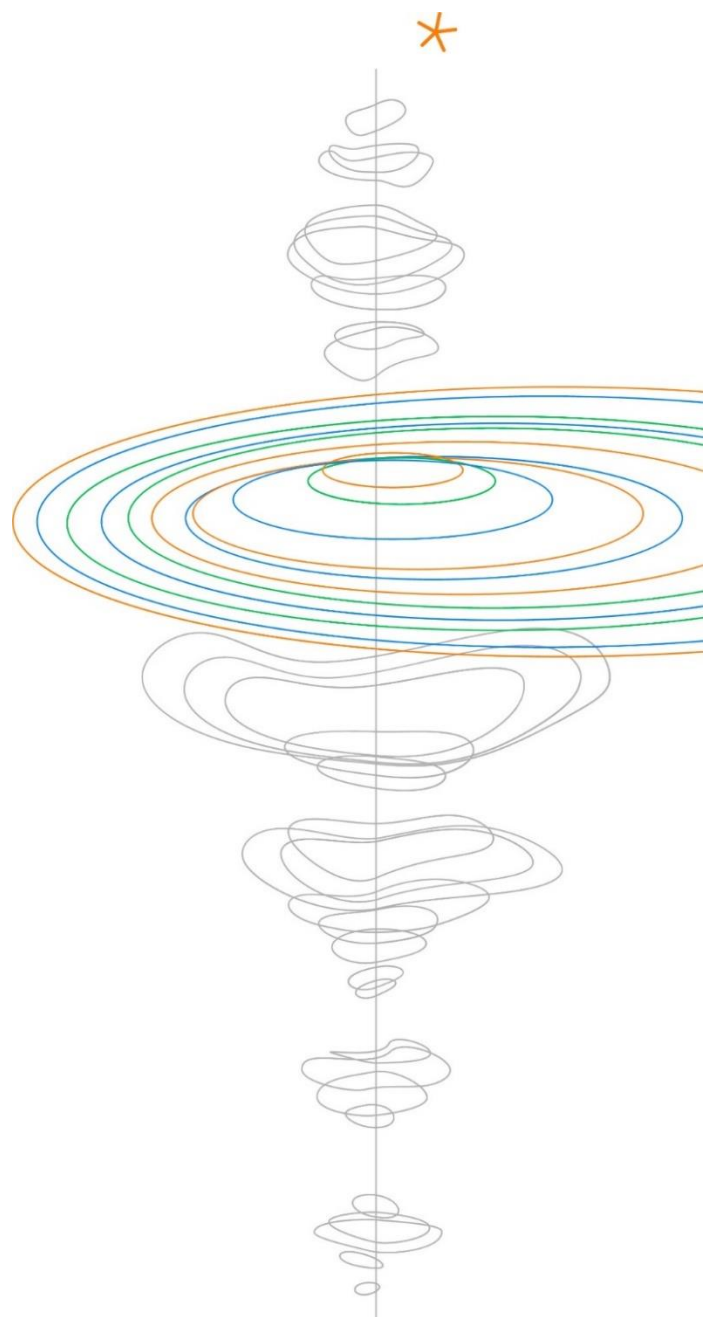


Digital Assets

Q1 2023 - Market Update



KEY HIGHLIGHTS:

- After a difficult last quarter in 2022, Bitcoin has recovered strongly during the first quarter of 2023 with a 73% return in USD terms. This price movement was likely strongly related to investors' fear of a potential collapse of the traditional banking system. Not only Bitcoin but also all the crypto market recovered during Q1 2023. Yet Bitcoin remains one of the leaders in terms of performance.
- Despite the good performance of Bitcoin, last quarter was not easy for the crypto ecosystem, especially after mid-March when the banking crisis hit some crypto friendly banks.
- Stablecoins were particularly shaken last quarter as well. Not only did Paxos stop issuing BUSD for Binance but also USDC and DAI lost their pegs as the market feared that Circle deposits at Silicon Valley Bank (SVB) could be lost.
- Ethereum is pursuing its merge developments. The Shanghai upgrade enabling stakers to withdraw their coins is expected for early April. Bullish and bearish scenarios are being confronted. Let's see how it plays out!
- DeFi is still struggling to attract value as market participants are not interested in building leveraged positions with lending protocols. Liquid staking remains one the most important DeFi activity with Dexes liquidity providing.

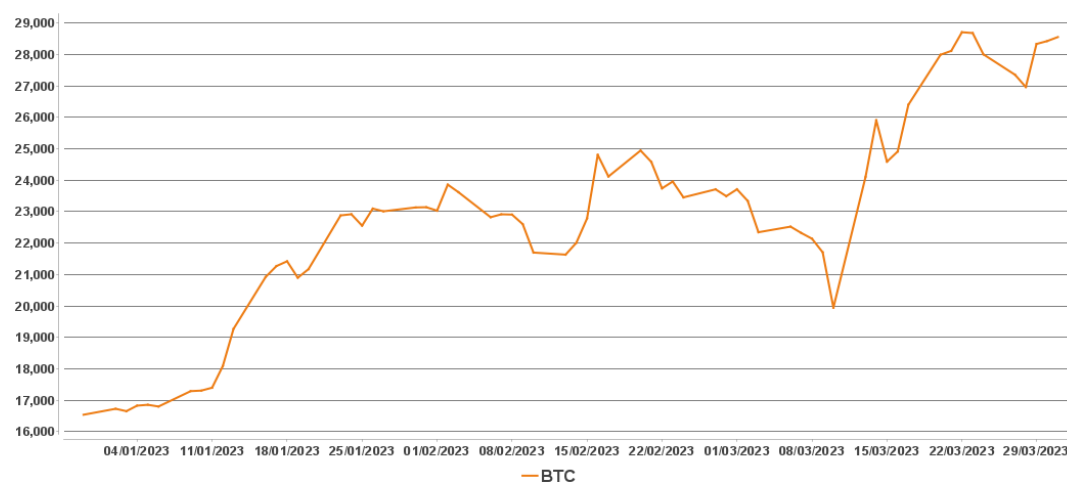
1. BITCOIN REBOUNDS STRONGLY IN Q1 2023

Key take-aways of this section

- After a difficult last quarter in 2022, Bitcoin has recovered strongly during the first quarter of 2023 with a 73% return. This was strongly related to investors' fear of a potential collapse of the traditional banking system. Not only Bitcoin but also all the crypto market recovered during Q1 2023. Yet Bitcoin remains one of the leaders in terms of performance.

After a difficult last quarter in 2022 with the collapse of FTX last November that led to a decrease in Bitcoin price from US\$ 20K to less than US\$17K, Bitcoin recovered strongly during the first quarter of 2023 with a 73% return: from US\$ 16,540 on December 31st to US\$ 28,517 at the end of Q1 2023 as highlighted in Figure 1. The main reason for this performance boost was, apart from the overall positive risky assets' sentiment, investors' fear that emerged during the month of March: their bank deposits in traditional US financial institutions might not be safe anymore and that they may have to put their money elsewhere other than in bank accounts or into short-term fixed income.

Figure 1: Bitcoin price for Q1 2023



Source: Coingecko, TOBAM

Despite the good performance of Bitcoin, last quarter was not easy for the crypto ecosystem, especially mid-March when Silicon Valley Bank (SVB) who had many crypto-related clients was on the verge of bankruptcy. The first reaction of the market was a crypto sell-off pushing the price of Bitcoin back to US\$ 20K, after nearly reaching the US\$ 25K checkmark on February 20th. However, shortly after SVB's bankruptcy, the US Federal Reserve (FED) decided to provide billions of dollars to reduce the risk of a panic and let all clients recover their funds, even those with deposits over US\$ 250,000. Bitcoin's price rallied strongly: this may be the beginning of a paradigm shift as these events may have changed the way investors see Bitcoin as a reserve currency asset.

TOBAM Bitcoin CO2 Offset fund perfectly captured the strong positive performance of Bitcoin this quarter: it exhibits a correlation of 100% and a beta of 1.00 from end of Q1 2022 to end of Q1 2023.

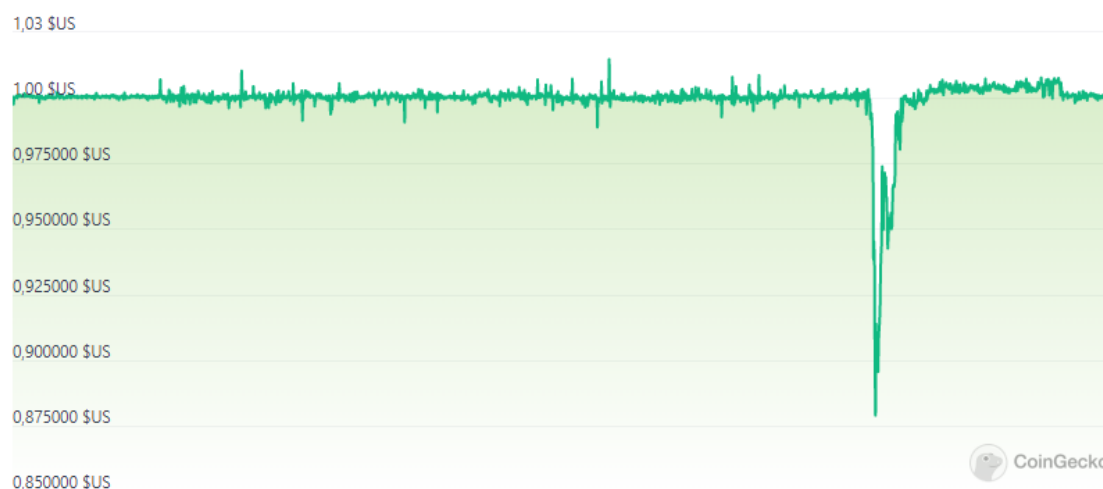
2. HOW STABLE ARE STABLECOINS?

Key take-aways of this section

- Despite the good performance of Bitcoin, last quarter was not easy for the crypto ecosystem, especially after mid-March when the banking crisis hit some crypto friendly banks.
- Stablecoins were particularly shaken last quarter as well. Not only did Binance have to stop issuing BUSD but also USDC and DAI lost their pegs as the market feared that Circle deposits at SVB could be lost.

Last quarter stablecoin holders were reminded of the risky nature of crypto assets, including stablecoins. Everyone remembers the crash of Luna and its associated stablecoin UST in May 2022. This time things were different as USDC, issued by Circle, was backed by US Treasuries and cash. On top of this, Circle reserves were regularly audited by third parties. Unfortunately, more than US\$ 3 billion in cash was kept at SVB mid-March, representing approximately 8% of the USDC reserves at that time. Before the FED released its reassuring statement, the market panicked during the weekend (March 10th and 11th) and USDC value declined sharply and reached 87.5 cts before getting back to the peg the next Monday.

Figure 2: USDC (Circle USD stablecoin) price during Q1 2023



Source: Coingecko

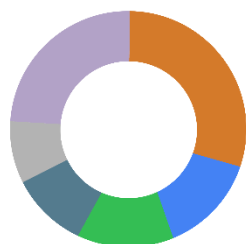
USDC was not the only stablecoin that was impacted. DAI, an overcollateralized crypto backed stablecoin issued by Maker with more than US\$ 5 billion of market capitalization at the end of 2022 was a collateral damage of USDC, as not only ethereum or bitcoin but also USDC can be used as collateral! Even if the USDC amount used as collateral is relatively low: 2.8 billion USDC are deposited as collateral, representing slightly less than 30% of the total collateral, as the collateralization ratio for USDC is 100% (i.e., 1 deposited USDC can be used to mint 1 DAI), the total amount of DAI that has been minted from USDC collateral represents more than 50% of the total DAI capitalization.

Figure 3: DAI collateral breakdown as of end of Q1 2023

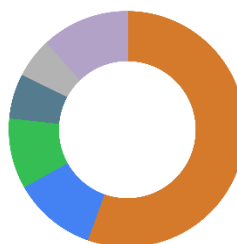
Collateralization

TOTAL VALUE LOCKED
\$9,390,919,427

COLLATERALIZATION RATIO
184%



PSM (USDC): \$ 2.8B
ETH Low Fee: \$ 1.28B
Monetalis Clydesdale: \$ 1.2B
ETH Balanced: \$ 1B
stETH Balanced: \$ 792M
Others: \$ 2.26B



USDC: \$2.8B
ETH: \$ 584M
RWA007: \$500M
GUSD: \$ 307M
WSTETH: \$ 278M
Others: \$ 617M

Value locked by vault type

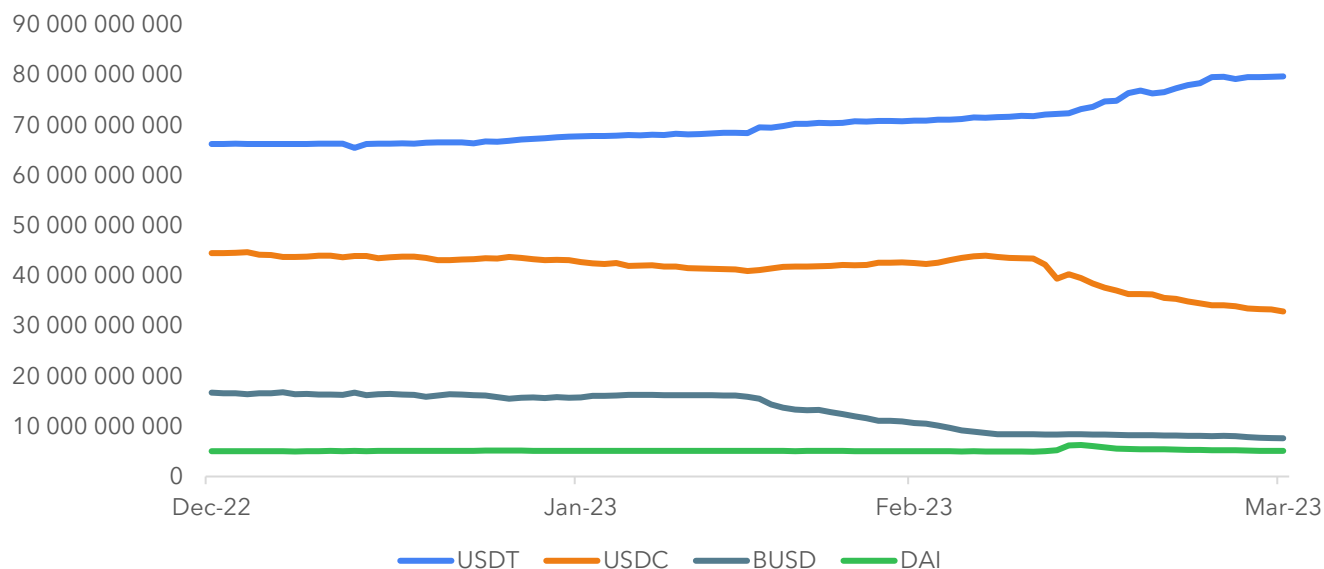
Total DAI minted from collateral

Source: makerburn.com

Binance stablecoin BUSD also had difficult times last quarter. On February 13th, Paxos, the company that issues BUSD, has been instructed to stop issuing the stablecoin by its regulator, the New York Department of Financial Services (NYDFS). The NYDFS has issued a statement in which it says that the order was "as a result of several unresolved issues related to Paxos' oversight of its relationship with Binance in regard to Paxos-issued BUSD." Their main concern was the following: if Paxos only issues stablecoins on the Ethereum blockchain, Binance issues pegged tokens on other blockchains that have not always been backed correctly with Ethereum BUSD.

Tether issued stablecoin (USDT) was the big winner, with a market cap reaching US\$ 80 billion at the end of Q1 2023. However, we think that uncertainties about Tether's quality of collateral are not much better than a few months ago. In our view, the move into USDT by certain investors is not quite understandable.

Figure 4: stablecoin market capitalization evolution (in USD) during Q1 2023



Source: coingecko

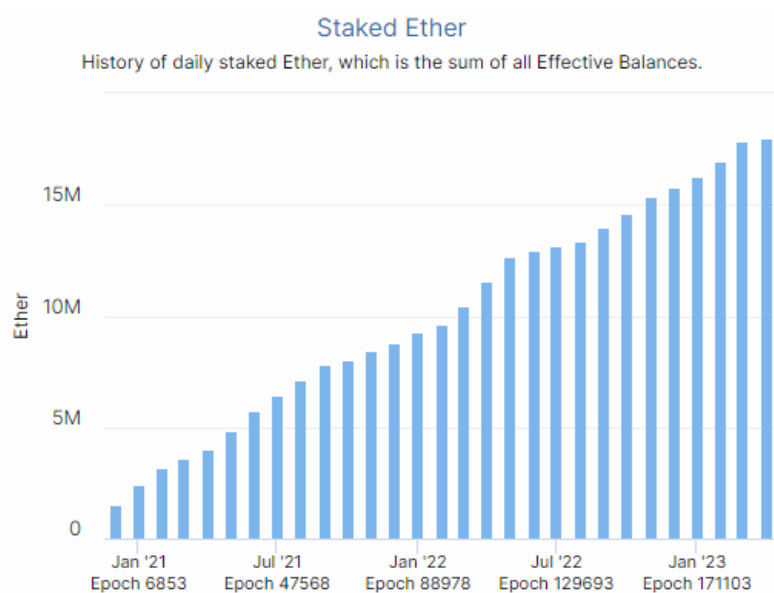
3. ETHEREUM IS FINALIZING THE MERGE TRANSITION

Key take-aways of this section

- Ethereum is pursuing its merge developments. The Shanghai upgrade enabling stakers to withdraw their coins is expected for early April. Bullish and bearish scenarios are being confronted. Let's see how it plays out!

The Merge¹ marked a significant milestone for the Ethereum network in 2022, with the blockchain platform shifting from the proof-of-work (PoW) to the proof-of-stake (PoS) consensus mechanism. This change introduced validators as the new “miners” of the network, with staking ETH becoming a key component to maintain the network. The Ethereum ecosystem will continue its ongoing metamorphosis as the highly anticipated Shanghai upgrade is expected to be implemented on April 12th. This upgrade will activate Ether withdrawals from Ethereum’s Beacon Chain. As there are around 18 million ETH tokens staked at the end of Q1 2023, representing more than US\$ 32 billion at the current price levels, it will be interesting to see how the market reacts to this upgrade.

Figure 5: Cumulated staked ETH tokens



Source: beaconchain.in

Will lockers withdraw and sell their tokens and their rewards? To prevent the market from a massive ETH sell-off, the development team has designed a withdrawal queue for full withdrawals: only six validators (this number can increase with the number of total validators) are allowed to exit their initially staked amount per epoch². As a validator had to commit initially 32 ETH and given the fact that an epoch lasts 6.4 minutes on the Ethereum blockchain, we end up with a total of 1350 validators possibly exiting staking per day with 43,200 ETH. At the current prices it represents a sell pressure of US\$78 million. With an average volume of more than US\$ 15 billion per day over the month of March 2023, the withdrawn ETH would only represent 0.52% of the average daily volume. We should keep an eye on the

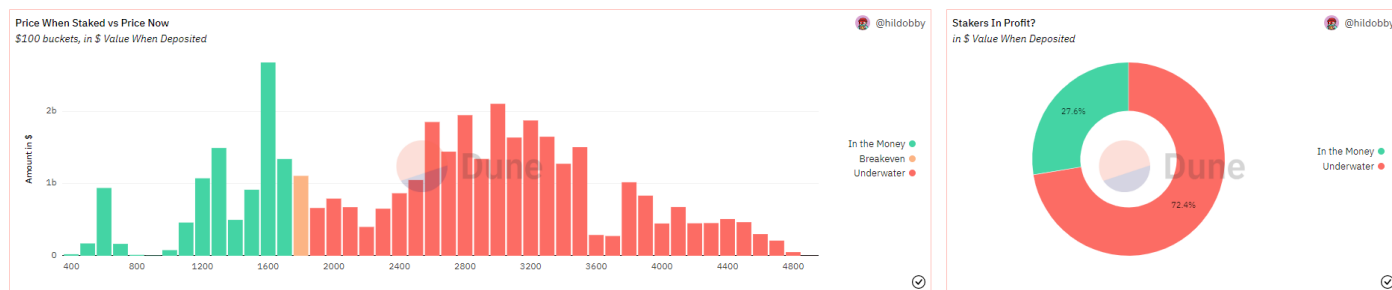
¹ The Ethereum Merge is the joining of Ethereum's proof-of-stake (PoS) Beacon Chain with the Ethereum Mainnet to transition the Ethereum blockchain off the legacy proof-of-work (PoW) system. With the completion of the merge on Sept. 15, 2022, Ethereum made the switch to a PoS model.

² An Epoch is a period of 32 slots (slot = period of time in which a new block can be proposed by a validator in the PoS system). Each slot being 12 seconds, an epoch is totalling 6.4 minutes.

staking rewards earned as these could be withdrawn immediately after the upgrade. At the end of March, validators have an average of 34 ETH. With 500,000 validators, the total amount of ETH that have been earned through staking and that could be withdrawn sums to 1 million ETH, or US\$ 1.8 billion representing 12% of the average daily volume over the last 30 days of Q1.

How likely are lockers to sell their tokens? It is difficult to answer this question but what we see now is that a lot of stakers are underwater as they started staking during the 2021 bull market. More than 72% of the stakers have a negative unrealized PnL meaning that there is no big appetite to quickly take massive profit for a lot of staking participants.

Figure 6: ETH price when staked vs price at the end of Q1 2023



Source: dune.com @hildobby

Will new players enter the field? Again, this is a difficult question to answer. However, we can imagine that the uncertainty from being unable to withdraw has prevented a lot of actors from buying ETH as they would not be able to stake their tokens and hence be diluted by those who accept to take the staking risk. The current Ethereum staking ratio is very low compared to what we see for other big layer ones: only 15% against an average of approximately 70% for Binance Smart Chain, Cardano, Solana, Cosmos and Avalanche.

The Shanghai upgrade will be the final stage of the merge. But it is not the last planned improvement of the Ethereum blockchain. After the merge, Ethereum will undergo further upgrades, which Vitalik Buterin calls the surge, the verge, the purge and the surge. The coming surge objective is to improve the scalability by helping rollups also called layer two like Optimism or Arbitrum to achieve 100,000 transactions per second without sacrificing security. The Surge will achieve this with Ethereum Improvement Proposal 4844 or EIP-4844 (proto-danksharding). The implementation of this EIP is planned for this year.

4. LAYER ONES ALSO BOUNCED IN Q1 2023 BUT ARE STILL LAGGING BEHIND BITCOIN

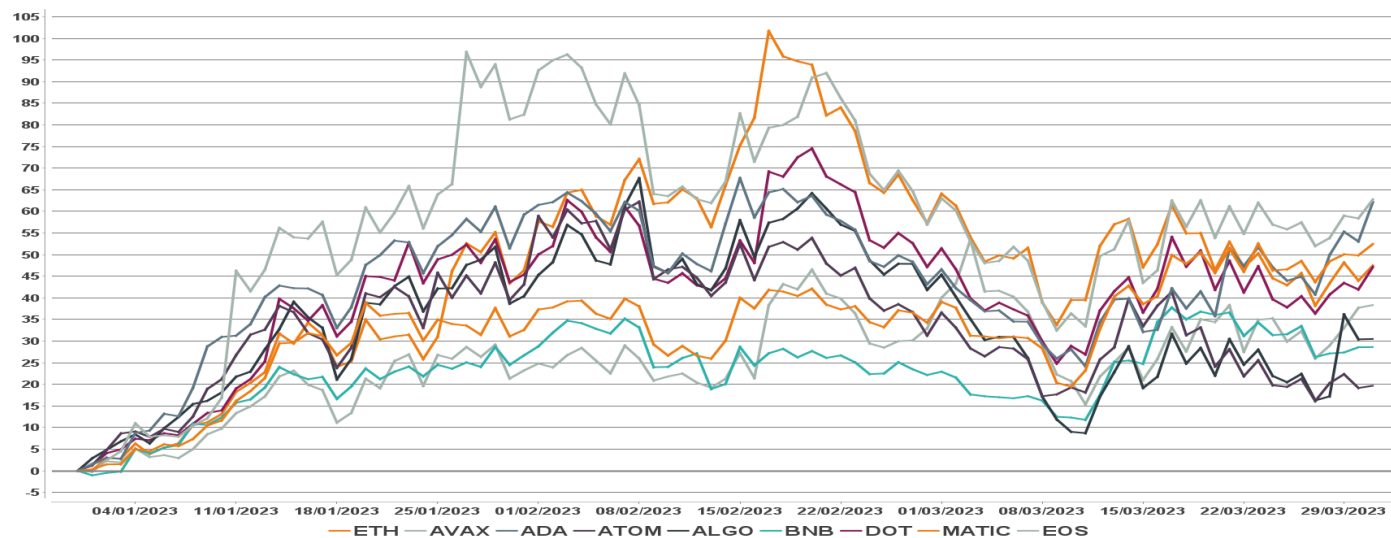
Key take-aways of this section

- The total crypto market capitalization increased by nearly 50% last quarter from US\$ 831 to US\$ 1,230 billion.
- Layer 1 prices increased strongly until late February before crashing as uncertainty started to rise about USDC and DAI. Since then, these assets bounced back, reaching again early February levels.

The total crypto market capitalization increased by nearly 50% last quarter from US\$ 831 to US\$ 1,230 billion. This is relatively smaller compared to the bitcoin performance. Ethereum's performance is in line with the market evolution with a price increase of 52%. Despite some important idiosyncratic news as the BUSD issuance for the Binance Smart Chain or the Hedera blockchain halt that occurred after a hacker managed to hack the smart contract and to drain

many wallets in early March, the layer ones moved pretty much together this quarter. Prices increased strongly until late February before crashing as uncertainty started to rise about USDC and DAI. Since then, these assets bounced back, reaching again early February levels.

Figure 7: Price evolution (rebased) of major layer ones for Q1 2023



Q1 2023 witnessed an increased interest for the zero-knowledge proof (ZKP)³ topic. ZKP is a layer 2 technology where a cryptographic proof is required to send a transaction batch on the Ethereum mainnet. It differs from optimistic rollups⁴ as Optimism or Arbitrum for which transaction batches are assumed to be legitimate. Hence optimistic rollups may be slower to send the transactions to the Ethereum mainnet as they include a period during which transactions can be challenged. Polygon launched early March zkEVM which is “the first zero-knowledge scaling solution that is fully equivalent to an EVM⁵. All existing smart contracts, developer toolings and wallets work seamlessly”. Shortly after, ZkSync, a layer 2 solution launched ZkSync Era, the public version of its mainnet. May the best one win!

Layer 2 solutions are competing more and more against traditional layer 1. The number of users is steadily increasing and has now surpassed big players like Cardano, Algorand or Avalanche. This may be the reason why Arbitrum finally decided to get a token in March 2023. A portion of the total supply of the token has been airdropped on March 23rd.

Daily users as of end of Q1 2023 (source: DefiLlama)

	Tron	BSC	Bitcoin	Polygon	Ethereum	Litecoin	Arbitrum	Solana
Active Users	2 162 828	1 200 905	985 157	405 306	335 126	219 789	153 727	113 591

	Near	Optimism	Cardano	Algorand	Avalanche	Osmosis	Gnosis
Active Users	58 103	55 248	48 003	34 631	24 691	9 279	6 669

³ A zero-knowledge proof is a way of proving the validity of a statement without revealing the statement itself. The ‘prover’ is the party trying to prove a claim, while the ‘verifier’ is responsible for validating the claim.

⁴ Rollups are layer 2 (L2) protocols designed to extend the throughput of Ethereum’s base layer. They reduce computation on the main Ethereum chain by processing transactions off-chain, offering significant improvements in processing speeds.

⁵ The Ethereum Virtual Machine (EVM) is the computation engine for Ethereum that manages the state of the blockchain and enables smart contract functionality.

5. DEFI IS STRUGGLING TO RECOVER AFTER LUNA CRASH

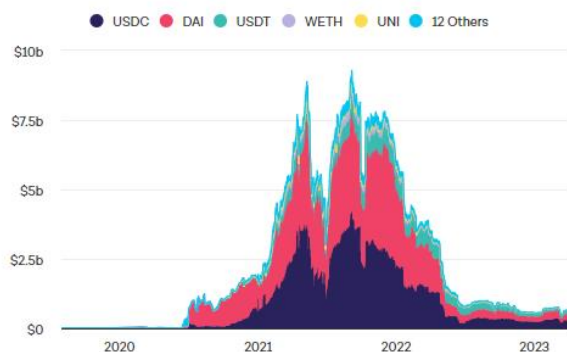
Key take-aways of this section

- DeFi is still struggling to attract value as market participants are not interested in building leveraged positions with lending protocols. Liquid staking remains one the most important DeFi activity with Dexes liquidity providing.

Total Value Locked (TVL) across all the decentralized applications is oscillating around US\$ 90 billion equivalent since June 2022. This figure includes staking and borrowing, noting there is likely some double counting (as for Convex which TVL is deposited, in an efficient fashion, on Curve).

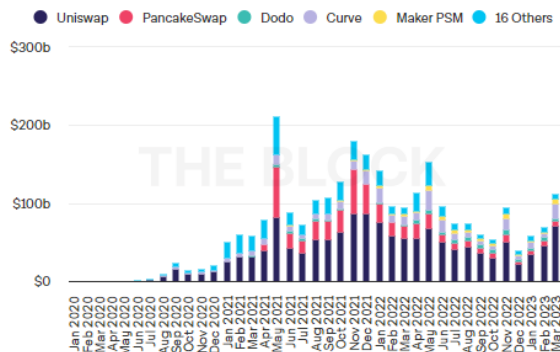
There is still no appetite from DeFi users to use lending platforms to build leveraged positions as was the case in 2021. Levels of debt remain **very** low compared to what we have seen in 2021. Trading activities on DEXes have increased during Q1 2023 from end of 2022 lows and are reaching 2021 levels. Despite this, we do not see any significant increase in the DEXes TVL even if the Dexes TVL remains the biggest contributor to the total TVL. This may mean that the remaining DeFi market makers are in good position to profit from this opportunity.

Figure 8: Compound Outstanding Debt



Source: theblock.com

Figure 9: DEX volume



Liquid staking has become one of the core components of DeFi with liquid staking solutions as Lido, who is the leader in terms of TVL, or Coinbase with their Wrapped ETH solution.

Category	Usage	TVL
<u>Dexes</u>	Protocols where you can swap/trade cryptocurrency	\$18.77b
<u>Liquid Staking</u>	Protocols that enable you to earn staking rewards on your tokens while also providing a tradeable and liquid receipt for your staked position	\$16.66b
<u>Lending</u>	Protocols that allow users to borrow and lend assets	\$14.69b
<u>Bridge</u>	Protocols that bridge tokens from one network to another	\$11.11b
<u>CDP</u>	Protocols that mint its own stablecoin using collateralized lending	\$10.5b
<u>Yield</u>	Protocols that pay you a reward for your staking/LP on their platform	\$6.12b
<u>Services</u>	Protocols that provide a service to the user	\$2.7b
<u>Derivatives</u>	Protocols for betting with leverage	\$1.39b
<u>Yield Aggregator</u>	Protocols that aggregated yield from diverse protocols	\$1.25b
<u>Algo-Stables</u>	Protocols that provide algorithmic coins to stablecoins	\$1.15b

6. UPDATE ON BITCOIN/BLOCKCHAIN RELATED EQUITIES

Key take-aways of this section

- The positive risk sentiment in early 2023 that impacted Bitcoin and other crypto currency prices also had a positive impact on Bitcoin related stocks.
- SVB collapse triggered volatility for companies related to the bank and close correlation vs bitcoin became challenging as Bitcoin became an “alternative safe haven asset” to banks.

The positive risk sentiment in the beginning of the year that made Bitcoin and other crypto currency prices rise also had a positive impact on the prices of companies that are active in this field or that hold a significant amount of Bitcoin on their balance sheets. Some of the companies in our Global Blockchain Equity universe printed returns of more than 100% in January (e.g., Hut 8 Mining, Hive Blockchain Technologies). Nevertheless, Silvergate’s elevated volatility triggered by its exposure to the FTX platform signaled that there might be trouble coming up and we decided to exclude the company from our eligible investment universe during the month of January.

After mid-February, positive sentiment started to fade, and this also led to the retreat of crypto assets and crypto related companies prices. However, it was only in March, when SVB collapsed, that this triggered more significant price movements for companies related to the banks (e.g., Coinbase, Signature Bank). The price of Silvergate Bank collapsed as well. In this environment it was more difficult for our equity strategy to stay very closely correlated to the returns of Bitcoin since some companies in the universe were badly hit by the crisis, but Bitcoin’s price was boosted because investors bought Bitcoin as an “alternative safe haven asset” when bank deposits seemed not safe anymore. Another reason for the strong positive momentum of Bitcoin was that the depeg of USDC that we described above, made some investors moved out of USDC into Bitcoin rather than leaving the crypto space because this might have a sensible tax impact for investors.

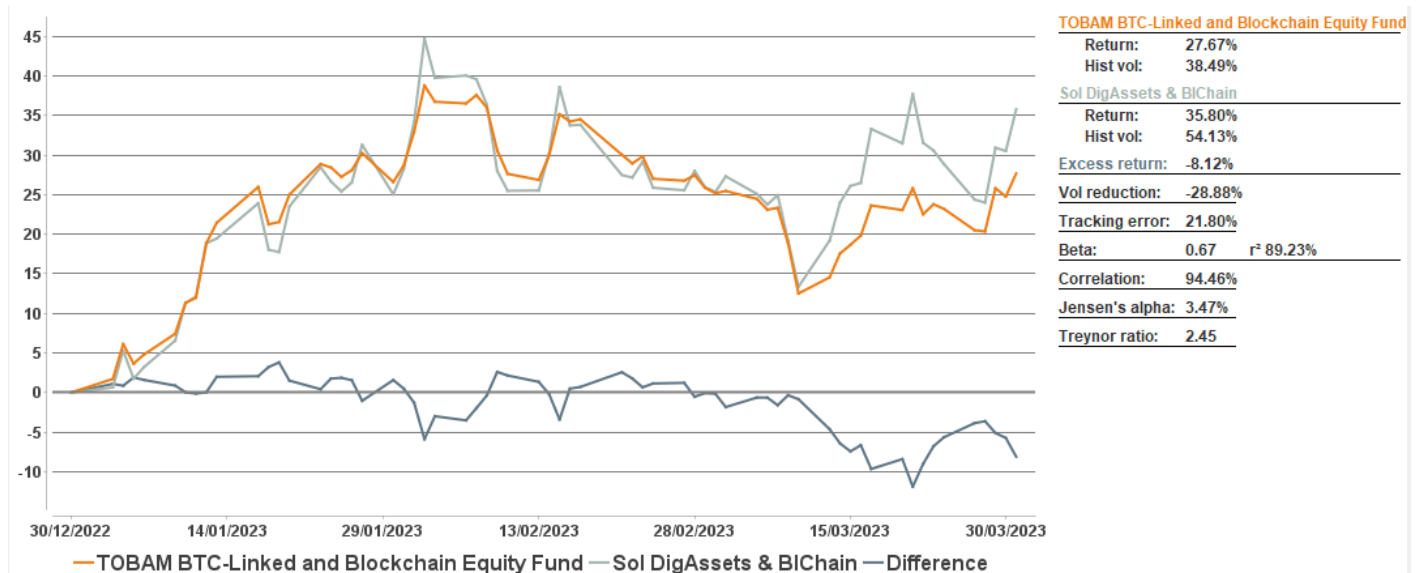
Figure 10 summarizes the best and worst performers since the beginning of the year,

Figure 10: Best and Worst Movers in the Crypto Ecosystem

Total Return as of 31/01/2022 (in EUR)	1W	1M	QTD	YTD
BTC	1.0%	18.7%	69.7%	69.7%
Best Performers 1M				
BITFARMS LTD/CANADA	1.4%	-0.2%	127.1%	127.1%
RIOT PLATFORMS INC	14.6%	56.0%	190.4%	190.4%
MARATHON DIGITAL HOLDINGS IN	10.6%	19.8%	151.3%	151.3%
HIVE BLOCKCHAIN TECHNOLOGIES	5.1%	12.9%	125.5%	125.5%
MICROSTRATEGY INC-CL A	12.8%	8.8%	103.5%	103.5%
Worst Performers 1M				
SIGNATURE BANK*	-100.0%	-100.0%	-100.0%	-100.0%
SILVERGATE CAPITAL CORP-CL A	-6.7%	-88.6%	-90.8%	-90.8%
NTT DATA CORP	0.0%	-8.0%	-12.3%	-12.3%
AXOS FINANCIAL INC	1.4%	-24.0%	-4.8%	-4.8%
NORTHERN TRUST CORP	4.6%	-9.0%	-1.0%	-1.0%

Source : TOBAM, Bloomberg, data as of March 31st 2023. * Trading halted since March 10. Current price is set to 0 hence the -100% performance.

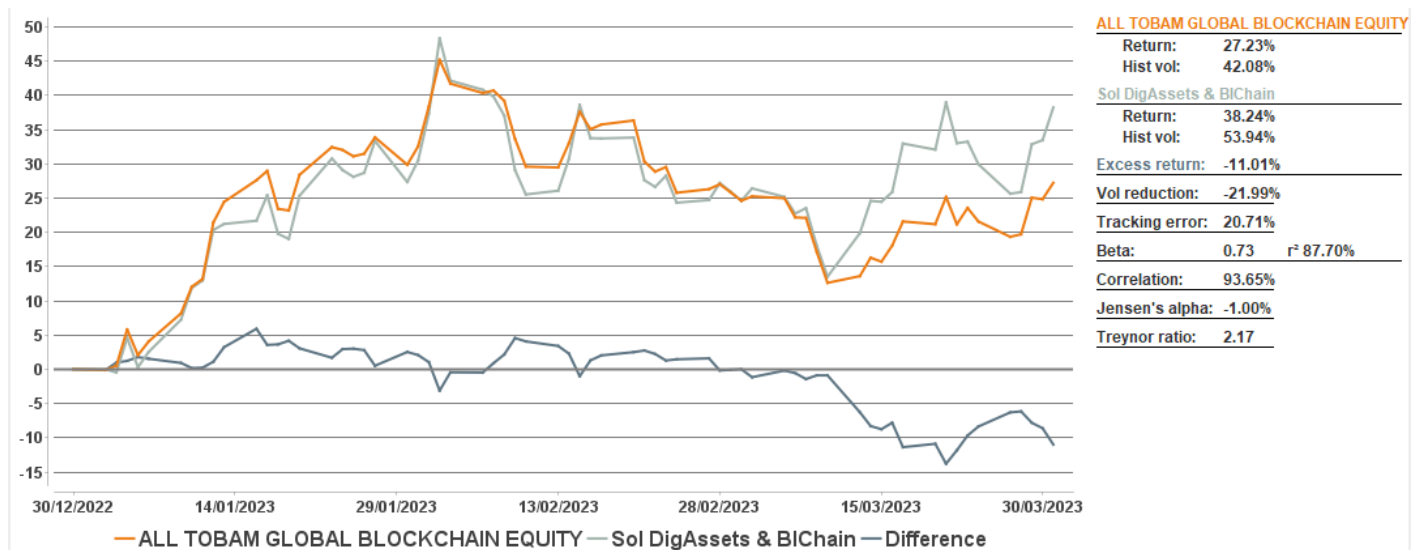
Figure 11: YTD Net Performance of TOBAM BTC-linked and Blockchain Equity Fund vs Solactive Digital Assets and Blockchain Equities



Source: TOBAM, Bloomberg, data as of March 31st 2023.

Against our Blockchain Equity related reference index Solactive Digital Asset & Blockchain Equities, the strategy underperformed with 27.67% vs 35.80% in EUR for the reference index (Figure 11). This is largely explained by our strategy having been overweight in Financials compared to the reference index. During March, Financials in general were under higher pressure while other companies active in the Blockchain related business space were not really affected by investors' fears or rather took advantage of the rising prices of crypto currencies and rising trading volumes.

Figure 12: YTD Net Performance of TOBAM BTC-linked and Blockchain Equity Fund vs Solactive Digital Assets and Blockchain Equities



Source: TOBAM, Bloomberg, data as of March 31st 2023.

7. THIS QUARTERS' READINGS LIST

Paxos Will Halt Minting New BUSD Tokens
[Paxos Will Halt Minting New BUSD Tokens - Paxos](#)

Circle on the SVB crisis
<https://www.circle.com/blog/an-update-on-usdc-and-silicon-valley-bank>

DAI collateral explorer
<https://makerburn.com/#/rundown>

The merge detailed information
<https://ethereum.org/gl/upgrades/merge/>

Polygon zkEVM documentation
https://wiki.polygon.technology/docs/zkEVM/develop/?utm_source=website&utm_medium=zkevm-page&utm_content=hero

Hedera's Mainnet Shutdown Sparks Panic
<https://dailycoin.com/hedera-mainnet-shutdown-sparks-panic-hbar-drops-18/>

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