

CoinDesk Quarterly Review

Second Quarter 2021

From CoinDesk Research

Executive Summary

After two consecutive quarters of strong price gains for most of the assets in the [CoinDesk 20](#), 2021 Q2 finally brought an end to market euphoria with a resounding crash. Most CoinDesk 20 assets, which constitute roughly 99% of the crypto market by verifiable volume, ended 2021 Q2 with negative returns. The [CoinDesk Bitcoin Price Index \(XBX\)](#) dropped 40.38%, its third worst quarter ever in terms of price performance. The [CoinDesk Ether Price Index \(ETX\)](#), on the other hand, finished the quarter up 18.69%.

As prices swung, trade volumes soared. In May, weekly volumes in dollar markets for bitcoin and ether reached record highs and for the first time ever, volumes in ether-dollar pairs consistently ranked higher than those in bitcoin pairs.

The Decentralized Finance (DeFi) ecosystem being built atop Ethereum continues to grow under bearish market conditions. The total value locked in DeFi, adjusted so that asset prices are fixed over a one year period, has more than doubled. As a side consequence of this growth in assets under management, miners on Ethereum are experiencing a surge in new revenue, based on their ability to order transactions within a block.

Both Ethereum and Bitcoin are expected to undergo significant protocol-level code changes later this year. On Ethereum, developers are in the final stages of testing Ethereum Improvement Proposal (EIP 1559), which is expected to improve the efficiency of the network's fee market. On Bitcoin, developers have gathered general consensus for Taproot, an upgrade aimed at boosting network privacy and security through introducing a new transaction signature scheme. Taproot is moving forward after Bitcoin miners signaled approval through their computational power, also called hashrate.

Bitcoin's hashrate became the center of public scrutiny and debate this quarter after Tesla CEO Elon Musk announced his company would suspend bitcoin payments over environmental concerns, leading to the formation of a new industry cooperative called the Bitcoin Mining Council (BMC).

In this Quarterly Review, we dive deeper into the creation of the BMC, the continued growth of the DeFi ecosystem and the beginnings of what looks like a short bear-market interregnum.

Performance

In 2021 Q2, the [CoinDesk Bitcoin Price Index \(XBX\)](#) and the [CoinDesk Ether Price Index \(ETX\)](#) hit all-time highs of \$64,888.99 and \$4,379.11, respectively. These outsized gains reached in the earlier half of the quarter were quickly retraced in the latter half, as the price performance of most assets in the [CoinDesk 20](#) turned negative.

In this section, we cover:

- Returns, volatility and correlations compared to macro assets
- Aggregated trade volume
- Distance from all time highs

Performance

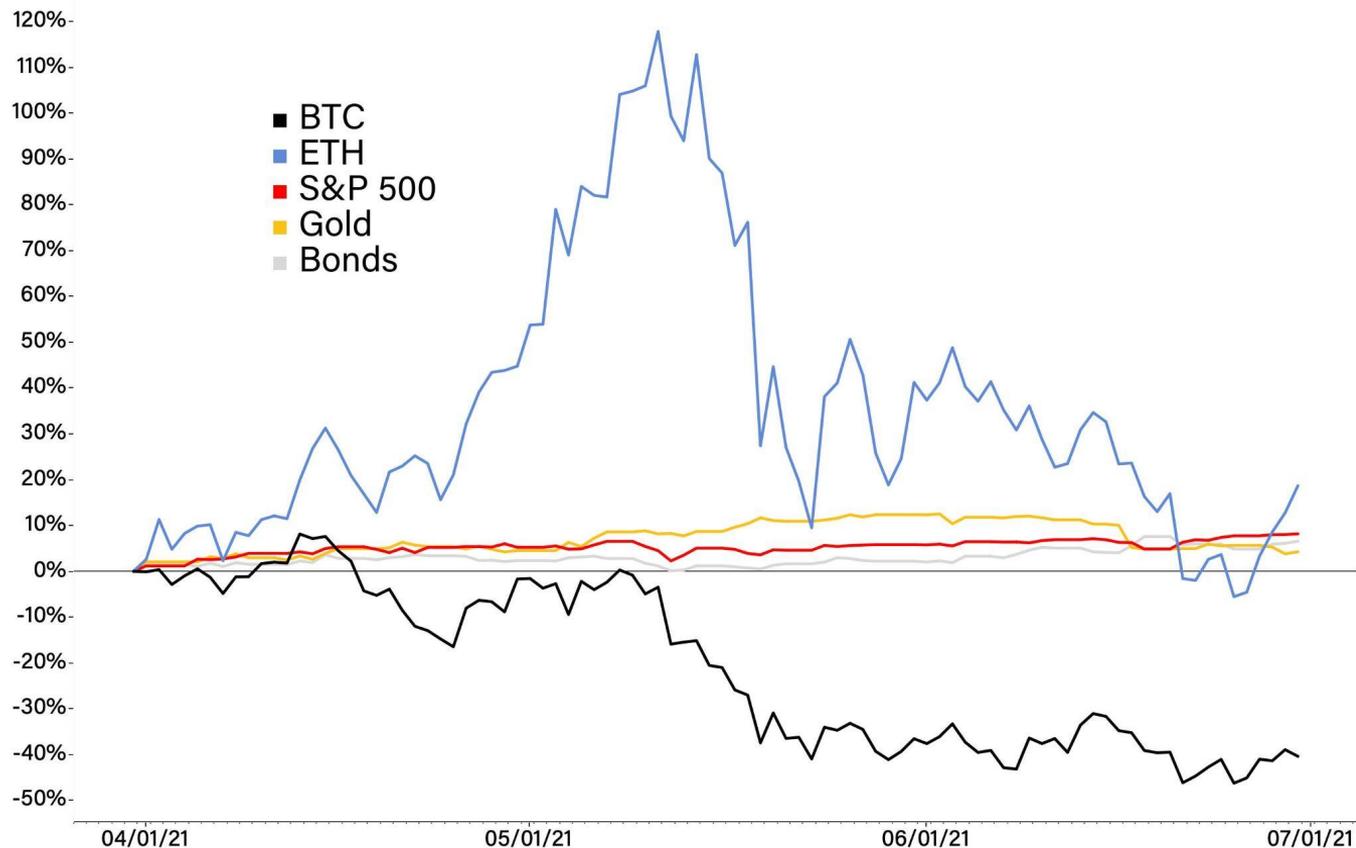
In 2021 Q2, bitcoin had its third worst quarter ever, in terms of price performance. The [CoinDesk Bitcoin Price Index \(XBX\)](#) dropped 40.39%. Only 2018 Q4 (-44%) and 2018 Q1 (-50%) were worse.

The [CoinDesk Ether Price Index \(ETX\)](#), on the other hand, finished the quarter up 18.69%. It's only the fourth time since ETX inception in 2016 Q4 that ether and bitcoin have recorded mixed quarters, but quarterly returns for the two price indexes have diverged by more than 50 percentage points nine times since 2017 Q1.

See also:

[Bitcoin + Ether: An Investor's Perspective \(report\)](#)

Bitcoin and ether diverged in Q2

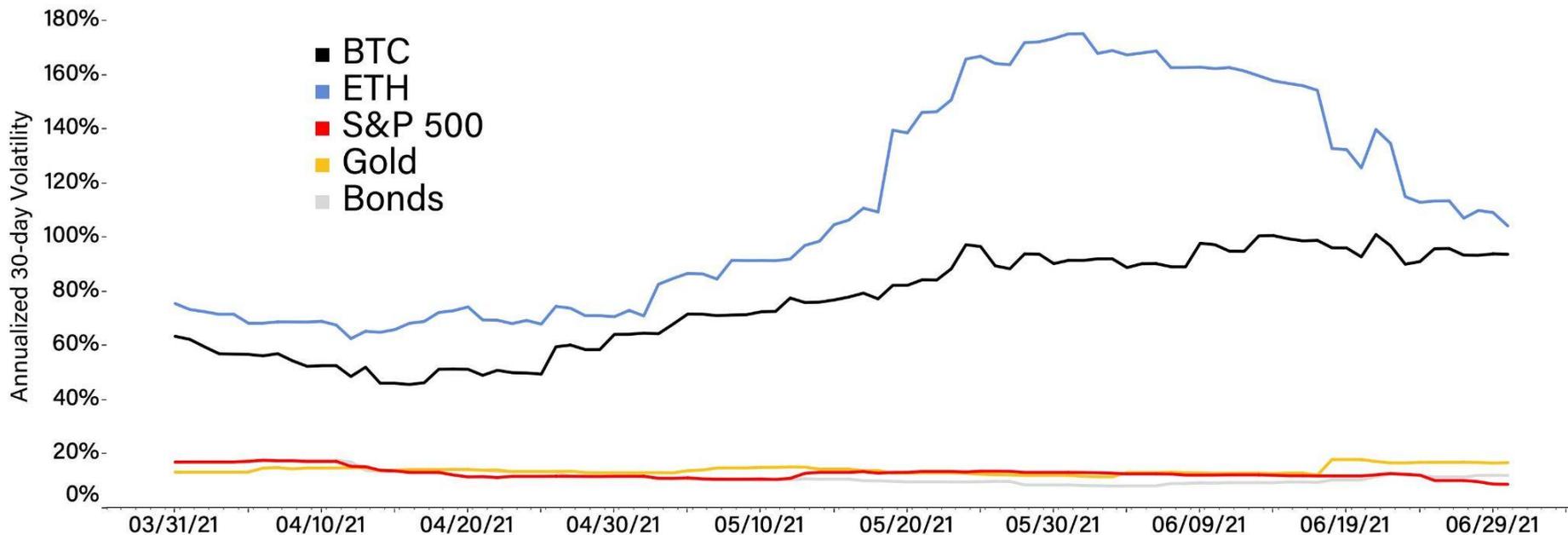


Source: CoinDesk Indexes, St. Louis Fed, Yahoo Finance
 Bonds = iShares 20+ Year Treasury Bond ETF; Gold = London Bullion Market pm fixing price

Quarterly Review: Q2 2021

Outsized returns are often a sign of outsized price volatility. ETH 30-day annualized volatility reached its highest point since [the “Black Thursday” price crash](#) in March 2020. BTC also experienced a 30.32% increase in 30-day annualized volatility, quarter over quarter.

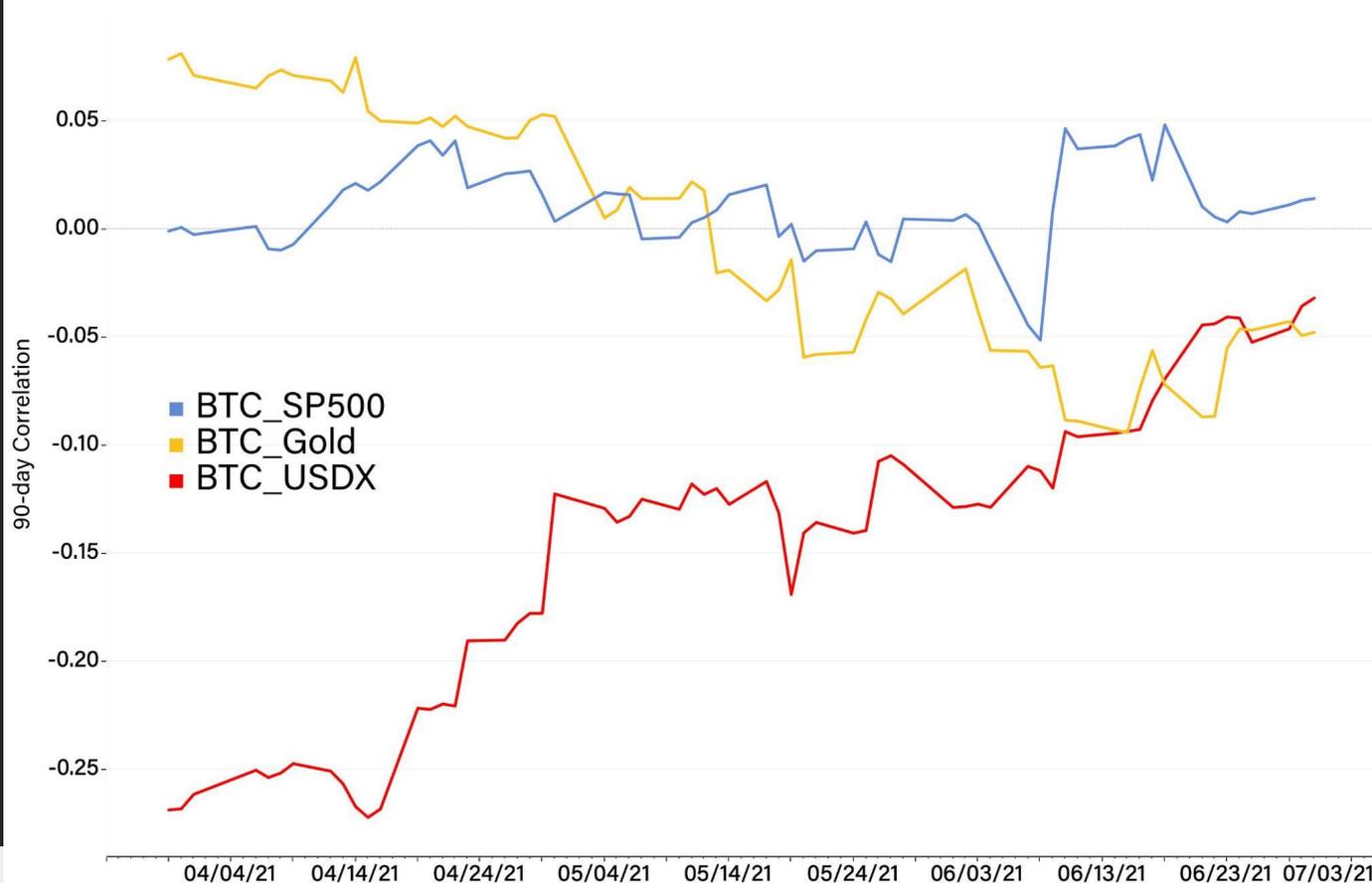
Crypto asset volatilities rise as returns fluctuate



Source: CoinDesk Research, St. Louis Fed, Yahoo Finance
Bonds = iShares 20+ Year Treasury Bond ETF; Gold = London Bullion Market pm fixing price

Bitcoin & macro assets correlations

Bitcoin remained stubbornly uncorrelated to gold, stocks and the U.S. dollar, with any strengthening in ties to macro assets looking like a blip as the relationship quickly returns toward zero. Bitcoin's uncorrelated nature is part of what makes it interesting to some investors, though it can be a detractor for those who are looking for indications that a specific use of bitcoin is emerging to drive adoption.



See also:

[Correlation](#) (report)

Source: CoinDesk Research, St. Louis Fed, Yahoo Finance
Gold = London Bullion Market pm fixing price;
USDx = US Dollar/USDx - Index - Cash

Quarterly Review: Q2 2021

Bitcoin & ether correlations

Bitcoin and ether are not as tightly correlated as they once were, but the correlation still remains strong. The 90-day correlation of daily log returns for the two largest crypto assets by market capitalization trended around 0.75 throughout 2021 Q2, showing that bitcoin can still be useful as a benchmark for the performance of other crypto assets.

Bitcoin & ether stay joined at the hip in Q2



Source: CoinDesk Research

See also: [Bitcoin + Ether: An Investor's Perspective](#)

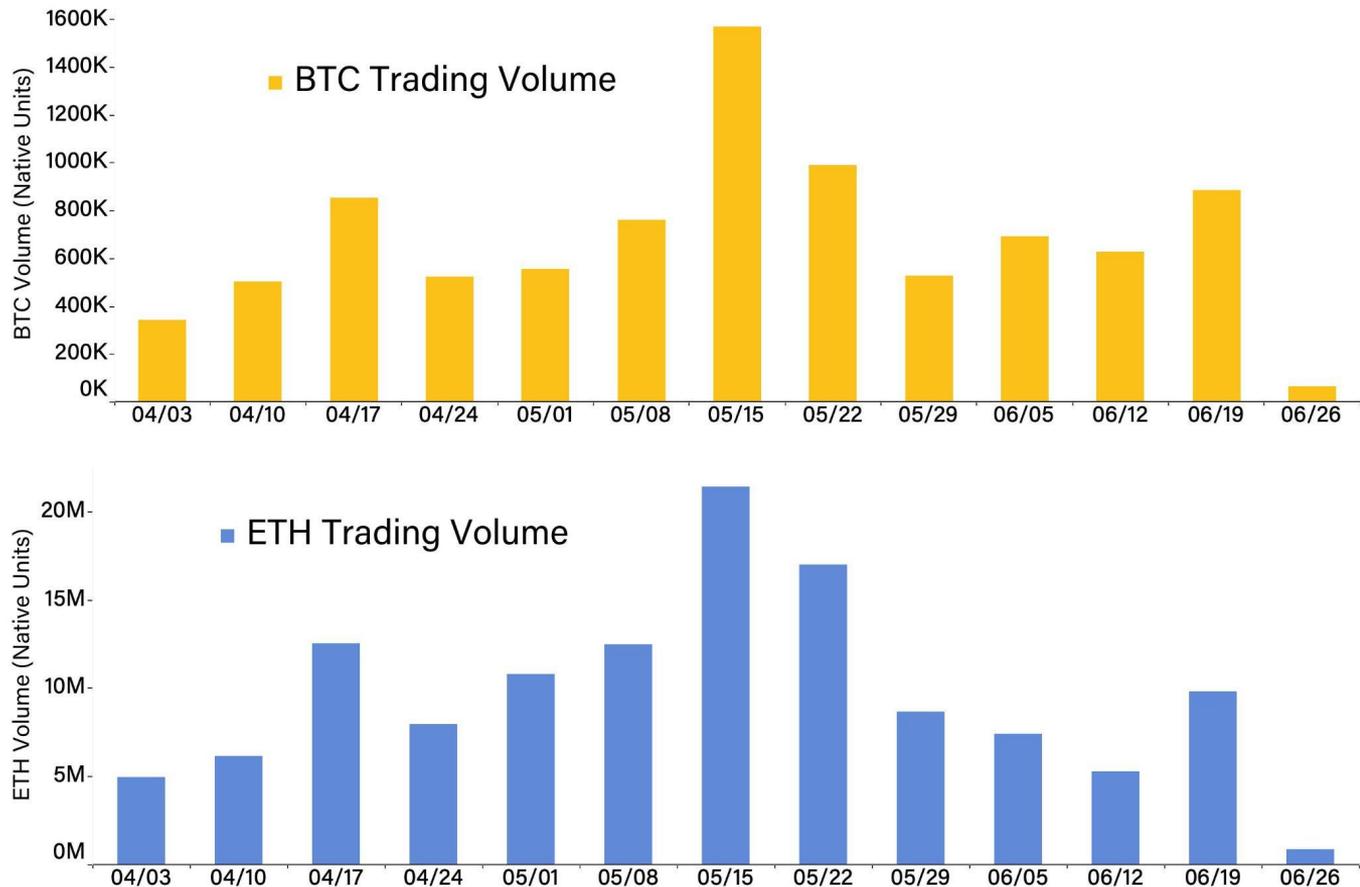
Quarterly Review: Q2 2021



Crypto volume soars to new high's in May 2021

Volumes

Weekly volumes in dollar markets for bitcoin and ether were among the highest ever recorded in May as cryptocurrency markets crashed. Notably, for the first time ever, notional volumes in ether-dollar pairs were consistently higher than those in bitcoin pairs during that time, as Kaiko noted in its [monthly market report](#). Since then, volumes have returned to where they were at the start of the quarter. Volumes here are aggregated from exchanges that meet CoinDesk's Price Index eligibility criteria for liquidity, transparency and accessibility to U.S. investors. More info at coindesk.com/indexes.



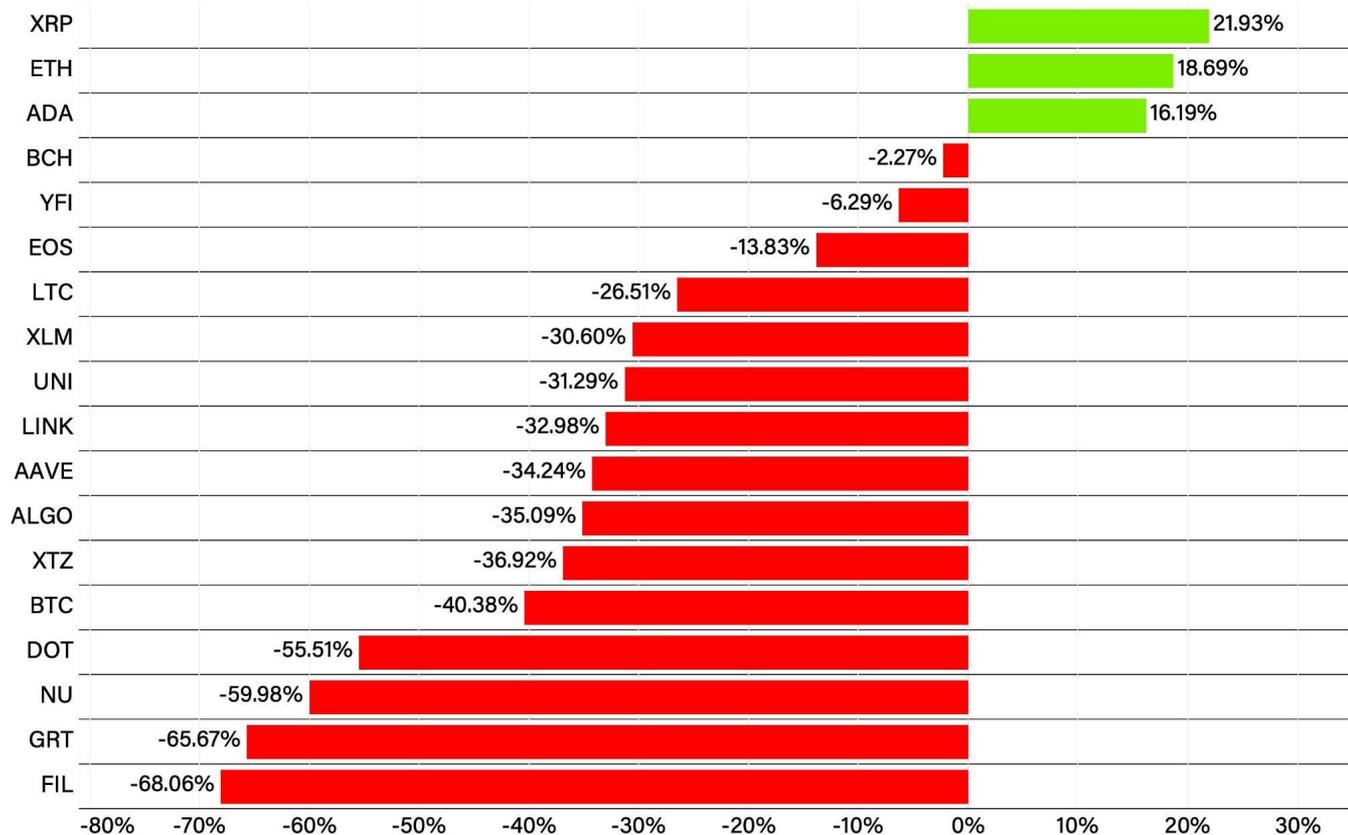
Source: CoinDesk Indexes

*Volume in USD across CoinDesk Price Index-eligible exchanges

Quarterly Review: Q2 2021

Crypto asset performance

The second quarter of 2021 was characterized by price retracing in most crypto assets in the [CoinDesk 20](#). The only assets that were in the green for 2021 Q2 were XRP, ADA and ETH, the native cryptocurrencies of the XRP Ledger, Cardano and Ethereum blockchains, which have continued their upward march returning 22%, 19% and 16%, respectively. Despite ending the quarter at a loss, BTC and ETH hit new all-time price highs earlier in the season (see next page).

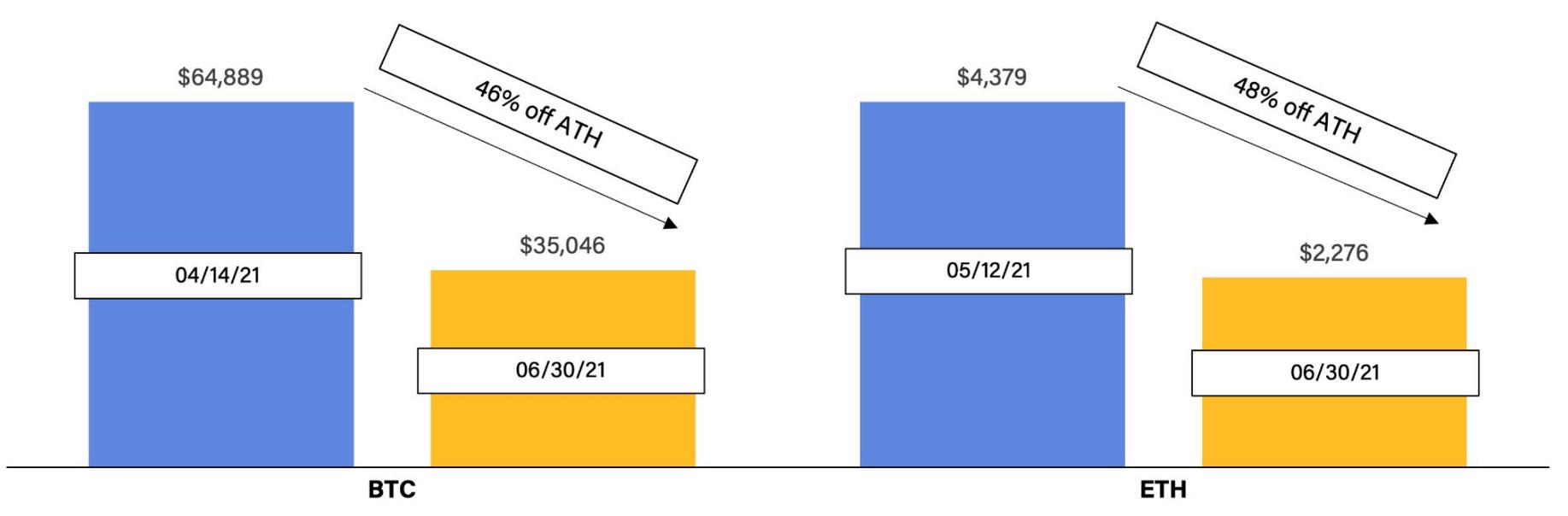


Source: BTC and ETH returns are from CoinDesk Indexes
Other returns are from CoinGecko

BTC and ETH ATHs

The [CoinDesk Bitcoin Price Index \(XBX\)](#) and the [CoinDesk Ether Price Index \(ETX\)](#) hit all-time highs of \$64,888.99 in April and \$4,379.11 in May, respectively. A correction brought index levels to \$35,046.22 and \$2,276.34 by end-of-quarter, down 46% and 48% from ATHs, respectively.

Bitcoin and ether's rollercoaster performance



Source: CoinDesk Bitcoin Price Index (XBX), CoinDesk Ether Price Index (ETX)

Markets

Bitcoin turns bearish as ether grows against it in both liquidity and value. The topics covered in this section include:

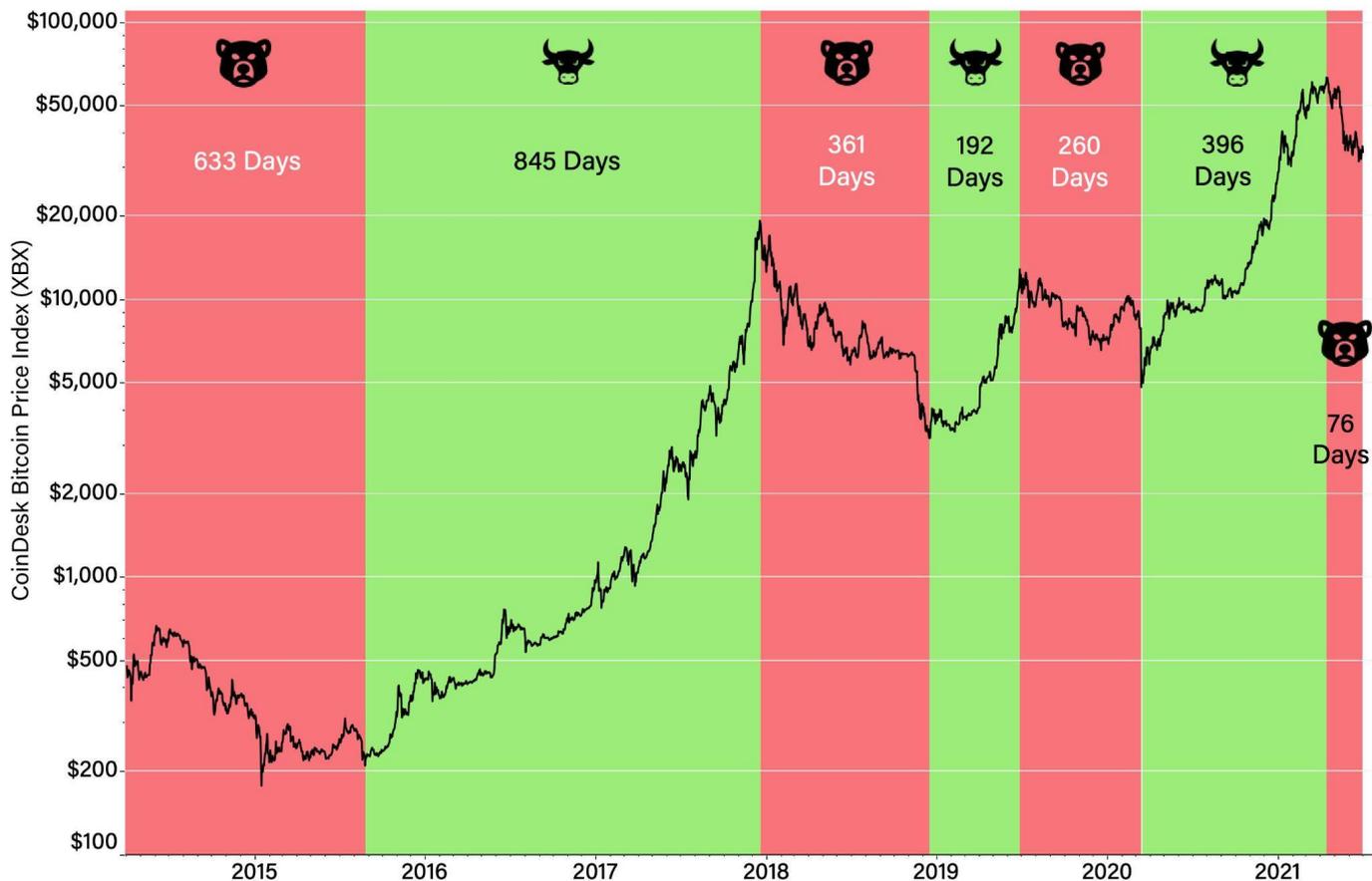
- Signs of a cryptocurrency bear market
- Bitcoin Dominance
- Bitcoin futures OI and volume
- Metrics suggesting the possibility of a short bear interregnum

Cryptocurrency market regime

For bitcoin, 20% drops are common on the way to new all-time highs. Earlier this quarter, we identified a simple method for determining whether such a drop (or rise) has ushered in a new market regime: a change of 20% in the [CoinDesk Bitcoin Price Index \(XBX\)](#), followed by at least 90 days in which bitcoin does not return to its previous high (or low). We use bitcoin as the benchmark for the overall market, given its large share of the total market value of all cryptocurrencies. The chart on this slide tracks crypto bull and bear markets across the years, using this methodology. The XBX reached its all-time high on April 14 (UTC): \$64,888.99. By April 22, it had fallen by more than 20%, to a low of \$50,500. As of quarter's end, 13 days remain until that 90-day threshold is reached.

Cryptocurrencies are likely in a bear market

12



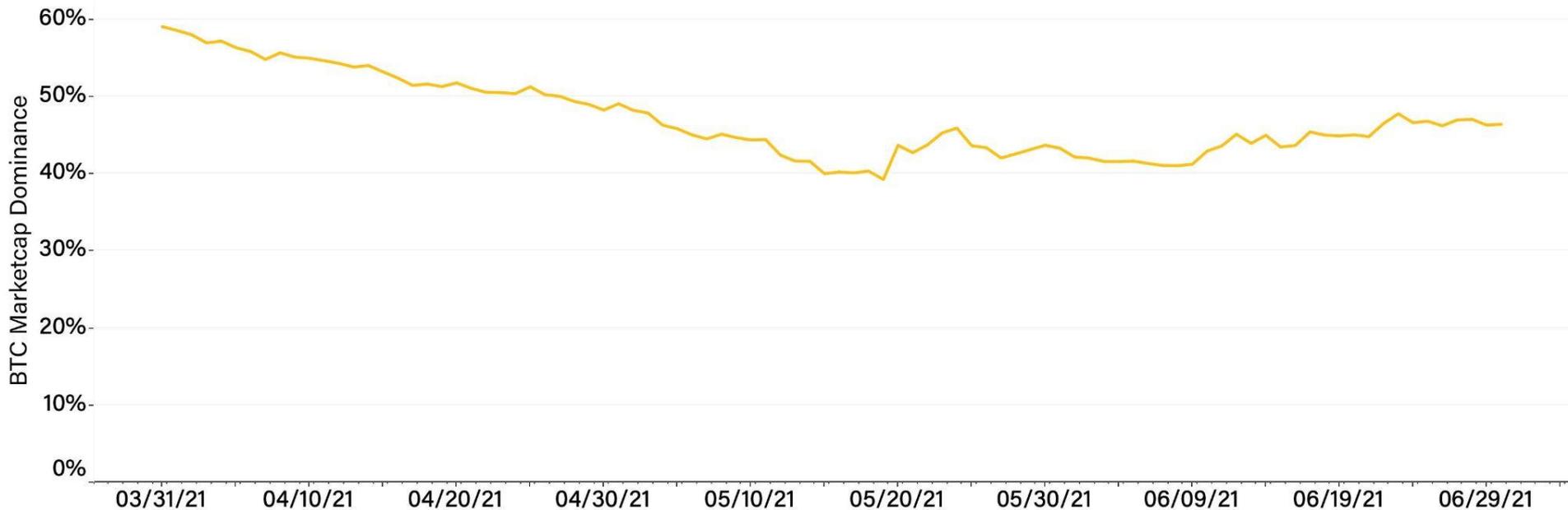
Source: CoinDesk Bitcoin Price Index (XBX)

Quarterly Review: Q2 2021

Bitcoin dominance

Bitcoin dominance, bitcoin's market cap divided by the sum market cap of all cryptocurrencies, often strengthens in a bear market, as cryptocurrency investors retreat from more volatile altcoins. That hasn't been the case so far with the bearish turn that cryptocurrency markets took in 2021 Q2. Altcoin investors have held on and in some cases continued to drive prices upward, while bitcoin has slipped. If the bear market deepens, look for the usual pattern to reassert itself.

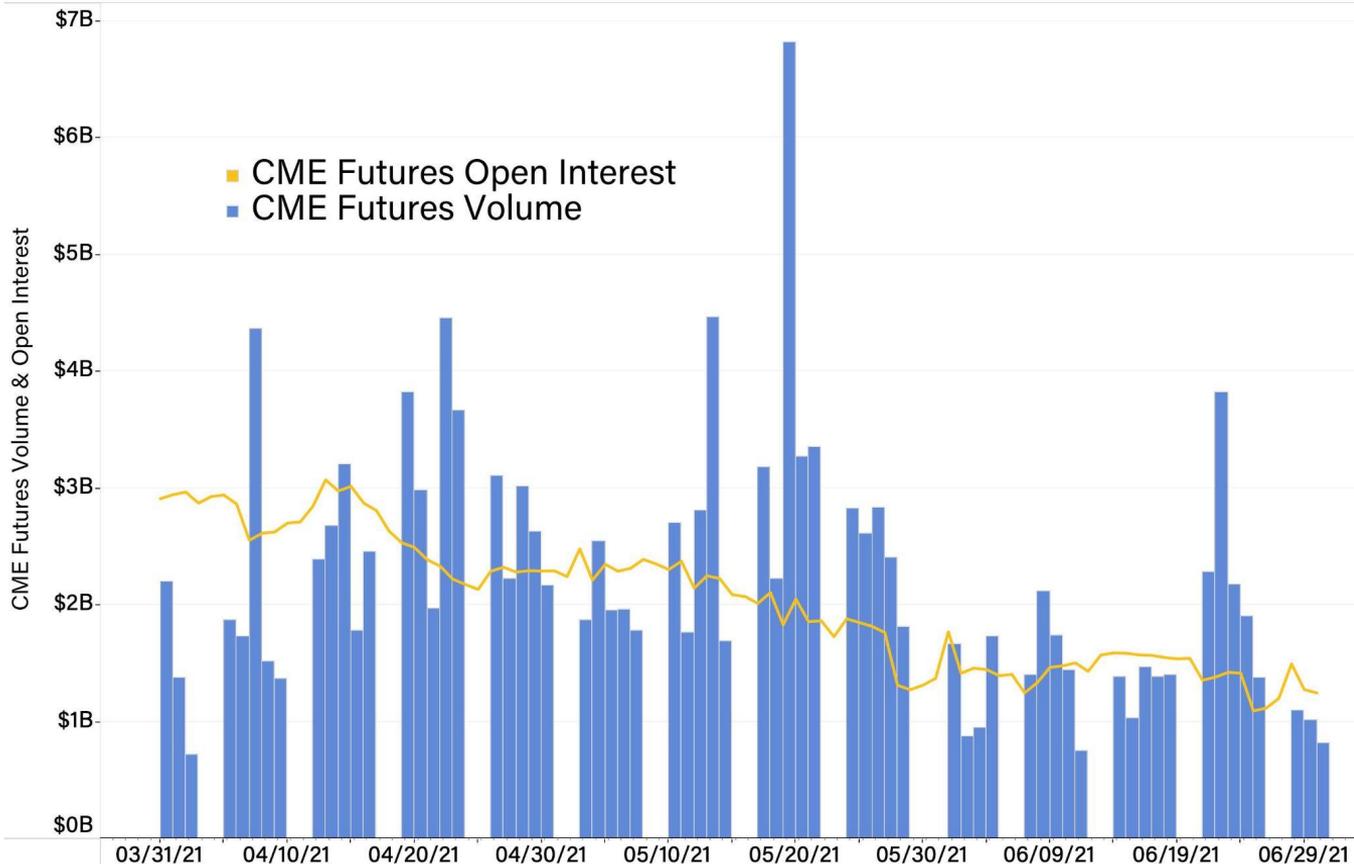
Altcoins remain dominant in the beginnings of the 2021 bear market



Source: [CoinMarketCap](https://www.coinmarketcap.com)

Bitcoin futures OI & volume

Regulated bitcoin futures markets are an indicator of institutional activity in crypto, used as a hedge against positions elsewhere and as a straightforward way to get exposure to bitcoin. The number of outstanding futures contracts or open interest on the CME has stayed flat since the May price crash, indicating lukewarm institutional interest in "buying the dip." Cryptocurrency markets have gone from a retail-driven dynamic to ones that seem to be driverless amid signs of retail exhaustion and institutional indifference.

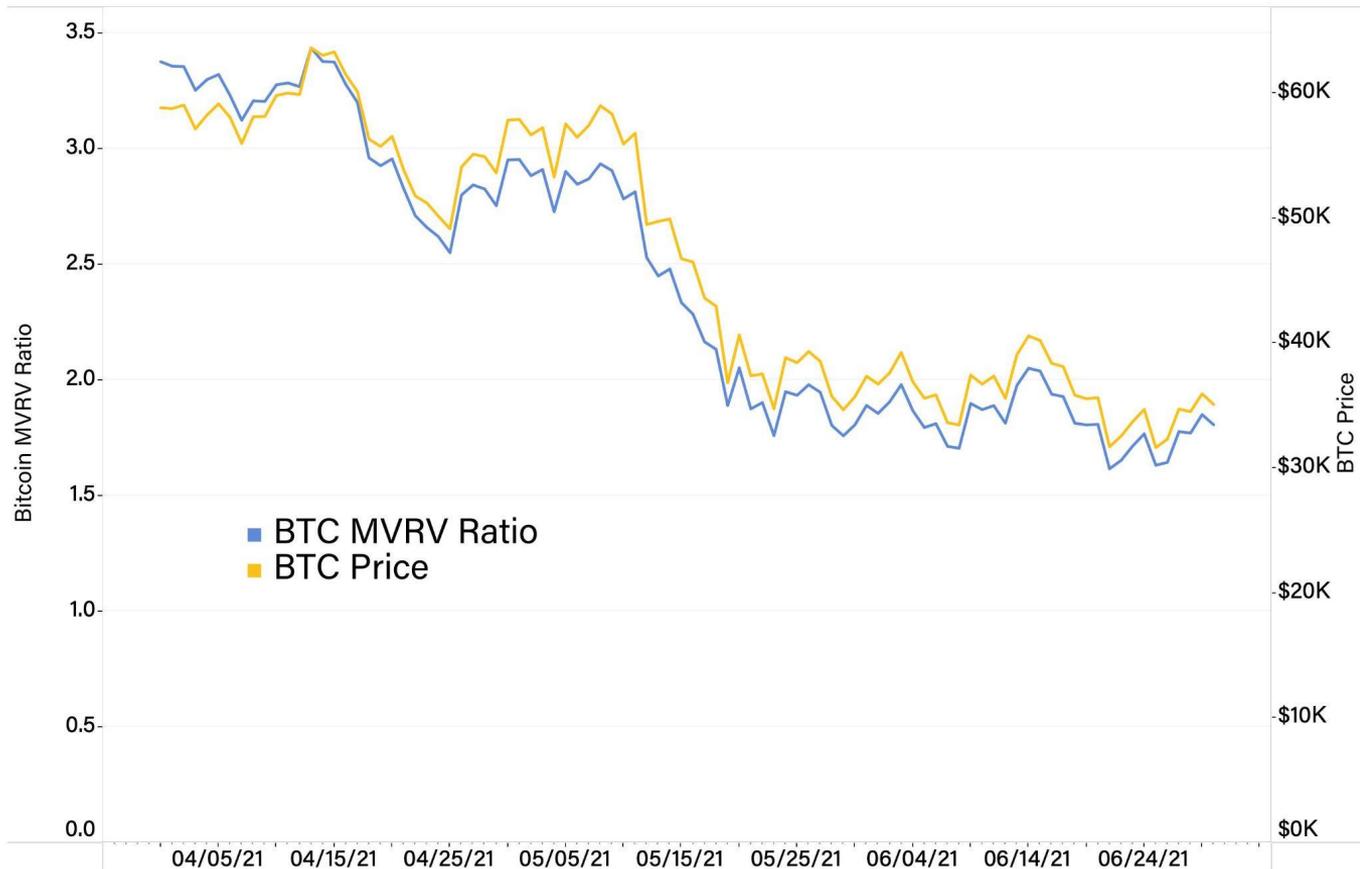


Source: Skew

Quarterly Review: Q2 2021

Bitcoin MVRV

On-chain metrics must always be taken with some skepticism: A bitcoin address isn't necessarily an entity, and transactions sometimes reflect custody or accounting decisions, more than trades. Still, MVRV, a measure of unrealized gains that takes an average of the price change since the last time each bitcoin changed hands, has yet to reach the highs it historically has hit before profit taking. The perception of an overbought asset precipitates true bear-market crashes and bitcoin may yet have room to run. There's potential that this will be a bear market of a similar length as the short bull-market interregnum of 2019, rather than a long crypto winter.



DeFi on Ethereum

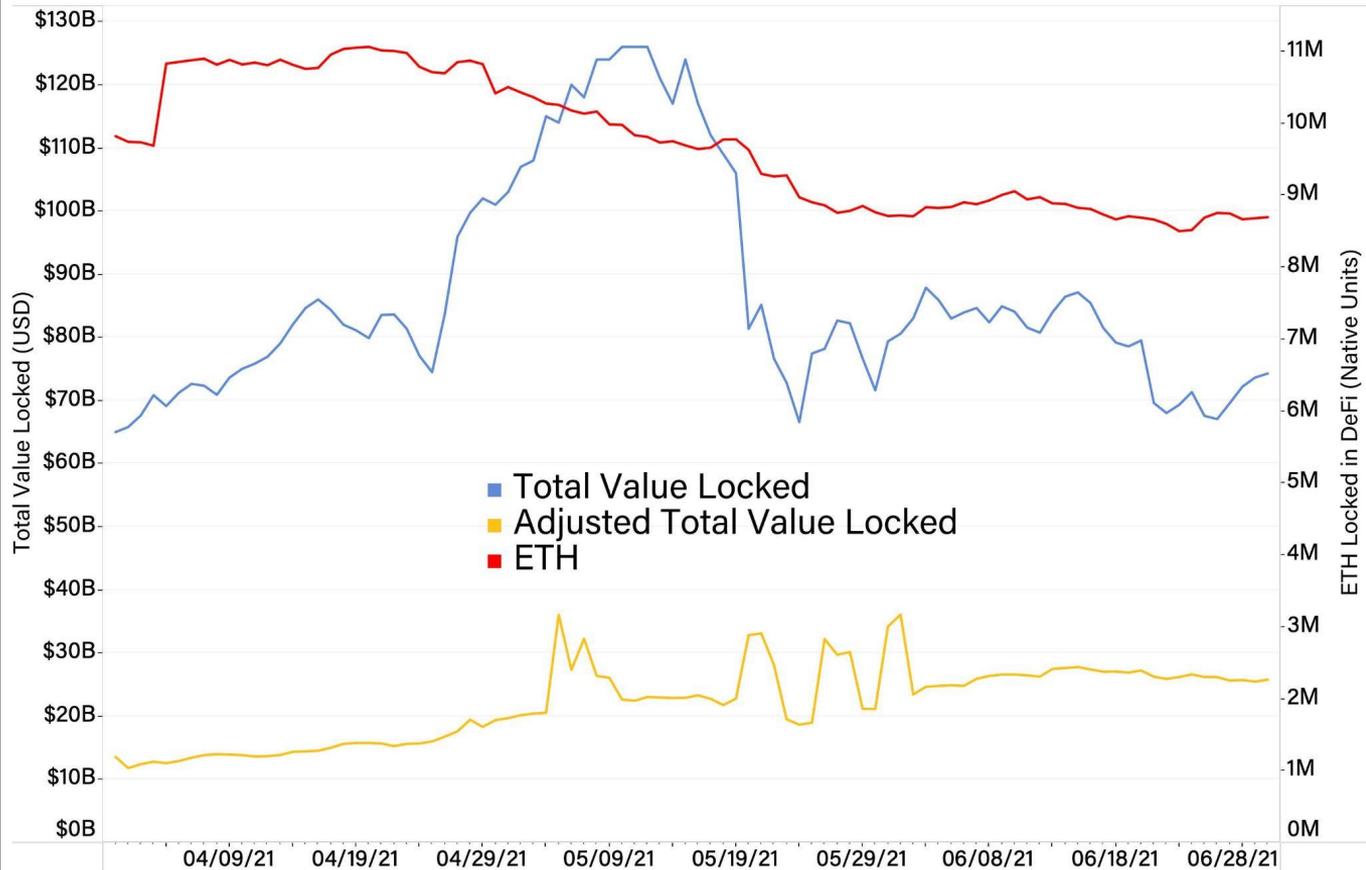
The Decentralized Finance (DeFi) sector continues to propel transaction activity on the world's second largest blockchain by market capitalization, Ethereum. As a consequence to DeFi growth on Ethereum, miners are experiencing a revenue surge through an income stream known as miner/maximal extractable value (MEV). Also, in this section, we discuss:

- Ethereum Improvement Proposal (EIP) 1559
- Ethereum 2.0 returns

DeFi TVL unfazed by crypto bear market

Total Value Locked in DeFi

Total Value Locked (TVL) tracks the dollar value of all crypto assets under management by DeFi applications. Due to the volatility of the crypto markets, changes in TVL may reflect price movements rather than changes to the balance sheets of DeFi applications. The adjusted TVL (aTVL) metric developed by [DappRadar](#) aims to accurately reflect DeFi balance changes by fixing crypto asset prices as of a certain date. Using prices fixed over the past year since July 3, 2020, aTVL has more than doubled over 2021 Q2. Notably during Q2, the amount of ETH locked in DeFi decreased, suggesting a rise in other asset types for DeFi collateral and liquidity such as stablecoins, governance tokens and other fungible ERC-20 tokens.

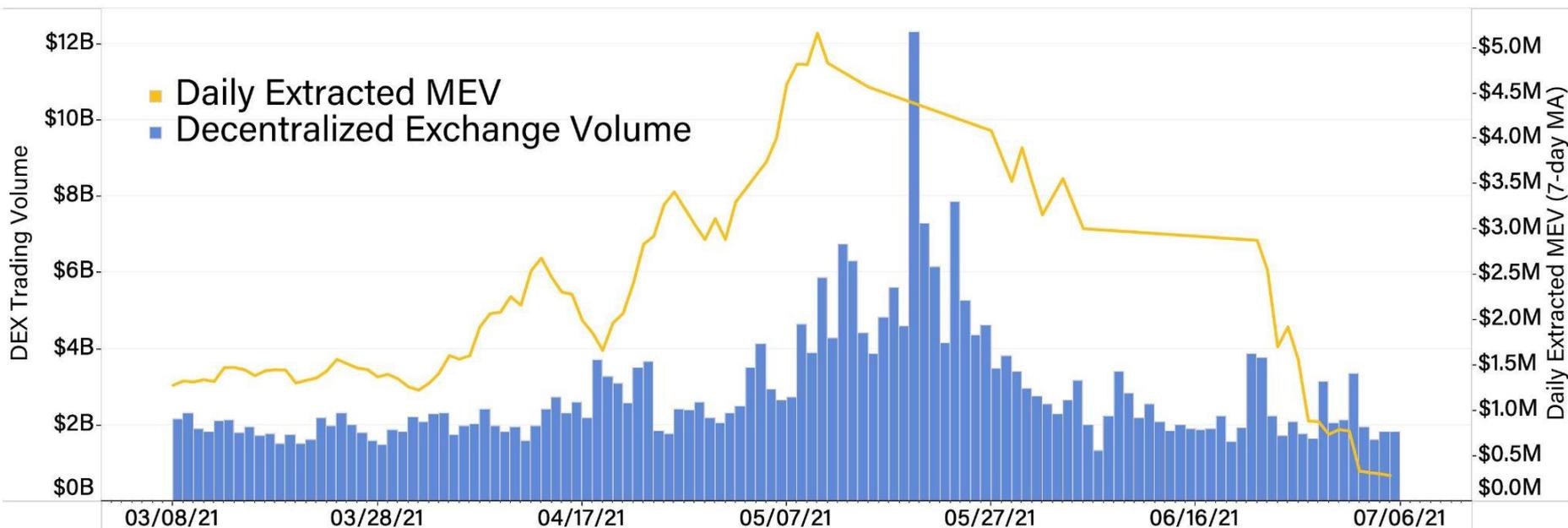


Source: [DappRadar](#), [DeFi Pulse](#)

Quarterly Review: Q2 2021

The continued growth and value of the DeFi industry has given rise to increasing levels of miner/maximal extractable value (MEV) on Ethereum. MEV refers to additional revenue that miners earn on top of transaction fees and block subsidies as a result of their ability to order transactions within a block. Capturing MEV is most frequent on decentralized exchanges (DEXs) where miners, or high-frequency traders that are willing to pay miners, can engage in front-running, back-running and sandwiching trades executed as on-chain transactions on Ethereum.

MEV rises along with DEX trade volumes

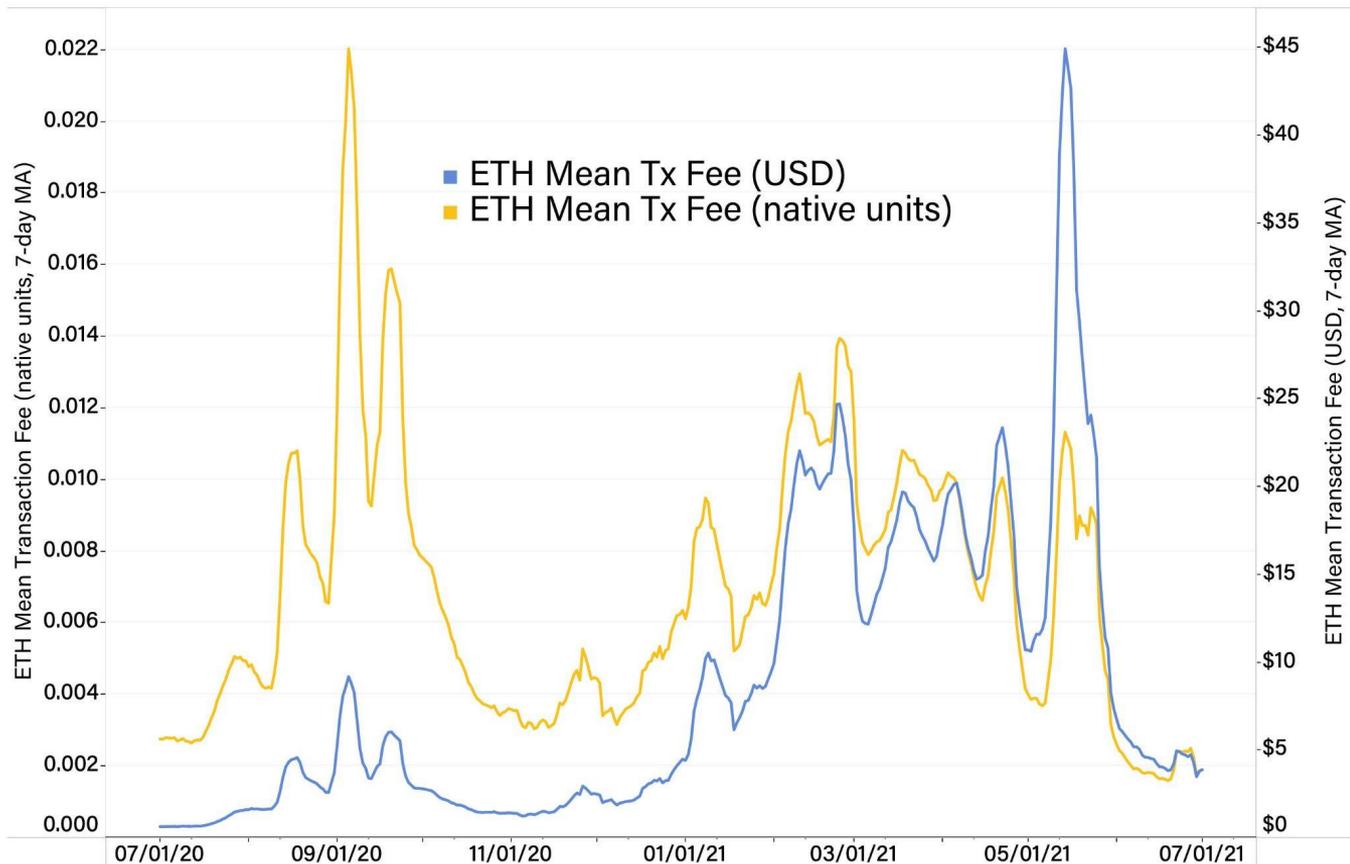


Source: [Flashbots](#), Dune Analytics

*Missing values for daily extracted MEV appear in this chart as interpolated dotted lines that connects the plot points immediately preceding and succeeding the missing value

EIP 1559

The DeFi ecosystem on Ethereum struggles with determining accurate fee estimations for transactions, especially during times of high network congestion. To introduce predictability and greater efficiency to Ethereum's fee market, protocol developers anticipate executing a code change called [Ethereum Improvement Proposal \(EIP\) 1559](#) in early August. While EIP 1559 won't go so far as resolving the issue of high fees on Ethereum, the change is expected to tie ether's value explicitly to the use of decentralized applications (dapps) and add a bitcoin-like narrative of limited coin supply. EIP 1559 also poses several risks, including risk of miner capitulation or revolt, and technological risk in the form of unexpected bugs or hacks.

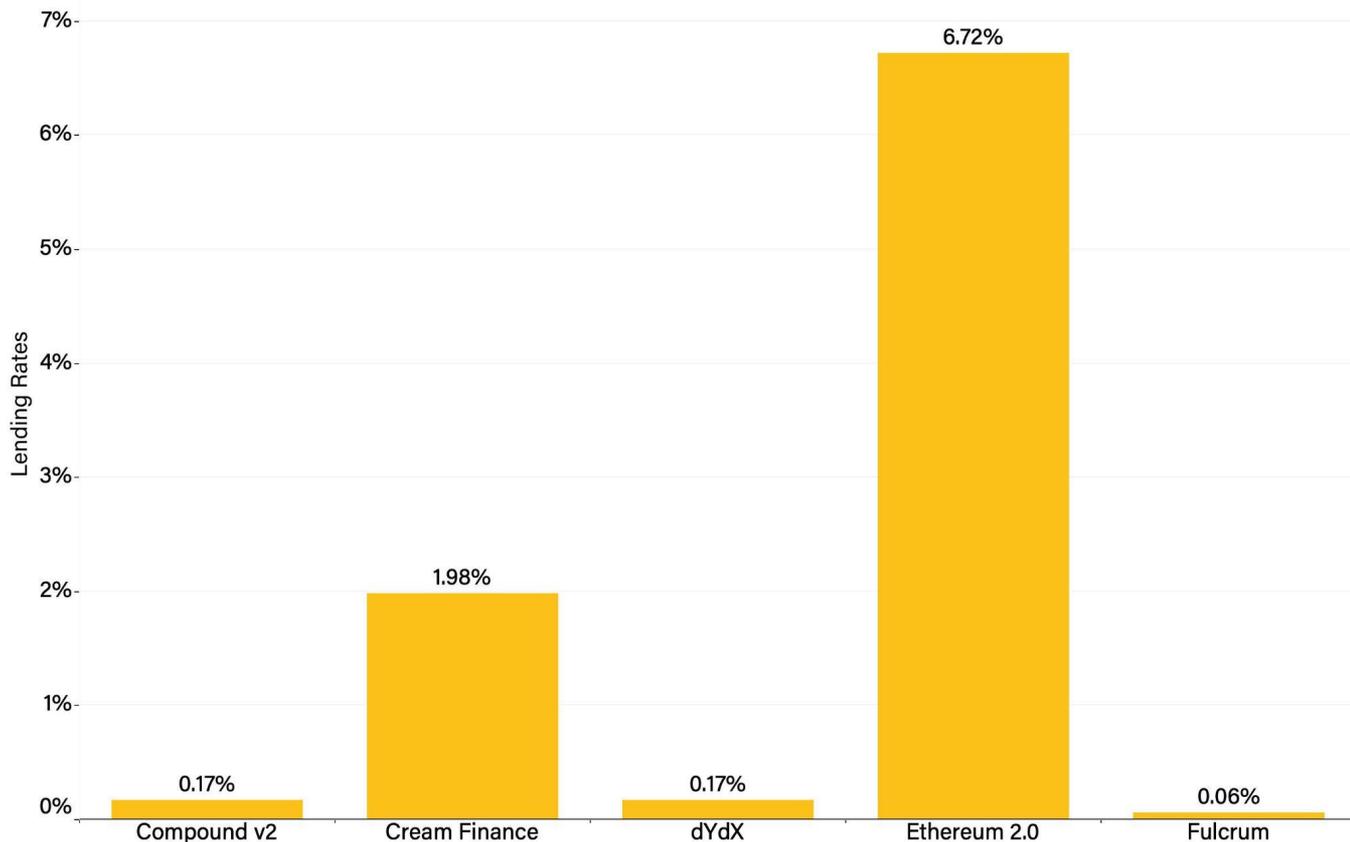


Source: Coin Metrics

Quarterly Review: Q2 2021

Ethereum 2.0 returns

The annual percentage return (APR) for running a validator node on Ethereum 2.0 is 6.72%. Compared to most other decentralized lending apps such as Compound, dYdX and Fulcrum, [which offer at most 2% APR on ether loans](#), the rates on Eth 2.0 are significantly more attractive. These rates come at a cost. Staking on Eth 2.0 does not offer users liquidity on their ether and requires a minimum of 32 ETH, worth \$72,832 at the close of the quarter. Over the long-term, as transfers are enabled on Eth 2.0 and a greater number of users trust the protocol with their ether holdings, the return for running a validator is expected to decrease and increasingly take on the role of a risk-free interest rate on Ethereum.



Source: [DeFi Rate](#), [Beaconcha.in](#), [Cream Finance](#)

Quarterly Review: Q2 2021

Bitcoin Mining

In 2021 Q2, mining was the hot topic of discussion among Bitcoin enthusiasts and critics alike as regulatory crackdowns in China forced most miners in the country to shut down their operations and billionaire entrepreneurs like Elon Musk began raising the alarm bells over the crypto asset's intense energy consumption.

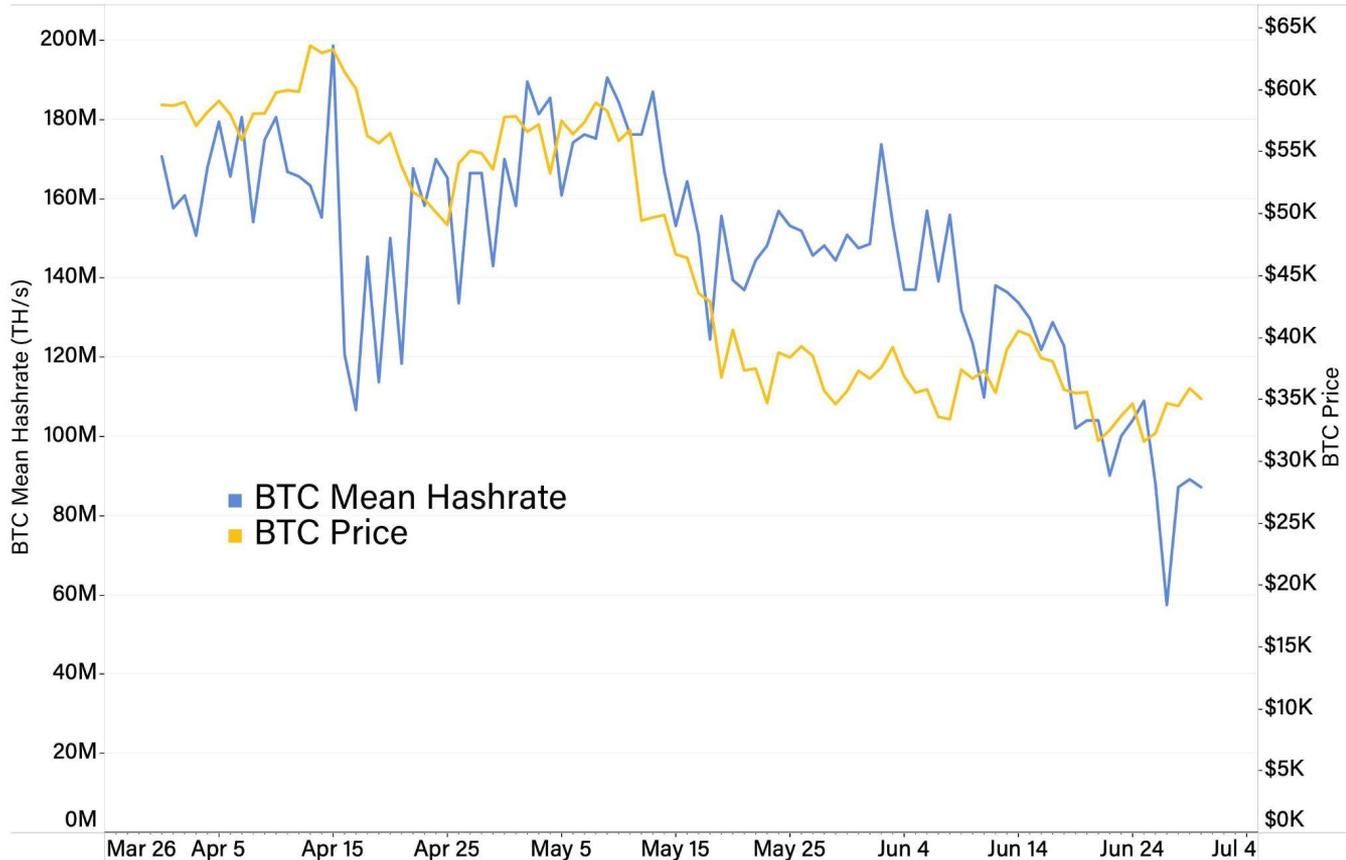
This section will cover the following topics in order:

- Bitcoin mining in China and its impact on the environment
- Mining energy mix data and the Bitcoin Mining Council
- The significance of Bitcoin's forthcoming Taproot upgrade

BTC hashrate falls as BTC price dips

China and Bitcoin

In Q2, a [coal plant accident in Xinjiang](#) and regulatory crackdowns in [Qinghai](#), [Inner Mongolia](#), [Yunnan](#) and [Sichuan](#) forced multiple Chinese mining pools to either shut down or scale back operations. Following each event, BTC hashrate was negatively affected, which also impacted network operations. The Bitcoin network recorded its slowest daily average block time on June 27, 2021 at 23 minutes. Bitcoin also recorded a 25% drop in mining difficulty levels on July 3, 2021, the highest ever in the network's 12-year history. These events highlight the high degree of miner concentration in China and the potential for greater decentralization in light of recent disruptions to bitcoin mining operations in the country.



Source: CoinDesk Bitcoin Price Index (XBX), Coin Metrics

Quarterly Review: Q2 2021

The Puell Multiple

The value of newly issued bitcoins awarded to miners on a daily basis is getting lower compared to historical standards, which may be a sign of a nearing bear market bottom. The Puell Multiple, which is often used as a tool to identify market peaks and troughs, is calculated by dividing the total dollar value of bitcoin mined in a single day with its 365-day moving average. This metric illustrates periods of time where the value of bitcoins being mined are either overvalued or undervalued. On June 27, the Puell Multiple hit a one-year low dropping into the green zone or the range of 0.3 to 0.5, signaling undervaluation of the crypto asset and potential weakening of bearish momentum.

Value of bitcoins being mined falls



Source: CoinDesk Bitcoin Price Index (XBX), glassnode

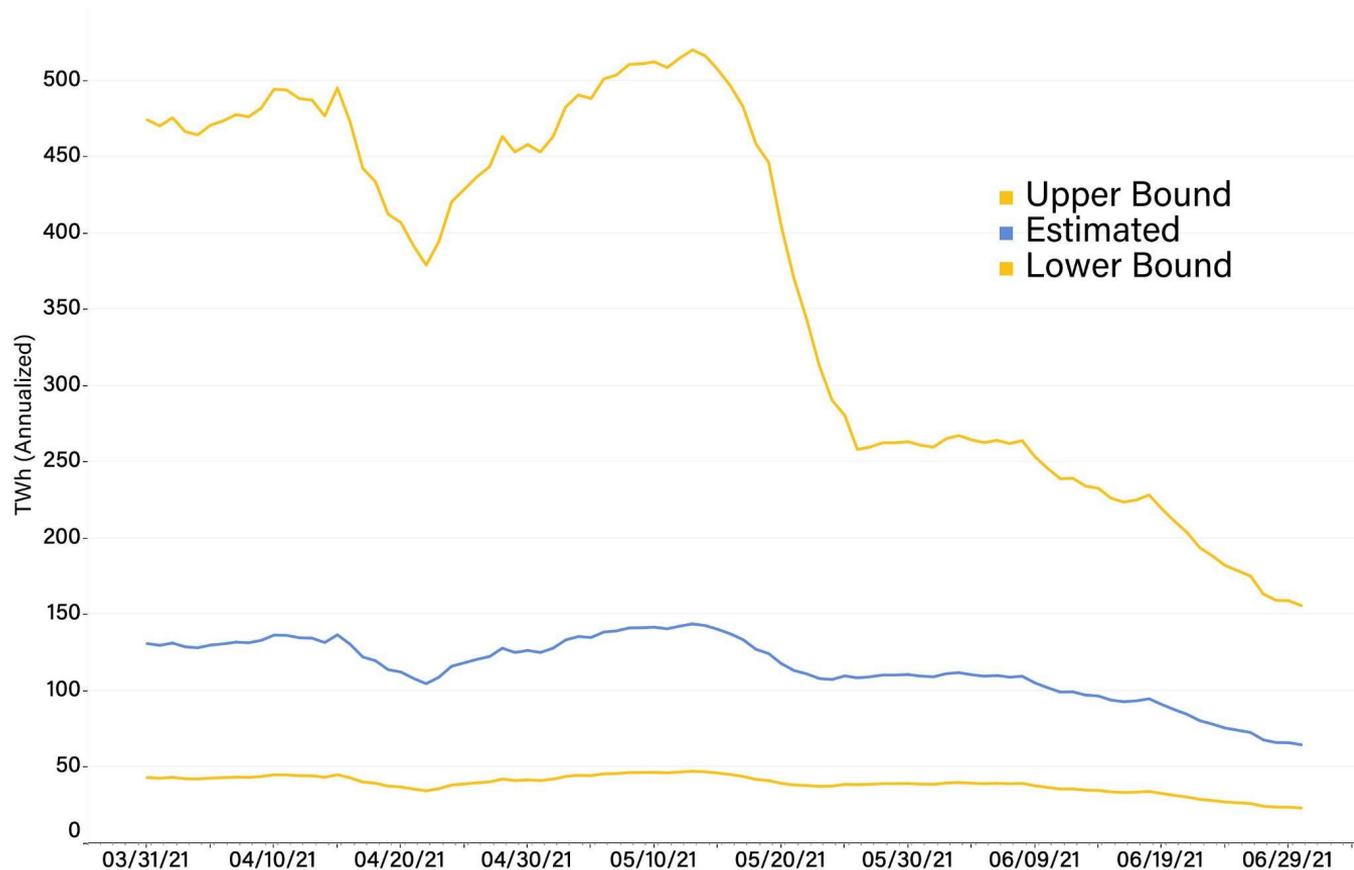
Bitcoin's energy usage declines in Q2 2021

Bitcoin's energy consumption

The Environmental, Social and Governance (ESG) narrative of Bitcoin was the subject of heated debate in mainstream media after Tesla CEO Elon Musk announced [in May](#) his company would be suspending bitcoin payments over environmental concerns about the cryptocurrency. While Bitcoin's energy consumption as estimated by [the Cambridge Centre for Alternative Finance](#) is at its lowest since November 2020 – primarily due to falling hashrate levels – and Musk has since announced payments in bitcoin are once again supported for Tesla products, concern from high profile investors over Bitcoin's environmental footprint persists.

See also:

[Bitcoin's Energy Problem](#) (report)



Source: [cbeci.org](#)

Quarterly Review: Q2 2021

How it started:

The [Bitcoin Mining Council](#) (BMC) formally debuted on June 11, 2021, a few weeks after Microstrategy CEO Michael Saylor and Tesla CEO Elon Musk announced they had a closed meeting with “leading” Bitcoin miners in North America about promoting energy usage transparency and sustainability initiatives.

How it’s going:

In its first, open-to-the-public meeting on June 16, the goals of the council were laid out. (1) The founding members of BMC will not act as a governance council for Bitcoin but rather focus on promoting education about Bitcoin mining. (2) BMC will publish quarterly reports on the energy mix of its members, which could provide valuable information to the market on bitcoin’s energy footprint.

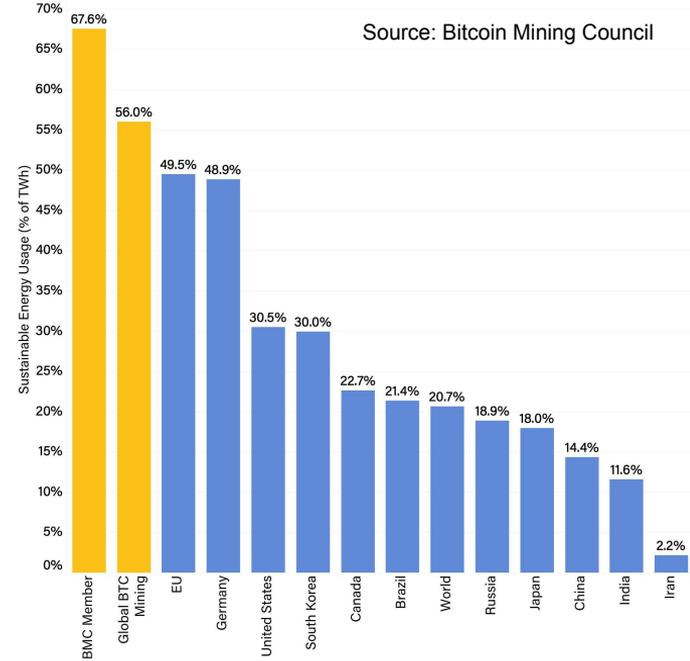
What it is:

The BMC is a forum of Bitcoin miners aimed at promoting energy usage transparency, sharing best practices and educating the broader public on the benefits of Bitcoin and Bitcoin mining.

What to expect:

The first quarterly report by the BMC was shared on July 2, 2021 during the council’s second open meeting. The report features data from 23 bitcoin mining companies representing 32% of total Bitcoin hashrate. Accurate and [up-to-date estimations](#) about the energy mix of miners are notoriously difficult to gather as most of the data relies on self-reporting. These regular reports are expected to improve data transparency about Bitcoin mining.

An estimated 56% of Bitcoin’s energy usage is sustainable



Bitcoin technology

Taproot is the most significant upgrade to the Bitcoin network since the activation of the block capacity enhancement of [Segregated Witness](#) in 2017.

To many investors, bitcoin represents a new and exciting aspirational store of value. Bitcoin's potential to become a store of value has earned it the label, "gold 2.0" and "digital gold." Where bitcoin and gold diverge entirely is the fact that the Bitcoin network is an upgradable technology. Gold in a vault will remain gold. There is no chance gold will turn into lead, silver or some improved version of gold. In contrast, the Bitcoin network can change.

Expected benefits of Taproot

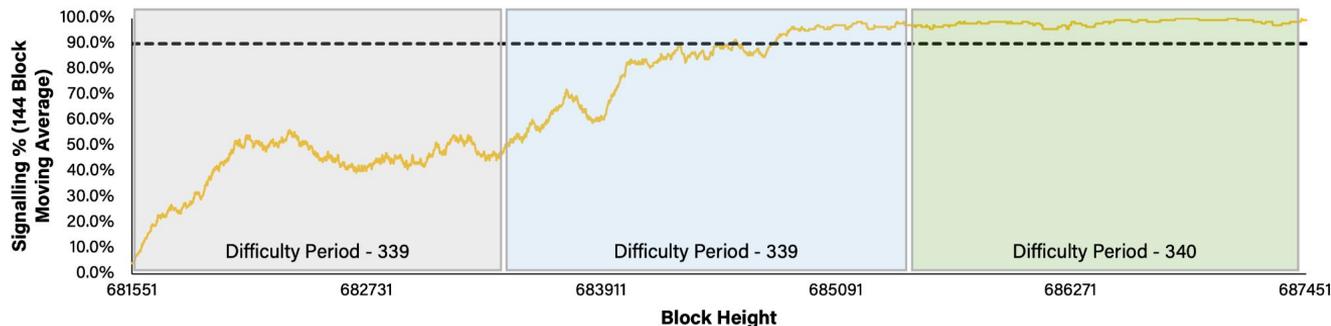
- Consolidated of all types of bitcoin transaction outputs into a singular Taproot output improving transaction privacy
- Improved Bitcoin programmability (i.e., so-called "smart contracts").
- Enhanced data efficiency by using a more efficient signature algorithm and transaction structuring method.
- Boosted security due to the addition of a new signature scheme, making it a dual-signature blockchain.

Risks of Taproot

26

- Low adoption rate shows that Bitcoin users are not interested in using Bitcoin for anything new.
- Low adoption rate negates potential privacy benefits.
- New signature scheme may prove less "quantum resistant" than the current scheme.
- Potential for fracturing in the Bitcoin community due to disagreement over the Taproot upgrade – similar to the controversy that led to the creation of [Bitcoin Cash](#).

Mining hashrate 90% signalling threshold for Taproot met after three difficulty periods



Source: [Hampus Sjoberg](#), CoinDesk Research

Quarterly Review: Q2 2021

What's new on the CoinDesk Research Hub?

- [A Look Into the Valuable Properties of NFTs](#)
 - CrossTower's research team offers its thoughts on the components that it believes drive value in non-fungible tokens.
- [Bitcoin Miner Metrics: Hashrate and Thermocap](#)
 - CoinDesk Research's George Kaloudis looks at two Bitcoin mining metrics and how investors can use them to glean insight into the asset's price and network fundamentals.
- [Does Bitcoin Have an Energy Problem?](#)
 - CoinDesk Research's George Kaloudis looks at the data behind the most common critiques and shows that while Bitcoin uses a lot of energy, the mix is evolving towards renewables.
- [Polkadot Ecosystem Overview](#)
 - This report by TokenInsight looks into the projects built on Polkadot's ecosystem and the underpinning market data of the Polkadot ecology.
- [The Investment Implications of EIP 1559](#)
 - CoinDesk Research's Christine Kim explains how EIP 1559 works and what its intended impacts are to investors, miners and users.
- [The Investor's Perspective on the Bitcoin Taproot Upgrade](#)
 - CoinDesk Research's George Kaloudis looks into the merits of Taproot from the investor's perspective, outlines some potential drawbacks and issues a reminder that Bitcoin is an investment in technology.

CoinDesk Research Updates

Thank you for reading!

CoinDesk Research offers reports and multimedia programming by independent experts on crypto industry trends and assets, to help professional investors make sense of the rapidly evolving concepts and data.

You can see more of our work, as well as a wide range of reports from some of the industry's top research teams, in our **Research Hub** at www.coindesk.com/research.

Be sure to follow us on Twitter at [@coindeskdata](https://twitter.com/coindeskdata). You can reach us at research@coindesk.com.

CoinDesk Research is: **Galen Moore, Christine Kim, Shuai Hao and George Kaloudis.**



This report has been prepared by CoinDesk solely for informative purposes. It should not be taken as the basis for making investment decisions, nor for the formation of an investment strategy. It should not be construed as investment advice or as a recommendation to engage in investment transactions. The information contained in this report may include or incorporate by reference forward-looking statements, which would include any statements that are not statements of historical fact. No representations or warranties are made as to the accuracy of these forward-looking statements. Any data, charts or analysis herein should not be taken as an indication or guarantee of any future performance.

Information is based on sources considered to be reliable, but is not guaranteed to be accurate or complete. Any opinions or estimates expressed herein reflect a judgment made as of the date of publication and are subject to change without notice. Trading and investing in digital assets involves significant risks including price volatility and illiquidity and may not be suitable for all investors. The authors may hold positions in digital assets, and this should be seen as a disclosure of potential conflicts of interest. CoinDesk will not be liable whatsoever for any direct or consequential loss arising from the use of this information.