# CoinDesk Quarterly Review

Third Quarter 2021

*From CoinDesk Research*

# Executive Summary

In the following report, we aim to summarize some of the key themes and metrics that highlight the quarter's progress in cryptocurrency markets.

Q3 2021 was a welcome relief for the market after BTC and ETH hit all-time highs in early Q2 2021, only to come tumbling down. Both assets performed well from a price perspective, adding 25.0% and 31.8%, respectively. It felt as though the market was taking a breather, which revealed itself through lower volatility measures than in any other quarter this year, albeit with levels still far above established macro assets. On top of that, BTC proved mostly uncorrelated with gold, the S&P 500, bonds and the U.S. dollar, highlighting that BTC could have a unique place in portfolios.

We started Q3 still hanging on the words of Tesla CEO Elon Musk, which led to an ARK Invest-hosted event, dubbed "The B Word," focused on explaining bitcoin to institutions. The event featured a keynote panel of Cathie Wood (ARK Invest), Jack Dorsey (Twitter, Square) and Musk. The topic of discussion was "Bitcoin as a Tool for Economic Empowerment." The event was widely watched live across the industry.

Stablecoins reentered the spotlight when Circle, the issuer of stablecoin USDC, announced its intention to go public. This move sparked a wave of stablecoin issuers disclosing what exactly was backing their pegged coins. Those disclosures left some skeptics and investors unsatisfied.

Meanwhile, non-fungible tokens (NFT) exploded in popularity – even Visa bought a CryptoPunk. NFTs also paved the path to making Ethereum expensive for transactions, triggering extended discussions around scalability and accessibility which, in turn, led to the rise of alternative layer 1 and layer 2 smart contract blockchains. A similar story was played out in Q3 for bitcoin, which officially became legal tender in El Salvador. Salvadorans transacted bitcoin using the Lightning Network, an open-source, decentralized, rapidly growing layer 2 scaling system for Bitcoin, to mixed reviews.

All the while, regulators and politicians all over the world applied pressure to bitcoin and crypto: China doubled down on previous bans; Binance navigated regulations; and the U.S. proposed new crypto tax rules, which were met with heavy criticism from crypto supporters.

This and much more are in the pages that follow.

# Performance

In Q3 2021, the CoinDesk Bitcoin Price Index (XBX) and the CoinDesk Ether Price Index (ETX) gained 25.0% and 31.8%, respectively.

In this section, we cover:

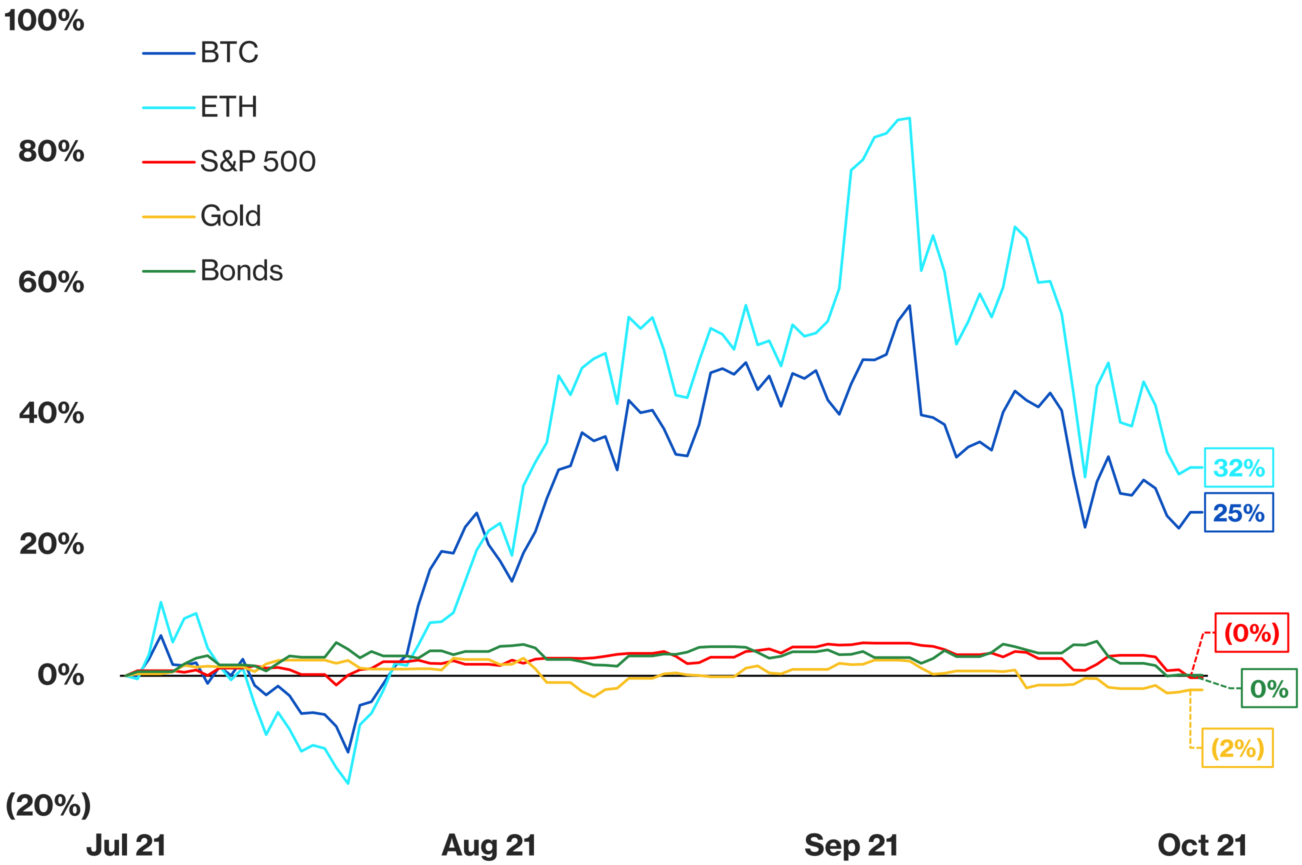
- Returns, volatility and correlations of BTC and ETH compared to macro assets
- Performance of CoinDesk Indexes and CoinDesk 20

# Macro Returns

BTC and ETH outperformed traditional benchmarks for stocks, bonds and gold in Q3, with the CoinDesk Bitcoin Price Index (XBX) and the CoinDesk Ether Price Index (ETX) gaining 25.0% and 31.8%, respectively.

ETH continued its winning streak against BTC, having outperformed the preeminent cryptocurrency by market capitalization in each 2021 quarter, hinting at the possibility that more money, institutional and retail alike, may be entering the fold.

**Crypto Assets Outperform Traditional Macroeconomic Assets**



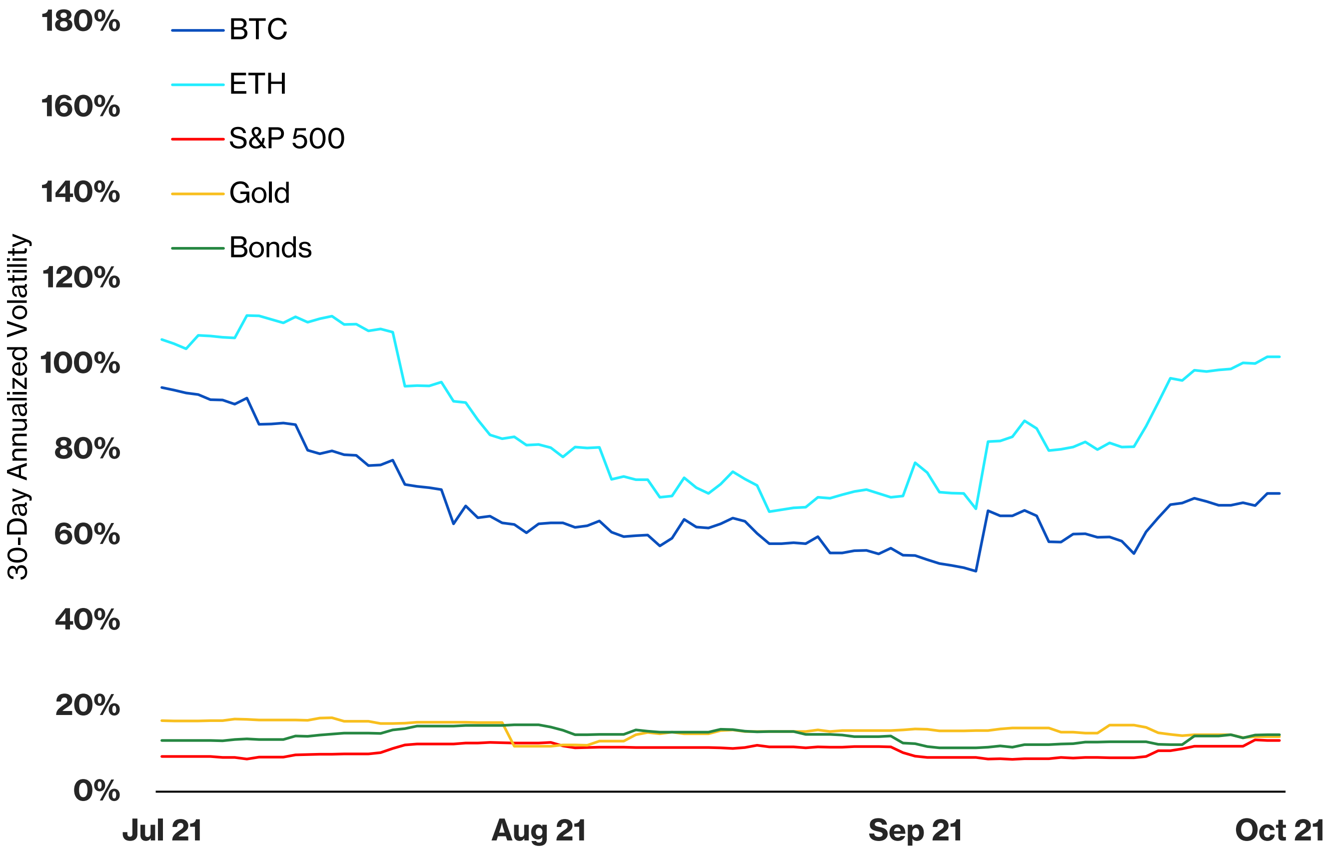

Source: CoinDesk Research, St. Louis Fed, Yahoo Finance. Bonds = iShares 20+ Year Treasury Bond ETF; Gold = London Bullion Market pm fixing price

# Volatility

Given the relatively muted performance of BTC this quarter when compared to Q1 and Q2 (+100% and -40%, respectively), volatility in the asset lacked the historical spikes we regularly see, with peak-to-trough volatility varying by a factor of 1.8x, compared to 2.0x and 2.2x in Q1 and Q2, respectively. Additionally, annualized 30-day volatility maxed out at 94% in Q3, compared to 101% and 113% in Q1 and Q2, respectively.

As expected with its superior returns, ETH again boasted higher volatility measures because outsized returns are often a sign of outsized price volatility, a theme consistent over the past three quarters.

## Crypto Asset Volatilities



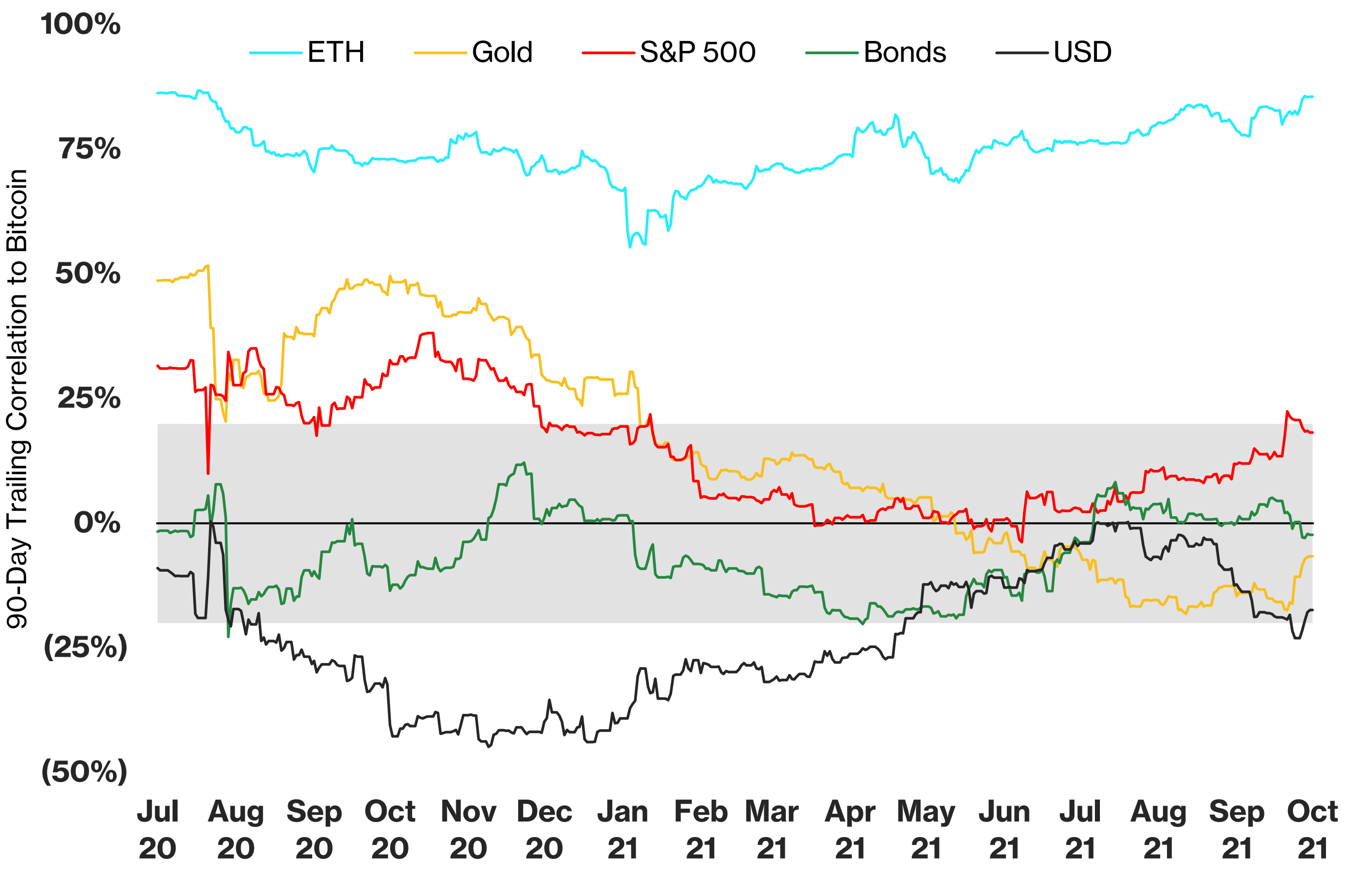

Source: CoinDesk Research, St. Louis Fed, Yahoo Finance. Bonds = iShares 20+ Year Treasury Bond ETF; Gold = London Bullion Market pm fixing price

# Correlations

All macro assets remained within an uncorrelated band to bitcoin for most of Q3 2021, represented by the gray band in the chart at right. This is contrasted to 2H 2020, where gold and the S&P 500 spent most of the time somewhat positively correlated to bitcoin, and the U.S. dollar (USD) was somewhat negatively correlated to bitcoin. Bitcoin again can claim it is a macro asset like no other.

Meanwhile, ETH remained tightly correlated to BTC even as ETH outperformed, suggesting that BTC's price remains an important indicator for digital asset investors even if they lack direct exposure to BTC directly.

**90-Day Trailing Correlations to Bitcoin**



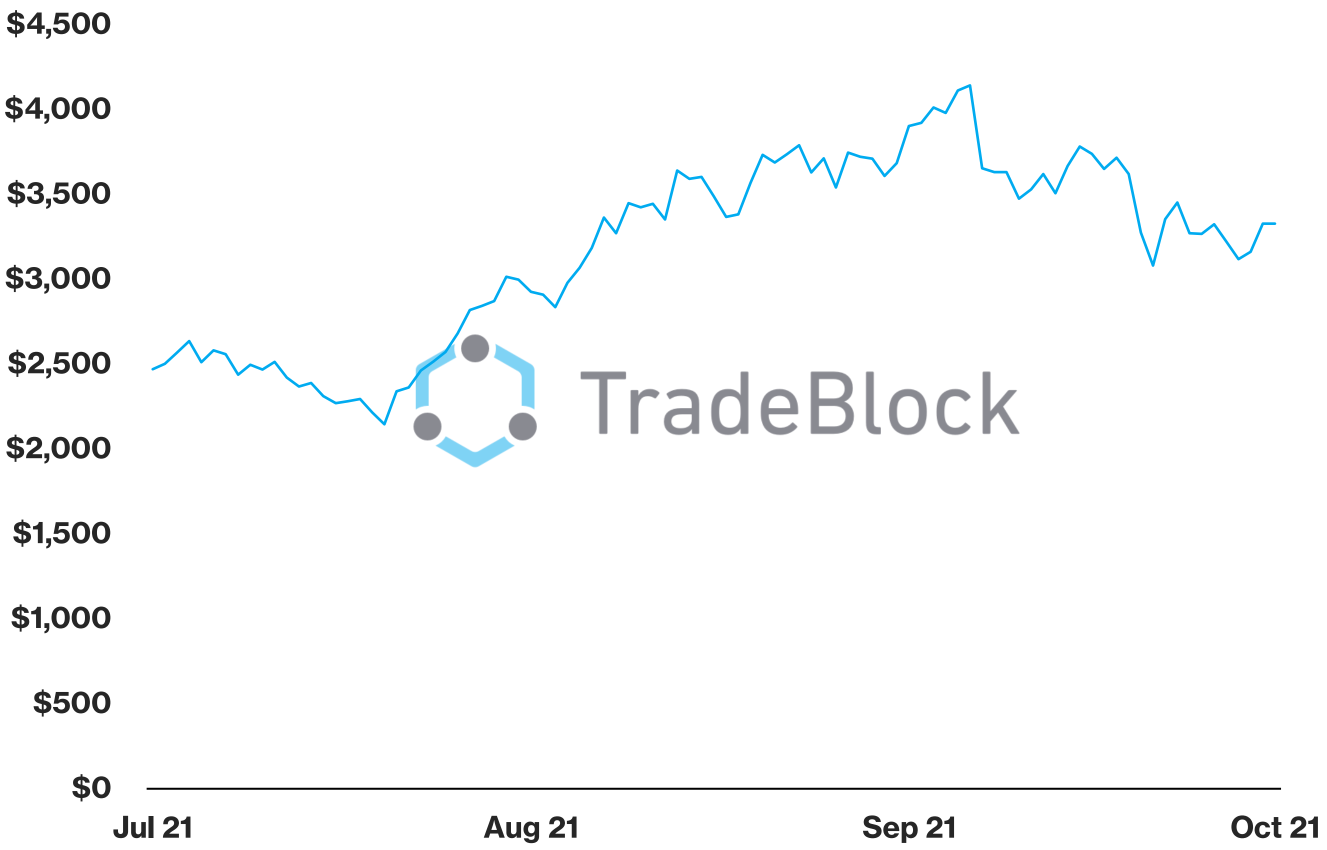

Source: CoinDesk Research, St. Louis Fed, Yahoo Finance. Bonds = iShares 20+ Year Treasury Bond ETF; Gold = London Bullion Market pm fixing price

# DLCX

The CoinDesk Large Cap Index (DLCX) is designed to track an investable basket of large-cap crypto assets via a market cap-weighted benchmark index. The DLCX is maintained by TradeBlock, Inc. (a subsidiary of CoinDesk, Inc.) and targets a minimum of 70% coverage of the crypto asset market capitalization.

The DLCX performed well in Q3, up 34.7%, with all constituent assets gaining ground over the quarter. The broader market performance bodes well for future inflows of institutional money. The more consistently assets perform, the more likely it is for investors to feel comfortable enough to make an investment.

**CoinDesk Large Cap Index (DLCX)**



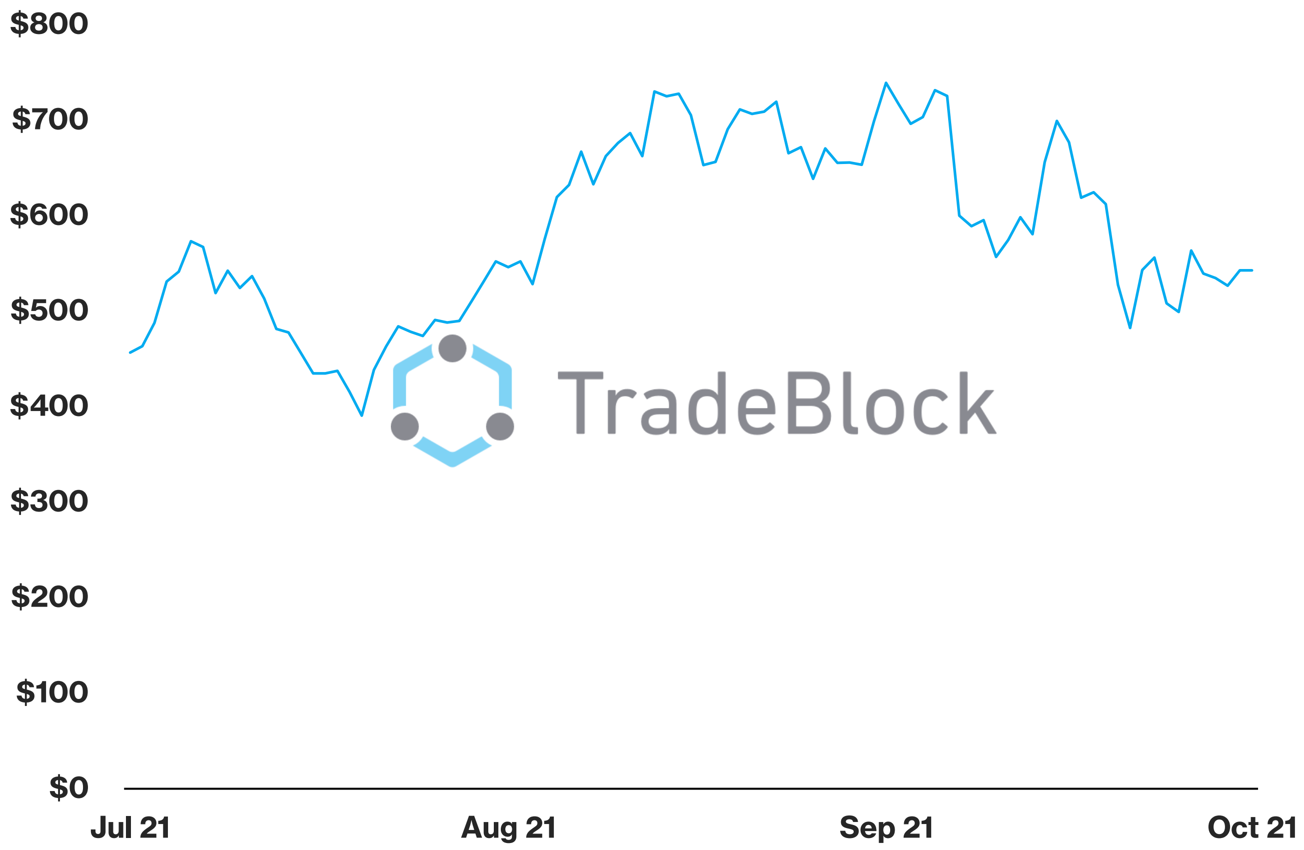

Source: TradeBlock, CoinDesk Research

# DFX

The CoinDesk DeFi Index (DFX) launched on Aug. 28, 2021, as a response to heightened interest in decentralized finance (DeFi). The DFX is designed to measure the investable DeFi market by weighting a basket of DeFi cryptocurrencies based on their market capitalization. DFX is maintained by TradeBlock, Inc. (a subsidiary of CoinDesk, Inc.).

As we will highlight later in this report, DeFi activity picked up again in Q3, with total value locked (TVL), or the total amount of assets locked in DeFi applications smart contracts, hitting new highs. However, governance tokens were swept under the rug as the majority of DeFi coins underperformed ether for the second quarter in a row. The DFX returned around 18.8% over the quarter, compared to 31.8% from ether and 25.0% from bitcoin.

CoinDesk DeFi Index (DFX)

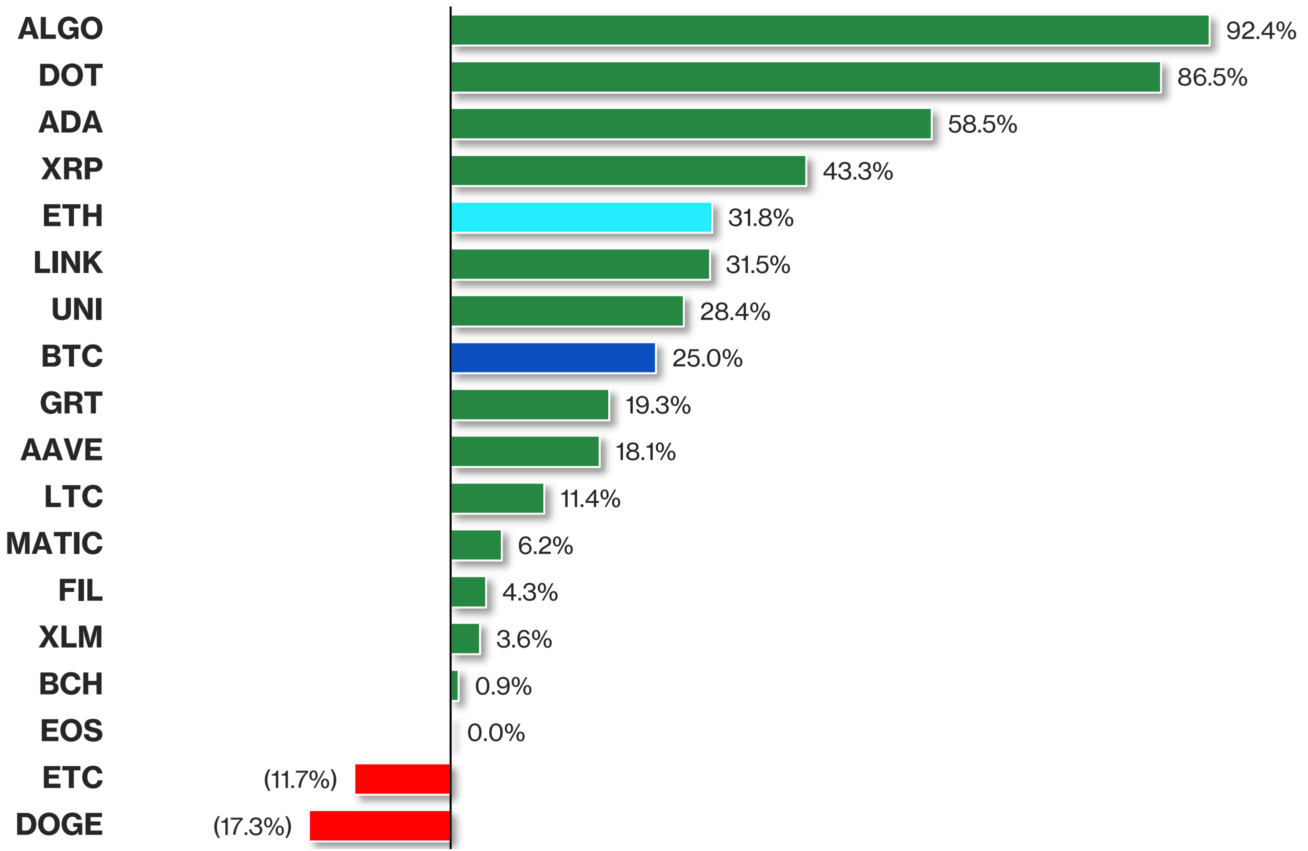



Source: TradeBlock, CoinDesk Research

# CoinDesk 20

Returns for the CoinDesk 20 (CD20) were mostly positive, with three alternative layer 1 crypto assets rounding out the best performers. ALGO, DOT and ADA returned 90.4%, 74.5% and 53.9%, respectively. Q3's performance comes off the back of a bloody Q2 where almost all CD20 assets shed value. It is worth mentioning that the quarter's worst performer was the venerable memecoin DOGE, which fell drastically in popularity after it became part of the fabric of internet culture in Q2.

## CoinDesk 20 Assets Bounced Back in Q3




Source: CoinDesk Research

# Bitcoin

Bitcoin's price appreciated again in Q3 2021, with the CoinDesk Bitcoin Price Index (XBX) gaining 25.0%. Two main themes dominated the quarter: Bitcoin's ability to shrug off legal crackdowns and political pressure from China, after initially ceding hashrate, or computing power; and its capacity for scaling, or expanding, through the Lightning Network as its use case is tested in El Salvador.

In this section, we cover:

- **Trends:** Hashrate recovery, Lightning Network growth, GBTC premium
- **Markets:** Market capitalization, monthly price performance, bitcoin dominance
- **Trading:** Spot, futures, options

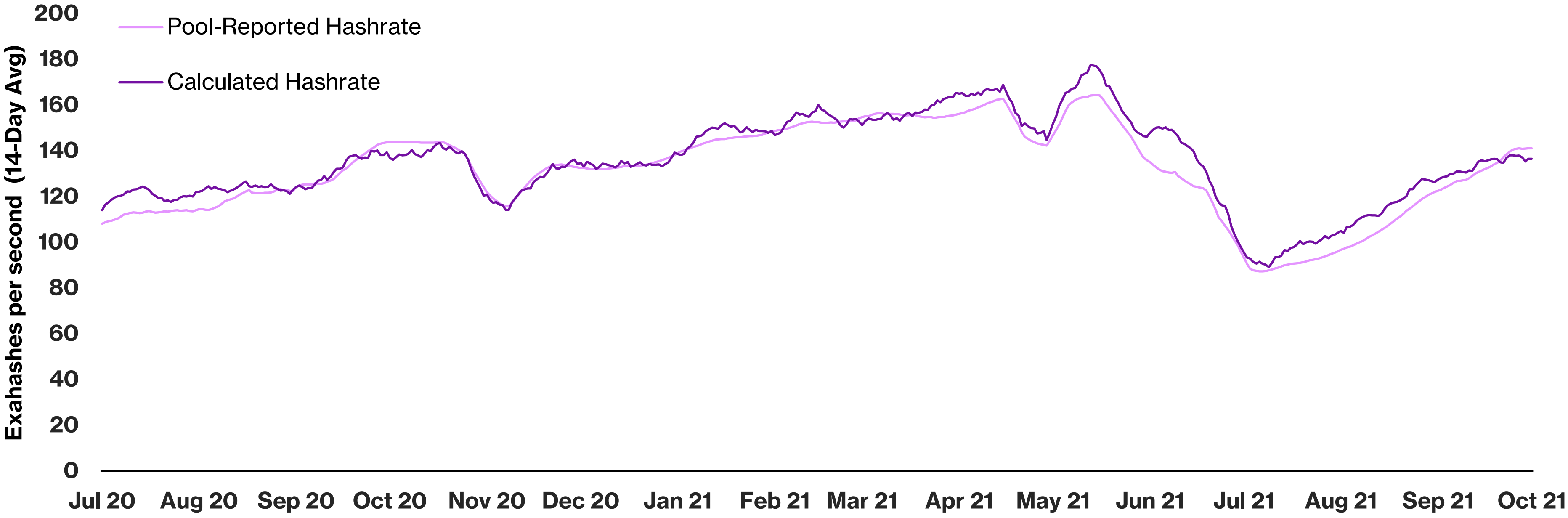
# Bitcoin: Trends

- Bitcoin hashrate recovery
- Lightning Network growth
- Grayscale premium

# BTC Hashrate

Following China's crackdown on bitcoin mining in Q2, hashrate, the amount of computational power being used to process transactions, dipped precipitously from an all-time high of ~178 Eh/s in mid-May to a low of ~89 Eh/s by early July. Since then, Bitcoin's hashrate has recovered, growing ~43% over the quarter, suggesting that the miners have either relocated or turned back on after a lack of enforcement by the Chinese government. Recently renewed crackdowns cast doubt on the latter point, suggesting that Bitcoin successfully relocated a significant portion of its security infrastructure while experiencing no downtime.

## Hashrate Recovered Rapidly in Q3

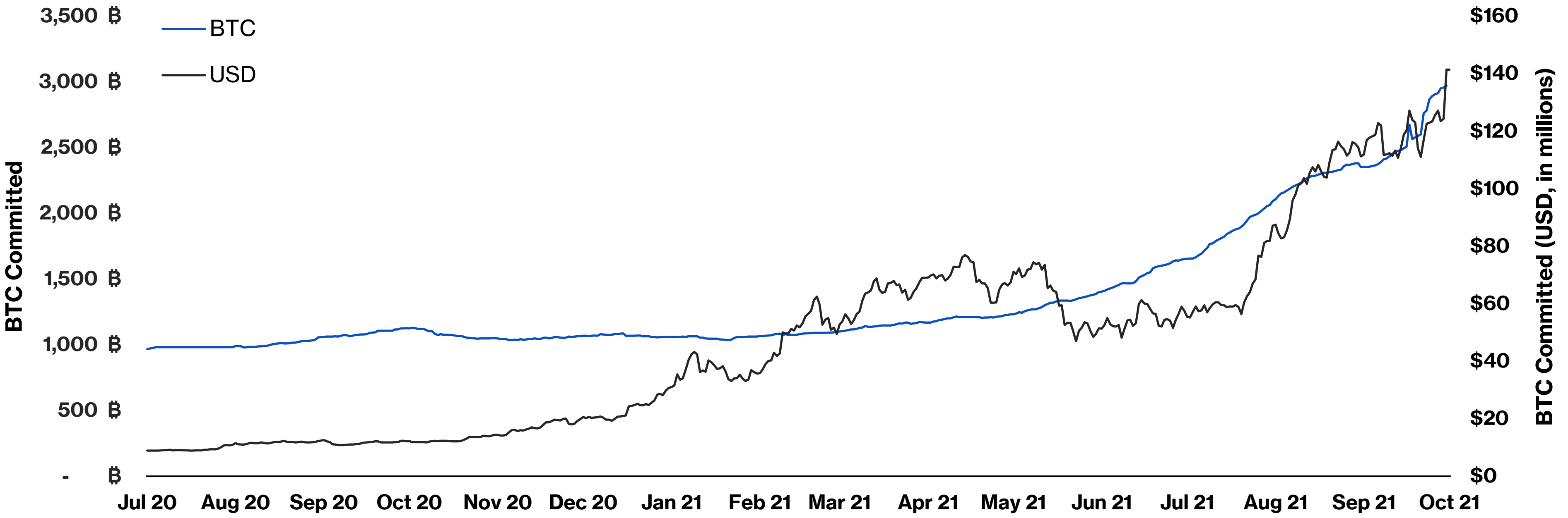



Source: Coin Metrics, https://miningpoolstats.stream/bitcoin

# Lightning Network Capacity

Since El Salvador made bitcoin legal tender in June 2021, the amount of bitcoin committed to the Lightning Network, a Bitcoin overlay network that enables cheap and instantaneous bitcoin payments, has grown ~97%, recently surpassing 2,900 BTC. As Bitcoin continues to grow into its "store of value" and "digital savings technology" use cases, it is harkening back to its roots as a "purely peer-to-peer version of electronic cash," given the growing incidence of real-life implementations of the Lightning Network.

## Lightning Network Capacity Grew in Q3



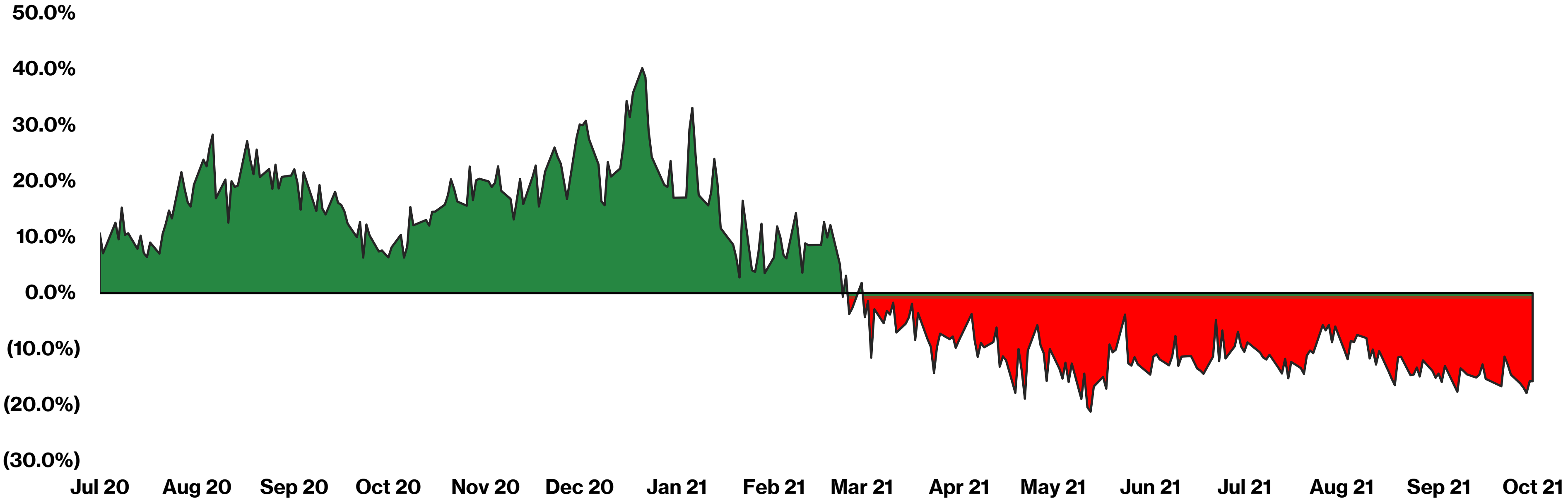

Source: https://bitcoinvisuals.com/lightning

**See also:** A Deep Dive Into Lightning as a Bitcoin Scaling Solution

# Grayscale GBTC Premium

The Grayscale Bitcoin Trust (GBTC) is an open-ended private trust that custodies bitcoin for investors. Its secondary market shares have tended to trade at a premium to net asset value, but that changed earlier this year and the shares spent all Q3 2021 trading at a discount, for the first time since February 2017. Historically, the GBTC discount has been associated with suppressed demand for the underlying asset itself, but given there are now viable substitutes to GBTC for access to bitcoin investment, the discount has been broadly associated with suppressed demand for GBTC in anticipation of a U.S. bitcoin exchange-traded funds (ETF), following the success of bitcoin ETFs in Canada.

**2020’s GBTC Premium Flipped Red in 2021**




*Note: CoinDesk and Grayscale are subsidiaries of Digital Currency Group (DCG). CoinDesk maintains editorial independence from DCG. Source: Skew*

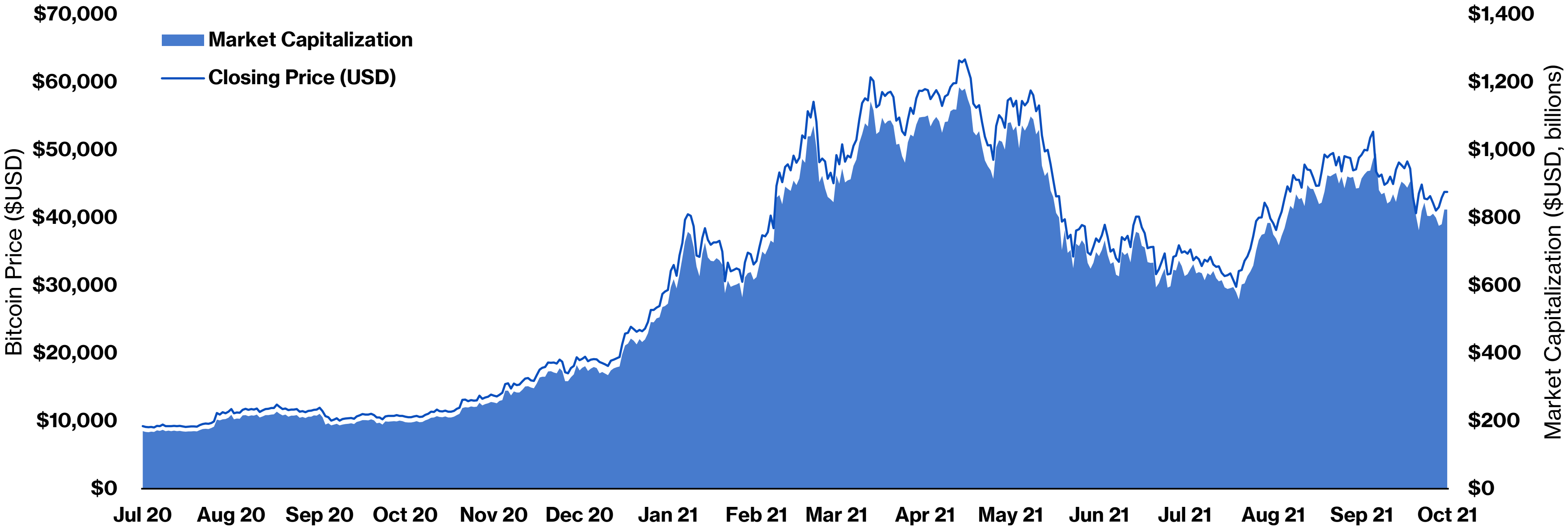
# Bitcoin: Markets

- Bitcoin market capitalization
- Monthly price performance
- Bitcoin dominance

# BTC Market Performance

BTC finished the quarter up 25.0%, reclaiming a portion of last quarter's losses, which clocked in at -40.4%. Entering September 2021, bitcoin looked primed to reclaim its all-time high of $64,888.99 set in April 2021 and exceed the symbolic $1 trillion market capitalization again. Market capitalization brushed up against $1 trillion in early September, before falling sharply and ending the quarter at $824B or $43,798.70 per bitcoin. That said, while price increased in Q3, sentiment was weaker given a declining put/call ratio over the quarter and the fact that bitcoin is still ~48% off its all-time high.

**Bitcoin Price Fared Well in Q3 Following a Poor Q2**




Source: CoinDesk Bitcoin Price Index (XBX)

# Monthly and Quarterly Performance

The poor price performance in September mentioned on the previous page aligns with an interesting trend for the bitcoin market. Since 2017, BTC's price has decreased, sometimes significantly, in September and that trend continued in Q3 2021. While there is no consensus reasoning behind the price movement pattern beyond cyclicality, there is an interesting parallel to draw to the S&P 500, which has averaged a (0.7%) return in September dating back to 1980.

## September Is Typically a Bad Month for Bitcoin Price

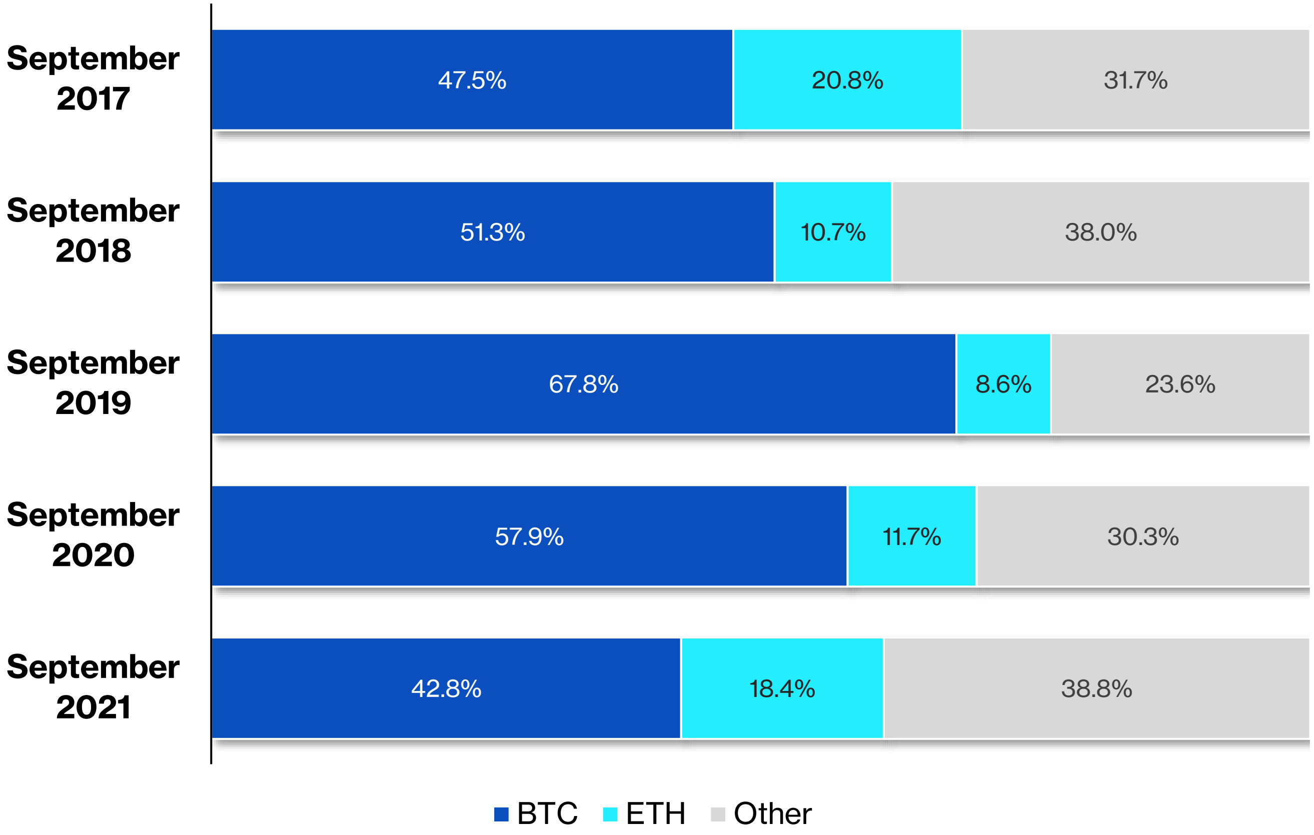
| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|
| **July** | 11.0% | 0.1% | 6.7% | 21.4% | (8.5%) | 24.3% | 14.4% |
| **August** | (20.8%) | (9.7%) | 72.0% | (8.7%) | (3.8%) | 2.7% | 22.5% |
| **September** | 4.8% | 5.4% | (10.0%) | (5.4%) | (14.4%) | (8.0%) | (10.3%) |
| **Q3** | (7.9%) | (4.8%) | 65.2% | 4.8% | (24.6%) | 17.4% | 25.7% |

Source: CoinDesk Bitcoin Price Index (XBX)

# BTC Market Capitalization Dominance

Bitcoin dominance, the measure of BTC market capitalization compared to the market capitalization of all digital assets, has consistently waned year over year since 2019. ETH has performed well, and the broad proliferation of new “altcoins” has allowed for market capitalization to grow outside the auspices of the “blue chips.” That said, BTC losing dominance does not imply that it is “losing,” especially as it continues to cement itself as a sound money and global monetary network. Waning dominance for bitcoin more accurately suggests that there is money flowing into other projects with different use cases, as typically occurs during times of optimism in digital assets.

**BTC Dominance Loses Ground**




Source: CoinMarketCap

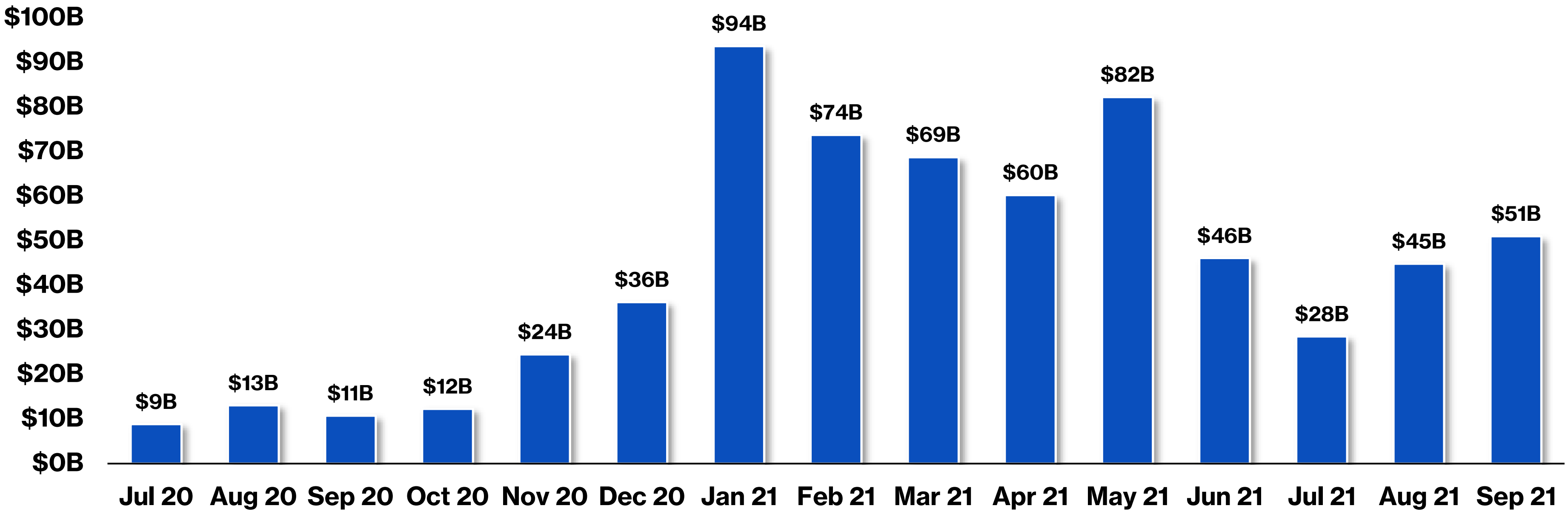
# Bitcoin: Trading

- Spot volumes
- BTC futures
- BTC options
- Liquidations

# BTC Spot Volumes

Bitcoin spot volume fell in Q3 following a record Q2, which was expected given higher prices are associated with higher volumes. In line with that, spot volume was up more than 300% for Q3 2021 when compared to Q3 2020. The top two exchanges by volume stayed consistent since last year, with Coinbase and LMAX commanding 39% and 19% of volume in Q3 2021. However, they ceded volume in absolute terms to up-and-coming exchange FTX, which enjoyed 18% of volume, powered by a heavy marketing spend and newly found brand recognition.

**BTC Spot Volumes Dipped in Q3 Following Record Q2**




Source: CoinDesk Research

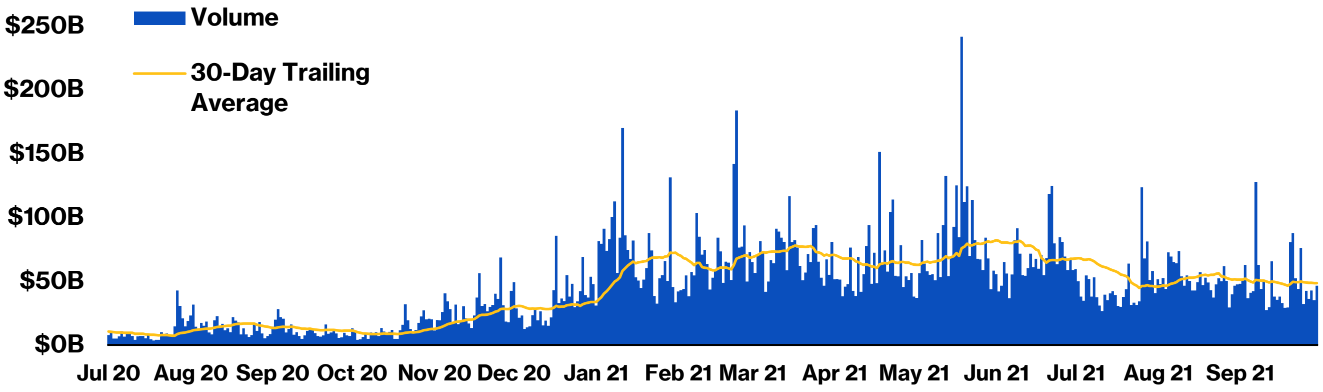
# BTC Futures

The 30-day trailing average for futures volumes surged from Q4 2020 through Q2 2021, peaking in early June. Bitcoin futures, specifically those hosted by CME, have been a way for institutional investors to gain exposure to bitcoin without holding the underlying asset. Since June the futures volumes have slowly declined.

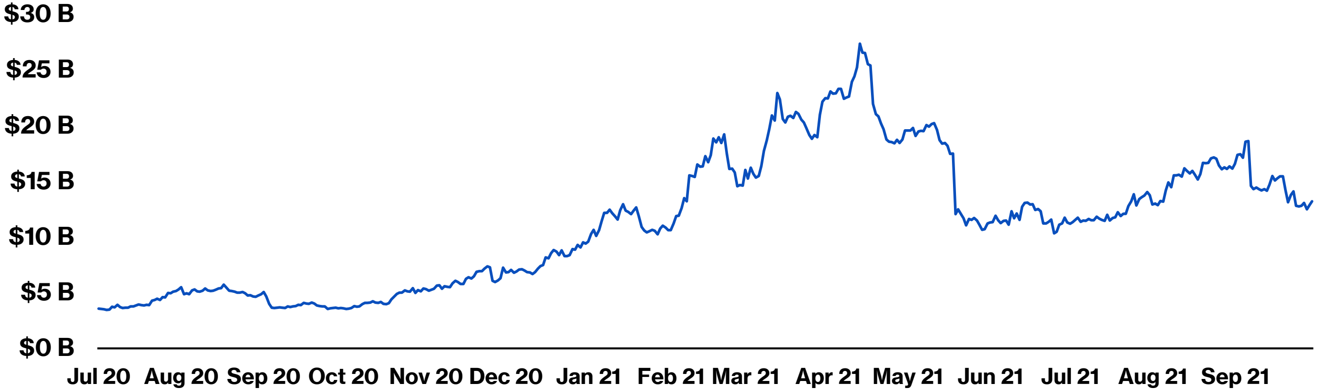
The increase in futures open interest over the quarter in combination with declining future volumes points to an increase of relative leverage. Furthermore, according to [data from Glassnode](), futures positions that were heavily crypto-margined in Q1 and Q2 are now shifting toward being fiat-margined, highlighting the current risk-off nature of the crypto markets. Fiat-margined positions pose less liquidation risk and currently make up nearly 50% of open interest, up from 30% in April.

## Bitcoin Futures

### BTC Futures Volume




### Futures Aggregated Open Interest

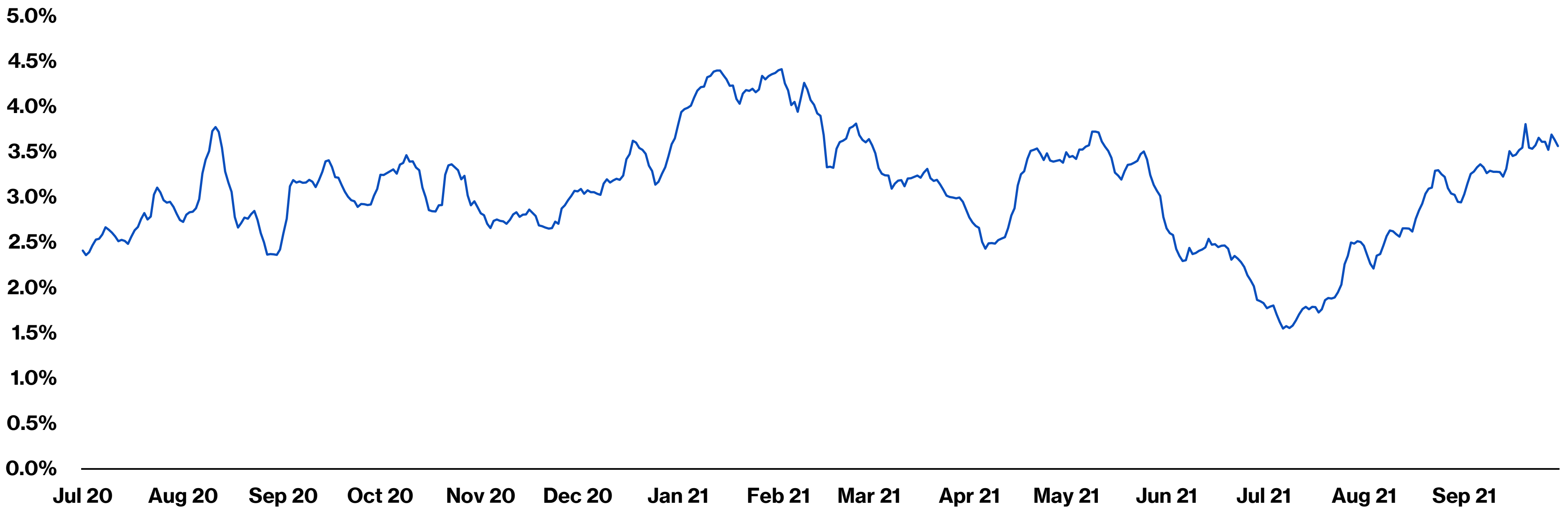



Source: Skew

# BTC Futures vs. Spot

The ratio of spot volumes to futures volumes is an indicator of institutional investor involvement, as futures tend to be used for short-term positions. The chart below shows there was a rise of institutional investor interest in 2H 2020, which continued through Q1 2021, trailed off in Q2 2021 and saw a resurgence in Q3 2021.

## BTC Futures Indicative of Increased Investor Interest




Source: Skew

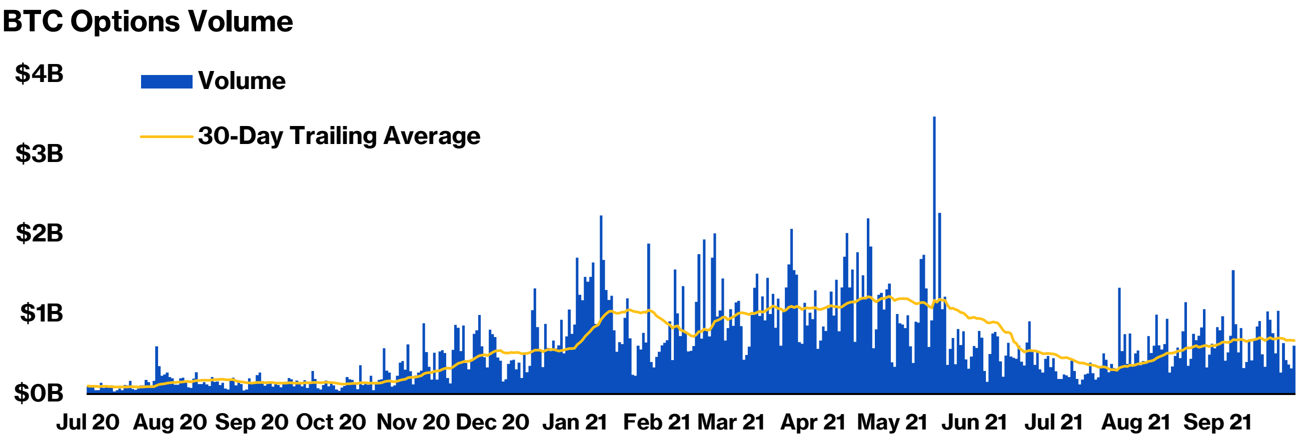
# BTC Options

After options trading volume reached all-time highs in Q2 2021, investor interest waned as the price of bitcoin fell.

Open interest recovered from the local June 2021 low, gaining 30% over the quarter, but it is still 44% off the all-time high of open interest.

As we approach the end of 2021, a trend worth watching in BTC options is the number of options expiring on Dec. 31, 2021, with open interest three times that of its closest competitor (representative of >66K BTC), with the most popular call option by strike price being $100,000 per bitcoin.

## BTC Options Volume Increased in Q3, but Still Off of Highs





Source: Skew

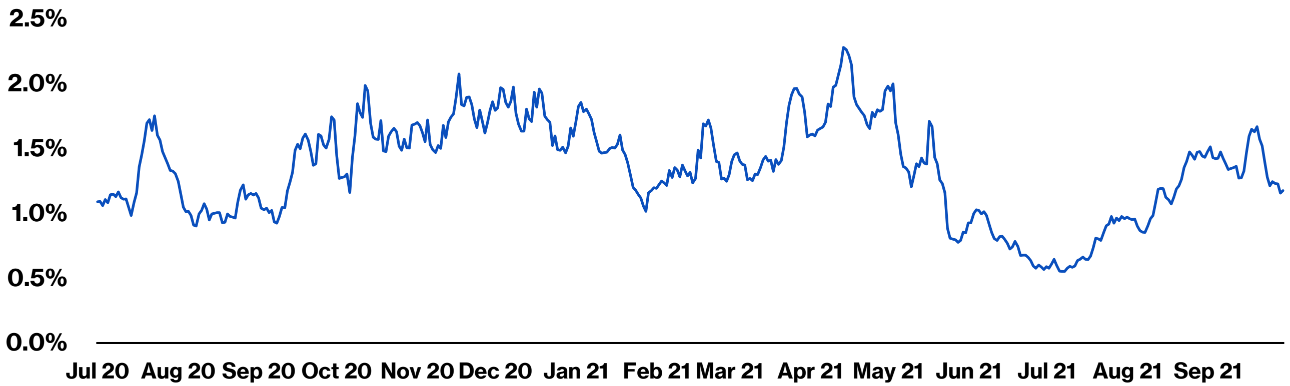
# BTC Options vs. Spot + Futures

Options volumes relative to spot and futures volume point to the fact that the BTC market still has a way to go when it comes to maturation. While options infrastructure has grown considerably in recent years, options are still a small part of the landscape. As the bitcoin market matures, we could expect options volume to grow faster than spot and futures volumes going forward as investors look to hedge their portfolios through BTC options.

## Relative BTC Options Volumes Still in Immature Stage

### BTC Options as % of BTC Spot


### BTC Options as % of BTC Futures

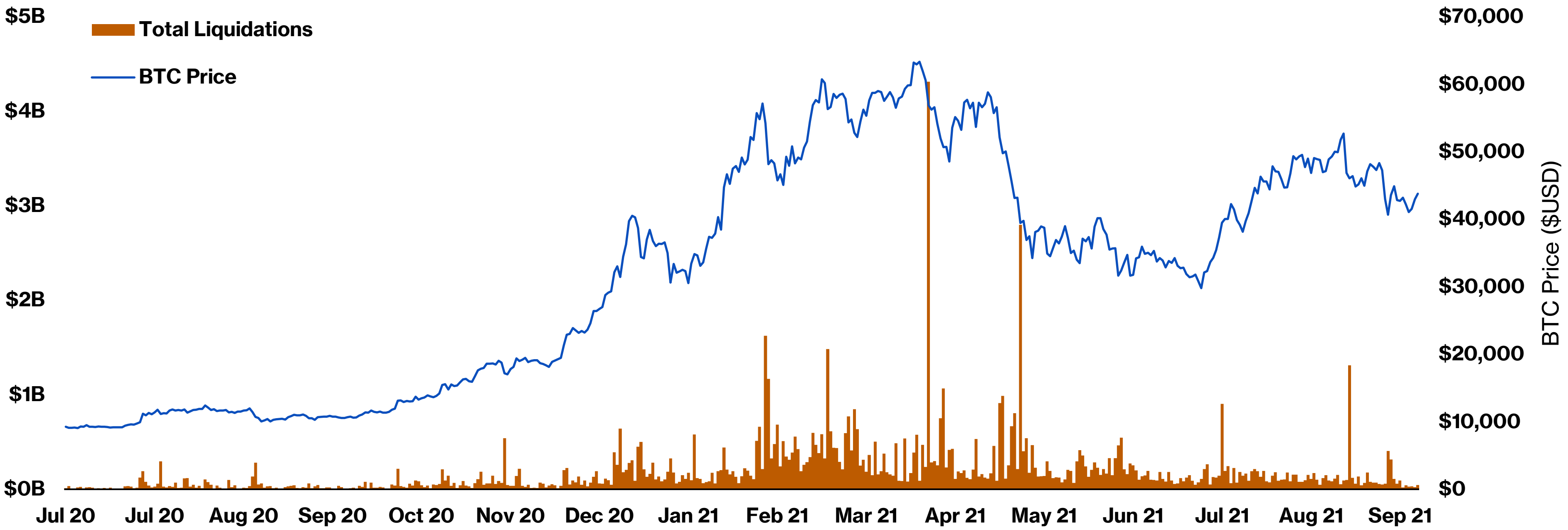



Source: Skew

# BTC Liquidations

Volatile price changes in bitcoin can typically be attributed to spikes in liquidations of leveraged positions. On Sept. 7, there was $1.3B in liquidations, which triggered a 10.7% price decrease. There was another spike in liquidations on Sept. 20 of $405 million, which triggered a 9.2% price decrease. These liquidations are a result of the high level of effective leverage in the BTC and cryptocurrency market. That said, moves have been made recently by large exchanges to bring down the amount of leverage their customers can use in order to mitigate the systemic risk of excess leverage.

**Liquidations Spike, Causing Leverage Concerns**




Source: Skew

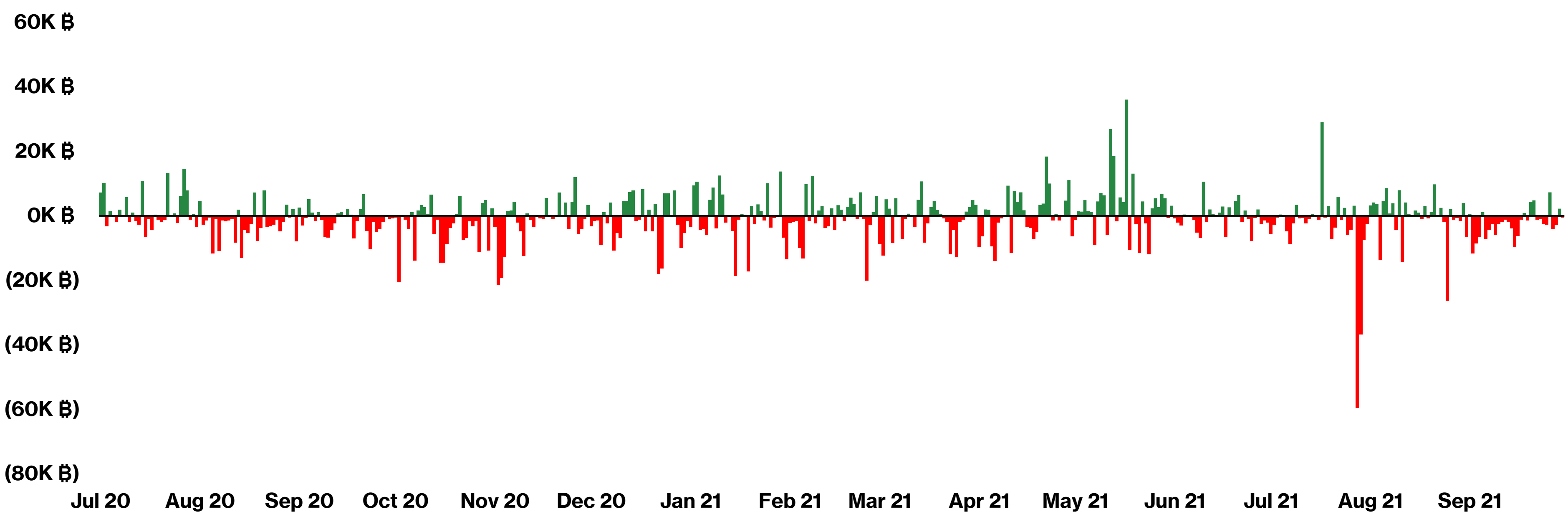
# Bitcoin: On-Chain

- Exchange flows
- Average transaction fees
- Coin days destroyed
- Liquidity

# Net Exchange Flows

Roughly 180K BTC left exchanges in Q3, signaling that bitcoin holders have opted to move their holdings to cold storage with a longer time horizon in mind. When bitcoin flows out of exchanges, we view that as a signal traders and investors like the price in the near term and are willing to weather near-term price volatility in exchange for excess returns in the medium to long term.

## Bitcoin Left Exchanges in Q3

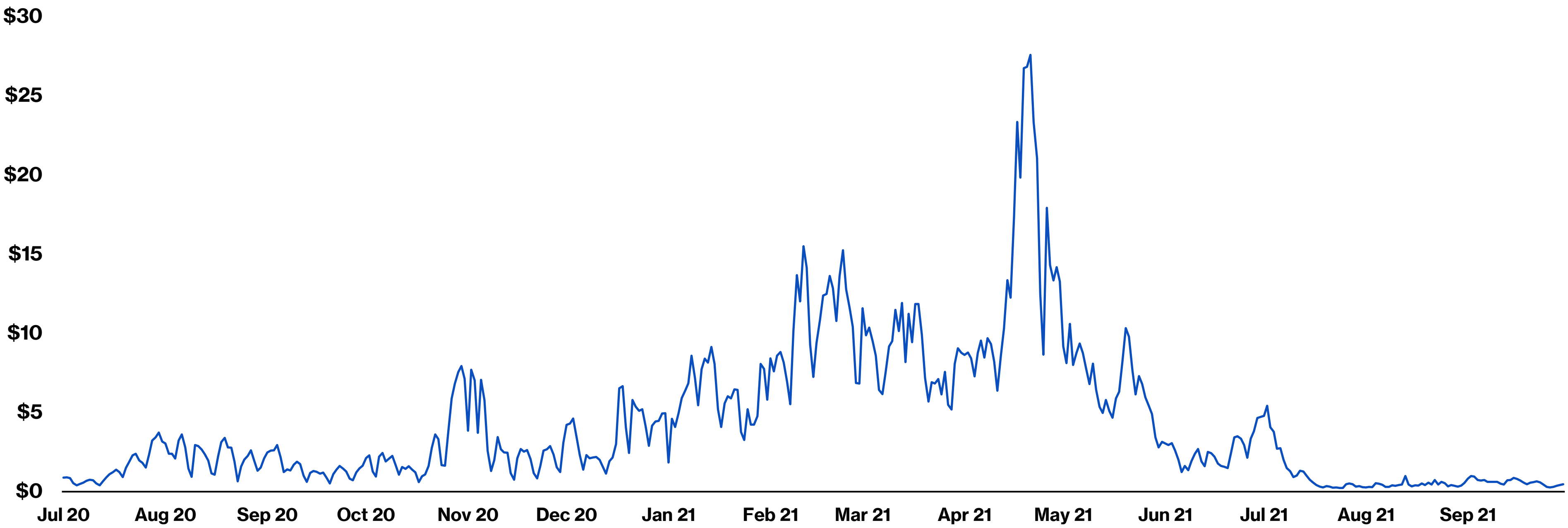



Source: Glassnode

# Transaction Fees

A common critique of Bitcoin is that its transaction fees are too high and unpredictable for use in casual commerce. That has historically held true, with transaction fees spiking in Q2. Higher fees have led to the rise of layer 2 scaling solutions, such as Lightning. However, transaction fees in Q3 reached yearly lows, with 1 sat/vB transactions common, the lowest fee rate possible, clocking in at around $0.06. However, low fees could be a source of some concern for the Bitcoin blockchain because transaction fee rates respond to changes in demand for block space on the blockchain, so low fees may be indicative of falling demand for using Bitcoin.

**Bitcoin Fees Bottomed Out in Q3**

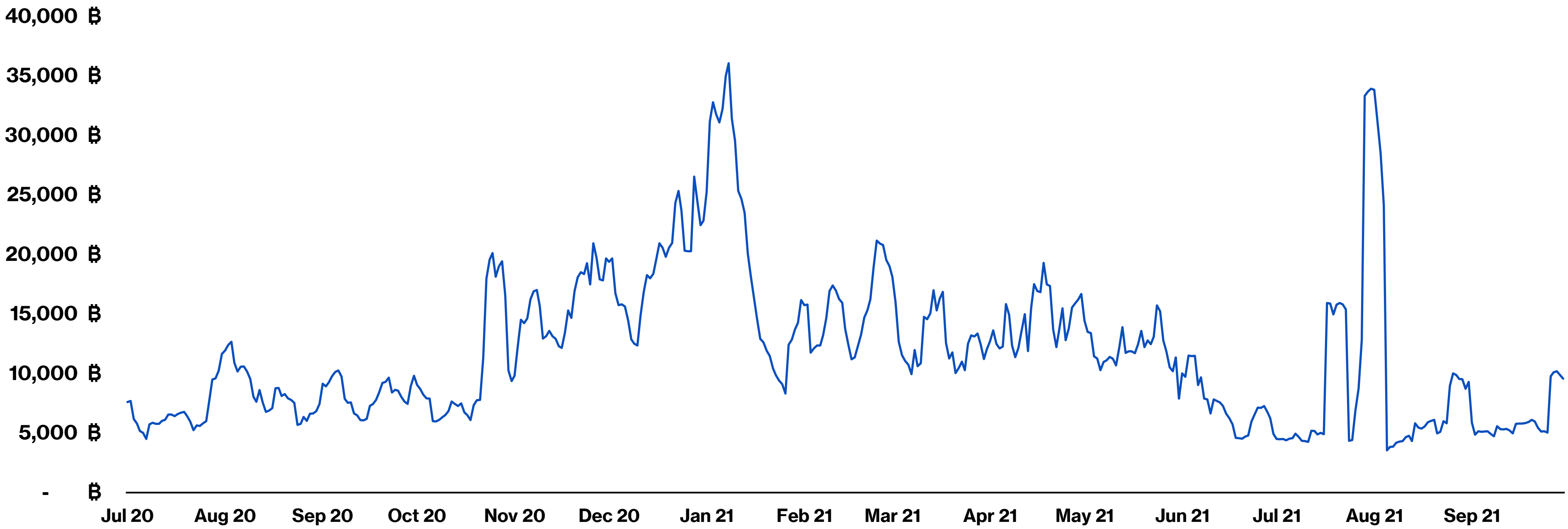



Source: Coin Metrics

# Bitcoin CDD

Coin Days Destroyed (CDD) aims to provide a realistic measure of the economic activity of the Bitcoin network, giving coins that have been inactive for a long time more weight in the network activity calculation. For each day that a BTC holding is not moved, it accumulates one "coin day." When it moves, the bitcoin days accumulated are destroyed and reset to zero. CDD spiked twice in Q3, implying that long-term holders could have sold following the price increase at the end of July. However, given the low transaction fees and no significant spot volume spike, it is more likely that this included holders of old coins consolidating their coins into different wallets rather than pure selling.

**CDD Spikes in Q3 Either Suggest Selling or Consolidation**



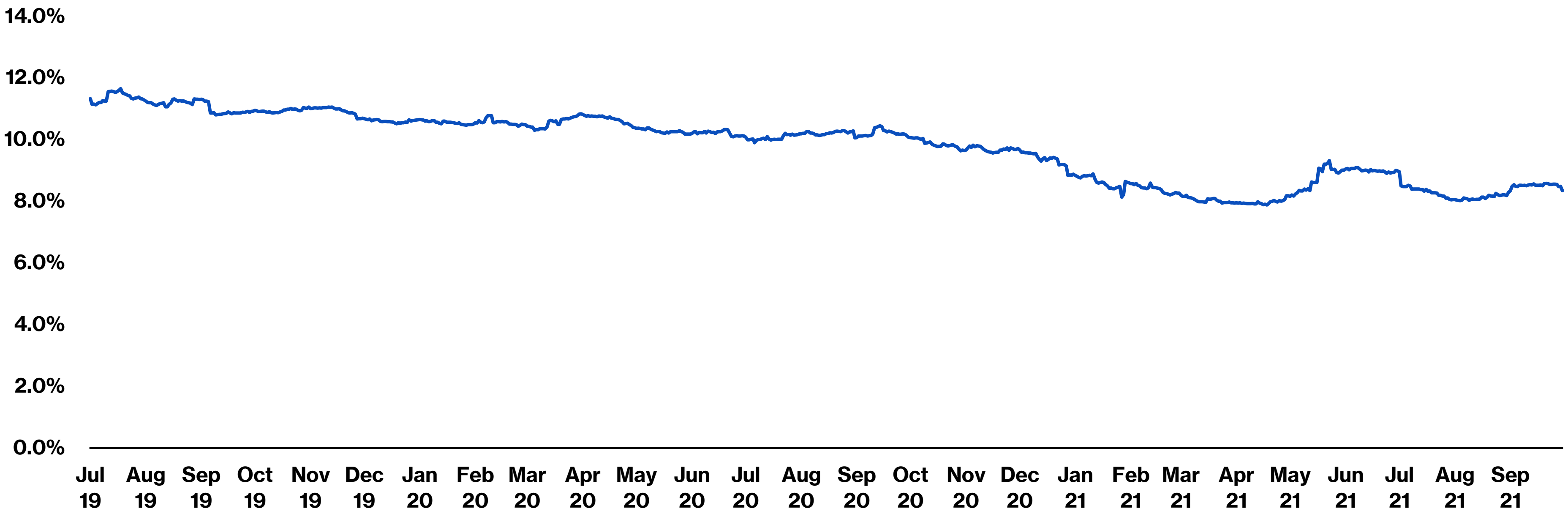

Source: Glassnode

**See also:** **Coin Days Destroyed** **(Report)**

# Liquidity

BTC liquidity is defined by the ratio of liquid supply (outflows/inflows > 0.25) to illiquid supply (outflows/inflows < 0.25). This measure has consistently declined since 2019, suggesting that more and more bitcoin is being held as a long-term investment. This can exacerbate price movements in both directions, as demand for the asset changes. Despite a declining on-chain liquidity measure, the glut of growth among exchanges and brokerages means it remains trivial to exchange bitcoin between currencies and other digital assets. The illiquidity of bitcoin on-chain does not imply trading illiquidity.

**Bitcoin's Liquidity Is Slowly Falling as Investors Continue to "HODL"**




Source: Glassnode

# Ethereum

In Q3 2021, EIP 1559 and cross-chain DeFi were among the topics of discussion by the larger crypto community. While Ethereum gas fees were high, alternative layer 1 and 2 protocols sprung to life, gaining TVL and market capitalization.

This section will cover the following topics:

- EIP 1559 and its impact on the network and ether's "tokenomics"
- DeFi growth and the potential for a multi-chain future
- The Beacon Chain and the upcoming "Merge" to Proof-of-Stake

# Ethereum: Trends

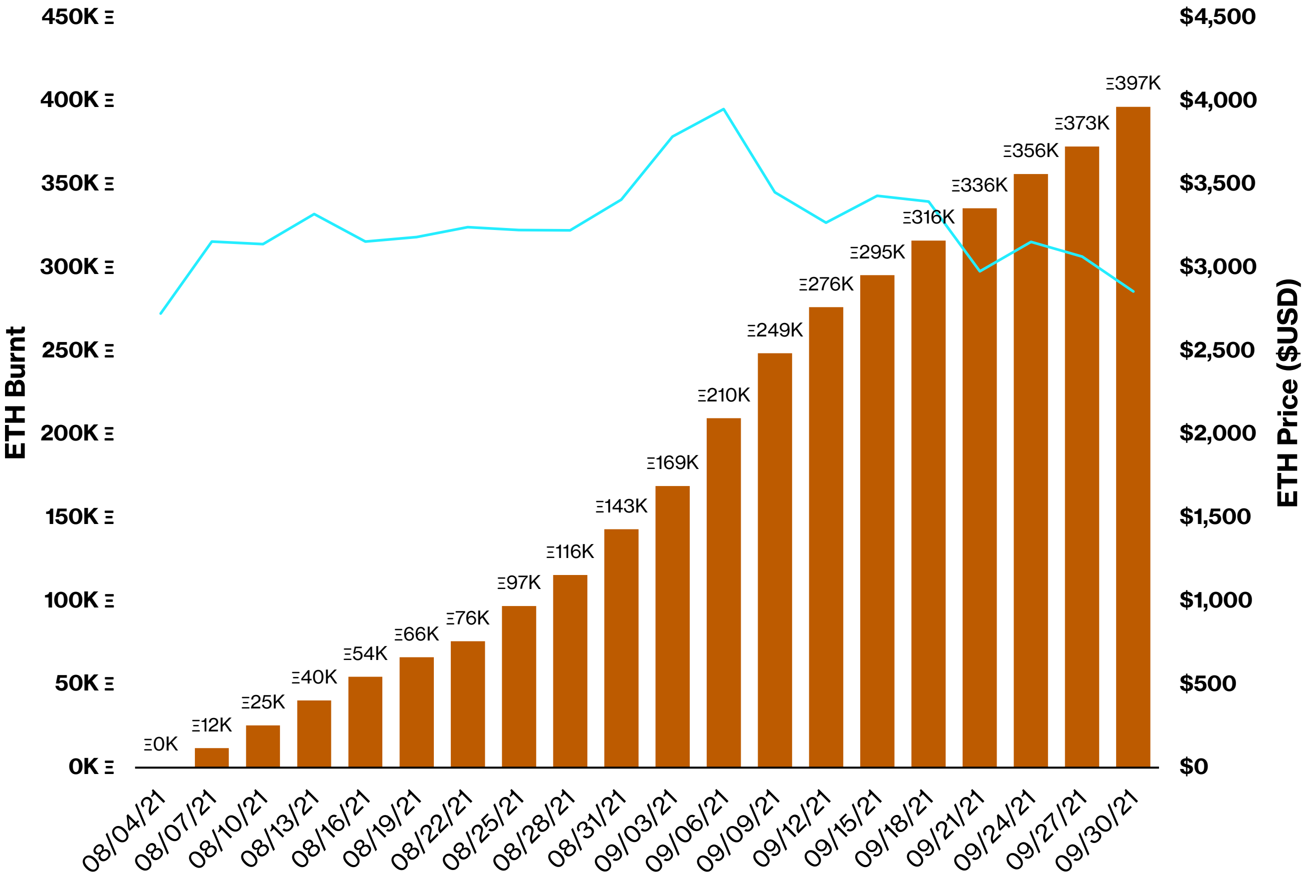
- EIP 1559
- Beacon Chain network data
- Gas fees
- MEV

# London Hard Fork's EIP 1559

Before the London hard fork of Aug. 4, Ethereum miners were rewarded with 100% of transaction fees. EIP 1559 created a fee system with a mandatory base payment per transaction that would then be removed from circulation permanently. Since the upgrade was implemented, 59% of network transactions have now begun using the updated transaction format, showing wallet providers continue to keep up with the state of the network.

Furthermore, 397K ETH has been burned from existence at a total value of $1.2 billion at the time of writing. With multiple deflationary days, the burn mechanism has significantly slowed ether emissions, and the yearly inflation rate has fallen 75.5% from post upgrade.

## Fee Burn Coincides With Price Increase

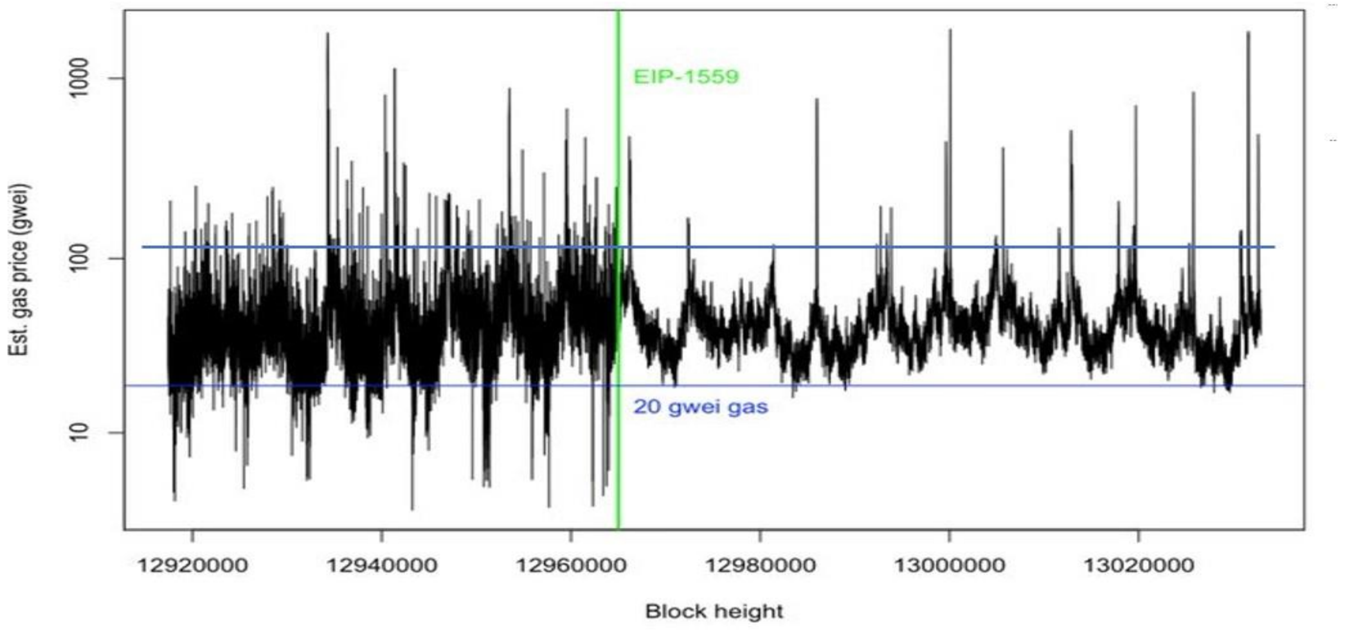



Source: Dune Analytics, Etherchain, WatchTheBurn

# Transaction Fee Volatility

Arguably, the main intention of EIP 1559 was to stabilize Ethereum's transaction fee market. The upgrade implemented a 12.5% base fee shift per block, depending on demand for block space in the most recently mined block. While the hard fork had minimal impact on reducing transaction fees, it met its intended goal and reduced transaction fee volatility and abnormalities. The common misconception that gas fees increased post-EIP 1559 is largely due to the simultaneous mania in NFT markets, which increased by multitudes in August and September.

## Gas Price Stabilizes After EIP 1559



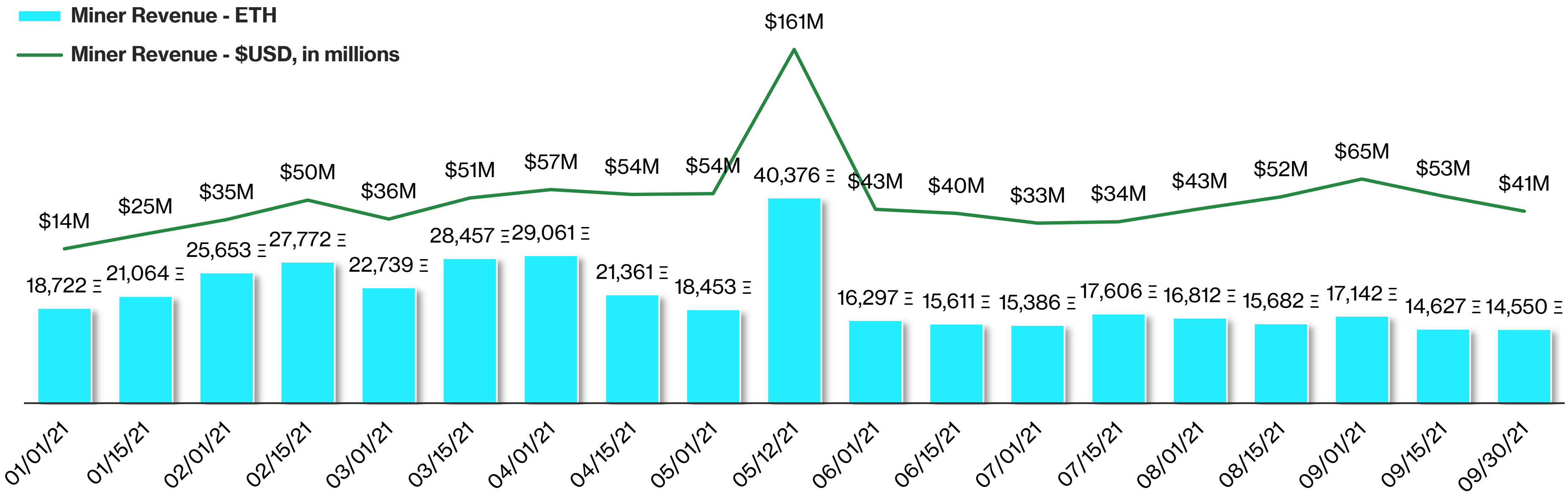

Source: [https://twitter.com/takenstheorem](https://twitter.com/takenstheorem)

**See also:** [4 Common Misperceptions of EIP 1559]()

# Ethereum Miner Revenue

A controversial impact of EIP 1559 was the transition to burning base transaction fees, directly taking away from miner revenue. Since Aug. 4, there has been no significant change in the USD value of revenue, likely due to mania in NFT markets and an increase in ether price. Critics of the upgrade warn users of the consequences of alienating miners, especially as the network nears its transition to Proof-of-Stake. It will be important to keep an eye on miner behavior as those stakeholders are gradually left behind. Miners have still been buying millions of dollars worth of mining equipment, taking a large bet on a delay of the merge. Furthermore, China's most recent crackdown has led to SparkPool and BeePool, the second- and fourth-largest mining pools, to cease operations.

## Ethereum Miner Revenue Post EIP 1559




Source: CoinDesk Research

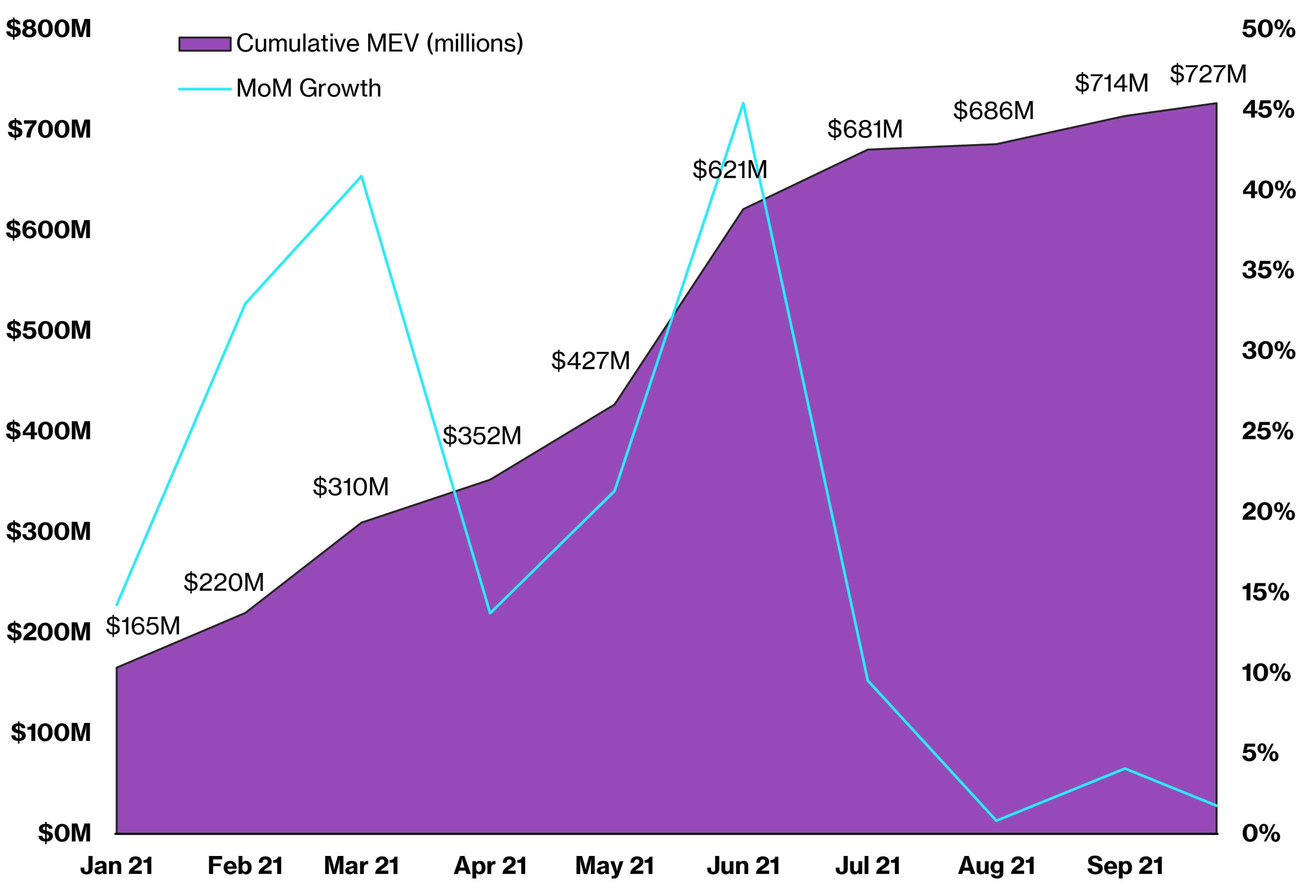
# MEV & EIP 1559

Maximal Extractable Value (MEV) was one of the most notable ETH topics in Q2 2021. However, a slowdown in trading on decentralized exchanges (DEX) such as Uniswap and Sushi, paired with the implementation of a mandatory base fee, made value more difficult to extract.

Before mandatory base fees were implemented, miners were able to submit and accept zero ether transaction fees to perform smaller and more common MEV captures. EIP 1559 solidified the need to pay a base fee, disincentivizing small extractions via liquidations and front-running.

Flashbots, an organization working to highlight the externalities of MEV, recorded $42.2 million being subject to MEV this quarter, in contrast to $328.1 million during Q2.

## MEV Tops Out




Source: Flashbots

# Beacon Chain Network Data

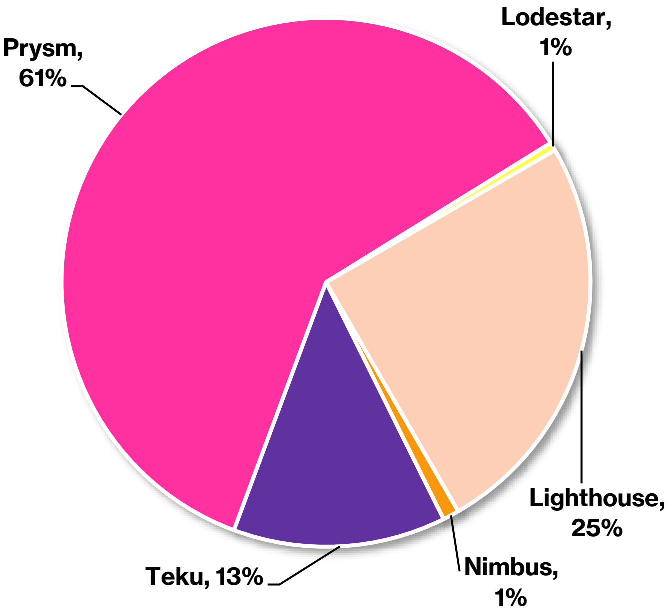
**Validator Growth**:
After starting Q3 with 181,053 active network validators, the Beacon Chain now has a total of 236,623, a 30.7% increase. The "deposit contract" passed Wrapped Ethereum as the largest holder of ether, with a total of 7,678,370 units locked for staking.

**Participation Rate:**
The participation rate is a measure of the percentage of validators that are "online" and performing proposals and attestations. Participation rates remained promising during Q3, starting the quarter at 99.03% and falling to a low of 97.4% on Aug. 20 due to a misconfiguration with decentralized staking provider Lido and its client, Lighthouse.

**Client Diversity**:
While Ethereum 2.0 has been extremely healthy by most metrics, the network has an issue with client diversity. The majority Eth 2.0 client, Prysm, currently accounts for around 60% of the network. Further diversity is desired for a secure transition to Proof-of-Stake.

**References for ETH2 Data**:
Ethereum Core Devs Call
Valid Points Newsletter
What's New in Eth2
Beacon Chain
@superphiz

**Beacon Chain Client Diversity**




Source: Beacon Chain, Etherscan

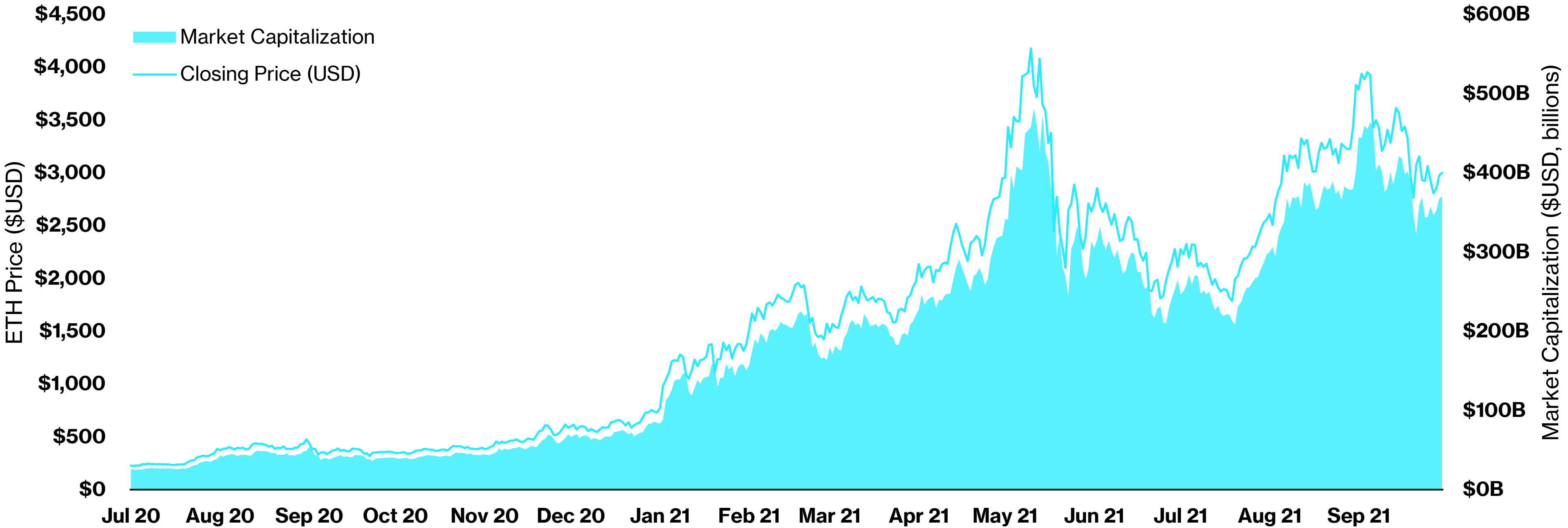
# Ethereum: Markets

- Market capitalization
- ETH / BTC
- ETH dominance

# ETH Market Performance

After an abrupt end to the bull market in Q2, we saw signs of recovery and bullish catalysts push the price of ether above $4,000 once again in early September. EIP 1559 put eyes on Ethereum, and institutional investors caught wind of ether as an investable asset. In theory, the upgrade took significant selling pressure off the Ethereum market as $1.2B of transaction fees were burned instead of awarded to miners. However, July and August's strong recovery failed to last, and ether fell 20.8% in September, giving up a significant portion of its gains.

**Ether Ends Q3 Up 31.8%**

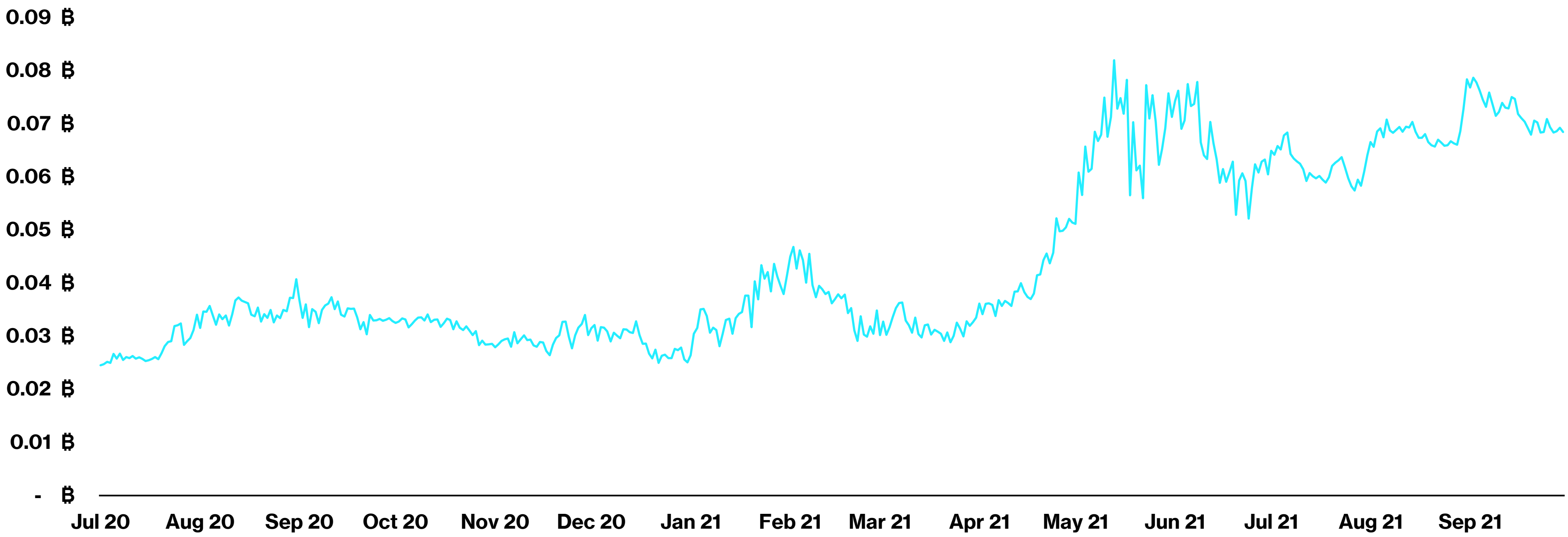



Source: CoinDesk Ethereum Price Index (ETX)

# ETH / BTC Chart

Ether's uptrend also made gains against bitcoin. ETH/BTC started Q3 around 0.06 BTC, peaked at 0.08 BTC and ended the quarter at 0.0685 BTC. Historically, ETH/BTC trends upward during bull markets and underperforms during bear markets; for example, ETH peaked at 0.15 BTC during 2017. Adoption of NFTs, DeFi and other blockchain applications have helped push the narrative that ether's market capitalization could continue to grow alongside bitcoin's.

**ETH / BTC Has Steadily Improved YoY**




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

# ETH Dominance

Three major trends throughout Q3 were the rise of layer 1 smart contract protocols, a return of stablecoin growth and DeFi's underperformance.

High gas prices and demand for scalability helped make alternative layer 1s the strongest narrative throughout Q3, with ADA, BNB, SOL, AVAX and LUNA now all in the top 12 coins by market capitalization.

Stablecoin growth is also on the rise. USDT, USDC and BUSD have gained 5%, 15% and 11% in market capitalization, respectively, over the last month, potentially signaling that new buyers are entering the market through the minting of stablecoins.

## ETH Still Dominates the Non-BTC Cryptocurrency Market


Source: CoinDesk Research, CoinMarketCap

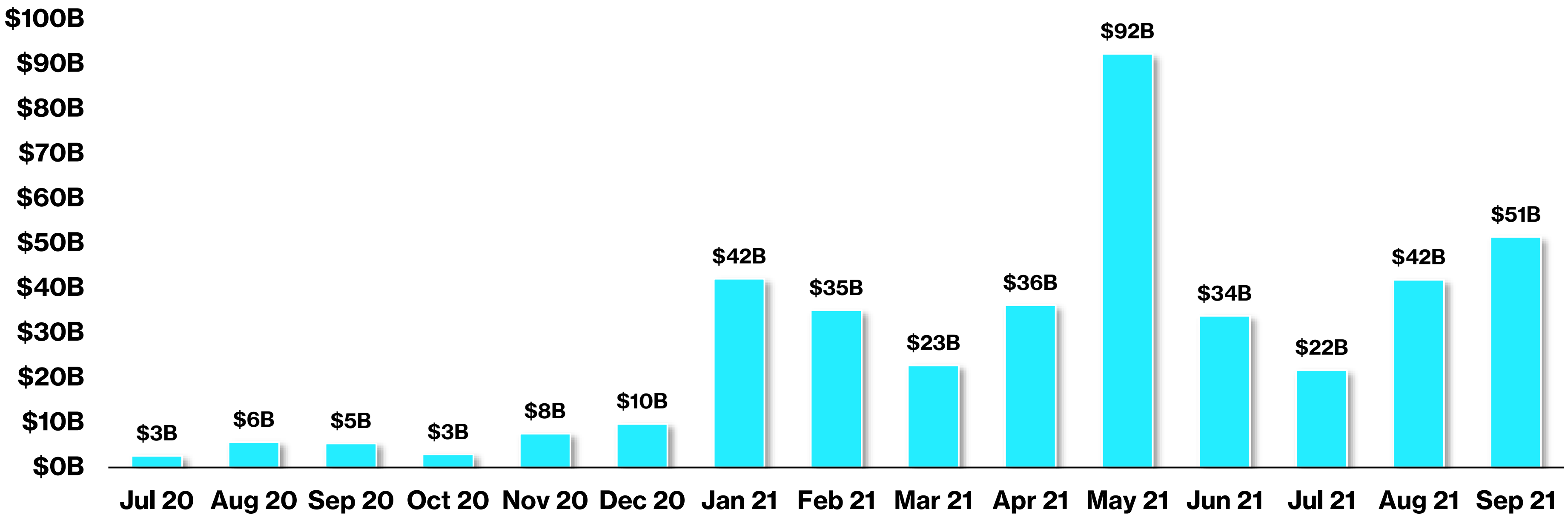
# Ethereum: Trading

- Spot volumes
- ETH futures
- ETH options

# Spot Market Aggregate Volumes

Ethereum spot volume fell in Q3 following a record Q2, which was expected given higher prices are associated with higher volumes. After ETH spot volume exceeded BTC spot volume for the first time ever in Q2, ETH has kept pace with BTC, ending Q3 within 8% of BTC's spot volume.

## Ethereum Spot Volumes Grow Substantially YoY




Source: Skew

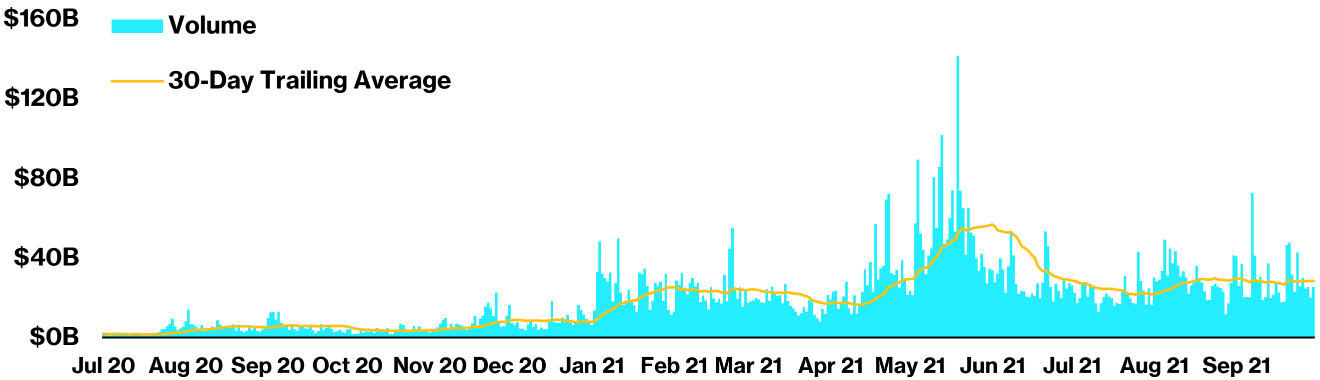
# ETH Futures

As with bitcoin, ETH futures volume failed to reach Q2 highs, staying relatively steady throughout the quarter. However, open interest spiked in early September, with perpetual futures open interest hitting a new high.

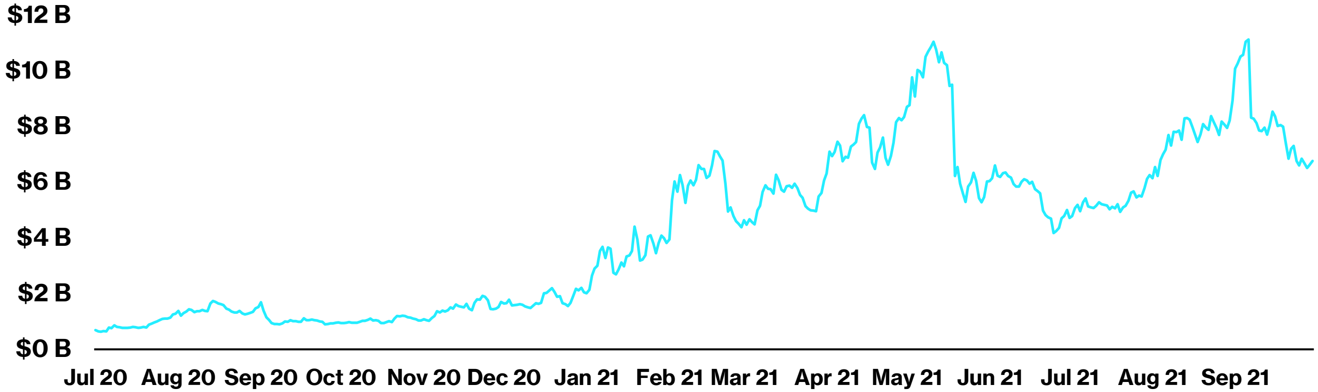
The increase in open interest with no real change in volume again signals an increase in relative leverage. The futures market appeared to be net long throughout the quarter, with funding rates being slightly positive over the course of the last three months.

## ETH Futures Rose in Q3

### ETH Futures Volume




### Futures Aggregated Open Interest




Source: Skew

# ETH Futures vs. Spot

The ratio of spot volumes to futures volumes is an indicator of institutional investor involvement because futures tend to be used for short-term positions. The chart below shows that the oft-cited rise of investor interest in 2H 2020 continued through Q1 2021 and trailed off in Q2 2021, but has seen a resurgence in Q3 2021 relative to trading interest.

### ETH Futures Indicative of Increased Investor Interest

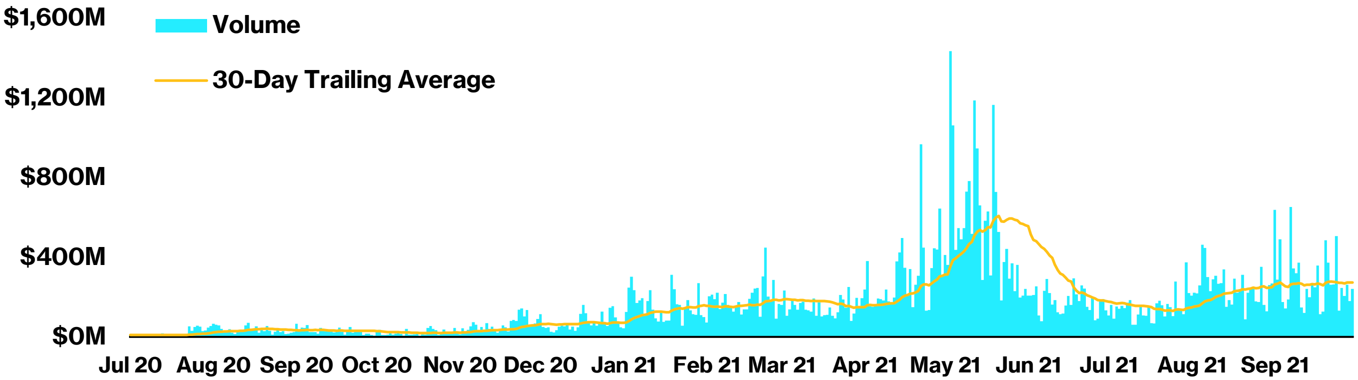

Source: Skew

# ETH Options

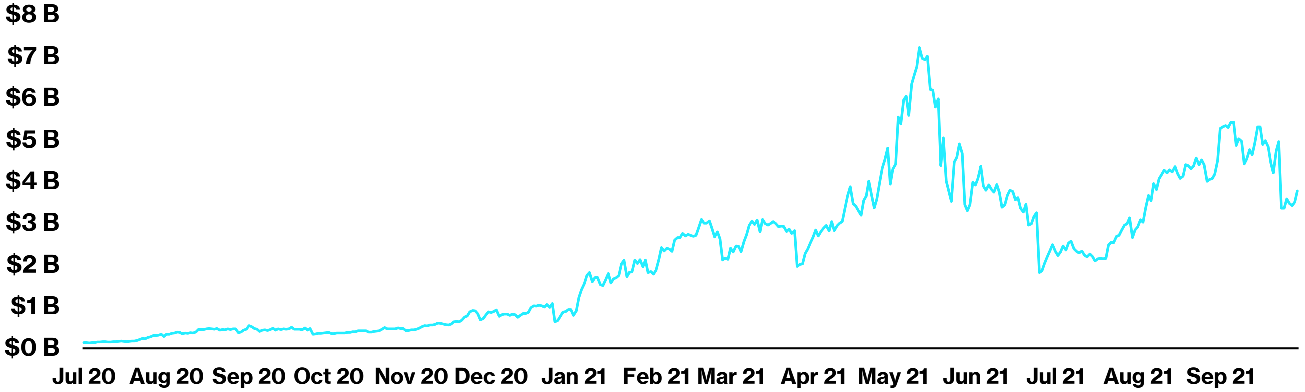
The options market for ether is less mature and has less volume than the bitcoin options market. However, the institutional interest in ether has been well documented, and the growth of ETH options volume is indicative of that. ETH options volume at the beginning of Q3 2020 was just ~$10 million compared to a simple average of over $225 million in Q3 2021, representing a staggering >2,000% growth rate.

## ETH Options Volume Recovers Following Q2 Decline

### ETH Options Volume




### Options Aggregated Open Interest



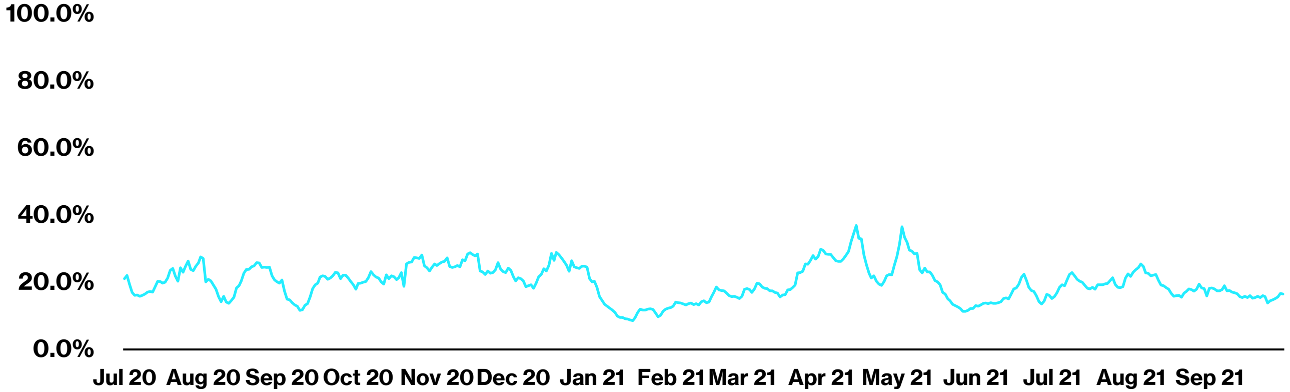

Source: Skew

# ETH Options vs. Spot + Futures

The story in ETH options mirrors the story in BTC options. Options volumes relative to spot and futures volume point to the fact that the ETH market still has a way to go when it comes to maturation. While options infrastructure has grown considerably in recent years, options are still a small part of the landscape. As the ETH market matures, we could expect options volume to grow faster than spot and futures volumes going forward as investors look to hedge their portfolios.

## Ether Options Market Returns to Growth

### ETH Options as % of ETH Spot




### ETH Options as % of ETH Futures


Source: Skew

# Cross-Chain DeFi and NFTs

Decentralized finance (DeFi) has expanded across alternative layer 1 and 2 protocols. The growth of a multi-chain ecosystem was largely a result of network congestion and high gas fees on Ethereum. Q3 featured another cross-chain migration of activity, this time to Solana, Polygon, Avalanche and Binance Smart Chain. Also, in this section, we discuss:

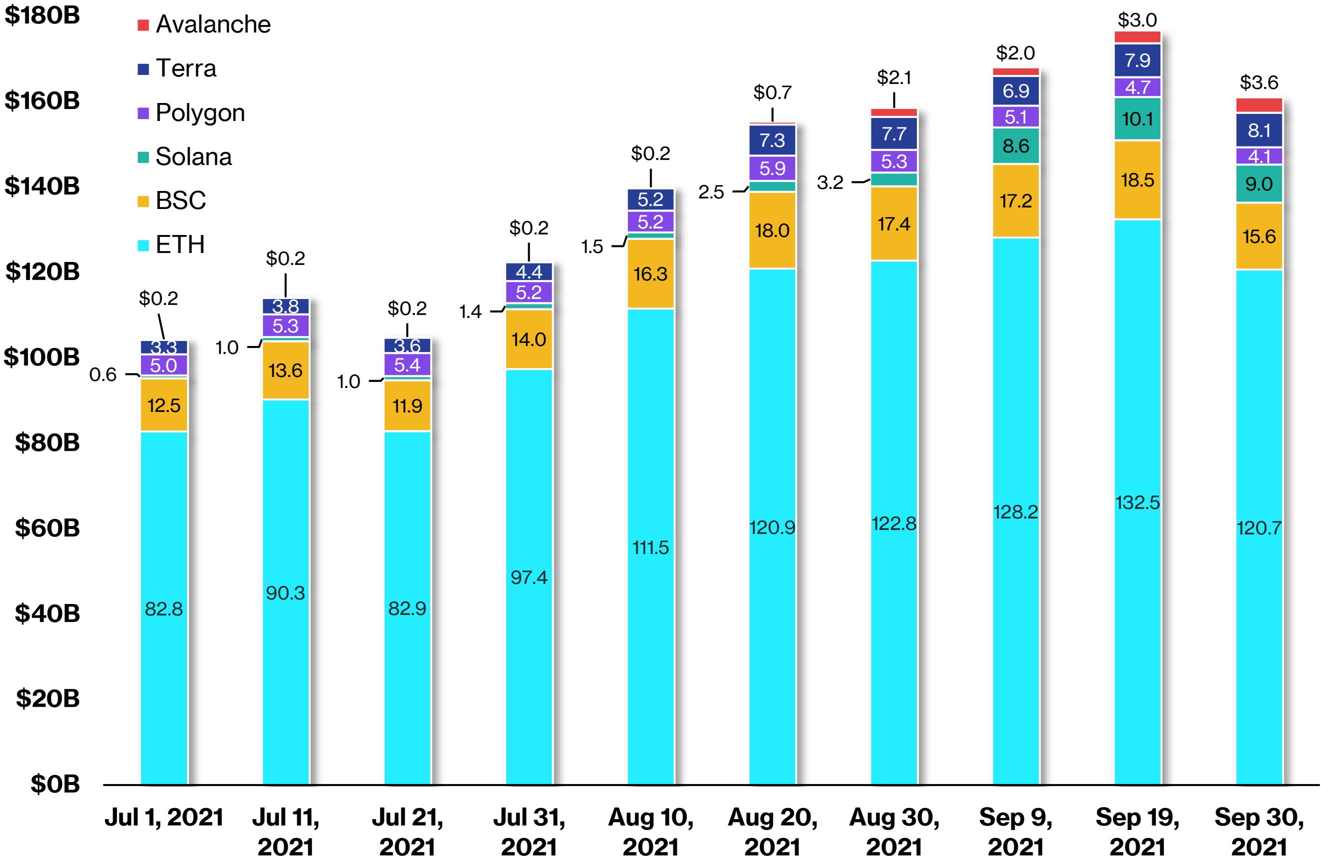
- Revenue generation in DeFi, NFTs and gaming
- Ecosystem-wide incentive programs

# Multi-Chain DeFi

To attract DeFi users from competing ecosystems, Avalanche, Polygon and Fantom launched multibillion-dollar liquidity mining programs. The networks provided their native tokens to select applications to distribute throughout their user base.

The tactic has proven effective in gaining short-term TVL with $9.0, $4.1 and $3.6 billion locked in DeFi on Solana, Polygon and Avalanche, respectively. However, Polygon was a case study for the "stickiness" of capital after rewards were sucked up. During the May and June mini-bear market, TVL dropped as much as 62% on Sushi Polygon as opposed to 17% on Sushi Ethereum.

## Chain-Specific DeFi TVL



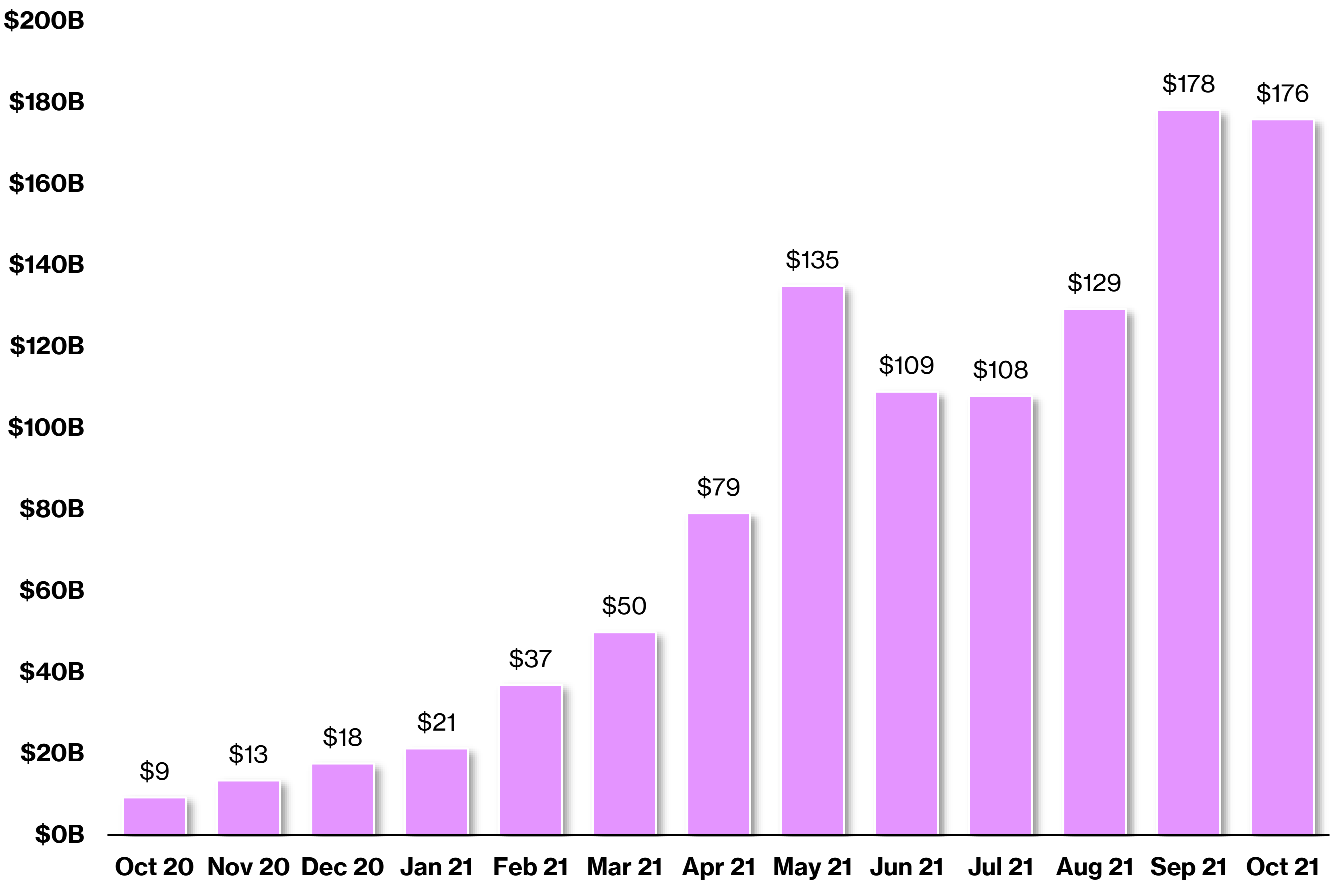

Source: DeFi Llama, Glassnode

# Total Value Locked in DeFi

Total value locked (TVL) tracks the dollar value of all crypto assets under management by DeFi applications. Over time, TVL is becoming less reliant on price fluctuations and more reliant on yield and stablecoin lending. As DeFi users have found less risky ways to generate interest and trading fees on stablecoins, TVL rose to new highs.

Popular applications deployed on new layer 1 and 2 blockchains, allowing smaller users to efficiently access DeFi. In August, Aave and Sushi showed their multi-chain success with billions locked in their platforms.

## DeFi TVL Hits New Highs



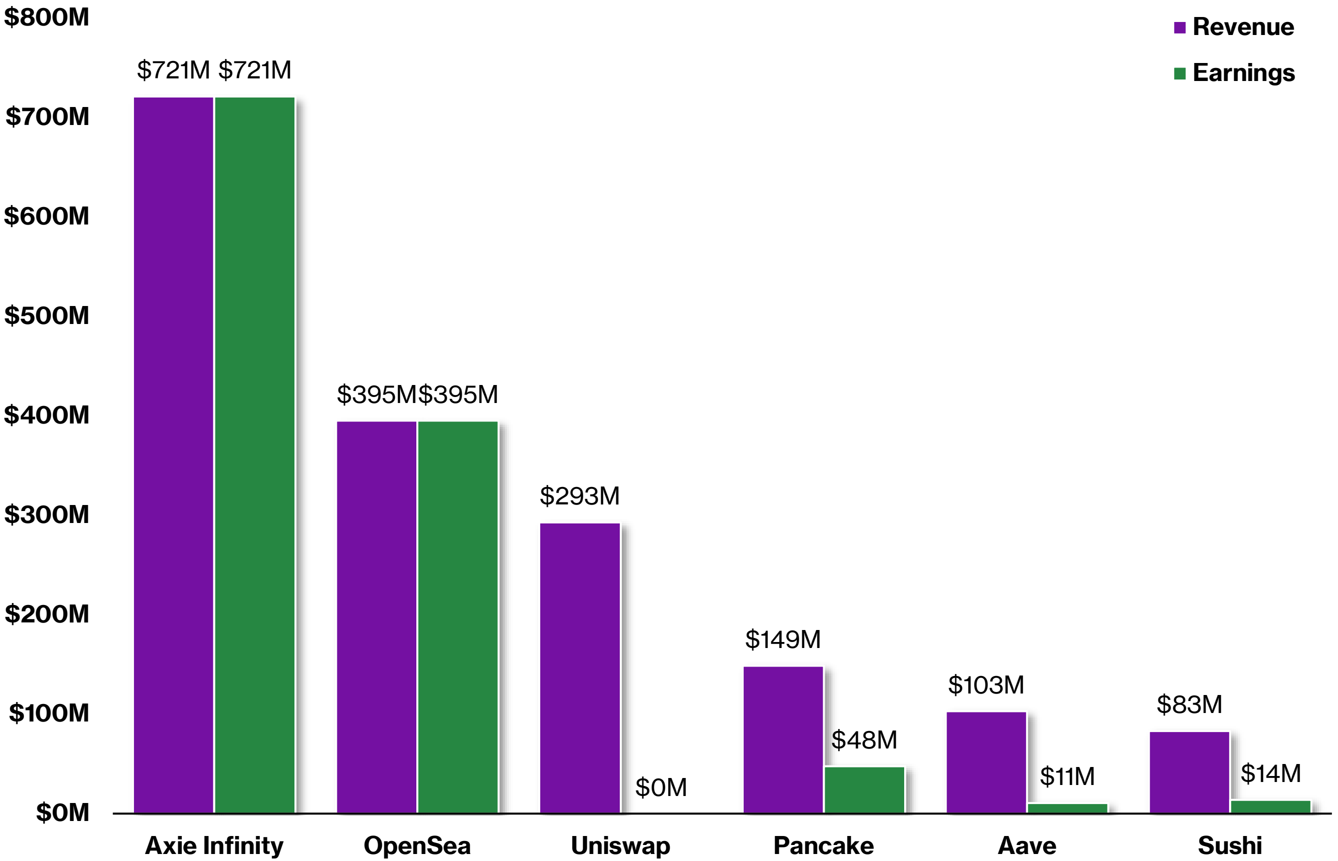

Source: DappRadar, DeFi Pulse

# Cash Flow in Crypto

Decentralized finance applications have helped turn crypto tokens into productive assets through lending, trading and insurance products. Demand for blockchain-based alternatives became apparent throughout 2021, but Q3 introduced a newfound demand for NFT markets and blockchain-based gaming.

OpenSea, Axie Infinity and Uniswap were a few of the most popular applications over the last quarter with $395, $721 and $293 million in protocol revenue, respectively. Revenue is defined as the total fees paid by an end users of a decentralized application (dapp).

## Revenue Generating Dapps




Source: TokenTerminal

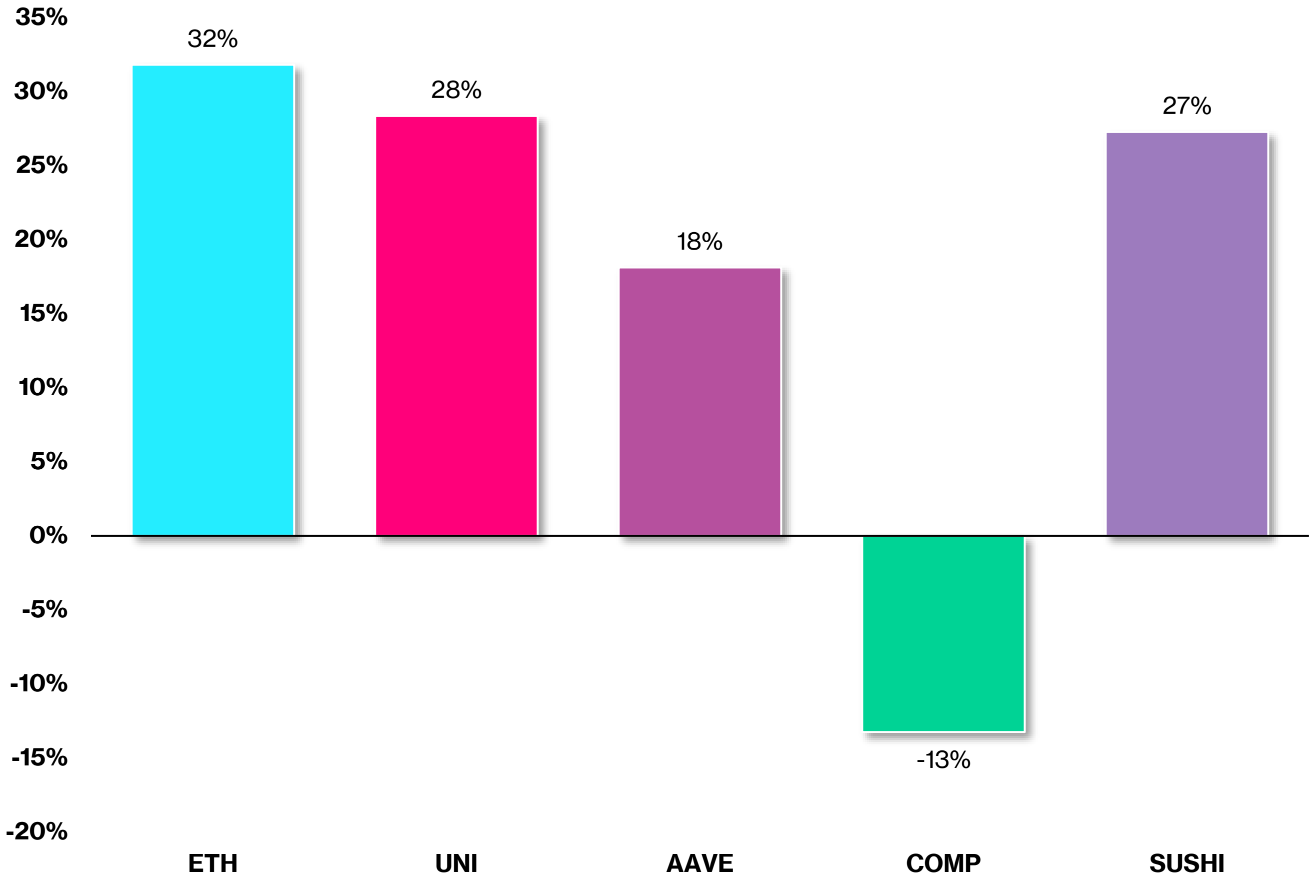
# DeFi / ETH Performance

While DeFi TVL soared to new highs, governance tokens failed to find their footing. After almost a full year of outperforming ether, some of the largest DeFi tokens have underperformed ether by as much as 70% since February.

AAVE, COMP, SNX, UNI and SUSHI have lost momentum and failed to return to their bull-market highs.

The performance may signal that investors believe DeFi value all accrues to Ethereum or that governance tokens fail to capture Dapp-generated value. Sentiment in the DeFi space will be important to watch as applications continue to launch in the multi-chain world.

**ETH Outperforms Governance Tokens**

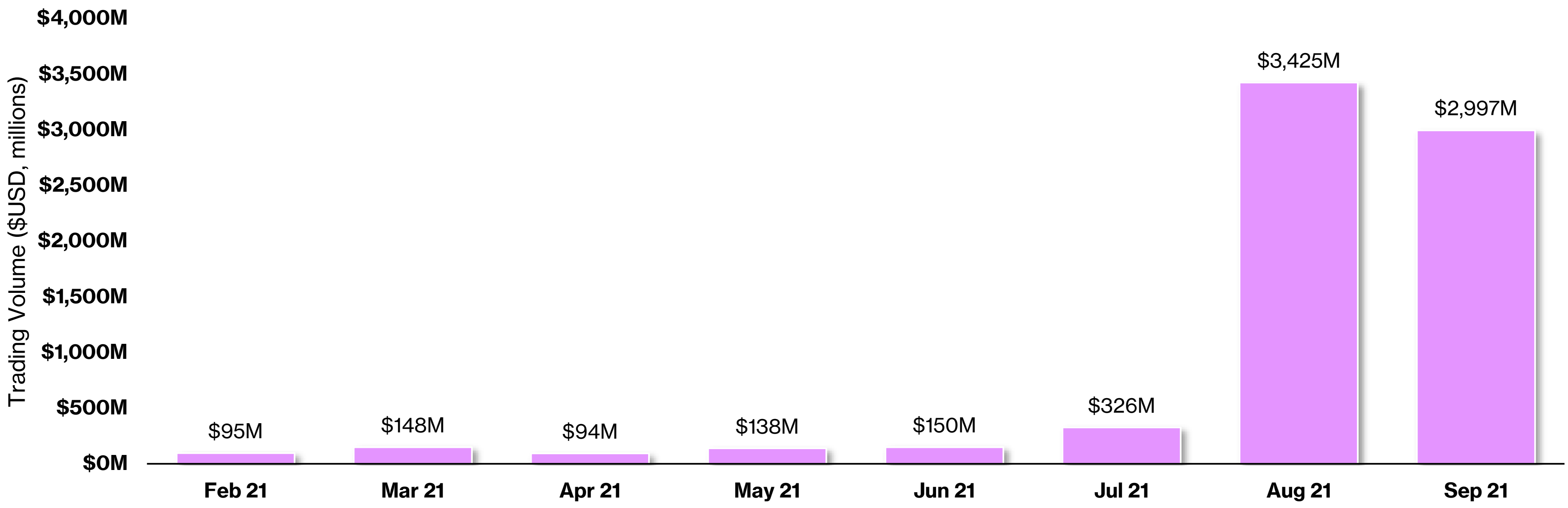



Source: CoinDesk Ethereum Price Index (ETX), CoinGecko

# OpenSea's Explosive Growth

All eyes were on OpenSea as the NFT market experienced explosive growth during Q3. Trading volume peaked at $3.4 billion in August, surpassing a total of $382 million in Q2. Not only was OpenSea the second most profitable application, but the marketplace was also the number one "gas guzzling" contract, burning 47,059 ETH in transaction fees since the London hard fork. With the highs, come lows – the platform experienced a difficult end to the quarter when its lead product officer resigned after being accused of trading on confidential information.

## OpenSea Volume Grows 36x February to August




Source: CoinDesk Research, Dune Analytics

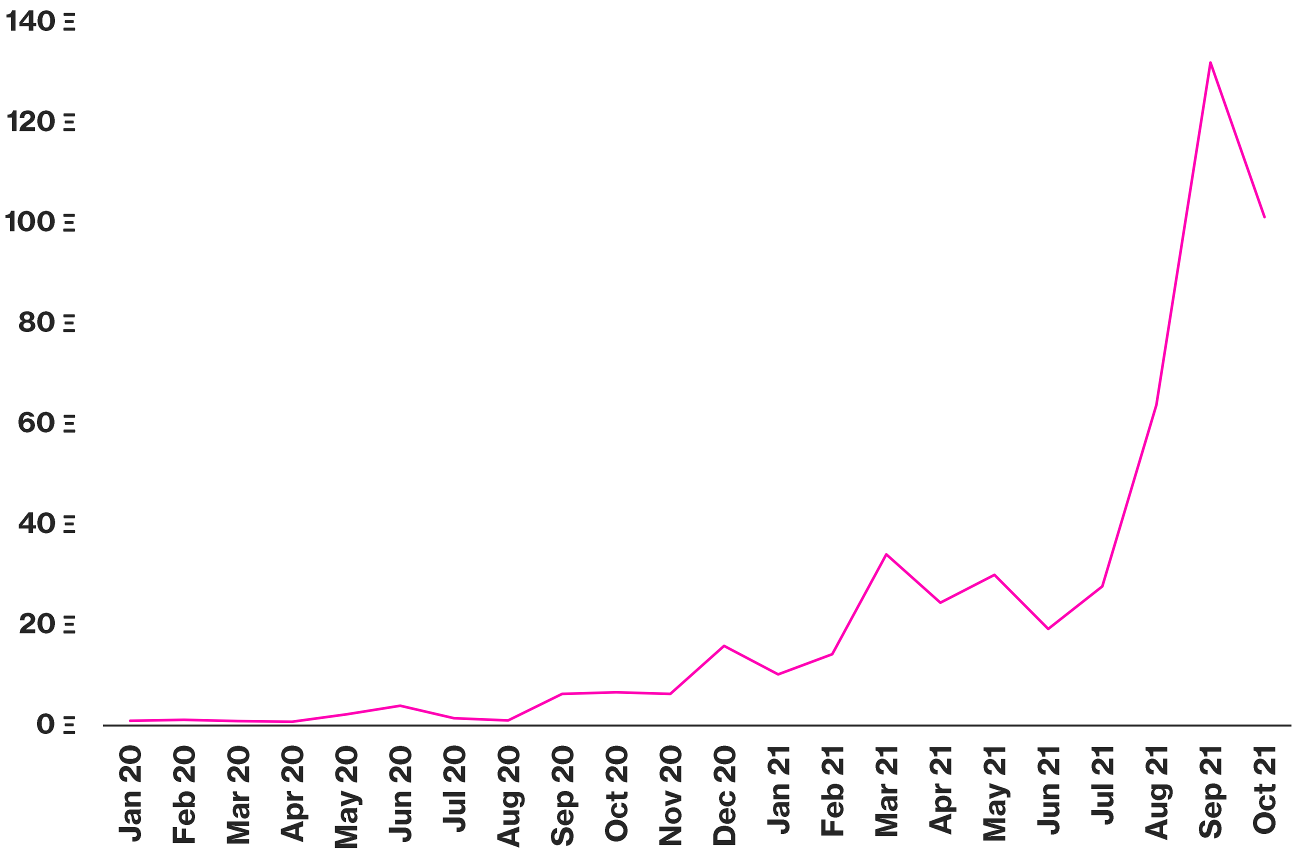
# CryptoPunks, OpenSea & Art Blocks

Non-fungible tokens (NFTs) have undoubtedly been a signal of excessive speculation; however, many investors are betting that they will be a part of a larger cultural revolution.

CryptoPunks led the charge in the NFT frenzy. The collection has had 505,000 ETH in volume traded, and we even witnessed a purchase from Visa during Q3.

Art Blocks also became established as a host and curator of "blue-chip" collections, like Chromie Squiggle and Fidenza. The rapid growth in the space attracted massive user growth and even [institutional money](institutional money).

## CryptoPunk Sale Price Dashboard




Source: Dune Analytics, https://dune.xyz/eliasimos/cryptopunks-

# Regulation

Regulatory oversight heated up during Q3, with the U.S. Senate, Securities and Exchange Commission and Commodity Futures Trading Commission bringing crypto to the forefront of politics, finance and regulation. The conversation has driven officials to gain a deeper understanding of the industry and to provide regulatory clarity around public crypto companies and DeFi protocols.

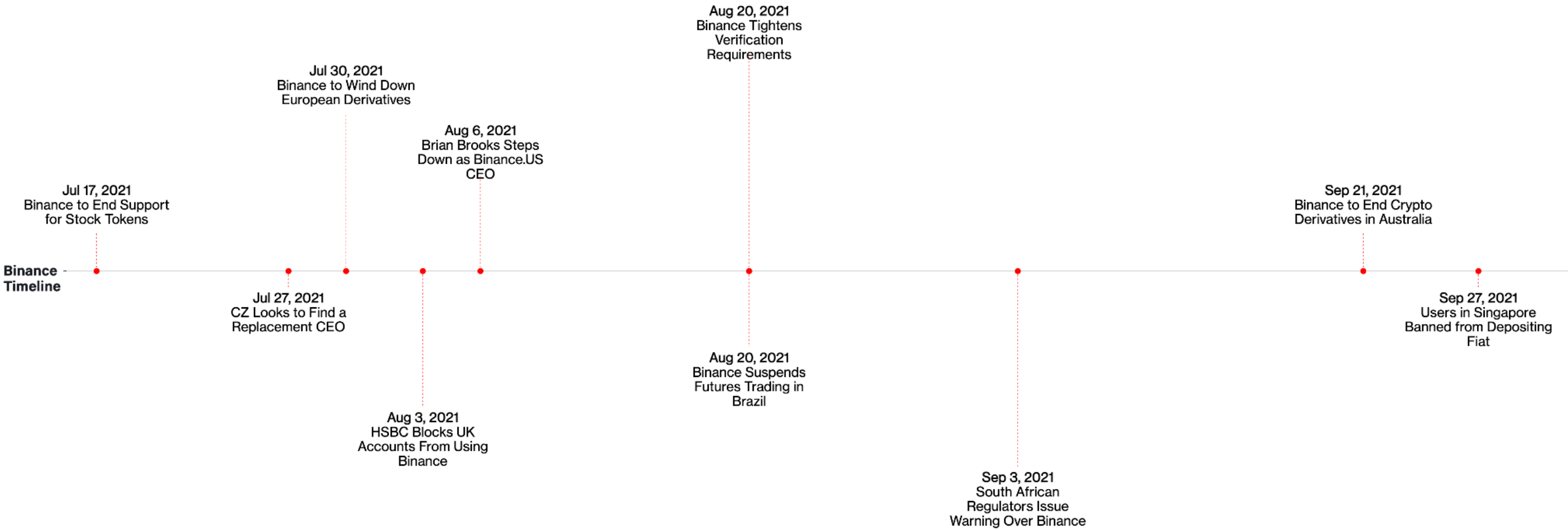
This section will cover the following topics:

- Binance's regulatory woes
- Tether, Circle and stablecoins
- The U.S. infrastructure bill's crypto provision

# Binance's Regulatory Woes

Binance, the largest retail-focused crypto exchange by volume, was plagued with regulatory woes throughout Q3. Offering synthetic equities and derivatives, operating without licensing and fulfilling weak Know Your Customer requirements were a few of the accusations made against Binance and its subsidiaries. The exchange was issued warnings by the United Kingdom, Japan and Brazil, while also being investigated by U.S. authorities on insider-trading accusations.

## Q3 Regulatory Timeline for Binance




Source: CoinDesk

# Stablecoin Wars

## Stablecoin Wars Heat Up

The top three stablecoins by market capitalization, USDT, USDC and BUSD, grew 16.5% QoQ, bringing the total stablecoin market cap to $128.0 billion. While USDT remains the largest stablecoin, backing company Tether's lack of transparency has allowed competitors to take market share, with USDC now controlling 26.4% of the market, up from 14.5% at the beginning of the year.

Circle's SPAC deal and Tether's legal battles kept stablecoin reserves at the forefront of crypto markets through Q3. Pressure from users and regulators led several stablecoin issuers to publish their reserves early in the quarter, without publishing specific investments. However, during August, Circle announced a plan to hold 100% of USDC reserves in cash and short-term treasuries starting as early as September.

Stablecoins have come to be an effective base pairing for exchanges, a means of leverage across lending markets and a form of seed capital for blossoming DeFi protocols. On Ethereum alone, Curve and Uniswap v3 combined hold over $2.75 billion worth of USDT, USDC and DAI, while Aave and Compound have over $14 billion in those three assets borrowed from their liquidity.

Source: CoinDesk, CoinGecko

# Crypto Tax Provision

## US Taxes and Crypto

A bipartisan infrastructure bill proposed in Congress looked to raise $28 billion in tax revenue from increased reporting regulations for cryptocurrency brokers. The definition of broker was written to include "software wallet developers, hardware wallet manufacturers, multisig service providers, liquidity providers, DAO token holders and potentially even miners," according to Kristin Smith of the Blockchain Association.

Senators Wyden, Toomey and Lummis worked to create an amended version of the bill that would further clarify that some entities would be excluded from increased reporting requirements; specifically, "persons who engage in mining or staking, selling hardware or software that an individual may use to control a private key, or developing digital assets or their corresponding protocols for use by other persons if such other persons are not customers."

The amended crypto provisions received bipartisan support but were ultimately stopped by a single senator and the original bill was passed and sent to the House. Sen. Rob Portman, the initial writer of the crypto tax provision, provided clarity and signaled that miners, validators and nodes would not be subject to comply as brokers under the new legislation.

Source: CoinDesk, https://www.senate.gov/

# Quotables

"One of the things that we highlighted for you all is that we now have 10% of the top 100 hedge funds measured by AUM, now clients of Coinbase and engaging with the crypto economy." – Alesia Haas, Coinbase CFO, 8/10/2021

"Compliance is a journey – especially in new sectors like crypto. We also recognize that with growth comes more complexity and more responsibility." – Changpeng Zhao (CZ), Binance CEO, 7/7/2021 https://www.coindesk.com/binance-regulation-compliance-journey-frameworks

"Saving people from egregious fees and thinking about the 4.3 billion people in the world who are hostage to authoritarian regimes or the 1.3 billion who are living in double-digit inflation, saving them from the destruction of their purchasing power is certainly a noble social goal." – Cathie Wood, ARK CEO & CIO on Bitcoin, 7/21/2021, The B Word Conference

"Being disappointed in Elon Musk is a just punishment for caring about what he said in the first place." – Kathleen Breitman, co-founder of Tezos, on CoinDesk TV, 6/5/2021 https://twitter.com/CoinDesk/status/1401153679995117570

## *CoinDesk Research's Favorite Tweets of Q3 2021*


# Thank you for reading!

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