

CoinDesk Quarterly Review

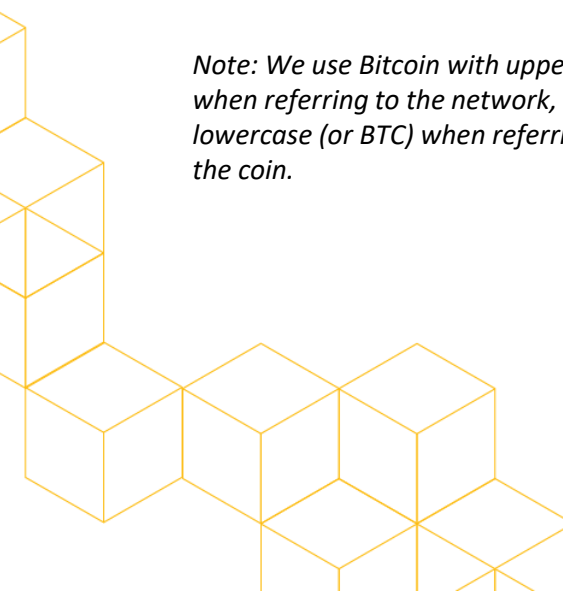
Fourth Quarter 2020





Setting the tone


Note: We use Bitcoin with uppercase when referring to the network, and lowercase (or BTC) when referring to the coin.



While Q1 was the quarter of market turmoil, Q2 had the bitcoin (BTC) halving and Q3 saw the explosion of stablecoins and decentralized finance applications, Q4 was the quarter of institutional interest, and of Ethereum launching the first phase of its ambitious migration to a proof-of-stake blockchain.

As the quarter drew to a close, bitcoin's price headed into uncharted territory, breaching its previous 2017 all-time high in mid-December. New ATHs affect the market beyond the headlines and the excitement; market makers feel more uncertain setting buy/sell prices when there is no precedent, and traders that watch technical resistance levels don't have previous patterns to rely on.

Ethereum's native token ether (ETH), on the other hand, still hasn't breached its all-time high. Will it reach those levels soon? It's worth remembering that ETH's ATH, reached in January 2018, was driven by a wave of retail enthusiasm for initial coin offerings and



Ethereum-based tokens. Given the progress since then on regulatory clarity, it is unlikely we will see similar levels of enthusiasm again, although the growing popularity of decentralized finance (DeFi) applications, most of which run on Ethereum, is worth keeping an eye on, as is the strengthening of the use cases for Ethereum-based stablecoins.

And to top off an already eventful year, crypto exchange Coinbase filed preliminary documents with the U.S. Securities and Exchange Commission for a public listing. This will be the largest public listing to date in the crypto industry, and will set a benchmark against which all future crypto listings will be measured. Next year we are likely to see other relatively large crypto asset businesses also go public, through IPOs, direct listings or even SPAC acquisitions. This will deepen our understanding of crypto business fundamentals through access to detailed financials, and will attract even more public attention and investment to the growing industry.

Return, volume, volatility and correlations

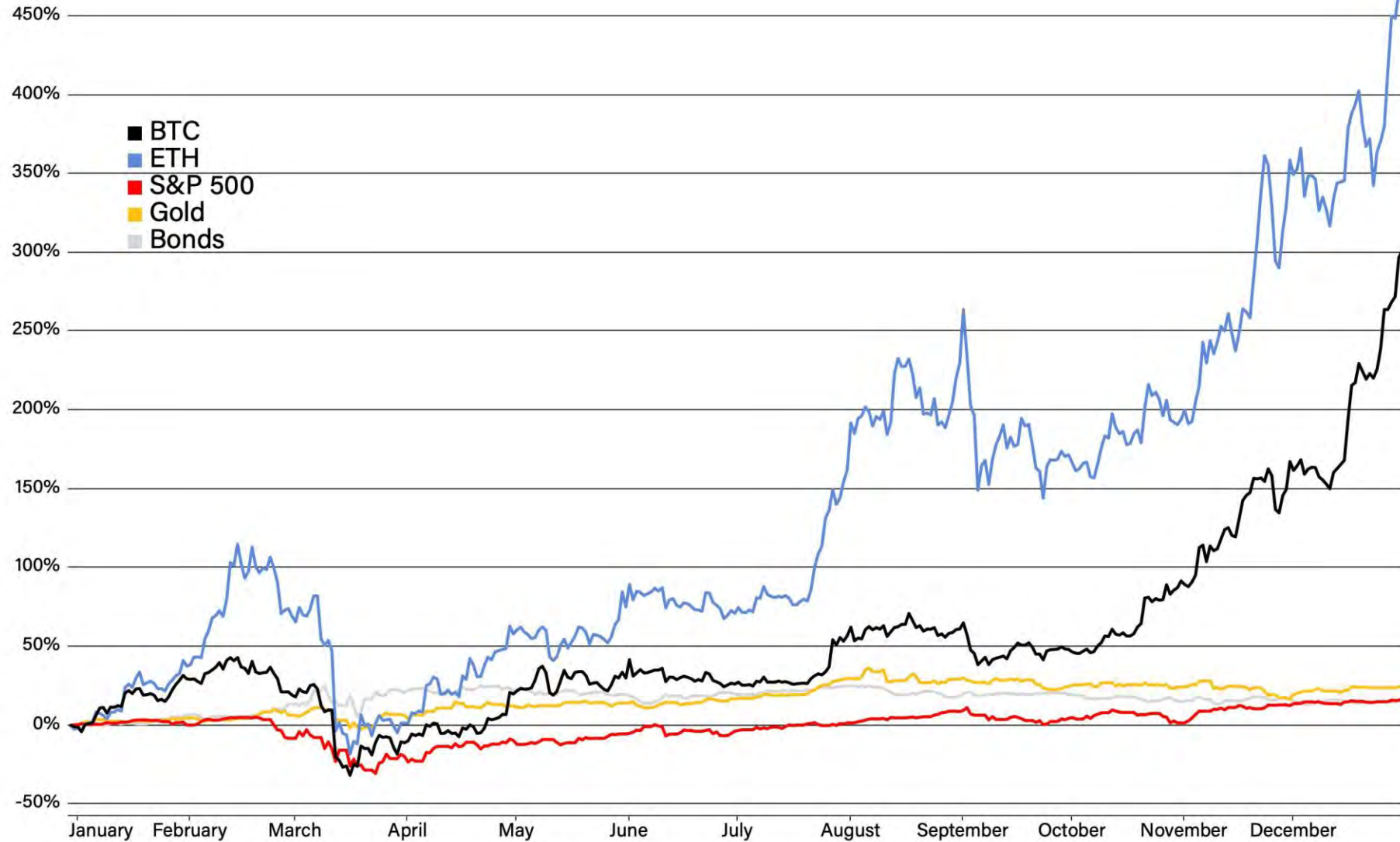
After a year in which bitcoin traded at times like a safe-haven asset with a relatively high correlation to gold, and at times like a risk-on asset with a relatively high correlation to stocks, the leading cryptocurrency by market cap seems to have broken its ties with other assets.

Performance of BTC, ETH and Macro Assets, 2020

In a tumultuous year that ended up being surprisingly strong for many stocks and for the main U.S. stock indices, crypto assets shone. Over 2020, BTC's strong performance of over 300% was dwarfed by ETH's performance, which gave an annual return of over 450%. Over the fourth quarter, however, BTC's performance of 170% outperformed ETH (+105%) as well as virtually all other asset groups.

Returns

These gains are a sharp contrast from 2019 in which BTC barely doubled in value and ETH declined by 3% over the year. This highlights the relatively volatile nature of crypto assets and reminds us that returns can swing wildly from one year to the next. The market conditions and asset fundamentals heading into 2021, however, are notably different from previous years, as later slides will show.



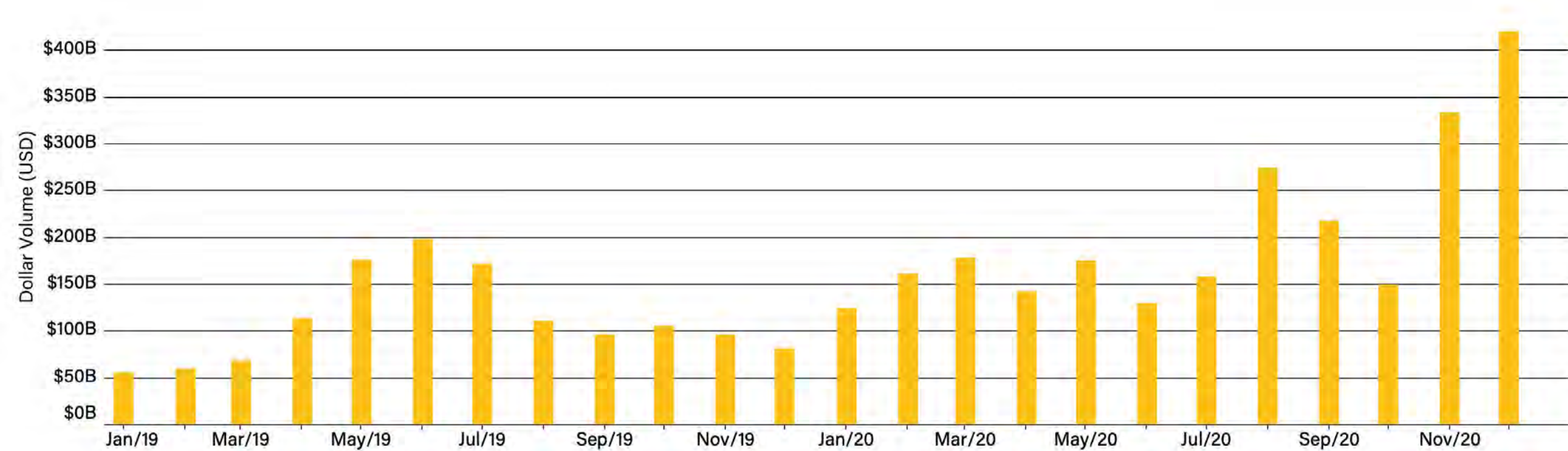
Source: CoinDesk Research, St. Louis Fed, Yahoo Finance

Bonds = iShares 20+ Year Treasury Bond ETF; Gold = London Bullion Market pm fixing price

Volume

Q4 daily U.S. dollar volume on “transparent” spot exchanges were 38% higher than in Q3. December figures reached the highest monthly volume since January 2018 when BTC was trending above \$10,000 for the first time. In December 2020, BTC's price hit successive all-time highs, reaching close to \$30,000. The fact that spot exchange volumes didn't reach an all-time high in the December price run-up suggests the current BTC bull run is fueled less by market speculation and retail interest than the bull run in late 2017 to early 2018.

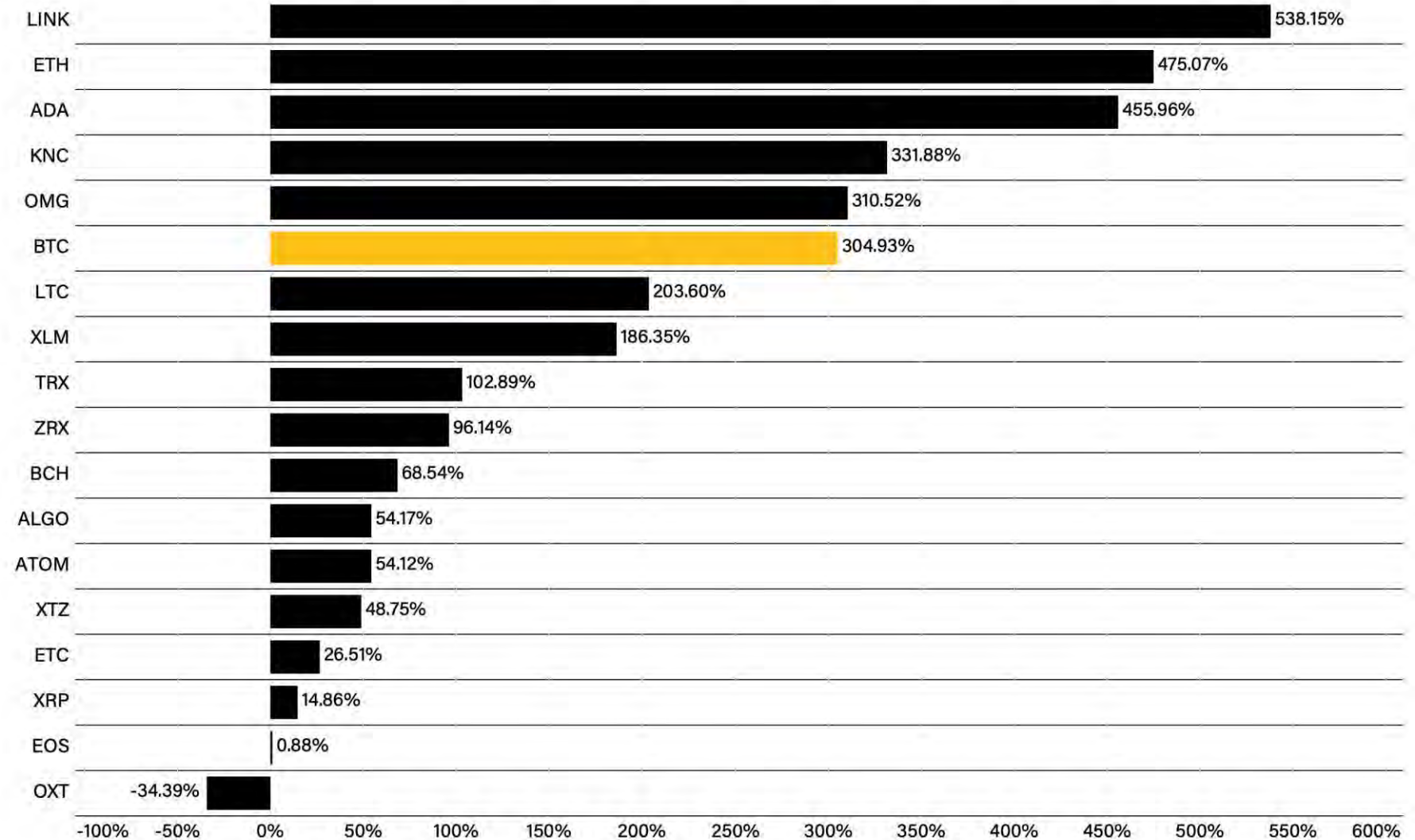
Verifiable Monthly Dollar Volume on Crypto Spot Exchanges



Source: [Nomics](#) 'transparent' volume, "B" stands for billions. The chart above features data from cryptocurrency exchanges with a high granularity of trade data and full trade history, according to Nomics' exchange transparency rating criteria ([read more](#)).

2020 Performance of Assets in the CoinDesk 20 (Excluding Stablecoins)

While BTC undoubtedly had an excellent year in 2020, it was by no means the leader of the crypto pack. Five other assets in the CoinDesk 20 list had performances significantly greater, with tokenized oracle network Chainlink's token LINK leading with a return of over 500%. ETH came in second, with an increase of over 470%, closely followed by Cardano (ADA) with a performance of over 450%. Only one asset in the CoinDesk 20 declined over the year - OXT, the token for peer-to-peer marketplace for virtual private network providers Orchid.

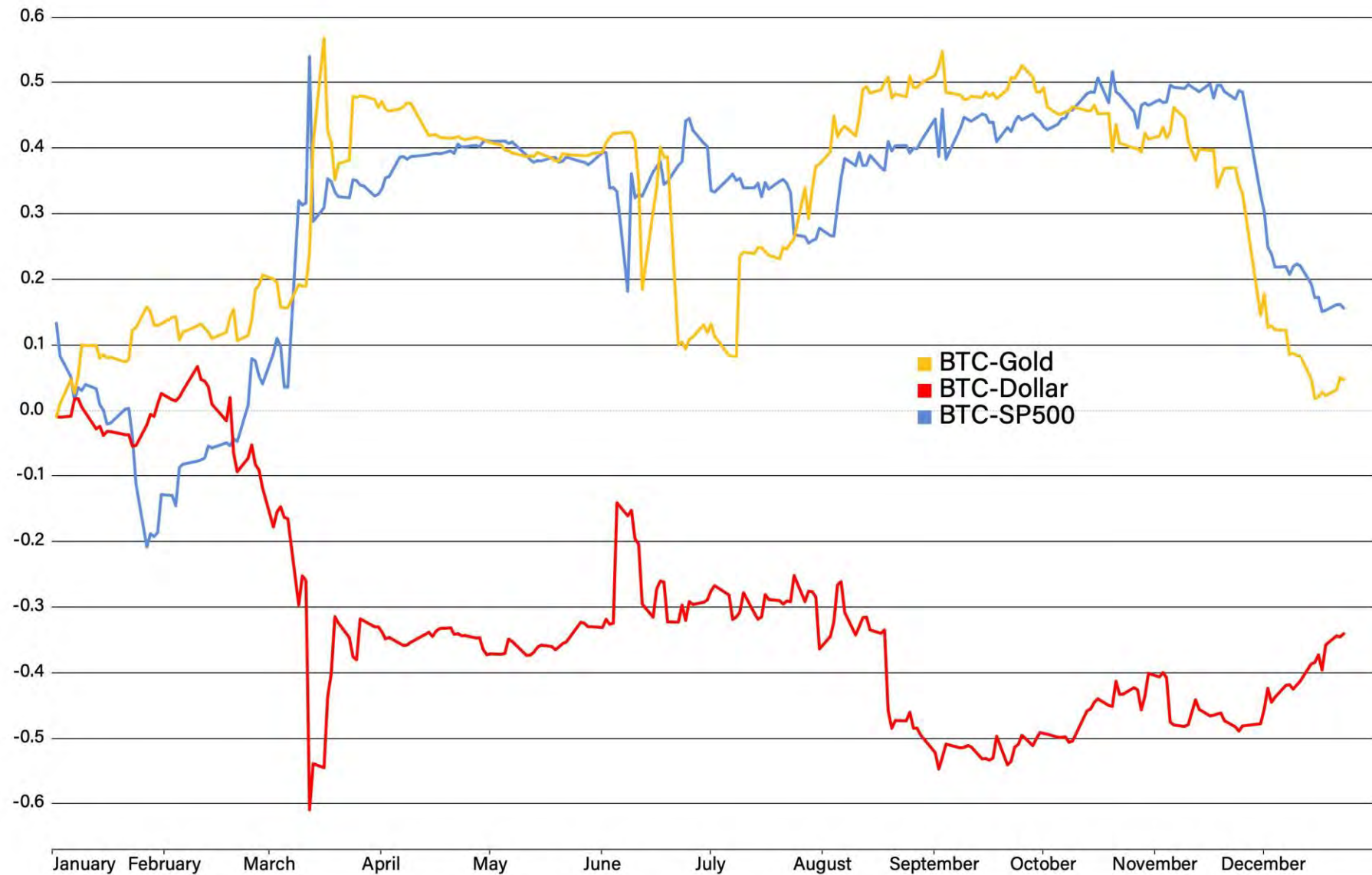


Returns, crypto assets

Source: Coin Metrics and [Nomics](#)

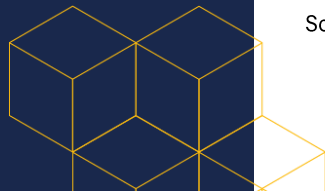
BTC: 60d Correlations With Stocks, Gold and the Dollar

BTC's 60-day correlations with both gold and the S&P 500 ended 2020 at their lowest point since before the March crash and, measured over the shorter time period of 30 days, have turned negative. Does this mean that bitcoin is finally coming into its own as a unique asset? Possibly, but a general market crash could see it perform in line with other asset groups, as it did in March 2020. On the other hand, the force of significant inflows from institutional investors coming up against a limited supply could continue to lend support, especially as bitcoin's role as an "alternative" system is now better known in investing circles.



Source: Coin Metrics

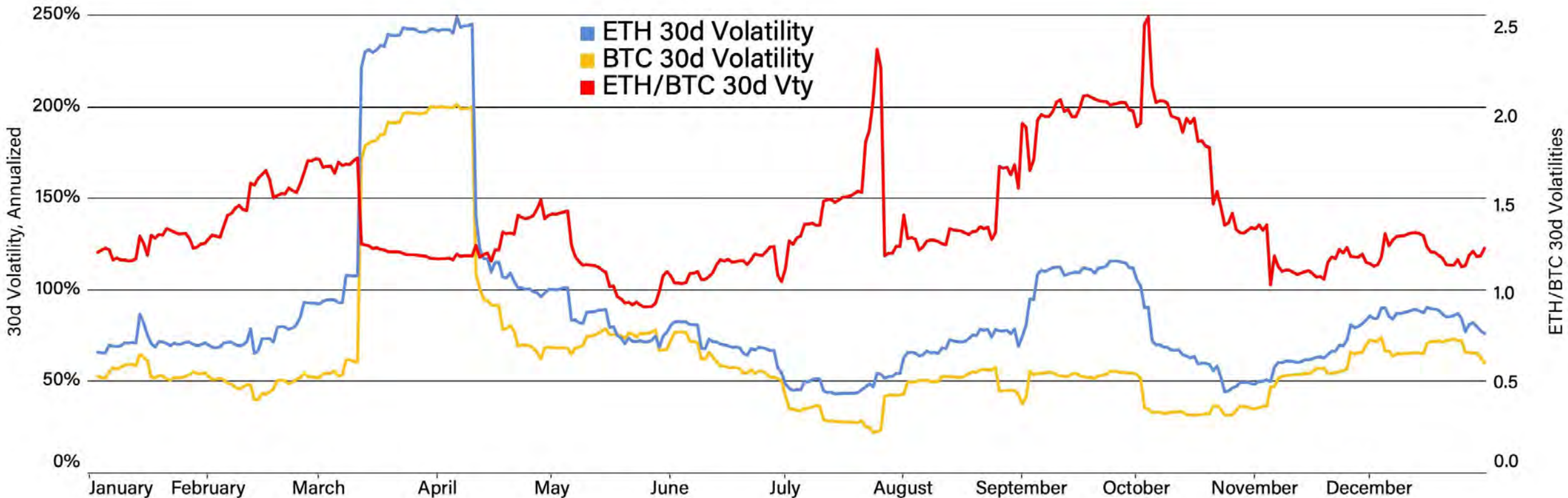
Correlations: Crypto and macro



Volatility: BTC and ETH

After spending October at relatively subdued levels, BTC and ETH 30-day annualized volatilities started climbing in November. In December, BTC's volatility reached levels not seen since June, while ETH's volatility stayed well below its September peaks. ETH's volatility is still significantly higher than that of BTC, however, although the differential between the two has narrowed considerably. This is relevant as it could affect portfolio allocation decisions – the narrowing volatility differential could encourage professional investors to take a closer look at ETH, which, unlike BTC, at year-end had not yet reached its all-time highs.

BTC and ETH Volatility Differential



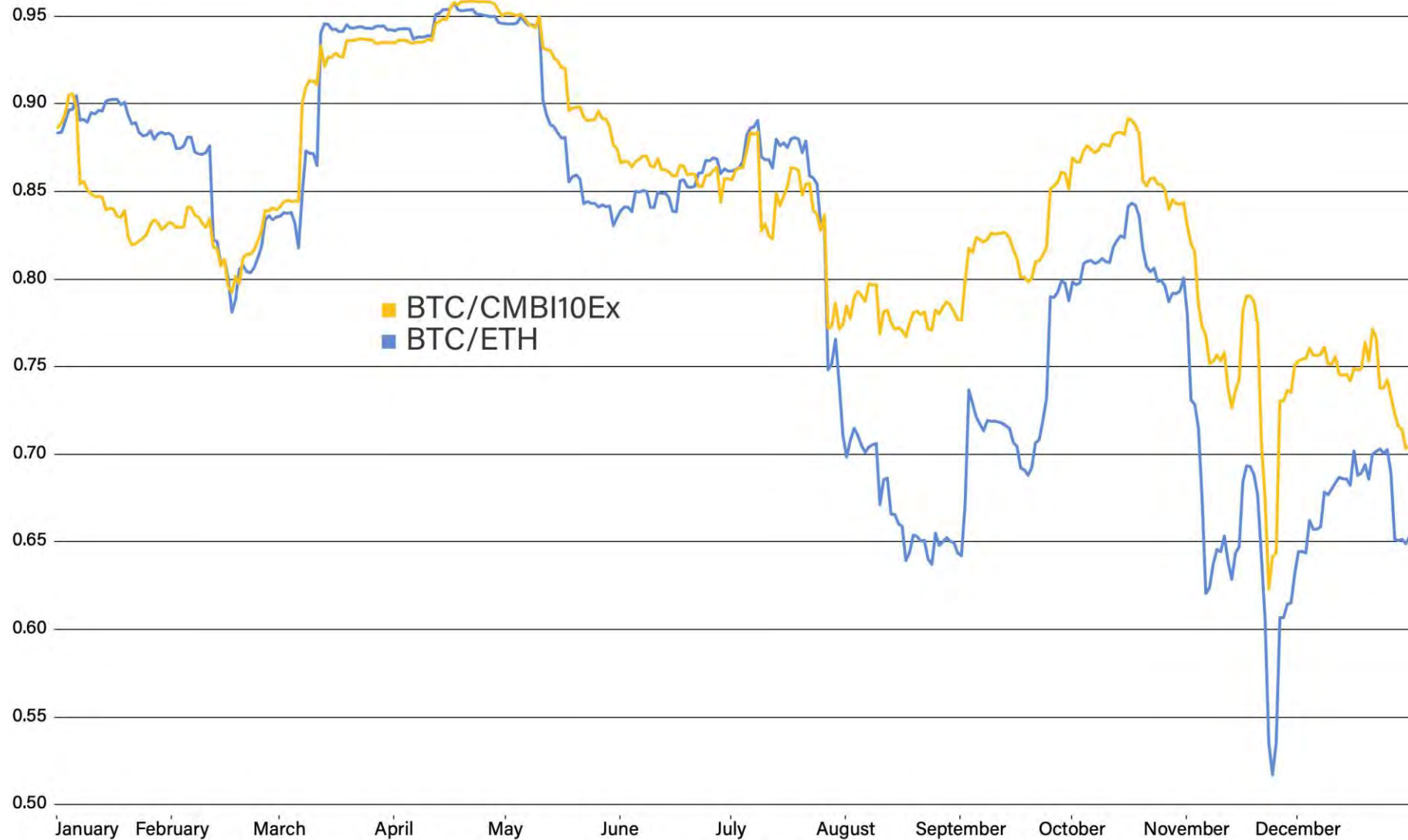
Source: Coin Metrics

60-Day Correlations Between BTC and ETH

The correlation between BTC and ETH has traditionally been very high, averaging 0.83 for the past two years. Recently, however, the BTC/ETH 60-day correlation has fallen to 0.65. This boosts the potential interest in ETH from institutional investors in that it justifies holding both BTC and ETH in a portfolio.

Crypto correlations – Portfolio diversification

The unusual drop in the BTC/ETH correlation is highlighted by the lesser drop in the correlation between BTC and a weighted index of the next top nine crypto assets by market cap (excluding stablecoins). This index (Coin Metrics' [CMBI10Ex](#)) is over 50% ETH and 20% XRP, which [fell 60% in December](#) in response to the [SEC's suit against Ripple Labs](#) and two of its principals.



Source: Coin Metrics

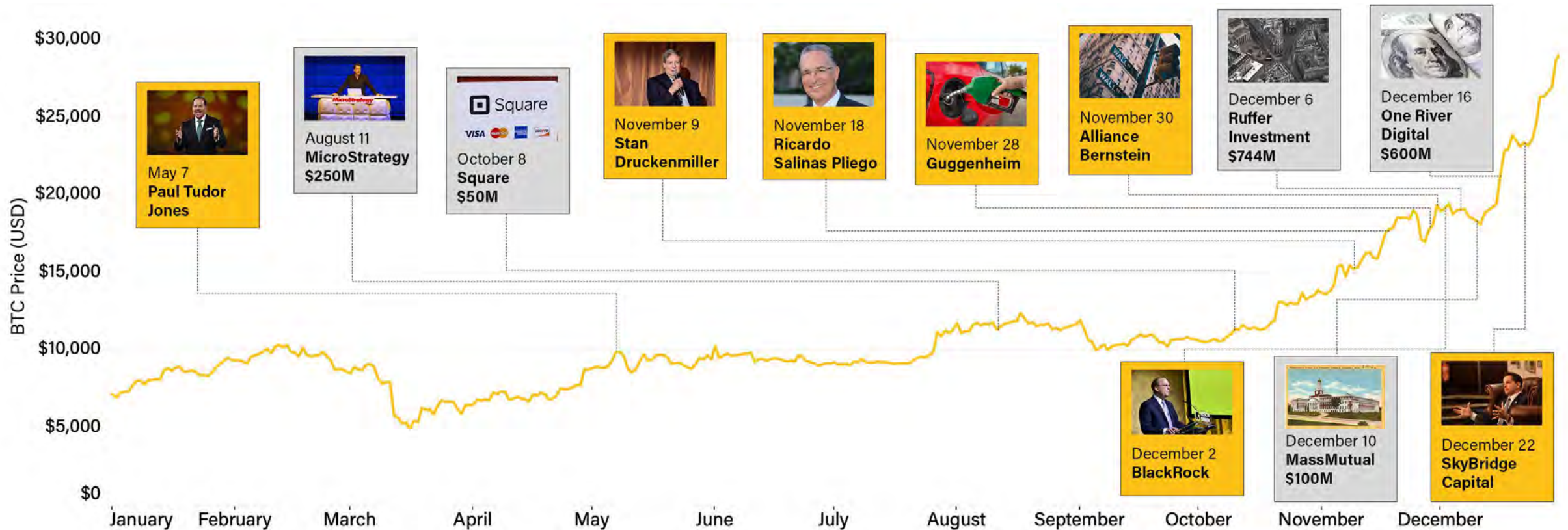
Bitcoin

One of the driving narratives behind bitcoin's rise this quarter was the growing interest from institutional investors, and the spread of bitcoin activity more generally.

2020: Institutional investors buying bitcoin

While the 2017 bitcoin rally was largely driven by retail frenzy, the 2020 rally was driven mainly by institutions. The accelerating rhythm of large institutional investors publicly talking about and investing in bitcoin as a portfolio asset has not only lent validation to bitcoin's role in portfolios; it has also attracted the attention of other investors. This self-reinforcing loop is likely to continue into 2021, especially given the mounting uncertainty around currencies and inflation.

Institutional Investments and Big Investors for Bitcoin in 2020



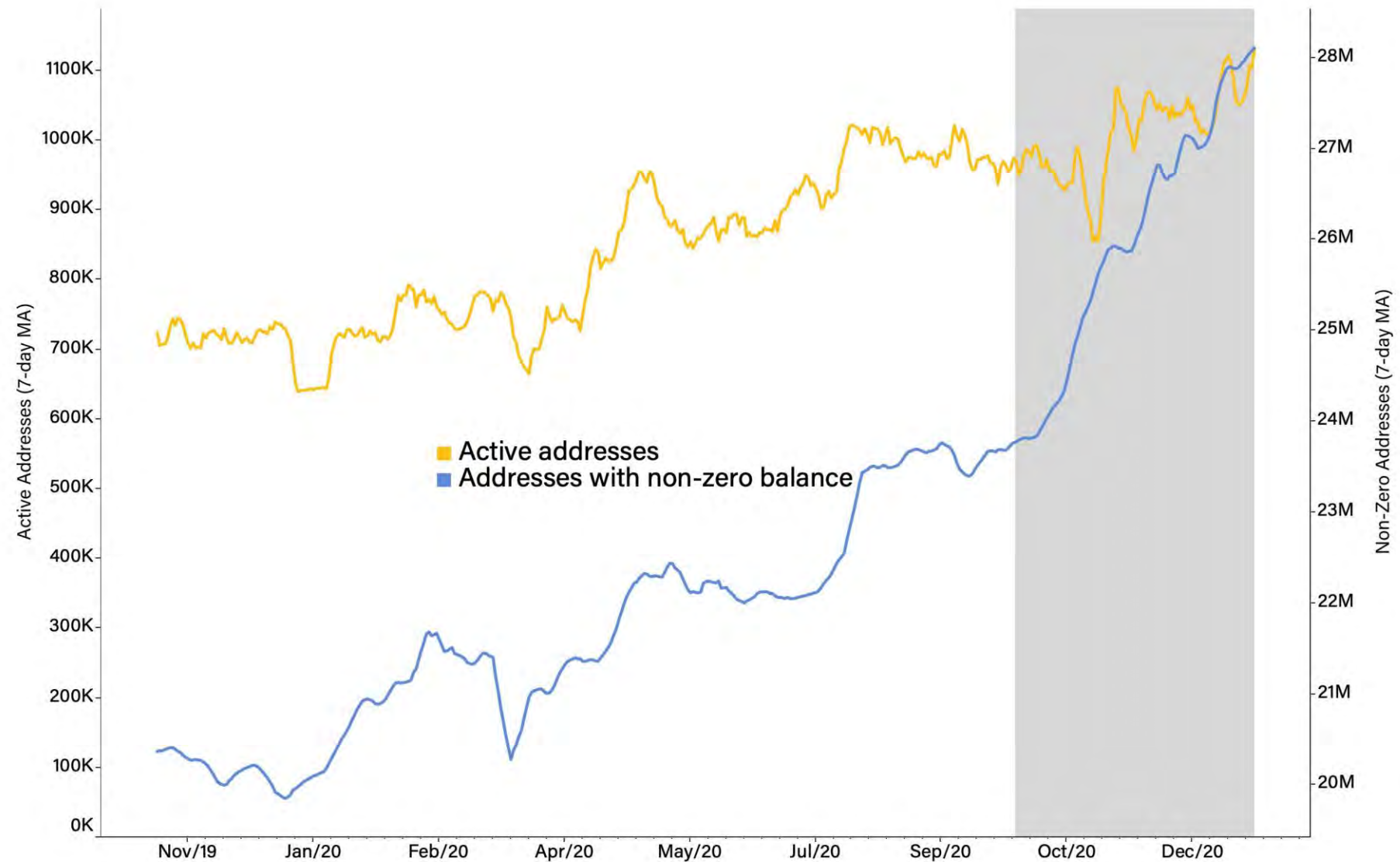
Source: CoinDesk Research - *Events highlighted in yellow represent big investors and institutions that made positive comments about bitcoin and/or made investments into bitcoin in which the dollar figure is not known. Events highlighted in grey represent big investors and institutions that made investments into bitcoin in which the dollar figure is known.

BTC Address Count: Active + Non-Zero Addresses

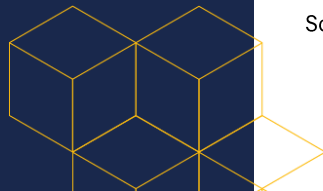
The number of active bitcoin addresses – those that have transacted in the past 24 hours at any given moment – ended the year at a 2020 high. The last time active addresses were at this level was in January 2018, as bitcoin started to descend from its 2017 surge.

Addresses – Who is using bitcoin?

The number of bitcoin addresses with a non-zero balance, on the other hand, passed its previous all-time high in April of this year, and currently stands almost 30% above that level, showing the spread of bitcoin interest.



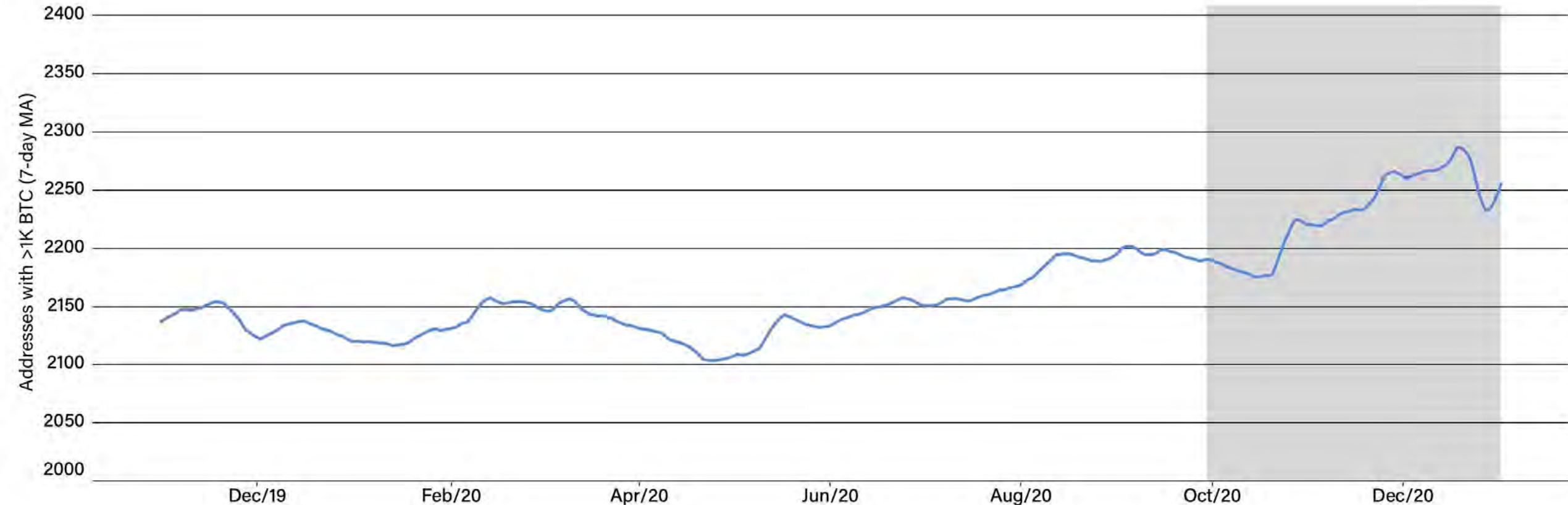
Source: Coin Metrics



Balances – Who is holding bitcoin?

One metric that hints at growing institutional involvement is the number of addresses that hold large balances. The number of addresses with over 1000 BTC hit its all-time high in December and is currently over 30% higher than at the end of 2017, the height of the last crypto bull run. This points to the growing presence of deeper pockets in the market., especially as the dollar value of these holdings has multiplied over the quarter. The dip and renewed increase at the end of December shows relatively little interest in profit taking on the part of these large holders, even though almost all holdings are currently in profit.

BTC High-Net-Worth Addresses

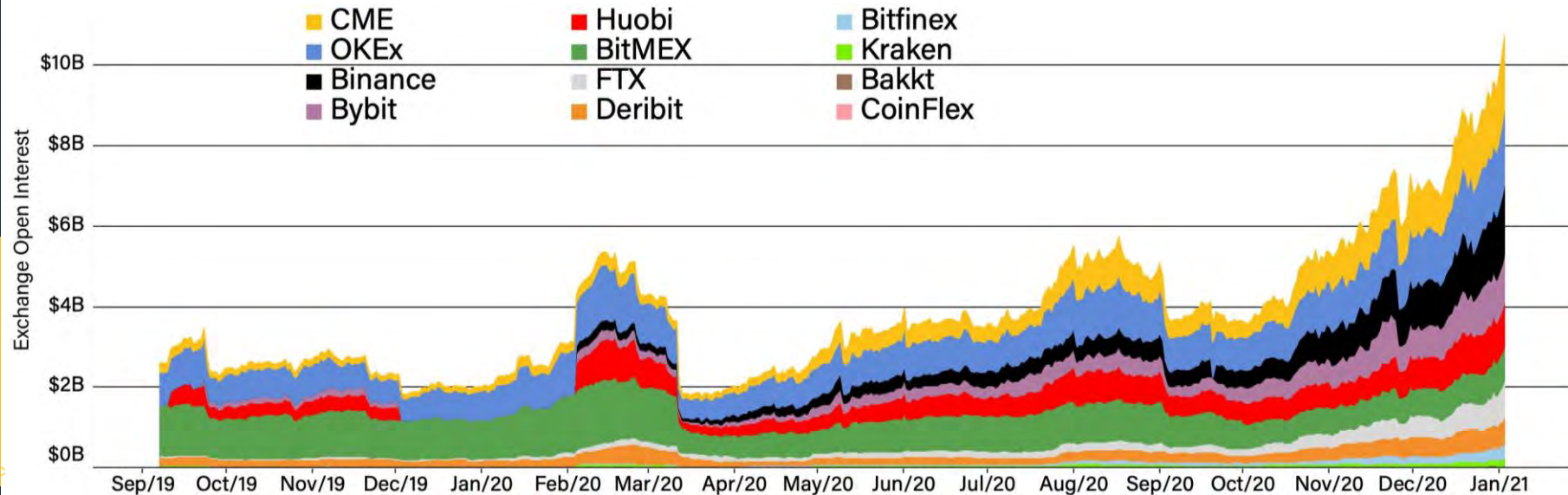


Another indicator that institutional involvement in the bitcoin markets is growing is the volumes on the Chicago Mercantile Exchange (CME), an institution-focused derivatives exchange that offers bitcoin futures and options. The CME's bitcoin futures open interest in U.S. dollars grew almost 300% over the quarter to become the largest in the industry (as of Dec. 30), having started the quarter in fifth position.

BTC futures: CME Open Interest (US\$)



CME Open Interest Ranks First Among Exchanges (as of Dec. 30, 2020)



Source: [skew](#)

Derivatives – Positioning, not trading

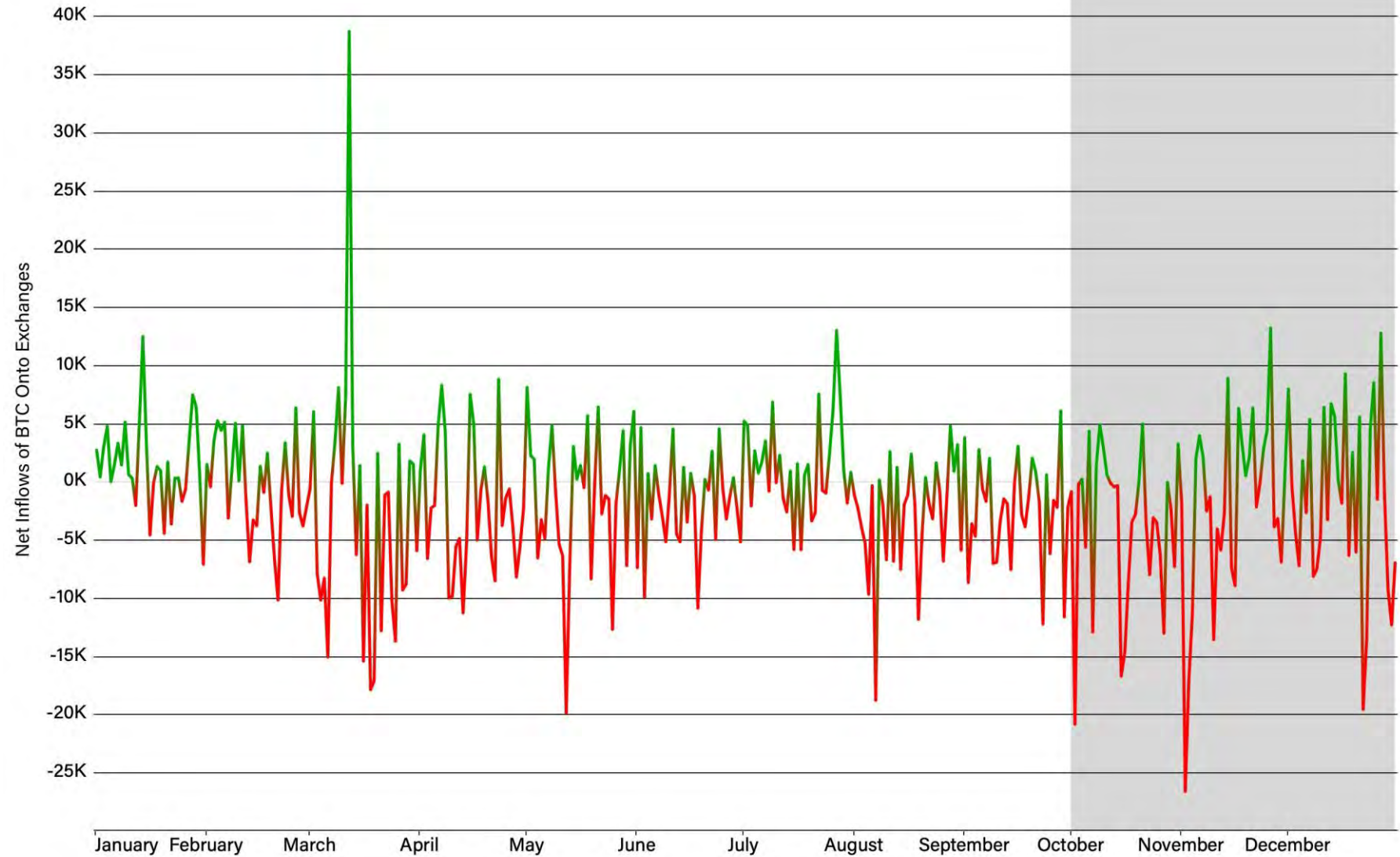
In terms of daily volume, however, the CME ended the year in 7th position, which implies that CME clients tend to take longer-term positions in crypto derivatives.

Net Inflows of Bitcoin Onto Exchanges

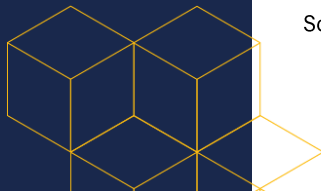
One sign that the recent inflows are more from investors than traders is the net outflows of bitcoin from exchanges. This is calculated by subtracting the amount of bitcoin moving off exchanges from the amount moving in the opposite direction each day.

Exchange flows

At the end of 2020, this measure reached its lowest point since July 2017, just before bitcoin embarked on an almost 600% rally.



Source: [Glassnode](#)



MVRV – Are investors ready to take profits?

A unique feature of crypto assets is the ability to use on-chain data to gauge market sentiment. [The MVRV ratio](#) divides the market cap (MV) by the “realized cap” (RV), which values coins at the last price at which they moved. This gives an idea of how “in profit” investors are – an MVRV ratio significantly greater than 1 means that most investors are in profit and could signal an imminent profit-taking correction. Since BTC ended the year at close to its all-time highs, almost all investors are in profit, but the MVRV ratio is approximately 40% below previous peak levels, which could mean that this rally has a way to run yet.

MVRV Ratio Still Well Below Previous Peak



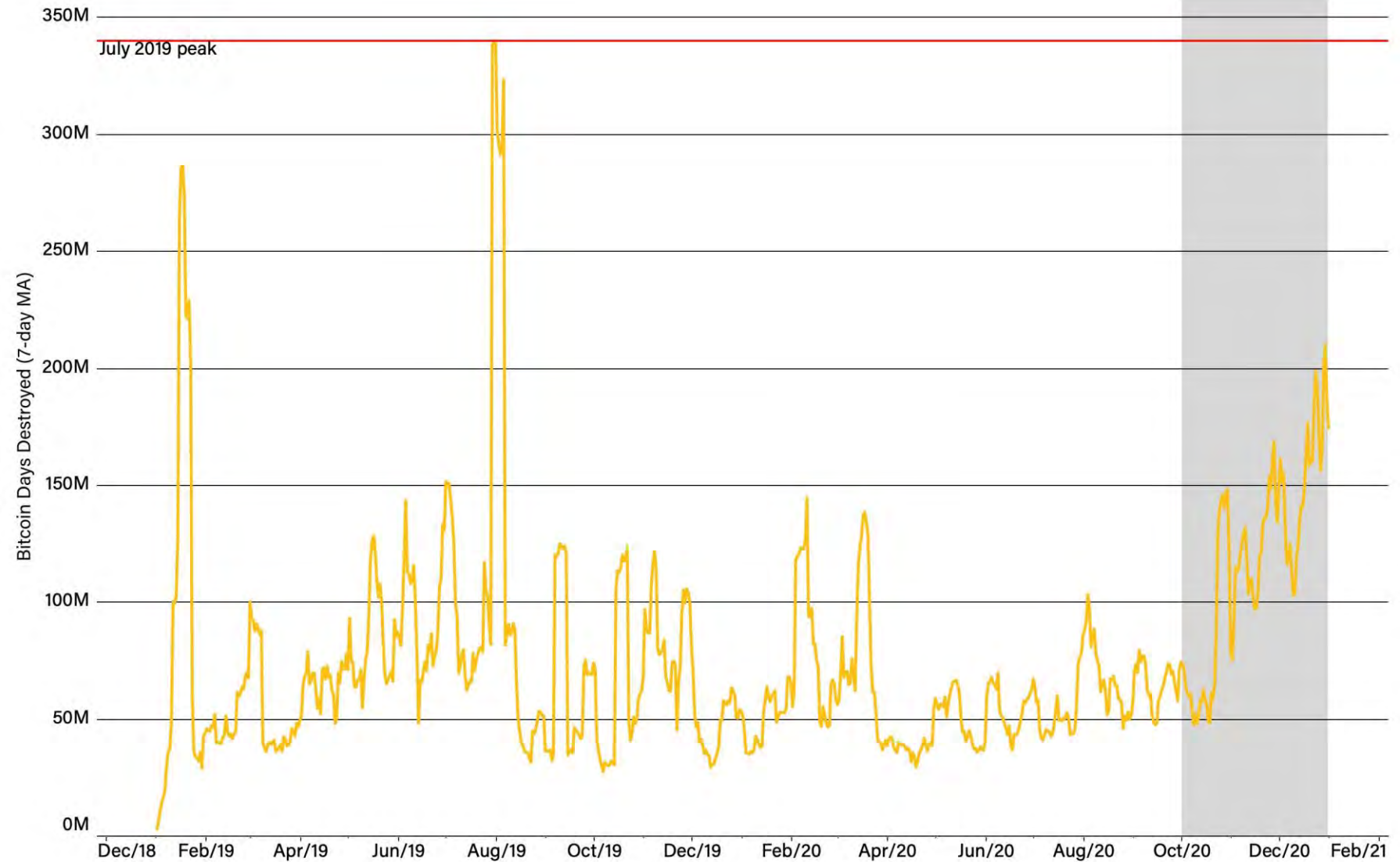
Source: Coin Metrics

Bitcoin Days Destroyed - Increasing Economic Activity

Another sentiment gauge is [Coin Days Destroyed \(CDD\)](#), which aims to provide a more realistic measure of the economic activity of the Bitcoin network by considering how long a holding had been inactive before moving. This enhances the weight of coins held by longer term investors.

Coin Days Destroyed – Who is selling bitcoin?

Over the fourth quarter, the CDD value for Bitcoin has more than doubled, reaching its 12-month high. Given the price increase, new buyers have to buy from someone, and some long-term holders are likely tempted to take profits at these elevated levels. The CDD is still only approximately half what it reached in July 2019, which indicates that there could yet be more upside to run.



Source: [Glassnode](#)

Ethereum

2020 was a momentous year for Ethereum, with the rise of decentralized finance, the launch of Ethereum 2.0 and new record-breaking highs for metrics like on-chain transaction fees, value transferred and miner revenue.

2020: The beginning of the Ethereum 2.0 era

After months of waiting, Ethereum 2.0 eventually launched on Dec. 1, 2020. ETH staked in Ethereum 2.0 surpassed \$1 billion 17 days after its launch. This year also witnessed a significant growth in enthusiasm toward decentralized finance (DeFi) applications, which aim to replicate and innovate on traditional financial services such as lending, savings and banking.

Big Events and Milestones for Ethereum in 2020

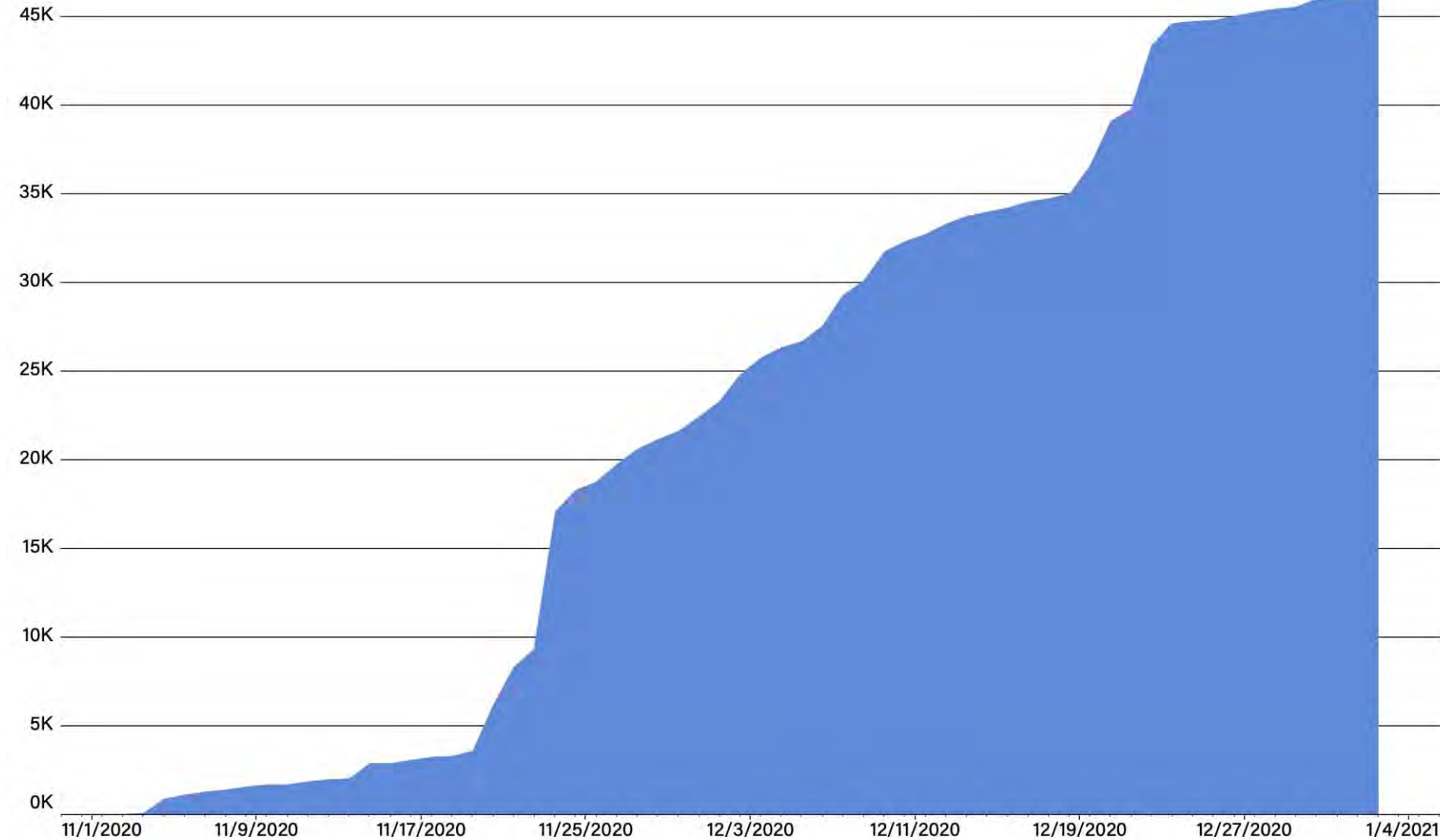


Ethereum 2.0 is the first and only upgrade in Ethereum's development roadmap that creates a separate blockchain network. This blockchain network promises radical improvements from the current one that address ongoing pain points related to transaction congestion, speed and costs for both users and developers.

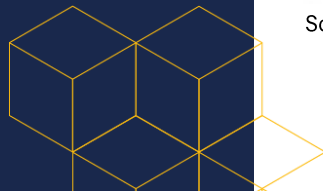
The significance of Ethereum 2.0 explained

Having been in development for over five years, the Ethereum 2.0 network finally went live on Dec. 1, 2020. Over the course of the month, the number of voluntary participants depositing 32 ETH in order to be validators on the network has increased 122%.

Number of Unique Accounts Depositing 32 ETH Into Eth 2.0 Deposit Contract



Source: [Glassnode](#)

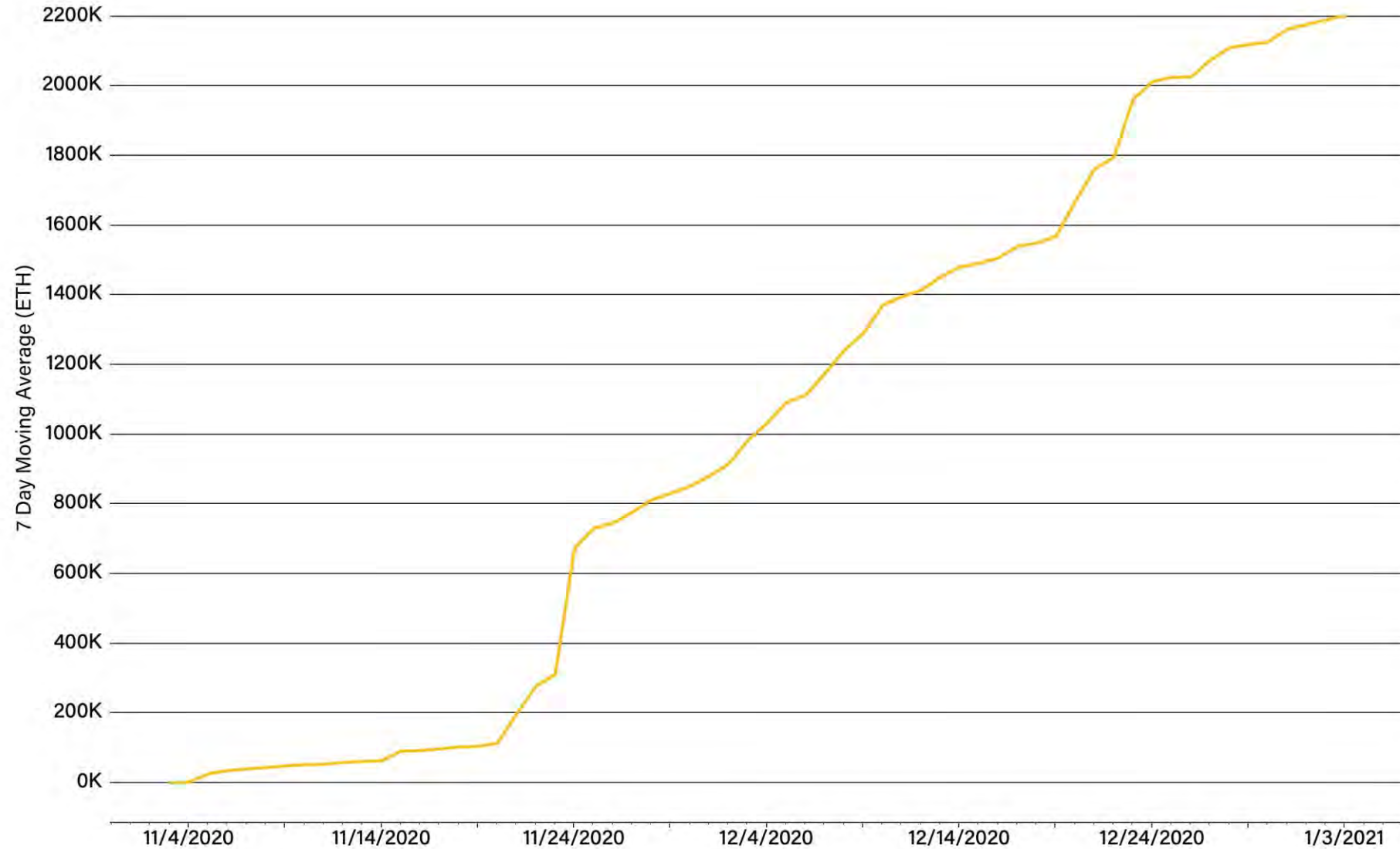


Now that launch is successfully out of the way, Ethereum 2.0 developers are focusing their efforts on the task of onboarding several tens of thousands more validators onto the network. The goal is to have a minimum number of [262,144 validators](#) securing Eth 2.0 before advancing to the next phase of development, Phase 1.

The next phase of Ethereum 2.0

In Phase 1, the network spawns 64 mini-blockchains called "[shards](#)" to boost transaction throughput and scalability. In order for a user to become a validator on Eth 2.0, they must stake a minimum deposit of 32 ETH, worth roughly \$39,000 at time of writing. As of Wednesday, Jan. 6, 20% of the 262,144 validators needed for Phase 1 have been onboarded to the network.

Total ETH Locked in Ethereum 2.0



Source: [Glassnode](#)

A snapshot of the Ethereum 2.0 network

CoinDesk is journaling the progress and evolution of Ethereum 2.0 through [the weekly Valid Points newsletter](#). In each edition, Research Analyst Christine Kim and Tech Reporter Will Foxley give readers a snapshot of network health and activity. The kinds of metrics featured include the average validator income, the number of active validators, the total amount of ETH staked and more. [Sign-up to receive Valid Points in your inbox.](#)



Average Validator Income:
0.0081 ETH/day
(\$8.86 USD/day)



Number of Pending Validators: **17,425**



Total ETH Staked:
2,252,546 ETH
(\$2.4 billion)

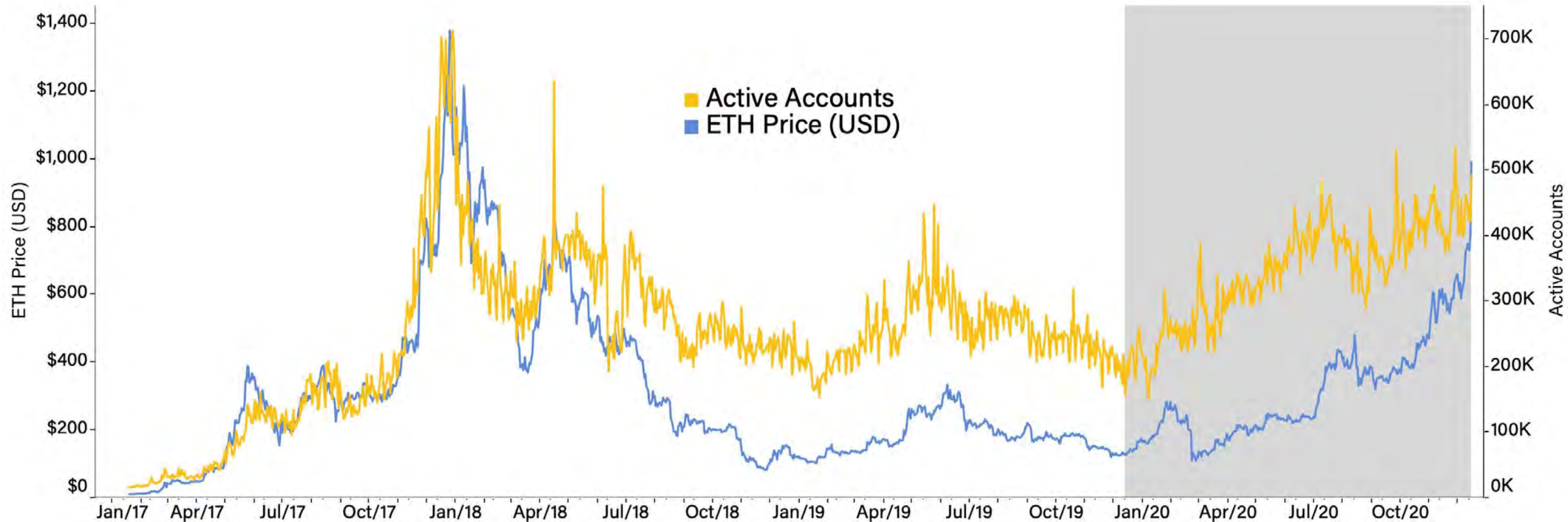


Network Participation Rate: **96.72%**

Active accounts on Ethereum climb

Since early 2020, the ETH price has been on the rise. Historically, peaks in [the number of active accounts](#) on Ethereum have coincided with market tops but the latest price surge which tipped ETH past \$1,100 for the first time since January 2018 was not mirrored by a surge in the number of active accounts. The number of active accounts has been trending upwards but is still roughly 33% lower than its peak of 714,225 reached back in 2018 when ETH price was nearing \$1,400. This indicates that the latest ETH price bull run may be fueled more by market speculation and less by a growth in real user activity and adoption.

ETH Price and Number of Active Accounts on Ethereum Since 2017



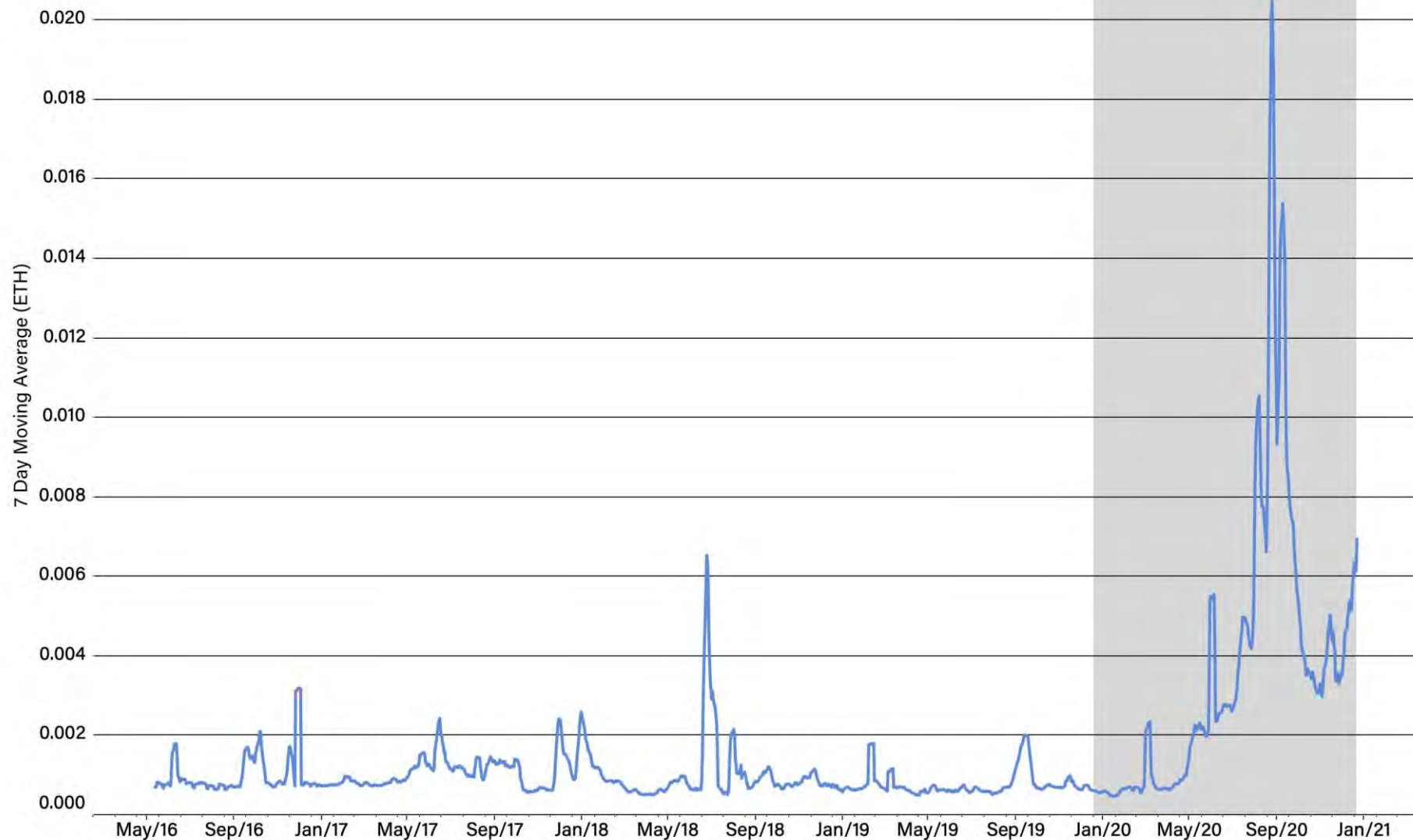
Source: [Glassnode](#), Coin Metrics

Average Transactions Fees On Ethereum

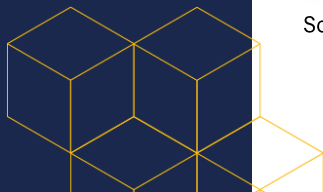
Decentralized finance applications made headlines this year. From SUSHI to YAM to TENDIES, these oddly food-inspired tokens generated a frenzy of user activity on Ethereum that pushed transaction fees to record-breaking highs.

Fees on Ethereum reach all-time highs

The spike in fees has spurred conversations and renewed interest in [Ethereum 2.0](#), the network's primary and long-term scalability solution. How much of an impact Ethereum 2.0 will have on fees in the short-term remains uncertain. For now, the hype around DeFi applications has cooled considerably, though it might make a comeback in 2021 as [mergers, acquisitions and investment](#) in DeFi continues to drive innovation.



Source: [Glassnode](#)



A clear indicator of the use case of Ethereum

Not all [Ethereum transactions](#) involve transfers of ETH. They could involve transfers of ERC-20 and ERC-721 tokens, which are crypto assets created for unique applications and use cases on top of Ethereum. What's more, not all Ethereum transactions are initiated by users. Some are initiated automatically by a smart contract, which is the code dictating the functionality behind all decentralized applications (dapps). This year, the total amount of ETH transferred by smart contracts as opposed to users doubled from its previous all-time high reached in 2016. This is a bullish indicator of Ethereum's growing use case as a dapp platform rather than as a network for transfers of value.

Total Amount of ETH Transferred By Smart Contracts



Percentage of Ethereum Miner Revenue From Transaction Fees

Similar to Bitcoin, network rewards on Ethereum are earned by miners. These rewards consist of a block subsidy and transaction fees. The former is a fixed amount of ETH that gets awarded to the miner who successfully computes the next block in the blockchain. Additional rewards are given to that same miner for including transactions in the block they have mined.

A year of plenty for Ethereum miners

2020 saw the percentage of miner revenue from transaction fees spike to over 60%. Normally, fees only make up 3-4% of miner revenue. As a result, total miner rewards have also reached new all-time highs on Ethereum, and this despite a 33% reduction to block subsidy implemented in 2019. The rise in miner revenue in 2020 is a strong indicator of increased adoption and user activity on Ethereum.



Source: [Glassnode](#)

CoinDesk Research Updates

In December, we wrapped up our live webinar series about the fundamental metrics for valuing the Ethereum blockchain. We also published 5 new reports from various industry experts about topics ranging from cryptocurrency spot exchanges to market to blockchain mining.

What's on the Research Hub?

Reports

- [Kaiko Research: Monthly Market Report December 2020](#) - Kaiko's December 2020 monthly review compares the 2020 and 2017 market rallies, and looks at correlations, institutional participation, trading volumes, DeFi token returns and more.
- [Arcane Research: 2020 Summary](#) - Arcane Research pulls together the main themes from 2020 in their year-end weekly report, focusing on institutional investment, crypto asset performance, derivatives markets, decentralized finance and more.
- [Vision Hill: An Institutional Take on the 2020 / 2021 Digital Asset Market](#) - This report from Vision Hill includes the asset manager's top 10 takeaways for 2020, seen from a buy-side institutional allocator lens, as well as its expectations for 2021.
- [CryptoCompare Exchange Review November 2020](#) - CryptoCompare's Exchange Review aims to capture the key developments within the cryptocurrency exchange market. It focuses on analyses of exchange volumes, which include derivatives trading, market segmentation by exchange fee models, and crypto-to-crypto vs fiat-to-crypto volumes.
- [GDA Capital: Cryptocurrency Mining on Blockchain Networks](#) - This report from GDA Capital offers insight into the fundamentals of blockchain mining (with examples particularly pertinent to Bitcoin's blockchain network), and highlights some established and emerging players in the space.

Webinars

- [How to Value Bitcoin Episodes 1, 2, 3 and 4](#) - How to place a value on bitcoin? Its data are unfamiliar territory for many investors. In this webinar series, we look at the novelties and complexities that are critical to understanding how bitcoin works.
- [How to Value Ethereum Episodes 1, 2, 3 and 4](#) - In this webinar series, we discuss the on-chain metrics fundamental to understanding and valuing ether, the native token of the Ethereum blockchain.

Thank you for reading!

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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.

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You can reach us at research@coindesk.com.



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