

CryptoAsset & Blockchain Advisor

Volume 4
February 2021



Bitcoin's Dark Knight

Taking a page from the Christian Bale Batman series, Elon Musk is not the hero that crypto wants, but he is probably the one that we deserve. After all, the industry waits with bated breath every time he tweets about **bitcoin** or joins a Clubhouse chat to discuss his favorite crypto, **dogecoin**. In fact, you can actually see the impact of his tweets on the price chart of any asset that he mentions. We would love to see a more established financial professional like David Tepper, Stanley Druckenmiller or Ray Dalio go full crypto, but their crypto-conversion remains to be seen. However, at the same time they are not known for toying with market emotions the way Musk does.

The question then becomes whether Elon Musk is actually good for crypto. There is little doubt that he did more than virtually anyone else on the planet to boost its recent price when you take into account the impact of him changing his twitter bio to the word bitcoin on January 29 or the vertical movement of the price chart on February 8 when Tesla's \$1.5 billion purchase was discovered. In the same breath, he is not afraid to express his beliefs when he thinks that cryptos like bitcoin and ether are overpriced. To me, this sounds a bit

disingenuous given his knowledge, not to mention that of his lawyers, of the effect that his public activities have on the price of crypto.

Dogecoin, which became a favorite of the r/WallStreetBets crowd, is another Musk plaything. While dogecoin may have utility as a tool to experiment and learn with, I fear that some investors will lose money from the self-described meme-coin in a manner similar to some momentum traders who got burned by the GameStop drama.

Is The Doge On Us?

While Musk is almost certainly having some fun at our expense, there is also some seriousness to his crypto entreaties. After all, nobody allocates \$1.5 billion of capital on what they think is a joke. But to give you a sense of the variability of today's markets, despite the fact that Tesla has earned a \$1 billion profit (on paper at least) from its bitcoin purchase, which is more than it made from car sales in 2020, its stock has actually dropped since the investment became public. Curiosity aside, things are all fun and games when prices are going to the moon or mars. Things could change if prices plummet and people get hurt because they took

the word of someone who briefly became the richest person in the world and forgot that most of us do not have similarly deep pockets.

So, what should you do? First, you should not take the twitter musings of a futurist as investment advice (this is good for most of crypto twitter to be honest—and leading influencers will tell you the same). It is best to rely on strong technical and fundamental analysis to make informed decisions regarding our portfolio. Also, it is necessary to form strong investment theses and stick to them during times of heightened volatility, such as the one in which we are living right now.

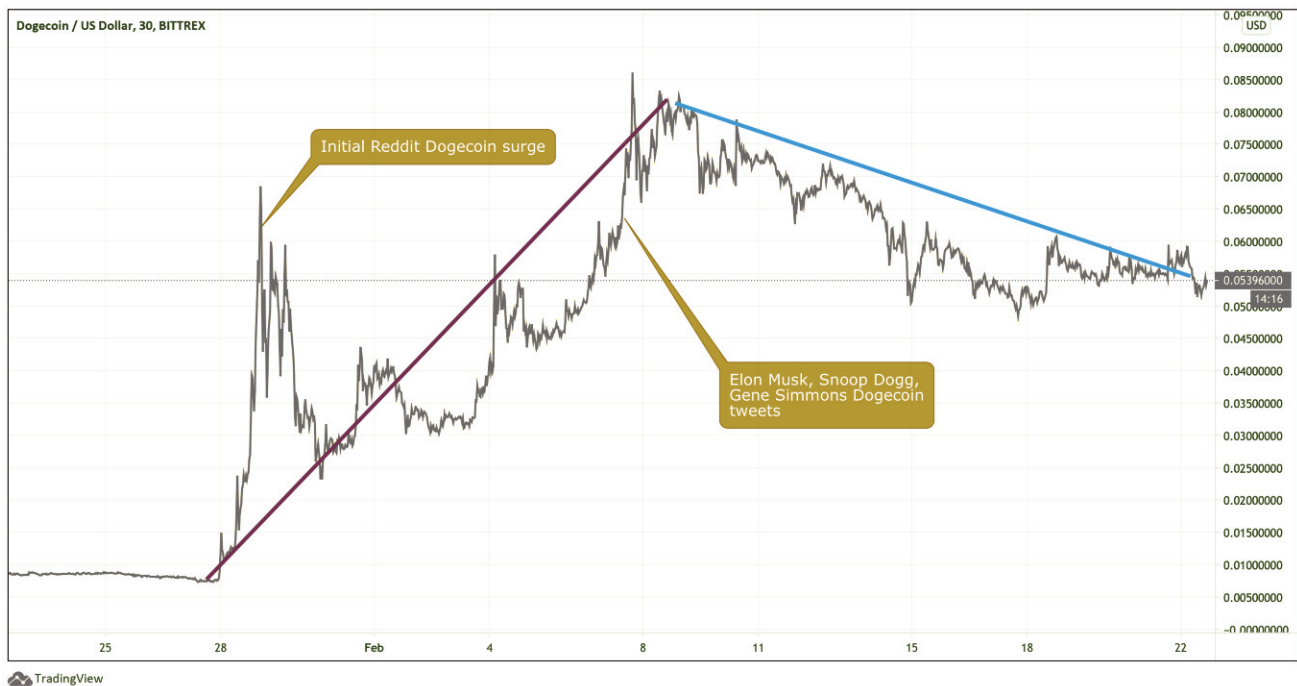
Additionally, it is more important now than ever to stay ahead of the curve and keep looking for an investment edge and additional value. In our **CryptoAsset Core Portfolio** we will be



Elon Musk's Recent Impact On Bitcoin's Price



Dogecoin Soars On **Celebrity Endorsements**



adding a series of innovative and high-potential tokens that have staked out leadership positions in their respective verticals over the next several months. We are also

adding two new stocks to the **Blockchain Equity Portfolio** that are primed to take off this year, while at the same time taking profits in one of our existing holdings. ■



Bitcoin: Time For A Breather?

Bitcoin initially started 2021 on a torrid pace. After finishing 2020 up 300%, it accelerated through January and most of February to top out above \$58,000. Even after this week's tumult, as I write this the price is \$46,265, still amounting to a 57.4% gain year-to-date. Spanned out over a 12-month period, this would amount to approximately a 344% surge.

However, bitcoin has fallen more than 20% this week due to a multitude of factors. First, there has been a prevailing sentiment that bitcoin is due for a correction. Second, bitcoin (and crypto in general) seems to be getting wrapped up again in broader macro trends, which is not new. Bitcoin sold off in mid-March last year with the rest of the market, then it accelerated with other growth stocks, such as technology platforms, through 2020. It ended up outpacing those assets due to broad institutional adoption for the first time and the fact that it offered a hedge to investors with unprecedented upside opportunity for safe-haven assets. With renewed concerns about rising yields on benchmark bonds, such as the U.S. 10-Year Treasury, investors are starting to worry about inflation and whether central banks will tighten the screws should economies become overheated. In the future, I would expect this to be good news for bitcoin, but for now while it still appears to be correlated with the stock market, it could weaken prices.

I will continue to follow this issue moving forward, but in this report I want to focus more on fundamental issues within bitcoin that are affecting its price, such as what we mean when we say "healthy correction." It has been common to use this phrase when bitcoin (or frankly any other asset) goes on a massive run and the price extends beyond technical fundamentals. But what makes a correction healthy? And how do we know how low a correction might go or how long it will last? Or when we could expect another one? Having a correction for a correction's sake does not do any

good, and if we use the term flippantly it can come off as lip service. Yes, they can be beneficial, but only when they are used to restore balance to crypto markets and create a new foundation for sustainable growth. Therefore, we need to examine what is causing bitcoin's price to teeter.

Retesting \$50,000

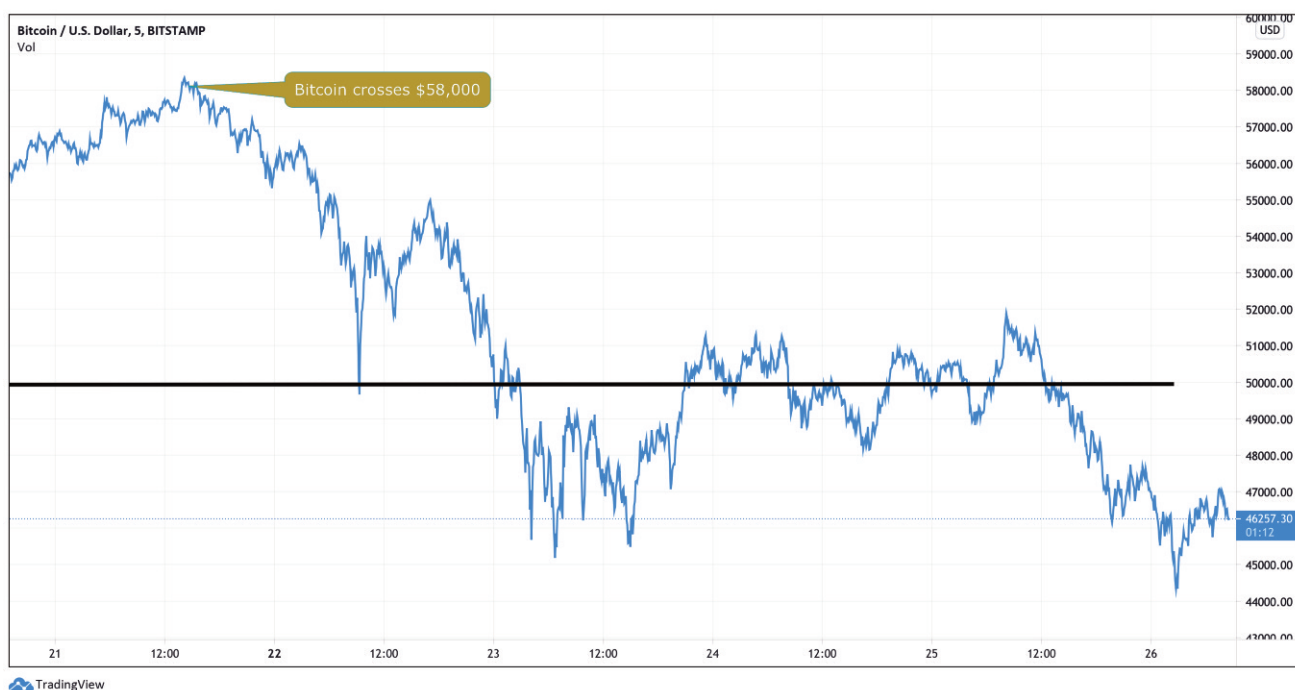
As you can see from the chart on page 5, after peaking over the weekend bitcoin has started to falter. It seesawed across \$50,000 and traded within a narrow bound for most of the week, but as some of the macroeconomic news became more worrisome over the last 24 hours it dipped. This is even after the public filing of Coinbase's S-1 with the SEC, which would be a very bullish item on a calm day.

Why is this happening?

A good place to start is liquidity. For bitcoin, it has been drying up quickly (often because institutions make huge allocations and then take them off exchanges), which adds to volatility. Sometimes this is a good thing. I frequently write about how metrics such as decreasing exchange balances are a very

“ Bitcoin initially started 2021 on a torrid pace. Even after this week's tumult, bitcoin still has a 57.4% gain year-to-date. Spanned out over a 12-month period, this would amount to about a 344% surge

Bitcoin's Uneven Week



bullish sign because “hodlers,” especially institutions, prefer to protect their bitcoin in more secure wallets. They usually only keep bitcoin on exchanges when they plan to sell. But, too much decreased liquidity can be a double-edged sword because it can result in single large transactions having significant impacts on the spot price.

This trend has been accelerating over the past few months. You may recall that in recent updates

I have written about how institutional gateways like Grayscale have been purchasing multiples of the amount of bitcoin mined in a certain day or month. To help quantify the effect of this institutional flow, I spoke with JPMorgan’s Senior Cross Asset Research Analyst, Nikolaos Panigirtzoglou, who told me that from the end of September 2020 to late-February he has been tracking about \$11 billion worth of institutional flows (counting

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Editor: Steven Ehrlich
 Contributing Editors: Jack Tatar, Michael del Castillo, Jeff Kauflin
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announcements such as the Tesla purchase, CME futures, Grayscale purchases, etc.). In that time the bitcoin market cap has increased by around \$800 billion. Putting these numbers together he told me that the institutional flows amount to less than 1.5% of the total expansion of bitcoin's market capitalization. In response to these observations, Panigirtzoglou told me that this "magnification is multiples higher than what we see in other asset classes."

This observation is also borne out with some other trading metrics. For instance, according to a report issued to clients last Friday citing data from Bitwise, there is only about \$10 billion in actual daily trading volume, which is 10x less than gold. To quantify the impact of this distortion, Panigirtzoglou highlighted readings from the Hui-Heubel ratio from the academic literature, which effectively captures the price impact of volumes on prices (i.e., market breadth). The upshot is that the impact of volumes on prices looks currently much bigger in bitcoin than in gold or S&P 500, almost 3x-5x in futures and 10x-20x in ETFs. This adds to volatility.

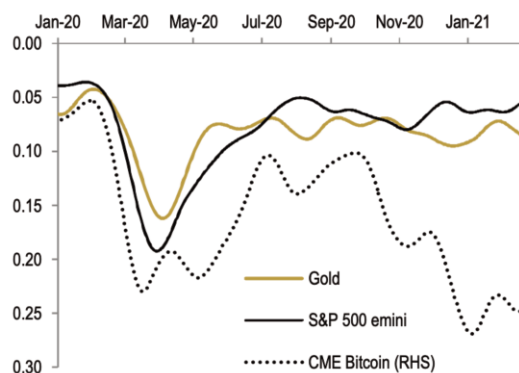
Finally, one other significant trend that has been less reported is that institutional interest is tapering off and retail investors have started to pick up steam. This has likely been covered up due to the

“One other significant trend that has been less reported is that institutional interest in bitcoin is tapering off and retail investors have started to pick up steam

outsize media attention placed on Tesla's purchase and the fact that Google search volume is not at the same level as it was back in 2017. Panigirtzoglou noted that "it is a worrying sign that the flow behind bitcoin funds and the Grayscale trust in particular has actually slowed, rather than accelerated. This points to retail investors as the main driving flow here today rather than institutions. This creates more volatility because the retail impulse is to be more speculative and that creates a problem with the theoretical valuation of bitcoin."

Hui And Heubel Liquidity Ratio

Y axis in reverse order as a higher ratio implies lower market liquidity, smoothed via HP statistical filter. See text for details on the construction of this ratio.



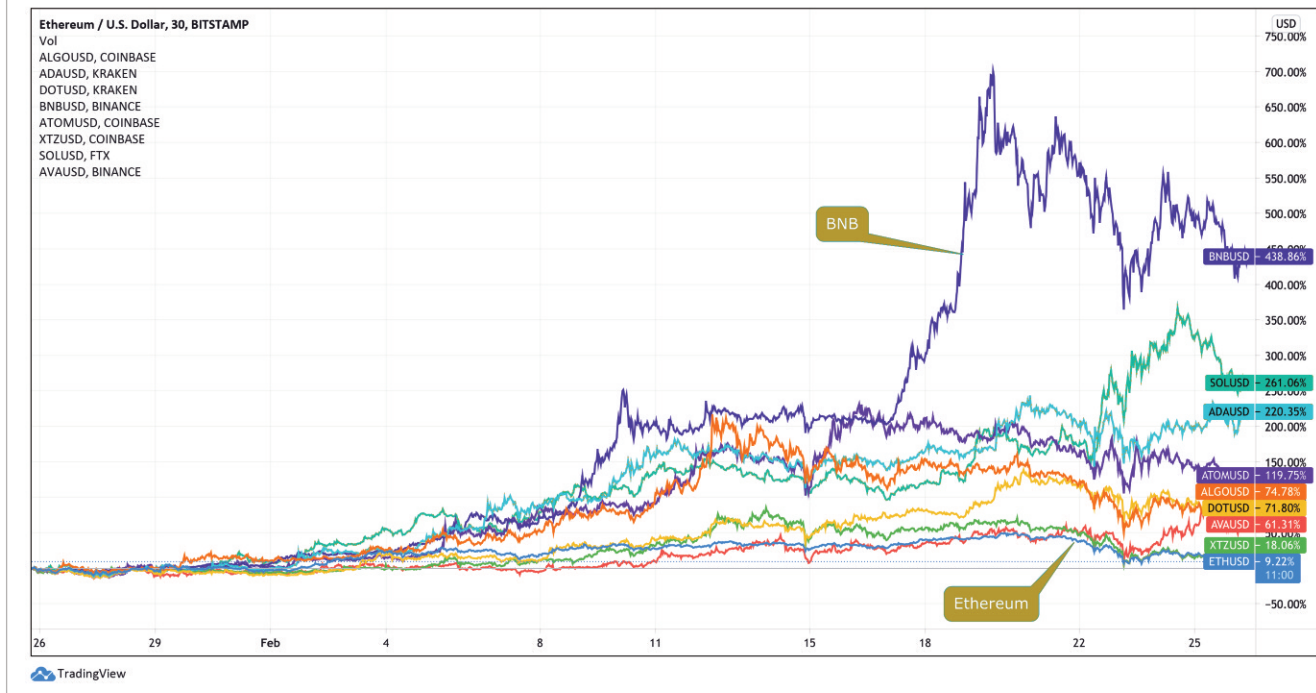
Source: Bloomberg Finance L.P., J.P. Morgan

Restoring Balance

At this point the question then becomes what will be the drivers of a bitcoin rebound? It is important to have balance between institutional and retail investors. This is because a diverse and complex ecosystem can smooth out supply and demand and reduce volatility, which will need to happen for bitcoin to hit all these lofty six-figure predictions coming out of Wall Street over the next several years.

Given the outsize influence of retail traders, it seems that the key will be a combination of increased institutional investment and more responsible purchasing on the retail side. On that front the good news is that there continue to be new

ETH And Its Competitors All Struggle—Except For BNB



solutions and methods for institutions to get access to bitcoin or for RIAs to funnel assets under management into the space. I expect these RIAs to smooth out retail trading over time. For instance, two bitcoin ETFs are now trading in Canada, one of which saw \$490 million worth of interest in its first two weeks. To get a sense of the investor profiles for these types of products, I spoke with Matthew Hougan, CEO of Bitwise, whose firm offers a crypto exchange-traded product, **Bitwise 10 Crypto Index Fund** (BITW) that trades on an OTC marketplace that doesn't have the same level of disclosures or requirements as more traditional bourses like the New York Stock Exchange. He told me that in the beginning his primary audience was "high net worth individuals and maybe some family offices...now it is a much more diverse set. Now financial advisors are a meaningful portion of interest, as are hedge funds, and there is a little bit of traditional institutional interest, which is starting to emerge."

As Goes Bitcoin, So Goes Crypto

Given how tightly correlated the crypto markets are, it shouldn't be a surprise that **ethereum**, **DeFi tokens** and competing blockchains have seen a dip as well. Each has struggled over the last few days despite growing through most of the month.

Nonetheless, you will notice there is one major exception, which is **BNB**, the native asset for Binance's blockchain. It has seen a concurrent surge with the rapid increase in use for its Uniswap competitor, **PancakeSwap**, which has surged into the top ten DeFi tokens by market cap and, priced at \$11.91, is up 1,500% year-to-date. This surge is most likely due to some DeFi advocates looking for opportunities to avoid the massive fees found on ethereum as network congestion has been growing over the past few weeks.

However, there is still room for optimism. Ethereum broke the \$2,000 barrier for the first time in its six-year history this month, which can be attributed to several factors with long-term potential, including:

- ➔ Confidence among the investment and development of the ethereum community that its transition to Eth 2.0 will be completed successfully. In fact, the next stage of the process is expected to commence in April.
- ➔ Institutions are starting to get more comfortable with ethereum as a way to diversify their crypto holdings away from just bitcoin and are starting to take advantage of ether futures offered by CME Group.
- ➔ The amount of ether currently being staked is approaching \$6 billion or a little under 3% of the supply. This will create some supply pressure,

but not to the extent of what we are seeing with bitcoin.

Additionally, while DeFi activity continues to be highly speculative, the experimentation and iteration is continuing. Additionally, I am becoming more and more encouraged by cross-chain integrations of leading projects and further development of layer 2 scaling technologies on ethereum. All of this increases the likelihood of more sustainable and economically viable activity in the future. ■

DeFi Tokens Follow ETH Down This Week



CryptoAsset Core Portfolio/ Growing The CryptoAsset Portfolio

► Buy: Chainlink (LINK-USD)

Market Cap: \$25.7 billion

Current Price: \$26.27

24-hour Trading Volume: 291.1 million

52-Week Range: \$1.51-\$36.83

This portfolio is designed to provide you with exposure to foundational assets in the crypto space that offer a blend of short-term upside with substantial long-term potential. When we evaluate an asset for inclusion, it is judged on a wide range of criteria including:

- ➔ Regulatory status
- ➔ Network or application security
- ➔ Developer activity
- ➔ Market traction
- ➔ Market position/capitalization
- ➔ Technological sophistication
- ➔ Trading volume/market liquidity
- ➔ Competitive landscape
- ➔ User experience/user interface

We endeavor to avoid the latest fads or tokens that trade on hype rather than substance. Short-term gains or fast exits are not our goal. Our approach is far more foundational in nature and is informed by our long-term assessments regarding where key sources and drivers of value in the industry will accrue.

Crypto's overall market cap has long been dominated by its top two assets, **ethereum (ETH)** and **bitcoin (BTC)**, which we own in our the **CryptoAsset Core Portfolio**. From time to time we would add and subtract to the portfolio based on market movements, product enhancements or macro factors, but there is a reason why BTC and ETH are core components to our portfolio.

Time To Expand

Since we launched this newsletter in October 2018, crypto markets have matured somewhat. Additionally, readers are more sophisticated in their crypto

knowledge. I smile with every thoughtful and detailed question that I receive.

Therefore, it is time to broaden the portfolio, incrementally and gradually. There is no set limit, but I anticipate it expanding to 8-10 digital assets. To do so we must also expand the definition of the CryptoAsset Core Portfolio. Now, it will also include assets and projects that have assumed leadership roles in core verticals within the crypto and blockchain industry. Given the nascent nature of these new emerging use cases, first-mover advantages are expected to be significant from a branding and network growth perspective. All the other criteria that I stated earlier still apply, and price will remain an important consideration (though given our approach to taking long positions it will not be the dominant criteria for the time being).

Areas Of Focus

At this point you are probably wondering what crypto verticals I am considering. Many will be familiar to readers of this publication, such as **privacy protection, oracles, non-fungible tokens, data storage, payments, identity management, records management and social networking** for starters. If crypto and blockchain are going to succeed there will be clear winners (or at least mature platforms and dapps) servicing these use cases at scale.

What It Means

We will still weight our portfolio to remain broadly in line with the respective market capitalizations of the top crypto assets in the space. That means that bitcoin and ethereum will likely remain the dominant players by far (though we can always make

adjustments if we deem them necessary). However, the number of assets on the back end will expand over time to cover a wide array of use cases and value propositions.

Introducing Chainlink

When I say the word **oracle**, many of you may think of Warren Buffett, the oracle of Omaha, or the technology giant founded by Larry Ellison or perhaps the *Matrix* franchise. Within the context of crypto, oracles are data providers that supply smart contracts with necessary information to function.

Let me give you an example, imagine that someone creates a smart contract to represent a futures contract governing the sale of a bushel of oranges at a specified price by a specified period of time, like the end of the month. To execute this contract on blockchain, it will need to know when we reach that date. Smart contracts do not know this information on their own (they are actually quite unintelligent), so it needs to come from a reliable external source. That is what an oracle does.

There are multiple oracle providers in the space today, but the market leader by a wide margin is **Chainlink** (LINK-USD). It was founded in 2017 by Sergey Nazarov, when the project raised \$32 million in an initial coin offering. It has integrations with dozens of companies and supplies a wide array of data feeds, including everything from asset prices for various DeFi applications to weather data for farming insurance policies. It also provides proofs of reserve to stablecoin providers that can be published onto a blockchain and offers a random number generator that is used to power decentralized games.

The network functions as follows: A Chainlink user (firm or smart contract) drafts a service level agreement (SLA) that spells out the type of data the entity is looking to obtain. The SLAs are then offered to Chainlink's various oracles as part of a

“Crypto and blockchain are going to succeed there will be clear winners (or at least mature platforms and dapps) servicing these use cases at scale

bidding process, which can choose to accept or reject the SLA. Rejections could be due to several reasons such as an oracle's inability to access the necessary data or the price being too low. The user also has the option to select multiple oracles for a given SLA to reduce the chances that one could be compromised and send incorrect data into a smart contract.

All of this is powered by **Link**, Chainlink's native asset, because it is how oracles get paid for their service. There are also some interesting safeguards within the Chainlink system. For instance, oracles are constantly rated based on a number of factors such as completed SLAs and the number of times they return accurate data. This helps give the best-performing oracles preferential access to future SLAs.

DeFi Dominance

Chainlink has dozens of smart contracts and platform integrations, but the vast majority of its activity is focused on the DeFi space. It provides price reference data to the smart contracts underpinning lending protocols, robo advisors decentralized exchanges, stablecoins (to check collateral ratios), and insurance providers such as Yearn.Finance, Synthetix, dY/dX, AAVE, Nexus

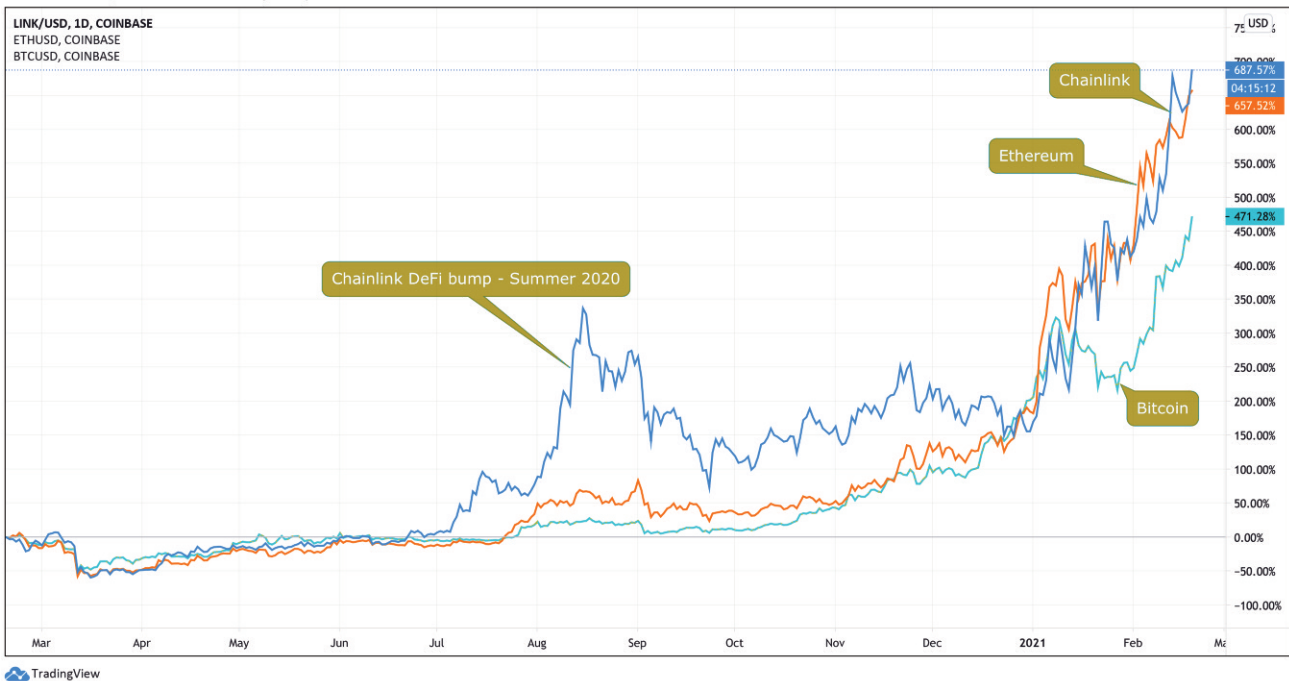
Total Value Locked (USD) In DeFi

TVL (USD) | ETH | BTC

All | 1 Year | 90 Day | 30 Day



Chainlink And Ethereum Are Moving In Tandem



Mutual, Ampleforth and OpenLaw. In fact, the company's CEO Sergey Lazarov told me in an interview for this article that Chainlink powers 50%-80% of all DeFi activity.

Price Performance

As you can tell from the chart on page 11, LINK enjoyed a strong 2020 and has been very tightly correlated with ethereum for all of 2021. As I write this, LINK is priced at \$26 and has returned almost 200% to investors this year and more than 700% over the last 12 months. These observations make perfect sense when put into the context of the fact that LINK became a hot commodity during the initial DeFi surge last summer and once again as traders start to roll some of their bitcoin earnings in ethereum and look to further leverage DeFi protocols to expand their wealth.

Poised For Future Growth

Given its strong start, broad exposure to DeFi and relative lack of competition in the decentralized oracle space, LINK continues to have substantial long-term upside potential. In much the same way that ether is seen as a method to gain exposure to DeFi without selecting individual winners, LINK offers a similar value proposition to investors. Additionally, Nazarov told me that the company is working on ways to expand beyond ethereum to other platforms such as solana, polkadot and avalanche.

That said, Chainlink is not without its challenges. For instance, while DeFi is a perfect match for decentralized oracles, the company must find ways to find similar levels of penetration in other verticals and recruit a sufficient number of trustworthy oracles to build trust. This could turn into a bit of a chicken and egg problem. Additionally, as crypto becomes more legitimized, Chainlink may

“ Given its strong start, broad exposure to DeFi and relative lack of competition in the decentralized oracle space, LINK continues to have substantial long-term upside potential

face competition from more traditional index and reference rate providers. While Nazarov told me that he sees these information providers as collaborators rather than competitors, and would like to see them join the network, I wonder if they will try to plug directly into blockchain networks themselves rather than rely on a middleman (even a decentralized one). To give you a sense of the level of development, Nasdaq just launched its first crypto index, and the S&P 500 is rumored to be doing the same sometime this year. Nonetheless, Chainlink has made progress in incorporating price feeds from some exchanges such as Coinbase and Kraken, which adds credence to its stature.

All of that said, Chainlink has made enormous progress over the last few years. This article is just scratching the surface of how the Chainlink platform and ecosystem operates, and I will be following and reporting on more closely in future articles.

The Trade: Take 1% out of Algorand and put it into Chainlink.

CryptoAsset Core Portfolio

Coin/Token	Ticker	Recommended Date	Recommended Price	Recent Price	Allocation
Bitcoin	BTC	Sept. 28, 2018	\$6,675	\$48,955.00	80%
Ethereum	ETH	Jan. 9, 2019	\$151.17	\$1,569.05	15%
Algorand	ALGO	Jan. 26, 2021	\$0.56	\$1.08	4%
Chainlink	LINK	Feb. 25, 2021	\$26.27	\$26.27	1%

Data through February 25, 2021. Source: BraveNewCoin.com

CryptoAsset Core Portfolio Performance

	1 Month Return	Return Since March 5, 2019*
CryptoAsset Core Portfolio	76.7%	1,044.7%
Bitcoin Price	60.0%	1,151.46%
Ethereum Price	24.4%	1,059.41%

Data through February 25, 2021. *Start of portfolio weightings.

About The Editor

Steven Ehrlich is director of research for digital assets at Forbes. He recently was the social media/copy lead at Kraken, a cryptocurrency exchange based in the U.S. Prior to joining Kraken he served as chief operating officer at the Wall Street Blockchain Alliance (WSBA), a non-profit trade association dedicated to the comprehensive adoption of cryptocurrencies and blockchain technologies across global markets. Before joining the WSBA, he was the



lead associate within the emerging technologies practice at Spitzberg Partners, vice president/lead strategy analyst at Citi FinTech, and he served five years as a senior intelligence analyst at Booz Allen Hamilton supporting the U.S. Department of Defense. He has a B.S. in Business Administration from the Tepper School of Business at Carnegie Mellon University and a M.A. in International Affairs from Columbia University's School of International and Public Affairs.

Blockchain Equity Portfolio/ Visa And Mastercard, Well Positioned Incumbents

► Buy: Visa (V)

Market Cap: \$456.9 billion
Revenues (ttm): \$21.5 billion

Current Price: \$213.59
12-Month Range: \$133.93-\$220.53

► Buy: Mastercard (MA)

Market Cap: \$356.18 billion
Revenues (ttm): \$15.3 billion

Current Price: \$354.62
12-Month Range: \$199.99-\$368.79

This month I am adding **Visa (V)** and **Mastercard (MA)** to the **Blockchain Equity Portfolio**. You may remember that they were placed on the Watch List in [August 2020](#) but were held back from full inclusion because of concerns of how they were performing during the pandemic. For instance, they were highly vulnerable to the reduction of travel, business to business, and in-person payments that

we saw in 2020. This trend was reflected in each stock's performance, which returned a negative yield to investors over the last 12 months.

Conversely, two companies that make up large portions of the **Blockchain Equity Portfolio**, **PayPal** and **Square**, have each surged by 131% and 224% over the last year largely due to the shift towards digital payments and e-commerce brought

PayPal And Square Soared Over Last 12 Months, Visa And Mastercard Struggled



on by the pandemic, as well as their forays into crypto. **In fact, PayPal is up 50% since it was added to the portfolio in November and is the best performing asset among the top 20 in the S&P 500 over that time outside of Tesla.**

Square has surged by 64% since October, when we increased its weighting in the portfolio by 5%. Nevertheless, their success is shared by Visa and Mastercard because much of their transaction volume flows over these credit card company rails.

As an illustration of how different some fintech companies fared in 2020 over more legacy institutions, earlier this month PayPal passed Mastercard in market capitalization for the first time. It still has a way to go before topping Visa, but it is on track to catch it unless something changes.

Visa And Mastercard Are Poised To Rebound In 2021

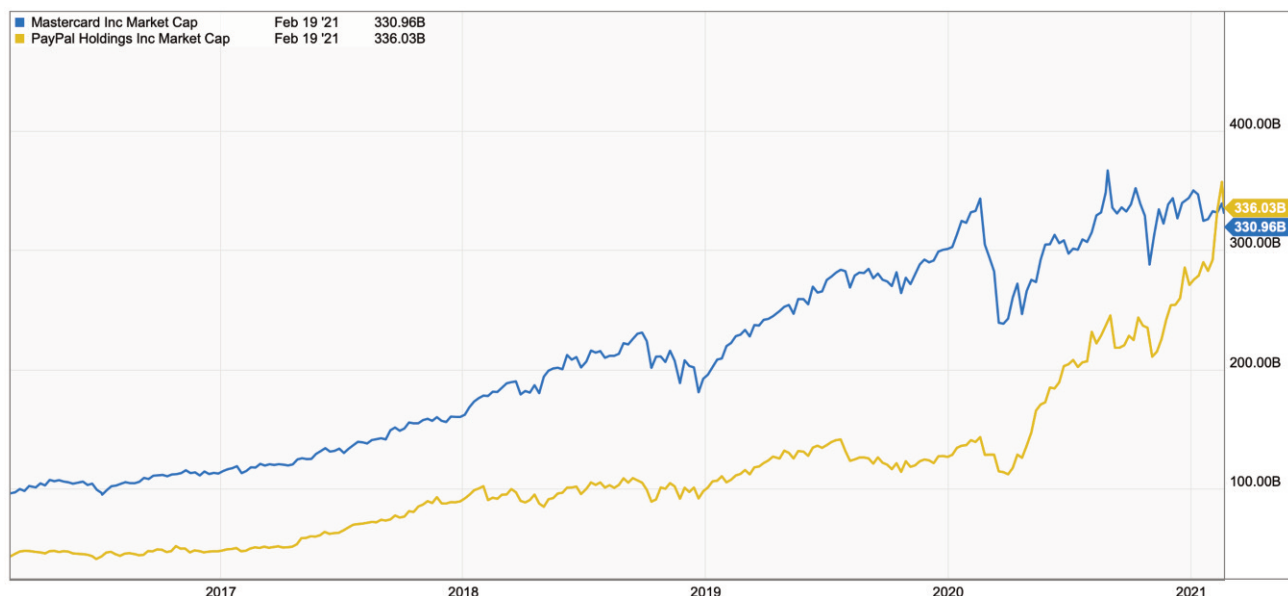
That said, over the last 12 months both card networks have continued to lay the groundwork for future growth by enhancing their international

presences, adding value-added services to support their core payment processing businesses, and striking important partnerships with emerging fintech companies. This work should help them recover.

Additionally, they have pursued crypto and blockchain initiatives with vigor as part of their innovation strategies. Visa partnered with dozens of crypto startups to let investors spend their holdings across the network and it has invested in core infrastructure providers such as the custodian Anchorage, which just received a banking charter from the Office of the Comptroller of the Currency. The firm is also taking steps to integrate stablecoins and central bank digital currencies into its network, and it is even open to integrating open blockchains into its “network of network” philosophy when the time is right. Most recently, Visa announced it plans to help banks roll out bitcoin and cryptocurrency buying and trading services with a Visa crypto software program.

Mastercard has been a bit slower than Visa when it comes to experimentation with crypto. Case

PayPal Passes Mastercard In Market Capitalization



in point, Mastercard fell off the Forbes Blockchain 50 list this year while Visa made the cut. Nonetheless, last quarter Mastercard CEO Michael Mielbach pledged to integrate digital currency payments on the network, and it is now being reported that the network will also let merchants accept crypto payments (meaning the merchants actually receive crypto as opposed to the funds being converted into fiat before being deposited in the receiver's account). This would be a major and unprecedented step in the industry.

Soup Or Salad? I'll Have Both

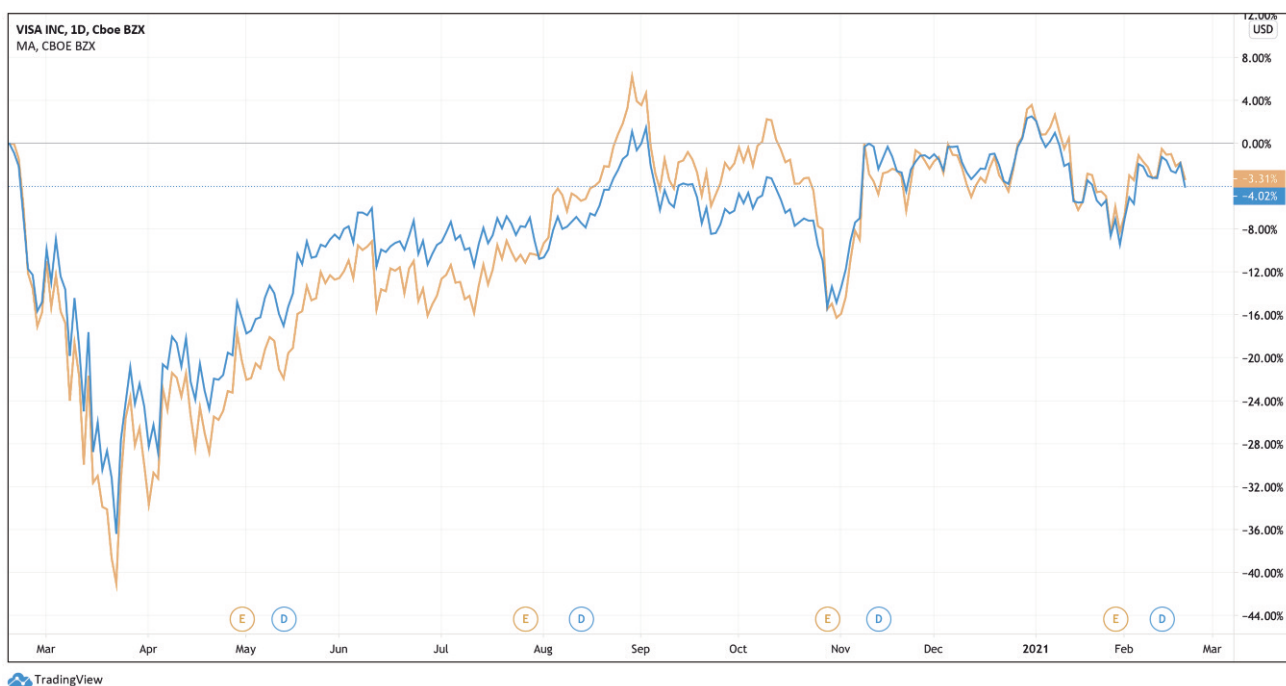
Although Mastercard has outperformed Visa over the past few years, the two stocks have mostly moved in lockstep for the last year.

This makes it difficult to choose between the two assets. In my research I spoke with two prominent network analysts, Lisa Ellis, partner and senior equity analyst at MoffettNathanson LLC and Sanjay

Sakhrani, managing director at KBW. They are both bullish on Visa and Mastercard despite their difficult 2020, which they see as strong recovery plays this year. There are many reasons for this confidence besides their likelihood to benefit greatly from an acceleration of travel in 2021 (which accounted for almost a quarter of each network's revenue pre-pandemic). For instance, Ellis told me that they have done a great job of moving beyond consumer payments into other channels that have not been digitized to the same extent such as B2B, remittance and B2C, etc.

Ellis was particularly bullish on Visa, though she does admit that they share more similarities than differences, believing that it has done a good job of leveraging fintechs and digital banks into its ecosystem through its push payments system Visa Direct (with push payments an individual initiates a transaction rather than the recipient initially requesting payment), which contributed 4% of

Visa And Mastercard's Performance Eerily Similar



Visa's volume in 2020 but is growing 60%-70% year on year. She pointed out that Mastercard has a similar service, but it has not seen the same level of adoption.

Sanjay Sokrani echoed a lot of the same sentiments, noting that KBW was bullish on the network stocks, saying that they were probably the highest ranked sub-sector that they have within the payments industry. He favors Mastercard, saying that it is the firm's number one idea for the year. His justification for this position is the fact that Mastercard is more exposed to cross-border payments and disproportionately indexed to credit cards (which are more profitable than debit cards where Visa is more popular). He further noted that Visa

modestly outperformed Mastercard during the pandemic due to a surge in the use of debit rails as people spent their stimulus checks, which may not continue as spending habits normalize as the global economy recovers.

The Trade: We are going to be making a few adjustments this month. First, we are selling 5% of our IBM stock and will split that allocation evenly between Visa and Mastercard. Second, we are going to increase our position in PayPal by 5%. To make room, we will sell our remaining stake at Oracle for a profit.

Blockchain Equity Portfolio

Company	Ticker	Recommended Date	Recommended Price	Recent Price	Allocation
Square	SQ	Sept. 28, 2018	\$99.01	\$226.89	25%
Alibaba	BABA	Sept. 28, 2018	\$164.76	\$240.07	10%
Amazon.com	AMZN	Oct. 31, 2018	\$1,598.01	\$3,057.16	10%
IBM	IBM	Oct. 31, 2018	\$115.43	\$122.44	10%
Microsoft	MSFT	Sept. 28, 2018	\$114.37	\$228.99	10%
PayPal	PYPL	Nov. 23, 2020	\$200.82	\$253.94	10%
Walmart	WMT	May 7, 2020	\$121.89	\$131.87	10%
Reality Shares Nasdaq NexGen ETF	BLCN	March 10, 2020	\$23.26	\$46.95	5%
Silvergate Bank	SI	Dec. 9, 2019	\$15.32	\$127.46	5%
Mastercard	MA	Feb. 25, 2021	\$354.62	\$354.62	2.5%
Visa	V	Feb. 25, 2021	\$213.59	\$213.59	2.5%

Data through February 25, 2021.

Blockchain Equity Portfolio Performance

	1 Month Return	Return Since April 5, 2019*
Blockchain Equity Portfolio	14.8%	108.6%
Dow Jones Industrial Average	1.9%	18.8%
S&P 500	1.7%	32.4%
Nasdaq	1.8%	65.3%
Reality Shares Nasdaq NexGen Economy ETF (BLCN)	16.2%	100.3%

Data through February 25, 2021. *Start of portfolio weightings.

IMPORTANT: The Blockchain Equity Portfolio is intended to provide a guide for investors seeking to gain equity exposure to companies likely to benefit from blockchain technology. Investors should recognize that most equities in this portfolio will not have blockchain as their primary driver for revenues or price appreciation, for that matter. The benefits of integrating blockchain technology may not be realized for many years. Of course, it is important to consider these stocks in the context of your current asset allocations as well as personal goals and risk tolerance.

Crypto Intelligence/ An interview With Polychain Capital Founder, Olaf Carlson-Wee

Polychain Capital founder Olaf Carlson-Wee became a poster boy of the initial coin offering (ICO) boom when he appeared on the cover of Forbes' July 2017 issue under the caption, "Craziest Bubble Ever." At the time, the crypto market was in the midst of an unprecedented climb that would see bitcoin approach \$20,000, a level that it would not revisit for another three years. Before breaking off on his own, Carlson-Wee was Coinbase's very first hire and ultimately led its risk management.

Fast forward to today, and the market is once again breaking records and Olaf's venture capital/hedge fund Polychain has more than \$4 billion in assets under management. However instead of ICOs, which were white hot in the crypto bubble of 2017, the new craze is decentralized finance (DeFi) applications, which are providing massive returns to investors despite limited usage beyond speculators. [For our report on Defi and yield farming please see our [September 2020 issue](#)]

Carlson-Wee's Polychain was one of the earliest investors in the DeFi space, counting many leading projects, such as Compound, Dharma, dYdX, 0x, as portfolio companies. I spoke with him to find out his takeaways from the ICO craze and whether he thought that history was going to repeat itself with DeFi. He also has some fascinating insight into decentralized governance structures and how DeFi platforms can use them to bootstrap traction and then ultimately scale. — Steven Ehrlich

Forbes: How would you articulate the Polychain thesis to a prospective investor?

Carlson-Wee: We like to be very early and long-term-oriented. Our goal is to invest in breakthrough technologies that will enable new types of human organization and behavior. It's no accident that all the things you see in the decentralized financial ecosystem are happening on top of ethereum, from capital coordination in the form of ICOs to decentralized financial primitives, like lending and trading to stablecoins and other types of synthetic assets. It is all due to low-level changes to ethereum, relative to bitcoin, namely its ability to write in solidity (an ethereum-native programming language) that allows for more complicated types of financial instructions. So, this is one type of enabling platform that can unlock new types of behavior. The other big brush

strokes category that we invest in are new applications that had not been previously possible. A lot of the time these new applications are also paired with a new human and capital structure that is also on the blockchain. These are called DAOs (decentralized autonomous organizations).

Forbes: Let's talk about the ICO boom in 2017. There was a famous bubble and you ended up on the cover of *Forbes*. Why do you think that prices rose so quickly and did you think that they were sustainable at the time?

Carlson-Wee: Keeping it in context, when I was on that cover, the headline was "Craziest Bubble Ever." The market value of cryptocurrency never went that low ever again. I think people have sort of famously misread the scale of things happening in cryptocurrency.



At the time, it felt to me pretty natural that the world was kind of catching up to a lot of the fundamental technology and infrastructure in crypto that had been developed between 2013 and 2016. A lot had happened in that time period, both in terms of the sophistication of businesses like Coinbase, which service retail users, as well as the more cutting edge stuff in the ethereum landscape. I do think that anytime you see a nascent area that's sort of global and grassroots, kind of like the internet, it grows in these really sudden bursts. This is how crypto has always been. I've been through several of these kind of run ups in price and media attention. But the prices in my mind are often not very correlated, if at all, with fundamental developments. In the 2013-2016 period so much was being built, and so many new users were coming into the system, yet the price kept going down.

That said, I do think crypto captured the popular imagination at that time in a way that I didn't expect. Ethereum was about two years old and was still really nascent. People didn't know what was going to be built here. A lot of projects that did ICOs, in a kind of theoretical sense, represent some of the most efficient human and capital coordination ever conceived. To combine capital into a pool that's worth, say hundreds of millions of dollars, over the course of a day is remarkable. So I always felt conceptually that it was a super interesting area.

But as the market got hot, you also saw a lot of people enter the space that maybe didn't understand what they were getting into. But that's also the complexity of being an investor in this area.

Forbes: Fast-forwarding a little bit, in your opinion what are the biggest technological advancements in crypto that you've seen?

Carlson-Wee: There are three pieces here. The simplest one is institutional infrastructure. Some very basic stuff, like custodians and the ability to store cryptocurrency at scale, did not exist in 2017.

“ You can now have lending agreements for millions of dollars between two people around the world who don't know each other's identities

Now, there's a relatively robust landscape of custodians out there that are sort of credible and have great security controls and access controls. The ability to have brokers that execute trades on your behalf really didn't exist.

Second, is this area of smart contracts, decentralized finance and decentralized autonomous organizations. That was effectively non-existent in 2017. Today the value held in the smart contracts on ethereum, surpassed \$40 billion. So in the scheme of all of finance, this is still a small number, but the growth rate is unbelievable. For perspective, at the beginning of 2020, so about a year ago, I'm pretty sure that number was at \$500 million. So it's grown by about 80 times in a year.

The third category is what I would call more like deep tech approaches to substantially increasing what developers can build on top of blockchain, and substantially increasing the kind of scalability of underlying blockchain. Some examples of these projects are things like polkadot, filecoin and dfinity, which were all investments we made in 2017. Two of those we've seen go live over the past about six months.

This is the other category that has really blossomed between 2017. During that time period we mostly had ethereum to build on top of. Having

more efficient platforms, and platforms that are more expressive so developers can write programs in many different programming languages, not just Solidity, or the ability to serve up files to the user, things like texts and images, aren't really possible on ethereum today.

Forbes: Let's dive into decentralized finance. What are the key differences between DeFi platforms and the ICOs from a few years ago.

Carlson-Wee: In short, products and users. I know that's a very simple answer. But, it took a lot of iteration. Some of the stuff happening in DeFi is pretty mind boggling. You can now have lending agreements for millions of dollars between two people around the world who don't know each other's identities. And this can be an agreement between a person and a computer, or a corporation and a computer, or a person in a corporation. There's no concept of identity or legal contract. And yet, you can have literally billions of dollars of financial contracts between these people.

Forbes: There was a 2020 survey from Crypto-Compare suggesting that DeFi platforms were overwhelmingly used for speculative purposes and to earn governance tokens. What will it take for DeFi to truly go mainstream?

Carlson-Wee: Two things there. To me, decentralization is a means to an end. The end is very high security guarantees that are ultimately technical properties of the system. Without decentralization, you can't have these platforms and assets and monies that aren't owned or operated by a central party. It's really about the security guarantees that are created through decentralization, much more than decentralization in itself being the goal for the end consumer. It's basically unlocking these new types of behavior through decentralization.

Regarding DeFi going mainstream, I would first say that today when we look at global financial infrastructure, it's all to enable the movement of money, and trading, lending, speculation and payments. It is neutral, in that all the various people that are interacting with those systems may be doing it for whatever specific reason they have in mind. It's not going to look and feel mainstream the way, for example, that Snapchat feels mainstream. But it's not to say it's not incredibly useful for average people. I'm sure that people have taken out loans on DeFi platforms to take a vacation to Hawaii. But because they're sort of a neutral financial infrastructure, it's a little bit hard to know.

Forbes: Now I want to get a little bit more into how these platforms are going to scale. Many DeFi platforms have used an approach known as the "fair launch" to more equitably distribute tokens to users than what was done during the ICO craze. Do you think this has been successful? And if so, how does a project move from this initial traction to mature growth?

Carlson-Wee: In startups, the idea of using capital to effectively bootstrap your growth rate in order to build network effects is an old one. It is the same concept as PayPal or Uber referrals. But very much like Uber and like PayPal, once you have robust network effects, you no longer need that user acquisition subsidy (referral payments or bonuses). So it's an excellent mechanism to accelerate growth; it doesn't in itself, make a good product or give that product market fit. That said, I do think that these DeFi systems have very strong network effects, such as liquidity. The ability to trade with low price slippage (meaning the trade executes close to the spot value of the asset), trade an asset for any other asset, take out a loan at a low interest rate, get yield on assets and grow in scalability with more people is very interesting.

Forbes: The SushiSwap vampire attack on Uniswap (when it surreptitiously siphoned hundreds of millions of dollars from Uniswap) highlighted a challenge many platforms face when it comes to placing a moat around their projects to protect their customer base. What were your takeaways from the saga and what advice would you give to prevent something similar from happening?

Carlson-Wee: This is one of these beautiful properties of the system. Anybody in the world can view the code, fork the code and remix the application logic. So I do think it's an open question, because it's still very early days, around how entrepreneurs can attempt to basically build moats of some kind, in this open source, permissionless context.

Forbes: A lot of attention has been placed on governance issues and protocols within DeFi platforms, but layer 1 blockchains have been experimenting with decentralized governance for years. What lessons can DeFi applications learn from their layer 1 brethren?

Carlson-Wee: I think what we've seen empirically is just as these systems scale, it's harder and harder to coordinate upgrades, which at a high level, kind of makes sense. It's harder to coordinate 100 million users than it is to coordinate 1,000,000 than it is to coordinate 10,000. I've been very interested in the formal upgrade processes, where you actually utilize, in some sense, the consensus logic that gets you the security guarantees and the systems in order to implement protocol level upgrades. That was sort of pioneered by tezos, and has now been expanded upon by other systems, like polkadot. I think ironically, in many ways, centralized hierarchical development teams have been faster at shipping peer to peer software than this sort of loose, open source, contributor, environment. A lot of that just has to do with the ability to coordinate these massive global systems with many disparate actors with different incentives

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around what changes to make. That said, it's hard for corporations to innovate the bigger they get. Whereas for startups, you can pivot and iterate on the product quickly. At a smaller scale it's just easier to be nimble, and I don't think blockchain systems are really an exception to that. I do think there will be more experimentation there, and that is a promising way to get coordination at higher scale.

Forbes: Finally, I'm interested in your thoughts on whether or not ethereum is going to be the dominant DeFi platform in the long run. If it's not, which among its potential competitors is best positioned to unseat them?

Carlson-Wee: First, I have never seen so many people building on something, as I have seen people building on ethereum. Second, this is not a zero sum kind of equation, much in the way that ethereum expanded on what was possible in the crypto universe; it did not destroy or replace bitcoin. I don't think anything is going to replace ethereum or steal its market share or anything like that. It's more that I think some of these new systems will enable new types of behavior that are uniquely enabled by the properties of that system, relative to ethereum.

Forbes: Thank you. ■

Building Blocks/ In Search Of The Price Of Bitcoin?

The world is fixated on the price of bitcoin, clearly because of its breathtaking rise in the last year or so. The problem is, if you look closely, you will notice that different exchanges quote different prices for **bitcoin** (BTC) at the same time. Take a look below: *these bitcoin prices are from 3:30 p.m. EST on February 15.*

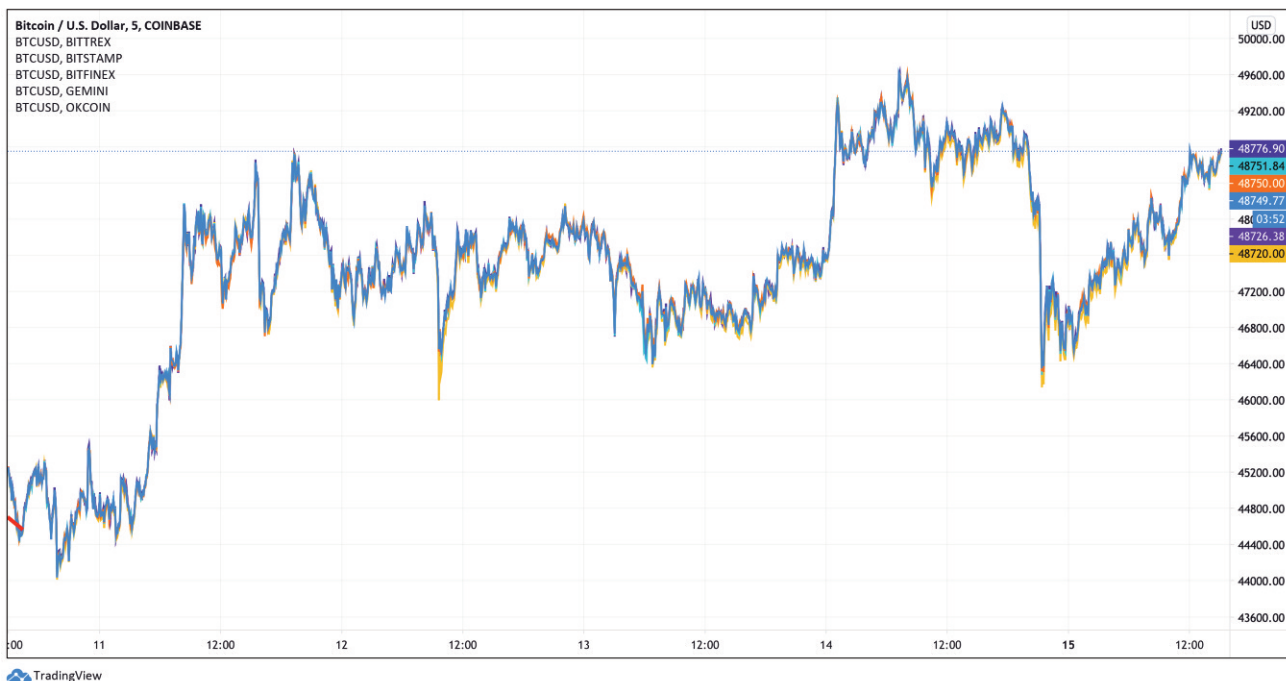
Exchange (base country)	Bitcoin Price	% Difference From Coinbase Price
Coinbase (USA)	\$48,760	-
Kraken (USA)	\$48,746	-0.03%
Binance (Unknown)	\$48,698	-0.13%
Bithumb (South Korea)	\$47,571	-2.44%
Bitso (Mexico)	\$48,731	-0.06%
BitOasis (UAE)	\$48,244	-1.06%
KuCoin (Singapore)	\$48,667	-0.19%
OKEx (Malta)	\$48,612	-0.30%
Uniswap (DEX)	\$48,791	0.06%

Why Are Prices Different?

Like anything else, the price of bitcoin is a function of its supply and demand. In a frictionless world where everybody has the exact same information at the same time and all liquidity can be centrally-pooled, the two would meet at a singular equilibrium. However, the bitcoin (or any other crypto) market is rife with sources of friction.

For instance, order book depth and liquidity can and does vary between exchanges and even trading pairs on a single exchange. If a particular exchange has shallow depth, it cannot absorb large orders without experiencing significant price slippage. If you look at the table to the left you will notice that if you were able to make frictionless trades, you might be able to make 2% buying bitcoin on Bithumb and selling on Coinbase.

U.S. Exchanges Have Different BTC Prices



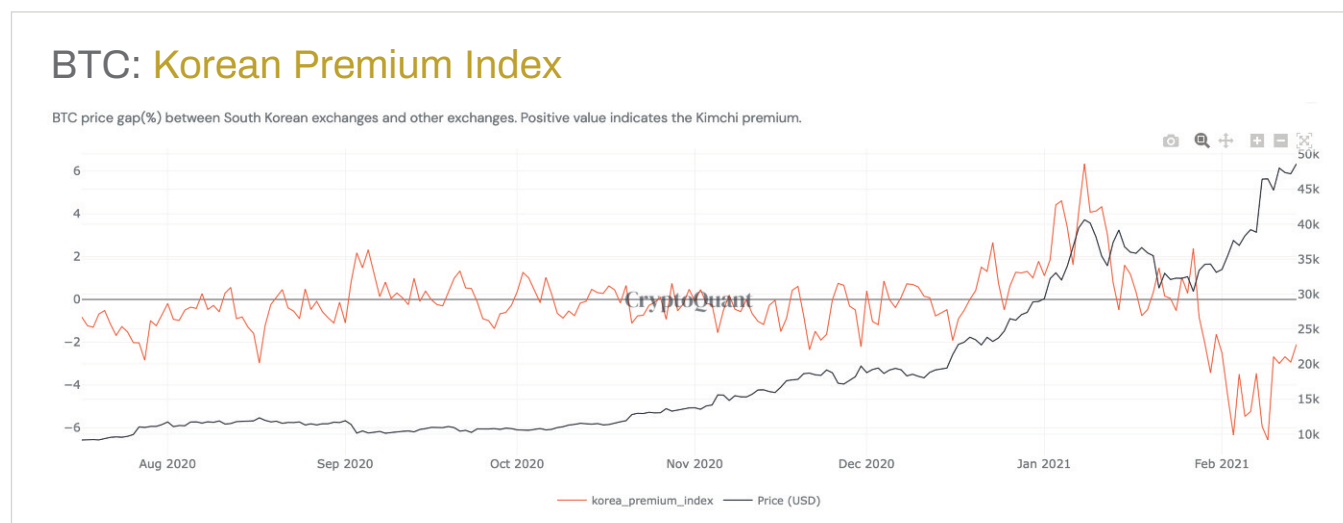
Despite its growth over the past few years, the crypto market remains far more fragmented than the traditional financial sector. This makes it difficult (but not impossible) for arbitrageurs to move money around the world and take advantage of price discrepancies, which would ultimately bring prices back inline. One of the best examples of this fact is the “Kimchi Premium,” which represents the difference in price between bitcoin on Korean exchanges and the rest of the world, which tends to be a bit less correlated with the rest of the market as a result of relatively limited investment opportunities for the retail traders in the country. Historically it has seen some substantial volatility. For instance, during the height of the ICO craze back in 2017 the premium reached 40%. However, if you look at the chart today it has actually turned negative.

Additionally, sometimes exchanges become first movers (in either direction) due to specific market positioning. For instance, Coinbase has become a destination of choice for institutional buyers. Therefore, crypto watchers (bitcoin in particular) have started to pay special attention to movements in the price on Coinbase, as it can signal whether institutions are buying or selling the asset. These observations can provide directional guidance to traders. In fact, it has become popular to track the

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difference in price between Coinbase and Binance (which is synonymous with retail traders). Based on this chart, you can see that it has recently turned negative, suggesting that bitcoin could be facing some downward pressure. CryptoQuant calls it the Coinbase Premium Index. That said, this is just the start as these observations come from directly looking at prices on exchanges.

Non-traders will get a different number when they search on Google for the price, and adding further to the complexity is the fact that many indexes and reference rates have their own unique



BTC: Coinbase Premium Index

The gap between Coinbase Pro price(USD pair) and Binance price(USDT pair) which indicates a strong spot buying pressure from Coinbase when the premium is high.



ways of calculating the price that underline the price of various exchange-traded products and other financial products.

Finally, right now I am only discussing prices denominated in USD or USDT. There will be additional variance if we start discussing other foreign currencies or crypto to crypto trading pairs!

Why It Matters

Although there will likely never be a singular price of bitcoin because markets inevitably have

friction, just like there is no one price of gold, it is important to keep working towards a convergence of market prices. Wide discrepancies in prices are a symptom of inefficient and immature markets. The more evenly-distributed liquidity is in the world, the less susceptible it will be to allegations of fraud and manipulation, which will create a more equal playing field for all investors. This could help get a bitcoin ETF over the finish line in the U.S. A little variance is manageable, a lot needs to be reduced. ■

Worth Reading

Robinhood Average Monthly Crypto Sign-Ups Jump To 3M Amid GameStop Saga
February 26, 2021, CoinDesk, Sebastian Sinclair

Coinbase Cofounders And Investors Poised To Rake In Tens Of Billions From IPO
February 25, 2021, Forbes, Jeff Kauflin

Digital Artwork Record-Breaking Sale On Winklevoss-Owned Marketplace
February 25, 2021, CoinDesk, Sebastian Sinclair

Congress Seeks Answers On Crypto Anonymity In Domestic Terrorist Financing
February 25, 2021, The Block, Aislinn Keely

Coinbase's Financials Are Now Public Ahead Of Stock Market Listing
February 25, 2021, CoinDesk, Nikhilesh De

DEX Monthly Volume Figures Reach New High For February
February 24, 2021, The Block, Michael McSweeney

How Bepple Put Digital Art On The Map—And Then Catalyzed Its Market
February 16, 2021, Forbes, Jesse Damiani

The 10 Most Important Scientific White Papers In Cryptocurrency Development
February 13, 2021, Forbes, Nina Bambysheva

Morgan Stanley May Bet On Bitcoin In \$150 Billion Investment Arm
February 13, 2021, Bloomberg, Sridhar Natarajan

Forbes Blockchain 50 2021

February 2, 2021, Forbes, Michael del Castillo, Janet Novack, Matt Schiffrin