



Bitcoin and Crypto Hype: Is It Real?

Crypto hype continues to grow with stories littered across news and social media, and investments from famed investors adding to the buzz. Yet the space remains in its infancy, with many characterizing the current environment as something akin to the Wild West.

One thing that has become clear – the rapid pace of crypto’s evolution is matched only by the diversity of opinion of its sustainability and substance. Warren Buffett of Berkshire Hathaway has steered clear, describing cryptocurrencies as “rat poison” while “crypto insiders” and other supporters have provided cautionary warnings. Fred Eshram, a co-founder of Coinbase and general partner at Paradigm, a crypto-focused venture firm recently noted that he expects 90% of NFTs (Non-Fungible Tokens – more on this later) to be of little to no value in three to five years, similar to the vast majority of websites in the early 1990s.

In response to growing client inquiry stemming from the increased coverage and the disparate opinions of cryptocurrencies, we are providing this survey of the crypto landscape without diving too deeply into the technical elements. We also highlight a few use cases that are most interesting to us. First, we will review the basic concepts of blockchain and Bitcoin as well as the evolving debate on Bitcoin. Then, we dive a bit deeper into the concept referred to as “Web 3.0” as we believe the crypto ecosystem may be essential to unlocking a new digital future. Ethereum, DeFi, tokens and Non-Fungible Tokens (NFTs) all serve a role in this Web 3.0 blueprint. For those inclined to take an even closer look, we enclosed a curated list of links in this report and additional readings at the end of this report.

At Gresham, we take a more neutral view, recognizing the potentially transformative impact of blockchain technology while understanding that many “experiments” in this domain will eventually be worthless. As a result, we examine crypto through a venture capital investment lens where most of these endeavors will fail but a small number could be incredibly valuable and highly disruptive to traditional businesses.

Investor Challenges

Beyond the high failure rate that has historically accompanied venture-like businesses, crypto-related investments pose a number of challenges for investors. One challenge is the extreme volatility of these assets, as they are traded 24/7 across the globe by the general public. In October, the first Bitcoin ETF (BITO) began trading on the NYSE, marking a partial victory for Bitcoin’s broader adoption but likely exacerbating this problematic volatility. History suggests that investors who do not understand the speculative nature of volatile investments are likely to suffer significant losses.

The evolving regulatory landscape poses an additional challenge. At best, regulations are racing to catch up, and at worst, they continue to fall further behind. In the U.S., the new Bitcoin ETF is surely a win for crypto enthusiasts. However, Gary Gensler, the Securities & Exchange Commission (SEC) Chair and someone considered knowledgeable about the crypto universe, [recently reiterated](#) his views on the need to regulate crypto exchanges and stablecoins. Know Your Customer (KYC) issues also need to be resolved since Bitcoin and

other crypto assets have been criticized historically for facilitating criminal enterprises and the dark web. However, one silver lining is that law enforcement is getting better at [using blockchain technology against criminal attempts](#), and the crypto community is becoming more flexible in creating KYC-enforced silos as alternatives. For instance, Aave, the largest crypto lending protocol, is planning to launch Aave Pro, which will operate segregated permissioned pools of “whitelisted” users that have satisfied KYC requirements. Such KYC-enabled protocols might allow for regulated institutional participation and could lead to another important leap for broader adoption.

Blockchain

As Chris Dixon from a16z (a.k.a. Andreessen Horowitz), a venture capital fund we respect and invest with, pointed out, there is a difference between [“doing old things better”](#) and [“doing brand new things”](#). Most investors tend to focus more on the former because it is easier to understand and to achieve, but it is the latter that has the greater potential to shift paradigms and change lives. The internet provides a good example of such a societal paradigm shift. Today, we find ourselves surrounded by an internet-native ecosystem comprised of social networks, e-commerce, and online gaming – none of which existed before the internet was invented just a few decades ago. Enthusiasts argue that blockchain, just like the internet, will again redefine our world.

Blockchain is a technology comprised of a digital ledger, a community, and a shared protocol. Information is recorded on the digital ledger and the ledger is then distributed to all participants through a shared network. A new entry to the ledger, such as a transaction, is registered when it receives a majority vote among all voting participants based on pre-defined set of rules, and a new block is added to the chain (hence the name “blockchain”) to permanently record the entry. The resulting ledger is then re-distributed and duplicated across all participants in preparation for the next transaction. While the intended function of the blockchain could differ, the voting mechanism will always require participants to earn the voting rights (more on this later).

Bitcoin

Let’s start with the first blockchain ever created – Bitcoin. The story began with a [nine-page white paper](#) published online in 2008 by Satoshi Nakamoto, the father of Bitcoin. (Fun fact: Satoshi’s real identity remains unknown to this day as well as the fortune he or she likely made). Satoshi envisioned Bitcoin to be a peer-to-peer digital currency and proposed a new technology, blockchain, to achieve digital scarcity and security for Bitcoin. Digital scarcity means one cannot freely copy and paste to create a new Bitcoin the same way we make a copy of a PDF or JPEG. Instead, Bitcoin is created through “mining.” Participants compete by constantly running their computers to solve mathematical problems (i.e., “proof-of-work”), and whoever solves the problem first is rewarded with Bitcoins issued by the system. This activity is called Bitcoin mining. Every time a new problem is solved, a new block is created, allowing new transactions to be registered after passing a majority vote. Something that may be counterintuitive but very important to understand is that Bitcoin is designed to be inefficient with the proof-of-work mechanism, but it is not a waste of computing power. In fact, Bitcoin miners are also the protectors of the Bitcoin network as it is extremely difficult and uneconomic for attackers to outnumber the computing power of all other miners – remember that only those who have invested the computational work can participate in voting.

For its supporters, Bitcoin’s magic resides in its simple and powerful proposition – a secure, decentralized, and immutable digital currency free from government control. Unlike fiat money, which by definition is issued by sovereign governments, Bitcoin’s issuance is controlled by code and therefore free from any human intervention. All rules are immutable; there will be only 21 million Bitcoins issued – ever. New Bitcoins are issued roughly every 10 minutes and the rate of issuance is roughly halved every four years. As the network scales and Bitcoin’s value appreciates, any malicious attempt will become increasingly costly and difficult to conduct, securing the network even further. This in turn adds to the scarcity value of Bitcoin and forms a virtuous, self-reinforcing loop. This is in stark contrast to governments who can issue, and hence debase, their fiat currency whenever they want to fund their spending.

The adoption of Bitcoin continues unabated, with a market cap today over \$1 trillion and large-scale Bitcoin mining operations all over the world. For example, the biggest Bitcoin mine in the U.S. (Whinstone, located in Rockdale, Texas) can host 90,000 miner machines and will consume as much as 750 megawatts of electricity when it reaches full capacity – that is enough to power 150,000 homes in Texas during peak periods of demand.

Debate over Bitcoin

Rightly or wrongly, people often compare Bitcoin to gold. Both enjoy scarcity value due to finite supply and a lack of governance by a centralized entity. Gold has the advantage of history, having been a store of value for over 5,000 years and tested through numerous economic cycles. Bitcoin, on the other hand, has earned the nickname of “digital gold” for being digitized, easily divisible, and less subject to confiscation or fraud. Michael Saylor, CEO of MicroStrategy and a leading voice in the Bitcoin community, famously invested cash on the company’s balance sheet into Bitcoin and aggressively claimed that “[gold is dead.](#)” While this view may be extreme, Bitcoin certainly has the potential to become an alternative store of value and thereby challenge gold’s historical reign in this regard.

Conversely, Nouriel Roubini, a professor of economics at NYU, articulated numerous concerns over Bitcoin in a recent [report published by Goldman Sachs](#). First, unlike bonds or stocks, Bitcoin does not generate cash flow or dividend income, and therefore has no intrinsic value. In addition, compared to fiat money, Bitcoin is slow in processing transactions (merely seven transactions per second). Moreover, unlike gold, Bitcoin’s price is extremely volatile which some say undermines its reliability as a store of value. “It is highly speculative,” [said Bill Ackman](#) in a recent webinar. “It is only worth what someone else will buy it from you for.”

Bitcoin supporters dispute the concern over price volatility as a temporary phenomenon, pointing out that Bitcoin is still early in its adoption cycle with an immature ecosystem. As to the fair value of Bitcoin, it may evolve into a “social truth,” where once enough people believe there is value in Bitcoin, it should be considered valuable. The concept is not dissimilar to traditional collectible assets like gold, art, or antique cars. Some might even say this same concept holds for fiat currency like the U.S. dollar ever since its explicit gold-backing was eliminated. Many in the Bitcoin community argue that it has already reached critical mass in terms of believers. After all, Bitcoin does have a unique proposition thanks to the features of digital scarcity, security, and decentralization, among other attributes.

The impact from government regulation is mixed globally. China used to host close to [70% of Bitcoin mining activities](#), but recently decided to [outlaw all crypto transactions and mining](#)

[operations](#), an action that is not surprising especially for a government like China that does not want to see greater adoption of a non-state currency alternative. At the other end of the spectrum, El Salvador placed itself under the spotlight as the first country to [adopt Bitcoin as legal tender](#) (i.e., recognizing Bitcoin as a legal foreign currency) in an attempt to move past the country's history of currency squeezes against the U.S. dollar and to allow the 70% of Salvadorans who are unbanked to leapfrog into mobile-based digital finance. We do not know which camp will have the upper hand, but we also should not ignore the fact that Bitcoin is attempting to challenge the U.S. dollar as an alternative medium of exchange, source of liquidity, and store of value.

Web 3.0

While Bitcoin is probably the most widely known blockchain created thus far, the endgame of blockchain is likely to evolve far beyond this single cryptocurrency. The internet has redefined the way information is distributed and communicated, and the types of information on the internet keep expanding, from simple text to pictures and videos. Blockchain is now adding one more layer – “value” and “digital ownership” – to the scope of information that lives on the internet. This has the potential to liberate more innovative power and permanently shift the way in which value is created and distributed.

Let's take a step back first. Since the internet was invented in 1983, it has gone through two stages of evolution. In the first era, or Web 1.0, the internet was mostly comprised of web pages with the simple goal of bringing information online. This early read-only version of the internet was based on open protocols, such as Hypertext Transfer Protocol (HTTP), that were accepted and available to the whole community. In other words, the internet started off as a decentralized network. Gradually the internet evolved into Web 2.0 in the mid-2000s. Users could not only access information but also create information on the internet, making the communication two-way and dynamic. Tech companies such as Google, Apple, Facebook, and Amazon provided critical software and services needed to improve digital efficiency and expand the functionality of the internet.

As these big tech firms scaled, however, their relationships with users and third-party partners evolved from win-win to zero-sum. When growth from the initial expansion stage plateaued, the natural way for these big tech platforms to keep growing was to extract more economic value from users (such as abusing private user data) and third-party providers (such as charging high commission rates or changing rules to hold back innovative challengers). Cases like the Epic Games vs. Apple lawsuit in the U.S. and the recent anti-monopoly regulations by the Chinese government directed towards Alibaba evidence the inherent weakness in a centralized Web 2.0 system where aversion to monopolistic control tends to limit future growth and innovation. The question remains as to how to rebalance the concentration of power from a handful of monopolistic or oligopolistic companies.

Some believers suggest that crypto might be a solution. Crypto networks, like the original internet design, are based on open protocols that are community governed where economic value accrues to users, developers, and other network participants in the form of crypto assets. Both the ownership and control are returned from the firm grip of these large corporates to the general community. If successful, Web 3.0 will marry the decentralized feature of Web 1.0 with the sophisticated functionality of Web 2.0. Startups and creators, while still enjoying an advanced infrastructure, will have more incentives to grow their businesses without worrying about the unilateral pricing power or unreliable policies from

centralized platforms. Users can enjoy direct rewards for their participation instead of having value accrue to behemoth for-profit entities. We are in the early innings of such a transition with many unsolved problems ahead, yet the emerging use cases as highlighted below have made this concept quite intriguing.

Ethereum

Ethereum went live in 2015 and is now the second most popular blockchain in terms of market cap. While Bitcoin's blockchain is closed-loop, meaning the sole purpose of the Bitcoin blockchain is to support its own cryptocurrency, Ethereum is the exact opposite. The Ethereum blockchain's main purpose is to serve as infrastructure to host other software, and its native cryptocurrency, ETH, is designed to facilitate that role similar to gas for a car.

In Web 2.0, software is built on platforms like Amazon Web Services (AWS) on a paid subscription basis. In Web 3.0, Ethereum essentially replaces the likes of AWS to be a "Layer-1" blockchain where other software can "stack" on it like LEGO blocks. The founder of Ethereum, Vitalik Buterin, gave a [25-minute overview](#) in 2016 in which he compared Ethereum to a smartphone that could host all kinds of applications. Five years later, Ethereum is home to hundreds of software applications with many new ones in the pipeline.

These software applications are also called "smart contracts" or "decentralized applications (dApps)." What makes these applications uniquely interesting is that as soon as a smart contract goes live, it is theoretically unbreakable. This is because all rules are written into code upfront and automatically implemented by the Ethereum network. This self-reinforcement feature is a powerful concept – as long as the Ethereum blockchain stays intact and there is no error in coding, execution of smart contracts is guaranteed once the pre-set conditions are met. This cleverly eliminates any counterparty risk and therefore the necessity of third-party administration. In dApps, one no longer needs banks, custodians, courts, or any other third-party intermediaries to enforce a contract. In crypto-speak it is "trustless" – meaning its ongoing function doesn't require us to place trust into fallible individuals or institutions that can change the rules down the road.

One type of dApp that has gained popularity is decentralized financing (DeFi). It aims to fulfill finance functions – trading, payment, and borrowing and lending – in a trustless manner, thereby disintermediating traditional financial institutions. Decentralized exchanges like Uniswap and dYdX have seen days with higher trading volume than Coinbase, the most widely recognized company that trades crypto assets. Valora by Celo is a blockchain-based mobile wallet that is tied to a person's phone number allowing someone to send and receive crypto assets as easily as sending a text. New DeFi projects like these have proliferated in the past few years. Despite controversies regarding safety, compliance, and beginner-friendliness, DeFi has an undeniable edge on efficiency. For example, Uniswap is run autonomously by some 500 lines of code loosely maintained by just a dozen developers whereas Coinbase, its centralized rival with comparable volume to Uniswap, has 1,700+ employees. Depending on the level of regulation, DeFi may advance the disruption of finance. Over the last decade, fintech solutions have added a tech-enabled, user-friendly layer to the traditional finance system, but DeFi may be able to unroot the entire core and build an alternative system from scratch.

Despite the rapid success of dApps and DeFi, Ethereum has been held back by its own success. Network congestion driven by high demand has pushed Ethereum towards a

choking point in terms of scalability. Transaction fees (called “gas fees” and paid in ETH) have soared, increasing the toll on users and developers. Competing layer-1 blockchains like Solana, PolkaDot, and Cardano are gaining market share as users become tired of the long lead time and high gas fees associated with the Ethereum network. To address this issue, Vitalik gave an [overview](#) of how Ethereum is upgrading itself to Eth 2.0. We will not go into the details of “proof of stake” or “EIP-1559” at this time, but the key takeaway is that the next two years will be crucial for Ethereum, and its migration will be a significant undertaking. Otherwise, Ethereum will risk being supplanted by a competing network.

Tokens

Cryptocurrencies and tokens are both crypto-based assets. The most obvious difference is that cryptocurrencies like Bitcoin and ETH have their own blockchains, while tokens are a proof of ownership of assets built on these blockchains.

There are many types of tokens. Governance tokens of dApps function similarly to equity shares of a public company, representing voting rights and economic shares of the underlying business. Contrary to a Board of Directors, however, tokens introduce a new governance structure where all token holders participate in every decision. In the “DeFi summer” of 2020, a few DeFi apps issued tokens to attract early users and found a fast track from startup to unicorn. Instead of going through the normal path of raising rounds of venture capital money and then going public through IPO, these DeFi apps turned early users into angel investors via token rewards.

To provide some context for what this means, consider this example. If Uber were to launch today, rather than providing cash incentives to its drivers, it could instead issue shares of equity in the form of tokens. Drivers could sell the tokens for cash or keep them in anticipation of future appreciation. Uber could still grow into a multi-billion market cap entity, but instead of trading its stocks on the NYSE after years of growth, Uber would have its tokens listed on all crypto exchanges from day one.

Today, one can essentially “tokenize” anything. For example, traditional financial assets like stocks and bonds can be synthesized and re-sliced into tokens that are traded on blockchains. And utility tokens are used as vouchers to pay for services such as cloud storage space. In its early stages, tokenization is a mixed bag of opportunities and risks. Without regulators like the SEC setting the standards on proper disclosure and future obligations, investors are on their own to decipher the risks involved in these investments. Given tokens’ close resemblance to securities, stricter regulation is likely needed to eliminate fraudulent activity and protect retail investors. The long-term bull case, if there is one, will reveal itself when the regulatory ambiguities are resolved.

NFTs

You may have heard of NBA Top Shot or noticed someone’s Twitter profile pictures featuring a Bored Ape avatar. If not, you may have read that the digital art “Everydays: The First 5000 Days” sold for \$69 million or the pixel art CryptoPunks auctioned at elite auction houses like Sotheby’s and Christie’s. Non-Fungible tokens (“NFTs”) have gone mainstream recently at prices that are shocking to traditional collectors and investors. Many dismiss NFTs as digital toys. But then why are people spending millions of dollars on them?

Similar to DeFi tokens, NFTs represent digital ownership, but these types of assets are unique and hence “non-fungible.” Each piece of a digital asset is linked to a unique marker that proves its authenticity, verifiable on blockchain. The most immediate application is digital collectibles, the value of which is highly dependent on the appeal to collectors. Someday, if not now, people may accept a new norm that owning a 24x24 pixel image of CryptoPunk is as cool as wearing a Rolex or driving a Lamborghini.

This concept has also gained traction in the creator community for music, art, gaming, and publishing because NFTs allow their owners to earn royalties. Anyone can record a song, mint it into an NFT, and earn royalties from listeners, skipping the steps of publishing an album and getting onto music platforms such as Apple Music or Spotify. This evolution has opened the door to a long tail of supply from lesser-known content providers while providing users an easier way to pay.

Moreover, if [Mark Cuban](#) is right, what will make NFTs a hundred-billion-dollar industry is the next stage of adoption, when it reduces the friction of business transactions like insurance, land deeds, or legal documents. Take traditional real estate transactions as one example. Currently the transfer of property ownership is notoriously labor-intensive and expensive thanks to the paperwork with lawyers, brokers, bankers, insurance companies, notary agents, title companies, etc. If homeownership can be digitized into an NFT blockchain that combines the property deeds along with other necessary paperwork, an NFT can represent the legal proof of ownership for a particular property. And since NFTs are blockchain-based, a transfer of deed can be written into a smart contract such that once the transaction conditions are met (e.g., final walkthrough completed, documents signed, money sent), the chain of ownership passes on to the buyer automatically.

Conclusion

Bitcoin started as a simple idea in Satoshi’s head 13 years ago and now it is worth over a trillion dollars in market cap. Ethereum has opened the door to Web 3.0 and DeFi may disrupt the entire finance industry. The crypto landscape is constantly shifting and blockchain’s real value is almost impossible to assess. Despite the skepticism and confusion, this might be one of the most intriguing social and financial experiments of our lifetime.

Our goal is not to make an investment recommendation, but we do want to monitor the disruptive – and long-term positive – potential of blockchain technology. The dot-com bubble in the late 1990s did not stop the internet from changing our world, despite numerous failures and costly missteps along the way, and blockchain could have the potential to represent another generational paradigm shift.

Gresham continues to view investment in the crypto area with interest and caution and we have several positions through a subset of existing managers. We continue to view investments like these as venture-like in the sense that many or most of these investments will likely prove to be worthless, but a select few have the potential to be transformative with enterprise values to match.

Content List

Overview of Crypto Space

Source: A16Z – Crypto, an Oral Essay

<https://a16z.com/2021/04/17/crypto-an-oral-essay/>

Overview of Bitcoin

Source: Cryptopia – Bitcoin, And the Future of the Internet

<https://www.amazon.com/Cryptopia-Bitcoin-Blockchains-Future-Internet/dp/B08HSNB63W>

Source: Inside the largest Bitcoin Mine in the U.S.

<https://youtu.be/x9J0NdV0u9k>

Debate over Bitcoin

Source: Michael Saylor's view on digital gold

<https://www.youtube.com/watch?v=gSc6BC1Kh2g>

Source: Goldman Sachs report: Crypto, A New Asset Class

<https://www.goldmansachs.com/insights/pages/crypto-a-new-asset-class-f/report.pdf>

Source: Lyn Alden's article on network effect

<https://www.lynalden.com/bitcoins-network-effect/>

Web 3.0

Source: a16z: The Web 3 Reading List

<https://a16z.com/wp-content/uploads/2021/10/The-web3-Reading-List.pdf>

Ethereum

Source: Vitalik Buterin's interviews

Ethereum in 25 minutes: <https://www.youtube.com/watch?v=66SaEDzImP4>

Proof of Stake vs Proof of Work: https://www.youtube.com/watch?v=Dbe_BE8fVJ8

Defi, Token, and NFT

Source: Mark Cuban interview (two alternatives, one w/ Unchained, one w/ Bankless)

<https://www.youtube.com/watch?v=HJ6wfSiXQ7c>

<https://www.youtube.com/watch?v=l3ptz8qvZcg>

No representation or warranty expressed or implied is made as to the accuracy or completeness of the information contained herein. It is provided for informational purposes only and does not constitute an offer to purchase any securities or other financial instrument. Further, this presentation is not an offer to purchase the securities of any company described herein. Nothing contained herein should be relied upon as a promise or representation of future performance or as being intended to be investment advice.