




PANTERA

EXCERPTS FROM OUR BLOCKCHAIN LETTERS

BEYOND BITCOIN








PROTOCOL EVOLUTION

Blockchain protocols have evolved over the past decade. Next generation blockchains allow for programmatic control over transactions. This has led to the proliferation of smart contracts built on top of layer-1 blockchains like Ethereum, Polkadot, and Solana.

Protocol	Enables	Breakthrough
 Bitcoin	Global transactions & store-of-value	Decentralized, trustless value transfer. Solved the double spend problem
 Ethereum	Smart contracts, token issuance	Self-enforcing contracts that allow for programmatic control over financial transactions
 Polkadot	Blockchain interoperability & enhanced scalability	Cross-blockchain transfers of any type of asset. Scalability enhancements

A MULTI-CHAIN ECOSYSTEM

Cross-chain infrastructure allows for a diverse ecosystem of blockchains with distinct characteristics. Certain blockchains make tradeoffs to optimize for things like speed, transaction throughput, decentralization, and more. We believe that the future is a multi-chain universe.

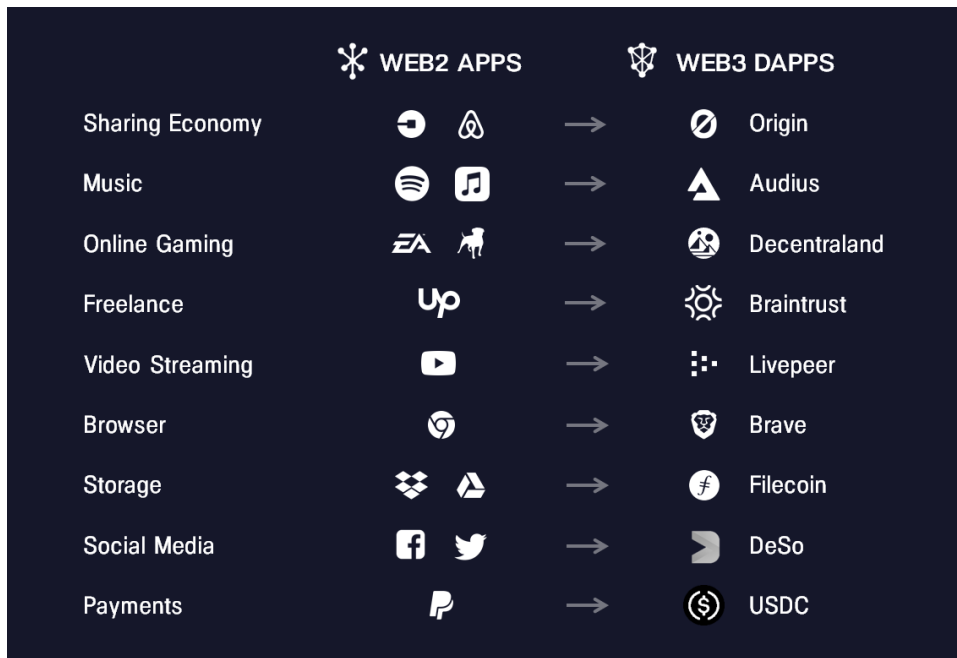
	 Bitcoin	 Ethereum	 Terra	 Solana	 NEAR	 Polkadot	 Avalanche
Launch	Jan 2009	Jul 2015	Jul 2019	Mar 2020	Apr 2020	May 2020	Sep 2020
Focus	Store-of-value	Smart contracts	Stablecoins	Smart contracts	Smart contracts	Interoperability	Smart contracts
Strengths	First of its kind, very decentralized, most widely known	First of its kind, decentralized, most developers	Developer friendly, growing ecosystem of dApps	Fast transactions, low fees, strong community	High throughput via sharding, developer friendly tools	Parachains, high throughput, strong founders	Fast transaction speeds, high throughput
Weaknesses/Tradeoffs	Energy intensive, low throughput	Low throughput, high transaction costs	Regulatory uncertainty around stablecoins	Less decentralized, occasional network outages	Strong competition, fewer applications developed	Early development, limited parachain availability	Late start relative to competitors, expensive to be a validator



WEB3

Web3 is the next evolution of the internet where users control their own data and platforms are owned by the community. Decentralized applications offer the ability to remove rent-seeking incumbents that extract value from both merchants and consumers.

Web3 applications built on smart contract platforms like Ethereum, Solana, NEAR and others will disrupt a myriad of industries. Some of these we've listed below.



May 3, 2022

INSTITUTIONAL TRANSITION PHASE

Institutional investors are in an uncomfortable moment. A few years ago it would have been massive career risk to propose investing in blockchain. A few years from now, it will be a huge fiduciary risk to NOT be invested. We're in that uncomfortable interregnum period.

One observation I'd share from having had so many conversations with institutional investors is to not get obsessed trying to figure out which protocol will win. It's not productive to stress about: *"Which is going to win - Ethereum or Solana?"* Sometimes investors want to spend the majority of a meeting trying to figure that out.

That's not how you pick an equity manager. You don't wait until the manager can explain which one company is going to take over the entire world. You select a great manager and let them buy a portfolio of stocks and trade into new things over time. The investment process should be the same in blockchain.

The beauty is you don't have to decide between Ethereum and Solana. You are allowed to buy both - and Polkadot and Terra and 20-30 others which we own.

The logjam is breaking. Massive institutions are just now investing. We're seeing it ourselves. We're closing our Blockchain Fund next month at well over double our target with a large influx of new institutional investors.

It's really hard to get from zero to one. It's taken twelve years to get these institutions to invest. They are generally investing amounts like 20 basis points of their AUM into our fund. However, it's not that hard to grow your exposure once you get over the zero to one chasm. In my mind, it's very clear that all those institutions - which have something like 0.20% invested in blockchain - are going to something like 8.0% over the next 5-10 years. That wall of money is coming into blockchain assets. It will drive prices way up.

We've raised \$2bn since the beginning of 2021. Our peers have raised similar amounts. That money will get invested. It might take a year or two, but it will get invested.

In the next couple of years, we and our peers will probably be seeing those institutions investing an order of magnitude more money into our space. It seems almost inevitable that the blockchain market melts up.

This moment in time is also uncomfortable because traders still think blockchain is supposed to trade in correlation to most other risk assets. I think the markets will soon realize that blockchain is totally different – there are no cash flows to discount. Rising rates have no impact on crypto. Crypto is priced on supply and demand. Every two years 10x as many people use crypto. If there's a fixed quantity of something and 10x as many people want to own it, it goes up.

In a world where most risk assets have terrible performance, investors will seek out the few – like blockchain – that can perform well.

I think that blockchain prices will soon decouple from other risk assets. I can imagine a world with bond yields above 5.0%, stocks are down from today's level, real estate is down, and blockchain is up 10x.



PANTERA BLOCKCHAIN FUND FINAL CLOSING

Pantera Blockchain Fund, our “all-in-one” wrapper for the entire spectrum of blockchain assets, will close to new investors after the end of May.

The Fund has invested in 58 early-stage token projects and venture equity deals. We have a record pipeline behind that. Pantera participated in the \$200mm Series B+ round for [Amber Group](#) – a crypto financial services provider that offers a suite of institutional-grade trading tools for both individuals and institutions. In addition to a handful of DeFi investments, we co-led the \$135mm Series D for [CoinDCX](#) – a leading cryptocurrency exchange based in India. The Fund has also been investing in projects within the blockchain gaming, metaverse, and NFT sectors. Pantera has led or co-led 30 deals, with more to be announced in the coming months.

\$600mm / \$1.3bn Initial Target Raise / Total Commitments	May 2022 Final Closing
----------------------------------------------------------------------	----------------------------------

The Fund will invest in illiquid assets including venture equity, early-stage tokens, as well as liquid tokens like ethereum and DeFi protocols

Venture Equity

Equity in companies building products and services in the developing blockchain ecosystem.

Early-Stage Tokens

Tokens, or rights to future tokens, underpinning new protocols. Similar to a venture-style model.

Liquid Tokens

Liquid digital assets spanning various functions like store-of-value, decentralized finance and adjacent assets.

The summary of terms can be found [here](#). Click the button below to begin the investment process online.

Invest

PANTERA BLOCKCHAIN SUMMIT

The momentum coming out of Pantera Blockchain Summit is wonderful. It reflects the remarkable engagement with our community of investors, entrepreneurs, and passionate enthusiasts. Seeing everyone in-person again was incredibly fun.

This quote captures the spirit of blockchain:

"The trope of the starving artist is over."

– Dannie Chu, Co-Founder of MakersPlace

So many artists like Van Gogh lived, worked, and died unknown and broke. The centralized power brokers did not allow them access to the public who would ultimately love their work. The artists sold some works in their lifetime, got nothing from the subsequent massive appreciation in value. Blockchain changes all that. Creators can access their fans without waiting for the blessing of centralized power brokers. Not only do they not need to pay the incredibly high commissions on the original sale of their works, they can now receive a cut of the appreciation in their art each time their work is sold.

Decentralization is devolving power from the historical centers and restoring it directly to the people. Blockchain is the ultimate democratization – anyone with a smartphone can participate.

Our focus continues to be identifying and supporting the best entrepreneurs, providing them the value they need to succeed. We are very proud of the platform we have built thus far and are excited to expand those capabilities in the coming months, at scale.

We have uploaded video recordings of the Summit to our website [here](#). Below we've provided some highlights from the day.

Opening Keynote

An overview of the firm and our upcoming initiatives and our current outlook on the industry. Pantera Co-CIO Joey Krug also provides his assessment of the cryptocurrency market and where things are heading in the upcoming years.



"I can't believe that any central bank in the world that doesn't have their own reserve currency, and that's most of them, would not want to have exposure to something that some other government can't take away from them or block them from accessing."

– Bill Miller

Fireside Chat with Bill Miller

Bill Miller is the Founder, CIO, and Chairman of Miller Value Partners. He is regarded as one of the leading investors of this era. Bill discusses how bitcoin is a "responsible" portfolio diversifier for institutional investors and how he approaches investing within the current macroeconomic environment.

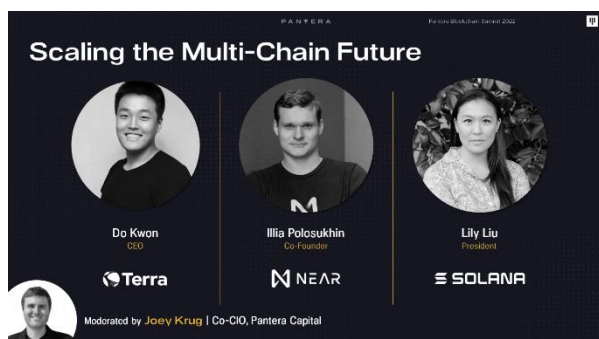
"This community thinks and implements ideas that our core team would have never thought of. It's becoming true that user-owned networks grow faster and become more valuable than investor owned."

– Adam Jackson, Braintrust



The Web3 Economy: NFT's and Beyond

A discussion about the Web3 economy and the proliferation of new applications ranging from NFTs, decentralized web domains, online identity, the talent economy, and decentralized social media.



"Insofar as blockchains are working with finite block space, and I think that's the one invariant that's never going to change, then in that case we are going to live in a world where there are multiple blockchains."

– Do Kwon, Terra

Scaling the Multi-Chain Future

A conversation with the leading minds and developers behind the largest blockchain protocols outside of Bitcoin and Ethereum. The group discusses how the future is a multi-chain universe and how to scale the ecosystem to support billions of users globally.

"What I'm most excited for are chains that are able to scale into the future – chains that have a hope of getting to a million decentralized transactions per second. And I'm more agnostic on whether the right structure for that is to think of them as a layer-1, or layer-2, sidechain, or rollup."

– Sam Bankman-Fried, FTX



Fireside Chat with Sam Bankman-Fried

A conversation with the CEO of one of the fastest growing companies in the blockchain ecosystem. Sam discusses his journey into crypto, seeing a market fit, and building one of the largest crypto exchanges in the world.



"I think it's important to think through the proliferation of strategies in this space. The availability of hedge fund strategies, whether it's quant or crypto long-short and macro. There's been a real proliferation of strategies and I think that's indicative of the opportunity set in crypto and gives institutions a wide variety of ways to engage that haven't been there before."

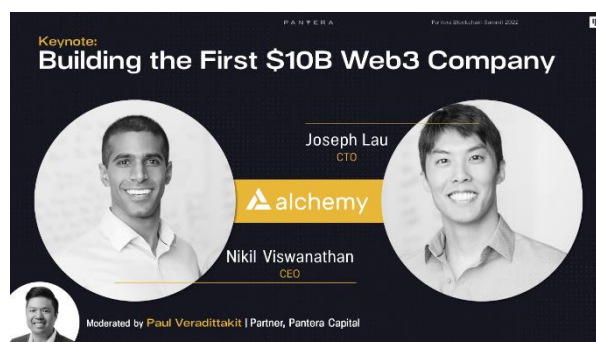
– Lauren Abendschein, Coinbase

Market Perspectives: Wall Street Meets Crypto

A discussion with former Wall Street participants about their transition from the world of traditional finance to decentralized finance and their perspectives on how digital assets can play a role in institutional portfolios.

"We had been engineers for about 15 years; we had coded every single day of our lives, and suddenly, we started doing Web3, and it was so difficult to build. Within a month we realized that – it was kind of the idea [for Alchemy] – that every big shift in technology has a platform that lets people build applications."

– Nikil Viswanathan



Building the First \$10B Web3 Company

The co-founders at Alchemy discuss their journey building the first \$10bn Web3 company and reflect on their process of identifying the incredible opportunity within this ecosystem. Their mission is to provide developers with the fundamental building blocks they need to create the future of technology.



BANKLESS PODCAST HIGHLIGHTS

Ryan Sean Adams: *"How would you describe an easy button portfolio for blockchain exposure here?"*

"Unfortunately it's not as easy as it used to be, really it's the sad answer, if we wanted a quick answer."

"Obviously Bitcoin was everything for a long time and it was great. I used to tell people, 'Buy some Bitcoin.' And then for a long time, I was like, 'Hey, buy half Bitcoin, half Ethereum and you're going to be fine.' The world's way more complicated than that now."

"The kind of theoretical answer, and obviously not super pragmatic for all your listeners, is to be investing in a lot of different things. We probably are invested in 200 different things across all of our funds. The reality is there are going to be probably 10 or so really important layer one blockchains. All the others are actually just kind of companies basically built on top of other protocols.

"There is a great line that the chairman of the SEC said about five months ago that we don't need 5,000 new private monies. I think he and lots of people misunderstand it. There aren't 5,000 layer one blockchains, right? There just aren't. There are 10 or so that are important. Almost all the rest of those are just protocol applications built on somebody else's protocol. The US has 4,500 public companies, so I have no problem with 4,500 tokens, right. We're not there yet. There aren't 4,500 real tokens yet, but in 10 years there will be.

"The punchline of all that is a portfolio should be many things, more than just one or two things. The theoretical answer is to invest in a broad portfolio of things, because there are a lot of things going on. For example, last year, Bitcoin was up 70% and our Liquid Token Fund was up 325%. There are a lot of things going on, one of which is Bitcoin, but there are 30 other important things on the liquid side. There's 80 or so in the private token side of our portfolio. So, for those that can invest in a fund manager, like ourselves (there are a bunch of great managers in the space), is probably now better than the old days, when I'd say, 'Hey, just buy some Bitcoin and Ethereum, you're probably fine.' These days, I think you do need a broader exposure."

Check out the recording [here](#).



January 18, 2022

THEN & NOW :: 2017 RALLY VS. THIS RALLY

Bitcoin peaked in 2017 at \$19,783.21. It's amazing how much everything else has changed since then. This graphic has the top-20 coins at the peak of the 2017 bubble vs. today. Bitcoin is the only constant. Everything else has changed. Only six are in both lists (shown in gold). The majority of coins in the top-20 today didn't even exist in 2017! They are shown in gray. Fourteen of the previous top-20 fell out – and fell a long way. The average position of those 14 is #90.

Top Coins in 2017 Bubble vs. Today		
2017 Peak		January 1, 2022
1. BTC bitcoin		1. BTC bitcoin
2. XRP		2. ETH
3. ETH		3. BNB
4. BCH		4. SOL
5. ADA		5. ADA
6. XEM		6. XRP
7. LTC		7. LUNA
8. TRX		8. DOT
9. XLM		9. AVAX
10. MIOTA		10. DOGE
11. DASH		11. SHIB
12. EOS		12. MATIC
13. XMR		13. CRO
14. NEO		14. WBTC
15. QTUM		15. UNI
16. BTG		16. ALGO
17. ETC		17. LTC
18. LSK		18. LINK
19. ICX		19. NEAR
20. NANO		20. BCH
<div><div></div> Projects That Have Remained in Top 20<div></div> Projects That Did Not Exist in 2017</div>		

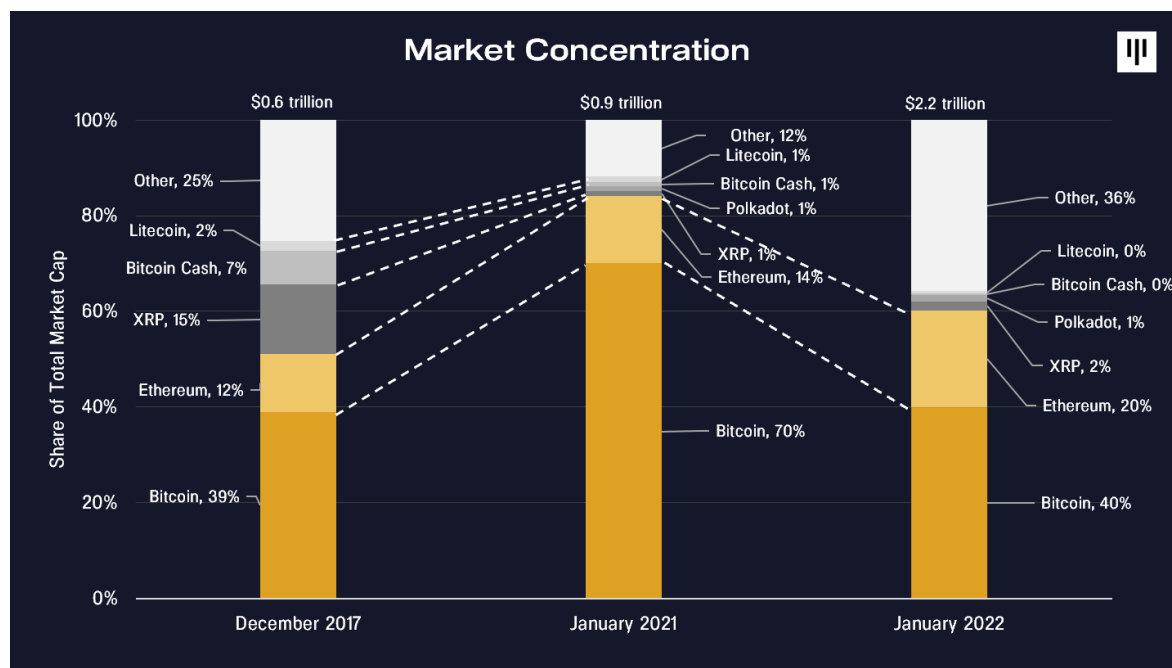
(This is not including the stablecoins.)

Lately I get asked a lot: *Is this rally different?*

Ken Rogoff wrote a fantastic book, *Why This Time is Different: Eight Centuries of Financial Folly*. Having read the book with humility and thought about some of my own experiences feeling “*But, this time is TOOOOTALLY different*”, I will take the plunge and share some of the differences I see – this rally vs. 2017. (Hopefully these will read well in a couple of years.)

With hindsight, 2017 is now officially a bubble.

The first massive difference is 2017’s rally was all about hype. In mid-2017 the world fell in love with newly-issued tokens – initial coin offerings (ICOs). They had existed since 2013. My Co-CIO Joey Krug did the first token on Ethereum in 2015 – Augur. There were incredibly important projects. However, they were very rare – only a few meaningful projects a year. A variety of factors came together and the second half of 2017 was ICO mania. By the end of the year, we were getting fifty whitepapers a week. Obviously it’s impossible to come up with 50 genius ideas each week, every week. Most of these projects were not useful. The market didn’t know that yet. A huge amount of money went into them. When bitcoin peaked in December 2017 it represented only 39% of the market cap of the industry and Ethereum was only 12% – non-Bitcoin+Ethereum peaked at 53% of the market.



There have been two huge changes:

- There was a massive shift from highly speculative, mainly non-functioning tokens having half of the total market cap in 2017 to a point a year ago when the market cap was mainly in the two proven, functioning chains: Bitcoin and Ethereum. Bitcoin had almost doubled its share to 70% while Ethereum held steady at 14% – the other 5,000 non-Bitcoin+Ethereum chains were only 16%.
- Another huge shift occurred as decentralized finance (DeFi) came on. Bitcoin is back to 40%. However, this time Ethereum increased its share to 20%. A totally new mix of very interesting coins like Solana, Terra Luna, Polkadot, Uniswap, and NEAR have proven their value. Collectively, they are worth 40% of the market.



October 6, 2021

PODIUM TURNOVER

An amazing number of projects have cycled through being the third most valuable cryptocurrency. Only three have held the Number 2 position – Litecoin, XRP, and Ethereum. And, of course, one has held the title belt the entire time – Bitcoin.

Highest Rank Achieved By Market Cap			
#1			
#2			
#3	 CARDANO	 tether	 STEEM
			
	 auroracoin	 bitshares	 peercoin
			 nxt
			 namecoin
			 PAYCOIN



MICROSOFT ANALOGUE

In sitting down to summarize my thoughts, it hit me that my remarks at SALT express my views best (edited for clarity):

"I think we're still in the early innings of a multi-decade transformation that's going to have a huge impact on literally billions of people. The SALT Conference is a great example of how much the interest in this space has grown. . . ."

"A lot of my closest friends are Bitcoin maximalists so this sounds edgy – but the advice I would share with investors is there are many interesting protocols to invest in and many compelling companies. A portfolio should be more than just one thing."

"My perspective is: Bitcoin has been amazing – Pantera Bitcoin Fund is up 67,000% since inception. However, I think the majority of future gains will be from tokens outside of bitcoin. I know that sounds heretical to some people here, but that's my professional opinion."

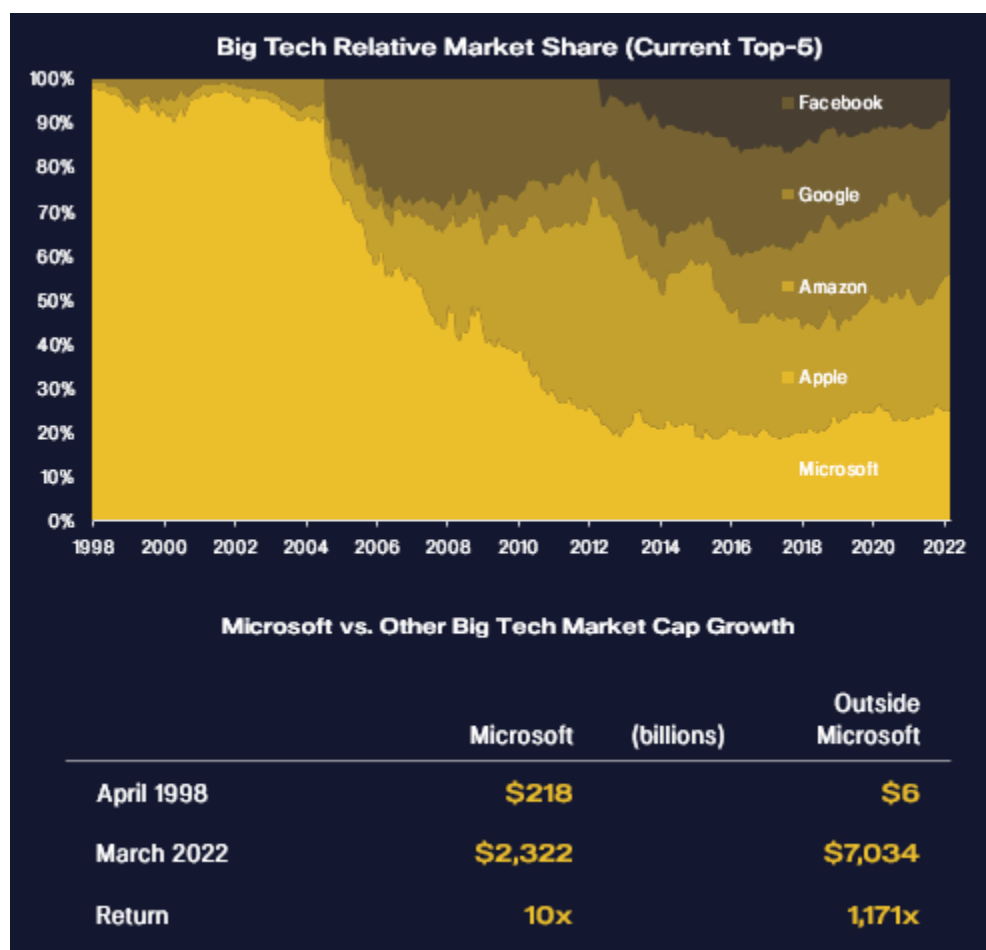
"The analog is: It's like saying in 1998 that majority of future tech gains would come from outside Microsoft."

"At the time Microsoft was worth \$218 billion, Apple \$3.5 billion, Amazon was \$2.2 billion. Google and Facebook were zero – they didn't even exist. In the years since, Microsoft did great – it went up 10x. However, 80% of the tech gains in these five stocks came from outside Microsoft."

"That's the view I have here – I think bitcoin is going to go up a ton – like 10x. It's a great investment. If that's all you can get through your IC you should be long bitcoin. But, if you can be long a basket of things, I think the broader portfolio is going to outperform."

– Dan Morehead, *How Crypto Is Eating Wall Street*, SALT, September 13, 2021

You can watch the recording of the panel [here](#).



ALPHA GENERATION

I'm very bullish on bitcoin. When an investment committee can only choose long bitcoin or nothing in crypto, I'm in favor of long bitcoin.

When a committee ****can**** select among a wider universe, I believe they should.

We're seeing that in our funds. Bitcoin has returned 60% since January 2021. That's awesome. It would take 107 years to compound that amount in 10-year treasuries. However, we're seeing compelling opportunities in the 150 other tradable tokens.

Pantera Fund Performance Since Jan 2021	Return	III
Early-Stage Token Fund	295%	
Liquid Token Fund	385%	
Bloomberg Galaxy Crypto Index	159%	
Bitcoin	60%	

(Performance estimated as of April 2022)

Part of it is we're in a new asset class with less competition.

"When Dan [Tapiero] and I were at Tiger, there were only a handful of large hedge funds and we only had 25 investment team members. We did simple things like count cars in early Home Depot parking lots. There was a lot of alpha because there wasn't much competition. Now there're hundreds of massive hedge funds. Each one has hundreds of really smart people and mind-boggling electronic data capture. It's really hard to have alpha in the public markets.

"There aren't many firms in the blockchain space and it's a \$2 trillion asset class. So, there are a lot of nickels to pick up."

– Dan Morehead, Blockworks Digital Asset Summit, September 15, 2021

"Yeah. There's more alpha in this space than in any space ever."

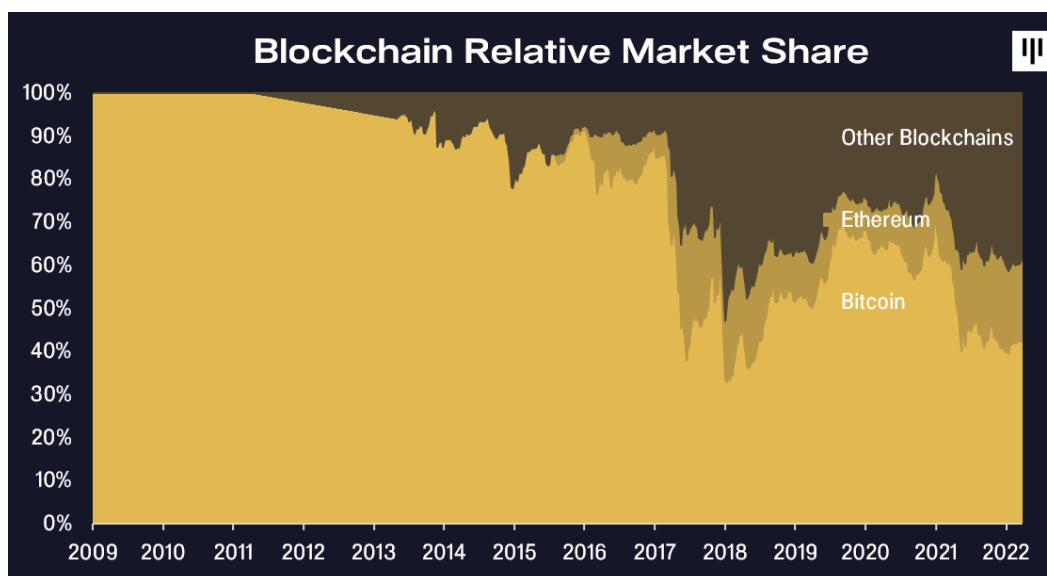
– Dan Tapiero, Blockworks Digital Asset Summit, September 15, 2021

COMPLETING THE MICROSOFT ANALOGUE

[note: written in September 2021]

In the last six months, more than 100% of the gains have come outside bitcoin.

Bitcoin vs. Other Blockchains Market Cap Growth		
	Bitcoin (billions)	Outside Bitcoin
February 2021	\$910	\$580
September 2021	\$870	\$1,250
Change	-\$40	+\$670



ETHEREUM MARKET CAP AS PERCENTAGE OF BITCOIN

We've written extensively on being bullish Ethereum, Polkadot, and DeFi tokens relative to other blockchains. This is a simple way to view the change happening in the markets. The ratio of ethereum's market cap to Bitcoin's market cap has more than doubled in the last year.



We think the market is re-rating Ethereum for the upcoming merge, issuance reduction, and ESG benefits from proof-of-stake. These changes will lead to ethereum being a deflationary asset where in each block, negative ethereum are issued. This means ETH will be a more deflationary asset than bitcoin.

Ethereum has a massive ecosystem of decentralized finance use cases with rapidly growing adoption. Combine these two dynamics and we think Ethereum will keep gaining market share relative to Bitcoin.



April 15, 2021

NOT JUST BITCOIN

So, that's bitcoin – but bitcoin is just one brand of blockchain. There are many other blockchains which have important, and often quite different, use cases.

When an investor asks, "Should I buy bitcoin?", I answer YES. When they ask if they should buy other tokens, I say YES. The critical first step is to get off zero – get exposure to something in blockchain.

Bitcoin is a solid proxy for the blockchain disruption. However, it's not everything. Bitcoin is about half of the market cap of the industry – but possibly less than half of the future opportunity.

In previous letters we've made the case that bitcoin will probably go up a lot, and that ethereum could go up more, and polkadot even more than that. And that we're most bullish on DeFi and other projects built on top of ethereum and polkadot.

Some of this is just small caps out-performing mega-caps in a bull market. However, most of it is for underlying reasons which we have discussed elsewhere.

We wrote in our [January investor letter](#) that the market cap of bitcoin plus ethereum was 84% of the overall market. All 5,000 other projects combined were only 16%.

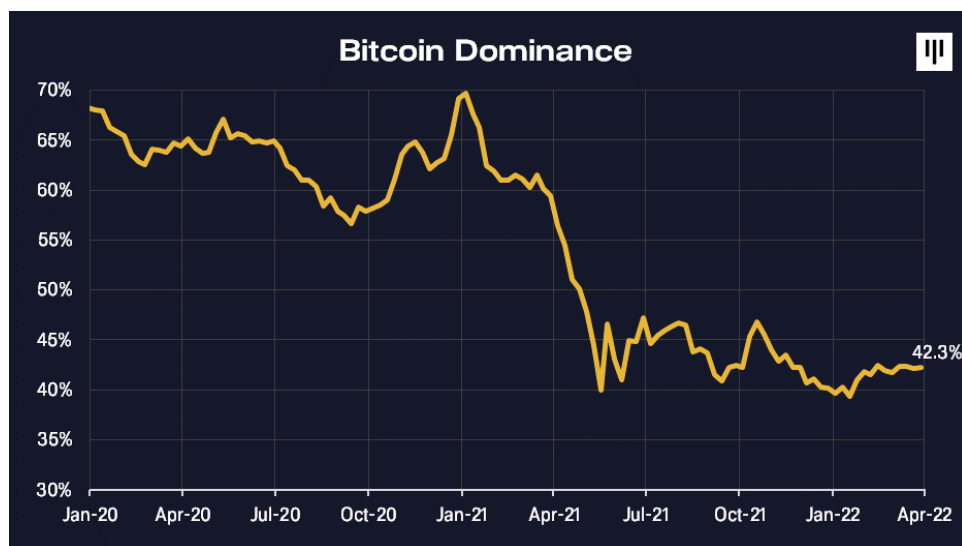
It's now happening. It's easiest to show in some graphics.



The non-bitcoin+ethereum market share has more than doubled, from 16% to 39%, since early 2021.

Watch this space. That's where the largest gains are likely to be.

Pantera Blockchain Fund is currently long 0% bitcoin.



Although it's rallying "like crazy", bitcoin's share of total market capitalization ("bitcoin dominance") is falling. It's a nice asset class to be in when something which is up 700% is losing market share.



WHY ETHEREUM IS UNDERVALUED WITH JOE LUBIN

In March 2021, we hosted a thematic call which was a very special one, *Why Ethereum Is Undervalued*, with Ethereum co-founder Joe Lubin. Joe and I went to Princeton together – the ecosystems have evolved a great deal since then.

Despite Ethereum being close to its all-time high, we believe both it and DeFi assets built on top are undervalued relative to their long-term potential.

Below are some highlights from the conversation. You can watch the full episode at <https://www.panteracapital.com/why-ethereum-is-undervalued>.

Q. Can you tell us a little about why Ether has value and what its role in the Ethereum network is?

Joe Lubin: "The main reason that Bitcoin and Ether and other cryptocurrencies have had value early on, is that they represent a store of value or a means of payment. A very speculative context as these systems are still quite young; however, these massive value propositions are materializing now and certainly going to grow.

"Ether is being used to power programs and to store data – but it's also being used to stake. There are millions of Ether being locked up on Ethereum 1.0, and for the Ethereum 2.0 Beacon Chain. It's being used in pretty enormous quantities around 2.0. It's about five times larger in terms of dollar value of fees, compared to Bitcoin, on a daily basis. I think there're approximately \$27,000,000 in fees being generated each day. The top three applications on Ethereum equal all the fees that are generated on Bitcoin.

"Finally, Ethereum 1559 is coming – a protocol that will enable a much more effective fee structure, that will have better scalability and availability. You'll be able to pay a fee to make sure that your transaction gets into a block pretty quickly and that's going to have a side effect of burning Ether. The narrative that Ether's monetary base is uncapped is probably going to go away – it will give quasi stable equilibrium most likely or deflationary."

Q. Of the consumer-use cases being built on Ethereum right now, what ones are you most excited about?

Joe Lubin: "I'm really excited about DeFi. DeFi is just an astonishing innovation. The web and internet protocols represent the democratization of access to information globally, the ability to publish information, the ability to engage in e-commerce, the ability to engage in social networks. That sort of power of democratization is being brought to the financial infrastructure. The financial infrastructure hasn't really been changed that much by the internet until recently.

"Real deep infrastructure changes are now possible because we're creating money on decentralized protocols – whether it's stablecoins, bitcoin, central bank digital currencies. We're creating these financial protocols that act together like Legos for lending, borrowing, insurance, equity issuance, bond issuance, automated portfolio management and so many more use cases. This financial infrastructure is being built by innovators, it's being built by technologists and entrepreneurs and it's enabling use cases like flash loans that are astonishing, use cases that were never really thought possible before.

"I'm confident that discussions with regulators in different countries is going to bring in tremendous value creation. We're moving from an analog and friction-filled society to a natively digital society, and that's going to enable us to squeeze all the frictions and delays out of our economies, and drive tremendous value. DeFi is going to enable the world to re-architect its systems again because it needs that financial encryption structure to sit on.

"Another incredibly exciting use case, that is possibly going to be bigger than DeFi commercially, is NFTs (non-fungible tokens). NFT's are basically creating digital representations or just gain some ownership for lots of different things in the world, whether they're natively digital, like digital art or music, or whether they represent physical objects.

"NFT's are a part of DeFi. They will implicate DeFi in some use cases, but are also just going to be relevant to so many more people. There are going to be so many use cases in art and music – people like collecting things and organizing things as a species."

Q. How do you think about the competitive landscape of Ethereum competitors – projects like Polkadot – how do you think they fit in?

Joe Lubin: "There have been so many Ethereum killers over the years and there really was no competition for a very long time, but now there's some good projects that are emerging and gaining some solid traction. These projects are still very immature. They still have tiny ecosystems in comparison to Ethereum. They don't have a great developer experience. They have minimal

infrastructure. But I think they're playing an important role. Ethereum is doing astonishingly well, but it is experiencing lots of growing pains. These are good pains to experience rather than the kind of pain that you might experience if you build something that you think is cool and nobody else thinks it's cool. Growing pains, combined with real desire to utilize a system, bring lots of capital into the context and humans are really good at what they think is valuable. Ethereum has a lot of scalability projects underway, some of them coming online."

Q. Ethereum as an asset class for institutions and potentially even corporations. I think we're starting to see that narrative this year with Bitcoin, where institutions are coming into our funds looking to get exposure to even Bitcoin specifically. And then of course, MicroStrategy and Tesla are seeing Bitcoin as a way to store value from their treasury. Do you sort of see the same for Ethereum and what does that look like in terms of the timeline?

Joe Lubin: "Things are really heating up on the enterprise front. We have entities like PayPal making use of digital assets, cryptocurrencies. Michael Saylor has done an amazing job of researching how one might line their treasury with Bitcoin, laying out all of the thinking, strategies, and procedures to enable organizations to do that. All of that is applicable to Ethereum and we've been talking about it internally - how we might present a much more compelling case for organizations to hold some Ether.

"It has all the benefits of holding Bitcoin on your balance sheet but is also much more functional than Bitcoin. Yes, it's still the Wild West, and yes, these systems are still sharp around the edges, but the potential is just so awesome that many will come very soon. I expect lots of enterprises will be using Ethereum and DeFi over the next 12 months."

Q. What sort of hurdles do you see, that Ethereum needs to achieve, and even more specifically, maybe even touching upon some of the regulatory hurdles for Ethereum going forward too?

Joe Lubin: "Usability, scalability, and regulatory certainty. Corporations don't do well in environments of uncertainty and especially regulatory uncertainty. The issues on the security side, I think, have been significantly addressed. Some might argue with that, but, I'm reasonably comfortable with the approach as we understand it at ConsenSys - we can issue tokens that we believe are utility tokens, with a clear expression on what they can do and what they can't do. It should be about utilization rather than speculation. Utility tokens aren't seen as securities. The Office of the Comptroller of the Currency did our industry a couple of solids recently in writing a letter indicating that financial institutions like banks can custody digital assets, like cryptocurrencies. More recently, they indicated that the same institutions can use the DeFi rails. They can use Bitcoin rails, Ethereum rails, run nodes, and transact on things like stablecoins - a pretty good opening.

"Gary Gensler, the new head of the SEC, is very well acquainted with the technology and so I don't anticipate difficult regulatory hurdles going forward. Though decentralized finance is going to be really interesting.

I think it will be incumbent on the developers of decentralized finance protocols to understand the law well with their legal counsel and to build protocols that enable them to operate without incumbent laws.

"Scalability is being addressed - we're going to see lots of applications making use of layer 2 technology. Usability is also getting addressed - our wallet system, MetaMask, has 1.6 million monthly active users. We're focusing on usability for the consumer and it's starting to make a real impact."



GAMESTOP & DECENTRALIZED FINANCE (DEFI) – BY JOEY KRUG

I love the recent GameStop story that's been all over the news. For those who haven't seen it, the short version is that Michael Burry (the Big Short guy) and the founder of Chewy (the online pet store company) took activist positions in GameStop earlier last year. So did a handful of Redditors, namely one guy named "Deep!@#\$%&!Value" (you can take a guess), who's been holding the position for a couple of years (he'd been buying call options on it).

Fast forward to January this year, and a ton of prominent hedge funds are short GameStop to the tune of about 140% of its float. You can see where this is going; GameStop was undoubtedly a company that was fading into irrelevance for a while. Still, it wasn't going to zero in 2020 or 2021 based on their balance sheet. Many retail traders on WallStreetBets figured out that if they bought calls, hedging would push the price up, putting pressure on shorts and triggering cascading margin calls. It ended up causing a hedge fund called Melvin Capital to lose over 50% in one month. A lot of similar dynamics exist in cascading liquidations on crypto exchanges, which cause rapid price movements. It's one of the reasons when we take risk-off, we usually do it by going to cash versus opening a short position. Crypto is so nascent and volatile it's more like shorting GameStop if you were to outright short something. It has a high blowup risk vs. selling to cash or buying puts to hedge. Shorting quantitatively is something we will do as your risk is very different trading hourly vs. discretionarily, where something can blowup overnight if you're holding a short position. The risk-reward isn't there yet.

There's a lot of other exciting dynamics surrounding GameStop here. I boil it down to three different things I think are notable. People on the internet can and are finding serious alpha with a midterm view that many of Wall Street's best hedge funds didn't capture. These users realized that shorting a stock when the company is already super beat up/oversold and has enough cash to keep kicking for a while is extremely risky. The equity behaves almost like a call option in these scenarios.

The second is that people realized that since over 100% of the float was short, they could merely squeeze the shorts by buying the stock. Those who remember the Icahn vs. Ackman Herbalife battle can see the resemblance here. However, on steroids, given the massive short interest here and the gigantic wave of retail buyers. To give you an idea, over *fifty percent* of Robinhood's users were long GameStop, which is just super wild, and I think more than any other stock on the platform by far. People started piling in because they realized it was squeezing the funds who were short. Many users bought the stock, even knowing they'd eventually lose money as a way to "stick it to the man" because they feel like the financial system is rigged.

The third element is that brokers started limiting buys of the stock due to clearinghouses requiring more collateral to be posted. These increases were over ten times the typical collateral needed due to changes in value at risk due to the insanely high volatility of GameStop stock. This collateral needs to be posted mostly as an artifact of the existing system where the trade isn't the settlement and settlement takes two days to occur. While a centralized database could fix this problem, there's a massive coordination problem here and many misaligned incentive issues that make it seem unlikely that it'll happen anytime soon, if ever in the traditional system.

What's interesting here to me is that there is a massive overlap between the decentralized finance [DeFi] ecosystem and these themes. Since all of DeFi is open, anyone in the community can (and people do) share their views on where they believe alpha lies in the market. This chatter is widespread across Twitter, Reddit, and Discord groups across the cryptocurrency space. Sure, most of it is noise and has no edge, but someone posts something with an immense edge with a well thought out investment thesis once in a while.

The great thing about DeFi is that it's global, has relatively low fees (once Ethereum scales), few intermediaries, transparent fair rules for everyone, and the trade is the settlement. It gets rid of the rigged system and replaces it with a shared public infrastructure that cannot be rigged. No broker can ratchet up collateral requirements because there is no gatekeeper broker. The clearinghouse is just a smart contract. Since everything is automated and happens via smart contracts, a trade either happens or it doesn't. There is not + 2 days, but instead "trade intent" + 30 seconds. Once your trade gets confirmed on Ethereum, it's final, and that's it. And since these systems are global, anyone can access them anywhere in the world; it just takes a smartphone or computer and some cryptocurrency. The advent of DeFi mitigates the main problems and rigged parts of the system these Redditors were frustrated with.

When you use DeFi, you'll realize finance is never going back. The moment I internalized that this was for sure the way the future is going was in 2020. This may surprise some people, given that I've been building in the DeFi space since 2014. But I was 90% confident for a very long time, and it wasn't until last year when I became 99.9% convinced that DeFi is the future of finance. I wanted to trade from one asset into another. I had one cryptocurrency that was a token on Ethereum. I needed dollars to send to an OTC desk to get me a cryptocurrency from an exchange that didn't trade in the US market. I used a decentralized exchange aggregator (a site that routes your order across dozens of decentralized token exchanges and gets you the best price) and traded that first token for USDC. The price I got was better than any OTC desk quoted me for the same trade. Ordinarily, I would've had to send it to a centralized exchange first, wait a while, trade it, and withdraw the USDC, which usually retakes a bit. Once I had the USDC, I sent the USDC to an OTC desk (at about 2 AM, when the banking system would've been closed). The OTC desk bought me the new token and then sent it to my wallet for that blockchain a few hours later.

So what just happened there is insanely cool. I'd have to sell the initial position in traditional finance, withdraw dollars after waiting for settlement, and wait for the wire to process (so three days so far). Then the foreign OTC desk could buy me the asset I needed. And I'd probably pay a fair amount of fees along the way too. And I certainly couldn't have done it at 2 AM because nothing would've been open (neither my bank nor the market). Crypto markets trade 24/7.

Just the other night, I was getting indicative quotes on a 1000 ETH trade, and decentralized exchange aggregators offered lower slippage than Coinbase Prime. This feels like a watershed moment for the DeFi space. Not only is it a better system in theory, but it is also actually starting to become more useful to crypto users than other centralized systems. Companies like Coinbase will always help onboarding users to crypto from fiat/USD. Still, for crypto to crypto and stable coins <> crypto, DEXes will begin to dominate.

Ethereum is the asset at the forefront of all of this. Even after its recent run-up, it still trades at a P/S ratio of 40x, which will become earnings for ETH stakers when value switches to Ethereum 2.0. Revenue on Ethereum has grown over 400x since January 2020. It's an insanely cheap asset compared to anything else in the public markets with that kind of growth relative to its revenue multiple. It's not entirely crazy to see Ethereum being able to 5-10x from here, especially when compared to traditional equities markets. Ethereum is the base layer of this new open financial system. The vast majority of the value in that system is transacting on top of smart contracts written on Ethereum. The net present value of the global settlement layer's transaction fees for all of finance is a considerable number. We have positioned the Pantera Liquid Token Fund around the opportunities surrounding decentralized finance and the Ethereum ecosystem for all the reasons above.

The fund was up 98% in January versus BTC up 15%. We think that similar to the last cycle, Bitcoin dominance (BTC's percent of overall market cap in the space) will eventually go down into the forties again. In our view, the primary beneficiaries are likely to be Ethereum and Ethereum based decentralized finance assets, as well as eventually DeFi assets on other chains like Polkadot later in the year. This outperformance so far has mainly been due to our positioning surrounding DeFi (and some due to catching an opportune time to take some risk off after BTC hit \$40k). These significant innovations we talked about above are only *4%* of the total cryptocurrency market cap. By the end of this cycle, we think they could potentially be 20%, or a relative outperformance of 5x.

On top of that, these assets' underlying fundamentals should grow proportionate to the price of ETH. As ETH goes up, total value locked and volumes go up, which increases revenues, which increases the prices of these DeFi assets. As the market gains confidence that DeFi is here to stay and isn't a fad, multiples will go up too, and things will begin to be valued by price/revenue/growth in DeFi. I think multiples could expand 4-5x across the board from here. As the protocols get more liquidity and their valuations go up, they also become more useful. There's a massive recursive reflexive positive cycle of reinforcement here that leads us to believe DeFi is the best opportunity in the crypto space since Bitcoin and Ether themselves.



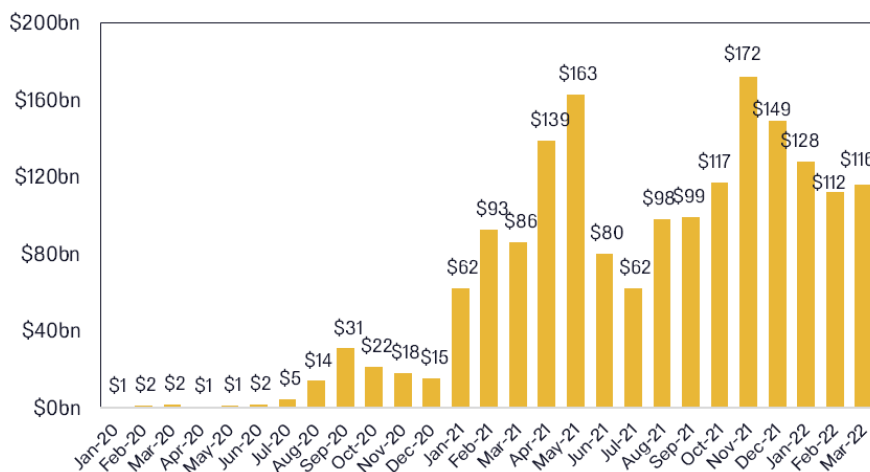
DECENTRALIZED FINANCE GROWTH METRICS

Decentralized exchange volume has taken off. Total trading volume across DEXes is about \$100bn per month now.

Pantera has positions in these decentralized exchanges:

- [Ox](#)
- [1inch](#)
- [Balancer](#)
- [DODO](#)
- [Injective](#)
- [PowerTrade](#)
- [SushiSwap](#)
- [Uniswap](#)

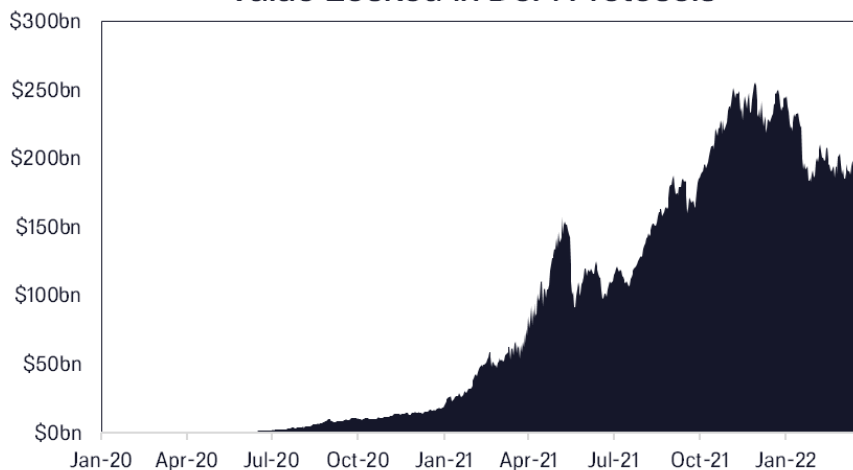
DEX Trading Volume



2. The Block; March 31, 2022

In parallel, the total value locked in DeFi protocols is continuing to rise. As of April 2022, the amount of value in DeFi was around \$220bn. Two years ago, it was just about \$1bn in total.

Value Locked in DeFi Protocols



1. Source: DeFi Llama; March 31, 2022



January 14, 2021

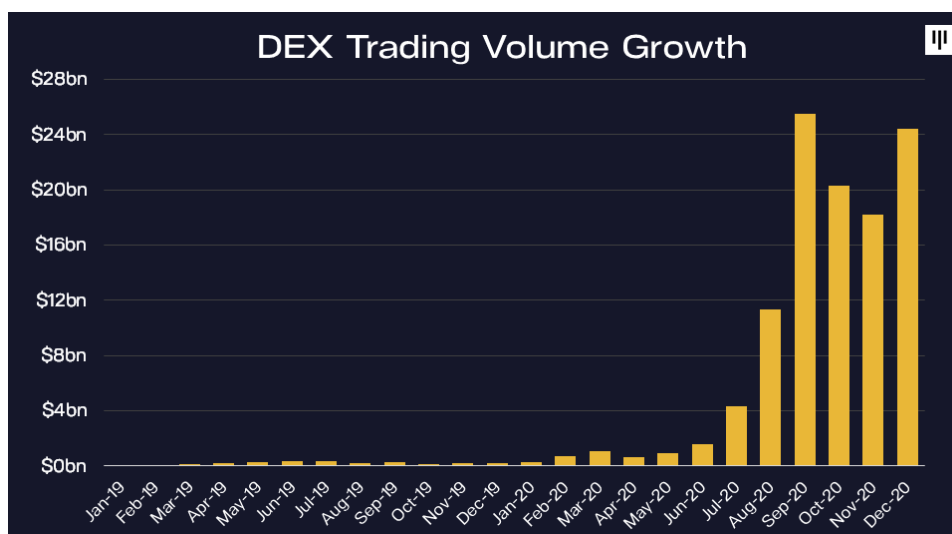
WHY ETHEREUM IS UNDERVALUED – BY JOEY KRUG

Ethereum is the leading asset in the cryptocurrency space for developers who want to write smart contracts and decentralized finance (DeFi) applications. It's the base money collateral for this new financial system. On Ethereum, DeFi has grown from \$1bn in Jan 2020 to \$16bn in Jan 2021, has more fees paid than Bitcoin, trades at an implied P/E multiple of 79, is down 37% from its all-time high, and we believe is undervalued on a relative basis to Bitcoin. Especially when we see Bitcoin's share of the overall market above 70%, which tends to be the higher end of its range in recent years.

When Ethereum launched in 2015, it was easy to write off as an inflationary cryptocurrency with an economic model inferior to Bitcoin's, but this missed the forest for the trees. Ethereum's launch was a watershed moment in finance and enabled for the first time financial contracts without requiring a trusted third party to engage in a financial transaction. Bitcoin did this for digital gold/wealth storage, but Ethereum is doing it for finance. This new parallel system in the long run will be more globally-accessible, cheaper, and enable rapid experimentation on the level that the internet saw with information consumption, but this time for financial markets. With Ethereum, anyone can participate in or even create a new financial market in a few clicks. You can take out a loan at 3am on a Saturday night if you want, and pay it back the following Sunday. Instead of needing an exchange or OTC desk, you can swap from one asset to another using sites like [1inch](#) and [Matcha](#), and often get a better price. And you can send someone digital dollars 24x7x365 in 30 to 60 seconds, and they actually receive it in that timeframe too.

Like most revolutionary new technologies, it's often hard to use, seems complicated, and many of the use cases feel like toy use cases. Is the future of finance really going to have things like Sushi (a Japanese-themed decentralized exchange) as core components of it? Maybe, maybe not, but does it really sound that much crazier than the term NASDAQ (National Association of Securities Dealers Automated Quotations)? Not really. Ethereum will be useful initially to practically no one beyond its investors (2015-16), then to people within crypto as a fun toy (2017-18), and now we're in the era of Ethereum actually being very useful and having found product market fit for people within crypto (2019-21). Over the course of this year, I believe this growth will continue and Ethereum will provide even more value for crypto users as a platform for decentralized exchanges (DEX's), lending protocols, synthetic asset trading protocols, etc.

This product-market fit is very real, exchanges on Ethereum have grown over 100x in the last year, and the same is true for lending. Ethereum itself now has more daily transaction fees than Bitcoin. Ethereum as an asset gives exposure to all of these developments, since Ethereum will receive transaction fees when staked after Ethereum finishes the migration to Ethereum 2.0. On top of that, Ethereum is used as collateral in many of these DeFi applications (Ethereum collateral is the mechanism by which Dai, a stablecoin pegged to the USD, is issued, as an example).



Ethereum is also used to pay transaction fees by users (and at some point there's a plan to burn some transaction fees too). Long run, Ethereum could potentially even be a deflationary asset that earns fee revenue, is used as collateral, and is used to pay fees. Each of these properties alone make it a fascinating asset from an investment standpoint, but combined they make it unlike anything else in the market. The implied P/E multiple based on current transaction fees is about 79, and for something where underlying usage is growing 25x (total value in DeFi) - 100x (DEX's) year over year, that feels incredibly low compared to assets in the equities markets.

Ethereum is currently down 37% from its all-time high and we believe undervalued on a relative basis to Bitcoin (not that they should be compared that much, as digital gold and DeFi are two different things), but still we're overweight Ethereum. Bitcoin dominance has been hitting above 70% recently, which tends to be at the higher end of its range in recent years, and as the bull market continues, we think people will take some of their Bitcoin gains and roll them into Ethereum. In addition, once CME ETH futures launch, it legitimizes Ethereum as something institutional investors can own, and it's actually a fairly easy bucket for them to allocate to (it fits in their tech disruption buckets). And as more and more holders stake their ETH in Ethereum 2.0, that locks up Ethereum, which means less sell pressure on the price. These two things, combined with the fundamentals and historically low valuation relative to Bitcoin, should provide a lot of positive pressure on Ethereum's price in 2021, and for that reason we're very bullish on Ethereum.

We will host a conference call on February 16th at 9:00am PST to discuss why Ethereum is undervalued. Please feel free to register [here](#).



February 16, 2022

WHY WEB3 MATTERS THEMATIC CALL HIGHLIGHTS

Following the debate stirred up by Elon Musk and Jack Dorsey's comments on the merits of Web3 applications late last year, we decided to host a thematic call on *Why Web3 Matters*, featuring Nader Al-Naji of the [DeSo Foundation](#) and Roneil Rumburg of [Audius](#). Below are some highlights from the discussion:

Q: How would you define "Web3"?

Nader Al-Naji: "I personally think of Web3 as building something on a blockchain. If you're using a blockchain, to me that's Web3. And you might ask, 'what's the point? Why is a category of blockchain based apps so interesting or different?' I think the biggest reason why Web3 is interesting

is that when developers build on a blockchain, all the assets and content are actually shared across all of the developers, which allows them to build off of each other and innovate in a way that they couldn't before in Web2. And that concept is called composability.

"For a concrete example, with the DeSo blockchain, apps that are built on it are actually all sharing the same pool of content. And that means interesting things happen. Like when you make a post in one app, it actually shows up in all the other apps. If you've built a following in one app, and then you want to move to a different app, all your followers are actually accessible there on that new app as well. That concept of sharing data across all apps, as I mentioned, is called composability, and I think it's the key that distinguishes Web2 from Web3 apps."

Q: Recently on Twitter, Jack Dorsey and Elon Musk publicly questioned the reality and vision of Web3. When tweeting about it, Elon stated: "[it] seems more marketing buzzword than reality right now". Is he right?

Nader Al-Naji: "I think the people who write off Web3 probably don't understand the power of composability – the power of the assets and the content being shared and truly owned by their users. I think that when you have composability, there's an inevitability of the platforms that fully support it (the layer-1s and things like that) because a single killer app that's built on them results in all these users and data being shared, and then more apps building, and creating a virtuous cycle. We saw it with Ethereum and I think when that happens, it'll just be impossible to ignore."

Q: Jack Dorsey has been critical of Web3 ownership by stating: "You don't own 'Web3'" and that "it's ultimately a centralized entity with a different label." Do you agree?

Roneil Rumburg: "I both agree and disagree. I think where I agree is that most networks today in crypto are pretty nascent. Typically that means that the distribution of token ownership among the broader community is not super dispersed. But when you think about how this compares to existing Web2 products, these companies actively having ownership available to users so young in their life cycle is a novel thing. But more so than that, these products are actually designed in such a way that they continuously distribute ownership in themselves to the very users that are making them valuable.

"The Web2 life cycle for a typical company is: sell equity to investors, spend that money on marketing and customer acquisition to bring in users, who you can farm data from and sell to advertisers. And the way that growth flywheel keeps moving is basically around a separation between owners of capital and the people who are actually creating the valuable asset on the network, which is data.

"You can remove a few layers there. And I think that's what these networks are doing by incentivizing users to create the valuable resource, which is data, through distributing ownership to them to bootstrap a network effect in the early days – that's a very powerful incentive mechanism. Five to ten years down the road, if you project out the expected inflation rates and distribution schedules of most of these networks, they do not at all look centrally owned or centrally controlled....

"So I think this [Jack's] criticism is valid today, but it misses the intention. I don't think anyone was saying that these things have ideal distributions of ownership. But I certainly think these products, assuming they're two, three, four, five years old, have distributions of ownership that are far more heavily skewed to their users than products like Twitter, which were owned by six or seven investors at that stage, and then maybe a handful of early employees."



METaverse AND PLAY-TO-EARN BY PAUL VERADITTAKIT

Play-to-earn: Play-to-earn, a type of blockchain-based gaming where players earn money based on their in-game activities, has certainly been one of the most significant industry themes of the year. Axie Infinity, at its peak, generated over \$15M in revenue per day, illustrating the power of play-to-earn gaming experiences. Many other games, from Star Atlas to Genopets, have since been announced, emphasizing that this trend of vibrant in-game economies is here to stay.

To maximize performance—and earnings—in many of these play-to-earn games, players sometimes are required to make an initial asset investment to commence their play-to-earn journey. As an example, in the Axie Infinity model users must own a team of three “Axies” to begin battling, which can cost hundreds of dollars. This problem motivated the creation of gaming guilds. Guilds lend out in-game assets—such as those Axies—to their network of “scholars,” allowing them to play the game and taking a proportion of their earnings in return. Many of the largest guilds, such as Yield Guild Games or Merit Circle, have thousands of scholars and are both valued in the billions.

Metaverse: “NFT” may have been Collins Dictionary’s word of the year, but another concept from the technology sector made its way into the mainstream consciousness in 2021: the “metaverse.”

Everyone’s talking about it. Partially driven by macro factors such as COVID’s digitization of our lives—and likely tipped over the edge by Facebook’s recent rebrand to Meta—the topic is top-of-mind, from op-eds in the New York Times to casual dinner table conversations.

It’s a topic that’s been covered at length elsewhere; I’ve even touched on it in several of my recent pieces. But, at the risk of sounding like a broken record, I think the subject is still worth a deeper dive.

What even is the metaverse?

Defining “the metaverse” is an impossible task from the start.

For one, it’s so early that it’s hard to predict what the metaverse will morph into and eventually mean to us, similar to how predicting Snapchat immediately after the release of the iPhone would have been miraculous.

To add to the mess, there are so many semantic battles. Some people think “metaverses” (plural) is more appropriate since there will be multiple different virtual experiences that will be accessed by various interfaces. Some don’t like to use the term at all because of much of a buzzword it has become—the “metaverse” has come to encompass almost anything in the virtual world. Maybe “metaverse” itself will eventually be retired for another term, who knows!

For now, it’s useful to at least try to arrive at a precise definition for the concept. The best one I’ve been able to find comes from Matthew Ball, an investor whose write-ups on the metaverse are must-reads. While he acknowledges that a perfect description is impossible, he defines the metaverse as:

“A massively scaled and interoperable network of real-time rendered 3D virtual worlds which can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence, and with continuity of data, such as identity, history, entitlements, objects, communications, and payments.”

There’s a lot to unpack there, but some of the elements that stick out are: it’s 3D, open to near-infinite numbers of people, and has some element of continuity, similar to real life.

For some, this may bring up images of Second Life, a popular massively multiplayer online role-playing game (MMORPG) from the early 2000s. While this analogy has some merit, it’s a visualization of what a single type of metaverse could look like. In reality, the design space for metaverse-builders will be wide and, ultimately, will be driven by us, the users.

Who, then, is building the metaverse? So far, they’ve fallen into two camps: non-crypto and crypto metaverses. And, until recently, they’ve been building more or less in parallel to one another.

Non-crypto: Big Tech’s metaverse

Due to the metaverse’s longstanding association with virtual reality, what we would consider “the metaverse” has been in development for several years by a number of VR companies. VRChat and AltspaceVR, for example, have been two of the most prominent platforms for working and socializing in virtual reality. Particularly with COVID, the virtual events use case found early traction.

This year, two Big Tech companies—Facebook (now Meta) and Microsoft—made big bets on the future of the metaverse, incorporating it directly into their immediate roadmap.

Facebook, of course, rebranded to Meta late last year, unveiling their own Horizon Workrooms product for VR-based teamwork. They seem to have bigger ambitions though, not only from a financial standpoint (~\$10B per year for miscellaneous metaverse-related R&D) but also in scope. Zuckerberg, at least from

what he's saying publicly, seems to "get" why interoperability and openness matter and, since he views this as a new era of the company, claims to be building in that direction.

We'll see what Meta ends up doing. At the end of the day, they remain deeply embedded in the profit-maximizing, zero-sum competition cycle of Web2 technology companies, so I don't expect them to build the metaverse that we hope for, necessarily. But I also wouldn't jump to conclusions too quickly.

Crypto: a community-owned metaverse

In our industry, the approach has been different. The core principles of decentralization, trustlessness, pseudonymity, and community ownership have been ingrained from the start.

Some of the earliest virtual worlds to be created with blockchain technology include The Sandbox, Decentraland, and Cryptovoxels. While they each have different elements and in-world economics, the power of blockchain and NFTs allows for true digital land ownership, which opens up entirely new types of activities from leasing your plot to custom-building a home for someone else.

A lot of early activity has been from buyers hoping to reserve their plot of land in the metaverse for posterity, but a number of interesting uses have begun to pop up. On Decentraland, for example, there are events almost every day that users can hop into and experience. Dominos, Atari, and other big-name brands have also purchased plots of land to advertise their goods, host events, and build awareness in the virtual world.

Where we go from here

We're still a long way from the metaverse going "mainstream." Frankly, we're not even close.

It will start with the enterprise (e.g., Microsoft, Meta) and gaming (e.g., Decentraland) and will slowly branch out from there. I personally think that the open, decentralized, and community-owned metaverse will beat the closed, rent-extracting, and surveilled systems, for many of the same reasons why I think Web3 will disrupt Web2. But this future is by no means predestined; it needs to be built!

In so many ways, we're still in the picks and shovels phase of this industry. The metaverse needs its own currency—we've more or less already got that covered. But the metaverse also needs its own sovereign infrastructure stack that doesn't go down when AWS does. Or ways for groups of people to easily collaborate with one another, from decentralized messaging to project management tools. Or standards for NFTs as they cross between "metaverses" and different rendering environments. In short, there's a lot that needs to be built for this new future.